Overweight and Obesity
in the Eastern Mediterranean Region
(An Annotated Bibliography, 2000 - 2011)

Compiled by
Abdulrahman O. Musaiger
Faiza Kalam  Mutasim Algadi
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Obesity has become one of the main health problems in the Eastern Mediterranean Region (EMR), which refers to all Arab countries (excluding Algeria), in addition to Afghanistan, Iran and Pakistan. Studies on overweight and obesity in the EMR have increased remarkably during the last decade. A systematic literature review of studies published in English between January 2000 and June 2011 using Pubmed and Google Scholar database was carried out. Keywords included overweight, obesity, anthropometric measurements, weight status and body mass index for each country in the EMR. Papers published in Arabic, Persian or in local Journals not abstracted in Pubmed or Google Scholar database were excluded. We hope that this document provides useful information on main studies published on overweight and obesity in the EMR.

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OBJECTIVE: The study sought to determine BMI trajectories in Iraq/Afghanistan veterans over 6 years and to examine sociodemographic factors associated with BMI trajectory membership.

METHODS: Our study sample included 16,656 veterans post-deployment and entering the Veteran Healthcare Administration (VHA) healthcare system. We used national VHA administrative sociodemographic data, tracked veteran BMI for 6 years, and used trajectory modeling to identify BMI trajectories and sociodemographic characteristics associated with trajectory membership.

RESULTS: Five trajectory groups determined in the full sample were primarily differentiated by their post-deployment initial BMI: "healthy" (14.1%), "overweight" (36.3%), "borderline obese" (27.9%), "obese" (15.7%), and "severely obese" (6.0). Being female, younger, and white were associated with lower initial BMI trajectory group membership (p's < .05). Greater observed BMI increase was associated with higher initial BMI across groups (0.6, 0.8, 1.5, 1.9, 2.7). Gender specific trajectory models found that male Veterans with higher education and white female Veterans were associated with the lowest initial BMI group (p's < .05).

CONCLUSIONS: Higher post-deployment BMI was associated with greater BMI gain over time for both male and female veterans. Older age is associated with higher BMI regardless of gender. Education level and racial status are differentially related to BMI trajectory by gender.

Gender Differences In Rates Of Depression, PTSD, Pain, Obesity, And Military Sexual Trauma Among Connecticut War Veterans Of Iraq And Afghanistan.

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Abstract

PURPOSE: The current wars in Iraq and Afghanistan have led to an increasing number of female veterans seeking medical and mental healthcare in the Department of Veterans Affairs (VA) healthcare system. To better understand gender differences in healthcare needs among recently returned veterans, we examined the prevalence of positive screenings for depression, posttraumatic stress disorder (PTSD), military sexual trauma (MST), obesity, and chronic pain among female and male veterans of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) receiving care at the VA Connecticut Healthcare System.

METHODS: We performed a retrospective, cross-sectional data analysis of OEF/OIF veterans at VA Connecticut who received services in either Primary Care or the Women’s Health Clinic between 2001 and 2006.

RESULTS: In this study, 1129 electronic medical records (1032 men, 197 women) were examined. Female veterans were more likely to screen positive for MST (14% vs. 1%, p < 0.001) and depression (48% vs. 39%, p = 0.01) and less likely to screen positive for PTSD (21% vs. 33%, p = 0.002). There was no significant gender difference in clinically significant pain scores. Men were more likely than women to have body mass index (BMI) >30 kg/m(2) (21% vs. 13%, p = 0.008).

CONCLUSIONS: These results suggest that important gender differences exist in the prevalence of positive screenings for MST, depression, obesity, and PTSD. As the VA continues to review and improve its services for women veterans, clinicians, researchers, and senior leaders should consider innovative ways to ensure that female veterans receive the health services they need within the VA system.
BAHRAIN


Study of the Knowledge, Attitudes and Practices of Physicians towards Obesity Management in Primary Health Care in Bahrain.

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Abstract

AIM: To examine the opinions of physicians in Bahrain regarding their role in obesity control, and to evaluate their knowledge, attitudes and practices towards obesity prevention and management in primary health care.

DESIGN: A cross-sectional survey of physicians in Bahrain. A single-stage cluster sample was used, which included twelve health centres and 107 physicians. Ninety-seven physicians participated in the study with a 90% response rate. A self-administered questionnaire was used to measure physicians' knowledge and practices, their perceived role and potential limitations. Correction for design effect and finite population were considered in the analysis.

RESULTS: The majority of physicians in Bahrain (92%) were aware of the obesity epidemic and 60% of them felt capable of assuming a major role in obesity control, regardless of their negative views towards the success rates of weight management. Only 36% agreed that they had effective weight-management practices. They were knowledgeable about weight-loss goals and showed a reasonable level of obesity identification, especially as part of chronic disease care (71%). Physicians reported a high rate of utilization of various weight-loss strategies, except for pharmacotherapy and surgery. The major barriers identified in patient care included time constraints (91%), lack of specialty clinics (81%), absence of guidelines (78%) and an inadequate number of dietitians (71%). Sixty-four per cent reported that training in lifestyle counselling and behaviour modification are important requirements.

CONCLUSIONS: Physicians in Bahrain showed a reasonable level of interest in participating in obesity prevention and management. It seems that there would be a good opportunity for better practice if physicians were
supported with appropriate training and the constraints of their working environment were adequately addressed.


**Anthropometry and Body Composition of School Children in Bahrain.**

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**Abstract**

**BACKGROUND AND OBJECTIVES:** This study was conducted because of the lack of a comprehensive nationwide assessment of data on the anthropometric status and related health problems in Bahraini school children aged 6 to 18 years.

**SUBJECTS AND METHODS:** A cross-sectional survey was conducted on the anthropometric status of school children enrolled in the primary, intermediate and secondary government schools in all populated regions of Bahrain. The sample size included 2594 students (1326 girls and 1268 boys) representing 2.5% of the total student population. For sample selection, a multi-stage sampling design was chosen that combined multi-cluster and simple random sampling methods. Anthropometric measurements included height, weight, mid-arm circumference and skin fold thickness at two sites (triceps and subscapular). Anthropometric indices derived were body mass index (BMI) and arm muscle area. The WHO reference standards (2007) and the National Health and Nutrition Examination Survey (NHANES) II data were used for comparison.

**RESULTS:** Compared to WHO reference standards, the median height of Bahraini children and adolescents in the age range of 6 to 18 years was close to the 25th percentile or lower, while the median BMI during adolescent years was comparable in boys, but higher than WHO standards in girls, reaching the 75th percentile. The cutoff values of BMI for overweight/obesity status (85th and 95th percentile) were higher by 3-6 kg/m(2) compared to WHO standards. While skin fold thicknesses were also higher in Bahraini adolescents compared to their American counterparts (NHANES II), arm muscularity was substantially lower.

**CONCLUSIONS:** Current study findings for BMI as well as skin fold thicknesses suggest an increased trend toward adiposity among Bahraini
adolescents, especially in girls, which puts this age group at a high risk of adult obesity and its consequences. A need for urgent intervention programs is emphasized.


Prevalence of Overweight and Obesity among Children Aged 2-5 Years in Bahrain: A Comparison between Two Reference Standards.
Al-Raees GY, Al-Amer MA, Musaiger AO, D'Souza R.
Nutrition Unit, Public Health Directorate, Ministry of Health, Kingdom of Bahrain.

Abstract
A cross-sectional study was carried out on Bahraini preschoolers aged 2-5 years (354 males and 344 females) to determine the prevalence of overweight and obesity using the World Health Organization and the International Obesity Task Force cut-off values. Weight and height were recorded and body mass index (BMI) was calculated to determine the proportion of overweight and obesity. Using the World Health Organization percentile cut-off values, overweight (12.3%) and obesity (8.4%) was higher in females between 2 and <4 years of age whereas, the proportion of both overweight (8.4%) and obesity (7.2%) were higher in males between 4 and <6 years of age. Relative to the International Obesity Task Force indicators, the World Health Organization cut-off values produced nearly a 2-fold increase in both overweight and obesity at most ages. It is therefore important to ensure that the same cut-off reference values are used to define overweight and obesity particularly in preschoolers. Shifting to the new World Health Organization child growth standards may have important implications for child health programmes.


Overweight and Obesity among Adolescents in Bahrain.
Bader Z, Musaiger AO, Al-Roomi K, D'Souza R.
Ministry of Health, Kingdom of Bahrain.

Abstract
A cross-sectional study was conducted to assess the prevalence of overweight and obesity amongst adolescents in Bahrain. The subjects
consisted of grades 1-3 secondary school students (336 males and 396 females) between the ages 15-18 years, selected using a multi-stage stratified random sampling technique from government schools from all the governorates of Bahrain, representing about 3% of the target population. The mean height in males and females ranged between 162.9-171.3 cm and 157.4-159.9 cm, respectively, while the mean weight ranged between 59-72 kg and 59-66 kg, respectively. The proportion of those underweight was higher in males (8.6%) compared to that in females (2.3%). The highest proportion of normal weight was observed at the age of 15 years in both the male and female adolescents (66.0%). The prevalence of overweight and obesity was higher in female (17.4% and 19.4%) compared to the male (15.8% and 13.7%) adolescents. Although compared to previous reports, a decline in the body mass index (BMI) was observed for both the genders in Bahrain. We believe that the launch of intervention programs at a national level to educate school authorities, parents and concerned health professionals alike, is urgently required.


The Effect of Loss of Body Weight on Lipid Profile in Overweight Individuals.
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Abstract

OBJECTIVE: To determine the effect of reducing body weight and body mass index on serum lipid.

METHODS: This is a prospective longitudinal study, which was implemented in Nain Primary Health Care Center in the Kingdom of Bahrain during May and June of 2004. The study included 55 individuals who were willing to participate. The criteria for the sample selection included being overweight, having high serum lipid and patients' willingness to reduce their weight. The patients were followed up for a 26 weeks period consisting of continuous health education program, maintenance on low caloric diet and exercise to help them reduce their body weight. This period included a lifestyle enhancement awareness program that included 4 health education sessions on weight loss, 4 sessions on weight loss maintenance and frequent and regular visits to the clinic to make sure that those patients were compliant with the given instructions.
RESULTS: The study showed that patients who completed the designed program had a reduction in body weight, body mass index, and lipid level and an increase in physical activity and dietary readiness to control overeating. Although in both genders there was a significant drop in all the parameters, only body mass index (p<0.002) and cholesterol (p=0.007) showed a statistically significant difference between men and women. In men, cholesterol level at the initial stage of the study was strongly related to the body weight (r=0.65, p<0.002) and body mass index (r=0.83, p<0.0005). Despite that the cholesterol level reduced more in women than men; women decreased less in weight (p<0.0005) and body mass index (p<0.0005) than men.

CONCLUSION: Overweight individuals would benefit from a life enhancement program that increases their awareness on the danger of obesity and helps them in reducing body weight and serum lipid level.

Child Care Health Dev. 2004 Jul;30(4):369-76.

Body Weight Perception among Bahraini Adolescents.

Al-Sendi AM, Shetty P, Musaiger AO.

College of Health Science, Ministry of Health, Bahrain.

Abstract

BACKGROUND: This study examines the relationship between actual weight status and perceptions of body weight in Bahraini adolescents. The study also investigates the adolescents' perceptions of parents' and peers' opinions of weight.

METHODS: A cross-sectional survey of 447 Bahraini male and female adolescents aged 12-17 years was conducted. Weight and height were measured and body mass index (BMI) was calculated. A short questionnaire was used to obtain their attitudes towards their weight status, as well as the attitudes of their parents and friends. The nine figure silhouettes illustration was used to measure perception of ideal body image and how it compares with their current body weight.

RESULTS: The results revealed a significant discrepancy between adolescents' perception of body weight and actual BMI. There was a tendency for teenagers to underestimate their weight status, which was especially noteworthy among the overweight and obese. More than half of the girls and about one-third of the boys expressed discontent with their
current body weight. One-third (33.5%) and 26.6% of the adolescents thought that their parents and their peers, respectively, would consider them to be overweight or obese. The percentage of adolescents who reported parental or peer underestimation was higher among those classified as overweight or obese than it was among those who were of normal weight.

CONCLUSION: The study shows the existence of a distorted body image as reflected by failure of many overweight or obese adolescents to perceive themselves as such. Among Bahraini adolescents weight-related beliefs and attitudes exist at two ends of the spectrum: a tolerance of obesity at one end and an exaggerated concern for its occurrence at the other.


Relationship between Body Composition and Blood Pressure in Bahraini Adolescents.

Al-Sendi AM, Shetty P, Musaiger AO, Myatt M.
College of Health Science, Ministry of Health, Bahrain.

Abstract

The objective of the present study was to examine the relationship between body composition and blood pressure (BP) in Bahraini adolescents. A sample of 504 Bahraini schoolchildren aged 12-17 years (249 boys and 255 girls) was selected using a multi-stage stratified sampling procedure. BP measurements were performed on the students. Anthropometric data including weight, height, waist circumference (WC), hip circumference, and triceps, subscapular and medial calf skinfold thicknesses were also collected. BMI, percentage body fat, waist:hip (WHR), and subscapular:triceps skinfold ratio were calculated. Mean systolic BP and mean diastolic BP were higher in males than in females. Weight and height in boys and weight only in girls were significantly associated with systolic BP independent of age or percentage fat. Nearly 14 % of the adolescents were classified as having high BP. BMI and percentage body fat were significantly and positively associated with the risk of having high BP in the boys and girls. Adolescents with high WHR or WC, as indicators for central obesity, tended to have higher BP values. The results from the present study indicate that obesity influences the BP of Bahraini adolescents and that simple anthropometric measurements such as WHR and WC are useful in identifying children at risk of developing high BP. These findings together with the known tracking of BP from adolescence into adulthood underline
the importance of establishing intervention programmes in order to prevent the development of childhood and adolescent obesity.


**Anthropometric and Body Composition Indicators of Bahraini Adolescents.**

Al-Sendi AM, Shetty P, Musaiger AO.

College of Health Science, Ministry of Health, Bahrain.

**Abstract**

**BACKGROUND:** Childhood and adolescent obesity tends to extend into adulthood and predisposes the individual to some chronic diseases in later life. Body composition is a good indicator for assessing obesity and nutritional status of people.

**AIM:** To determine the anthropometric and body composition characteristics of Bahraini adolescents and to compare these measurements with previously published data on the same age group.

**SUBJECTS OF METHODS:** Cross-sectional data on 506 Bahraini adolescents (249 boys and 257 girls) aged 12-17 years were collected in 2000. The sample was selected from intermediate and secondary schools using a multistage stratified sampling procedure. Anthropometric measurements, including weight, height, mid upper arm circumference, waist and hip circumference, triceps, subscapular and medial calf skinfold thickness, were performed on the adolescents. Body mass index (BMI), percent body fat, arm muscle circumference (AMC), arm muscle area (AMA), arm fat area (AFA), waist/hip ratio (WHR), and subscapular/triceps skinfold ratio (STR) were also calculated.

**RESULTS:** A sexual dimorphism that appears to be related to differential changes in body composition during puberty was observed. The findings showed that mean BMI, skinfold thickness and percent body fat were all higher than those reported in earlier studies on Bahraini adolescents of corresponding age range, indicating an increase in fat accumulation among the adolescent population. Bahraini adolescents were found to be shorter and of similar weight or even heavier than their Western counterparts, indicating a greater trend of obesity among Bahraini adolescents.

**CONCLUSION:** A trend of greater obesity appears to have occurred in the Bahraini adolescents during the period between 1986 and 2000. These findings have important public health implications given recent evidence
linking childhood and adolescent obesity to increased risk of obesity and morbidity in adulthood. Therefore, programmes to prevent the development of obesity in children and adolescents should be given a high priority.


Al-Sendi AM, Shetty P, Musaiger AO.
Food and Nutrition Division, Food and Agriculture Organisation, Rome, Italy.

Abstract

OBJECTIVE: The aim of this study is to determine the prevalence of overweight and obesity among Bahraini adolescents using three different sets of criteria/standards.

DESIGN: Cross-sectional prevalence study.

SETTING: Intermediate and secondary schools in Bahrain.

SUBJECTS: The study included a population-representative sample of 506 Bahraini students (249 males and 257 females) between 12 and 17 y of age. The sample was selected using multistage stratified random sampling technique.

MEASUREMENT: Anthropometric measurements including weight, height and triceps and subscapular skinfolds were taken on the adolescents. Age was verified against school records. To minimize inter-observer error, weight and height were taken by one person while skinfold was taken by two trained persons (one for each sex).

RESULTS: The overall prevalence of obesity among Bahraini boys and girls was high, especially in girls. Obesity was highest (21% in males and 35% in females) when the WHO recommended criteria of BMI for age and skinfolds for age percentiles were applied and lowest (15% in boys and 18% in girls) when the age and sex specific BMI cut-off values of Cole et al were used. Compared with those of WHO criteria, estimates of overweight and obesity prevalence obtained with Must et al and Cole et al were generally close.

CONCLUSIONS: Our data revealed a much higher prevalence rate of obesity in the Bahraini adolescent population than was previously reported, especially among girls. The BMI reference values of Must et al and that of
Cole et al gave relatively similar estimates and appear to be more practical for use in surveys aimed at estimating the prevalence of overweight and obesity among adolescents than the WHO recommended composite criteria.


**Social and Lifestyle Factors Associated with Diabetes in the Adult Bahraini Population.**

Musaiger AO, Al-Mannai MA.

Environmental and Biological Program, Bahrain Center for Studies and Research, Manama.

**Abstract**

This paper aimed to assess the prevalence of known diabetes among Bahraini adults, and to determine associated social and lifestyle factors. A community-based survey was carried out on 514 adults aged 30-79 years.

The overall prevalence of known diabetes was 9%. Using multivariate analysis, the risk of diabetes was found to be higher among older (50-79 years), female, illiterate, currently married, non-smoking people, those who did not walk regularly, overweight and obese people (BMI ≥ 25), those who had a history of hypertension and those who consumed fresh vegetables more than 3 times a week. However, only obesity was found to be significantly associated with diabetes (OR = 1.83, CI 1.48-4.15).


**Blood Lipids and Body Fat in Bahraini Women.**

Al-Mannai A, Khalfan HA, Dickerson JW, Morgan JB.

College of Medicine and Medical Sciences, Arabian Gulf University.

**Abstract**

**OBJECTIVE:** The aim of this study was to examine some biomedical parameters of a representative sample from the population of overweight and obese, and average weight Bahraini women visiting 2 health centers in Bahrain.

**METHODS:** This study was conducted over a period of 4 months in 2 health centers in the urban city of Muharraq in Bahrain, namely Muharraq Health Center and Shaikh Salman Health Center. The association was examined between body mass index, and the distribution of body fat determined by
the waist hip ratio. Serum triglycerides, total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, as well as glucose levels were measured.

RESULTS: The 2 groups of pre-menopausal women selected for this study were of similar age (mean of 30.4 and 30.7 years) but differed significantly in their body mass index values; however, their mean waist hip ratio was similar (0.80 and 0.82). The type of obesity shown by these Bahraini women was not associated with an elevation of serum glucose concentrations, or with significant differences in either serum cholesterol or triglyceride concentrations. There was however, a statistically significant difference between the 2 groups with respect to the level of high-density lipoprotein cholesterol, which was lower in the obese group, compared with the lean counterparts. Furthermore, the ratio of high-density lipoprotein to low-density lipoprotein cholesterol was significantly lower in the obese subjects, compared with the controls.

CONCLUSION: Obesity in a group of Bahraini women was associated with indices predisposing to coronary heart disease, and this has public health implications.


Obesity among Adult Bahraini Population: Impact of Physical Activity and Educational Level.

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Department of Family and Community Medicine, College of Medicine and Medical Sciences, Arabian Gulf University, Manama, Bahrain.

Abstract

BACKGROUND: In the populations of the Arabian Peninsula, obesity has emerged as the leading cause of morbidity and mortality over a 25-year period of swift socioeconomic progress. The objective of this study was to determine the body weight distribution, prevalence and risk factors for the overweight and obese in the native adult Bahraini population.

SUBJECTS AND METHODS: A cross-sectional national epidemiological community survey was conducted involving 2013 Bahraini subjects aged 40-69. The males were aged 40-59 years, with a mean age of 49 years, while the females were aged 50-69 years, with a mean age of 59. The sample was adjusted for gender, age, and area of residence distribution. A questionnaire describing the demographic, social, educational status and
income status was completed. Measurements were made of height and weight, and body mass index (BMI) was calculated for each subject. WHO classification was used for defining overweight (BMI 25-29.9 kg/m²) and obesity (BMI > or =30 kg/m²) categories.

RESULTS: The age-standardized prevalence rate among native Bahraini men and women was high. Approximately 32% of women and 25% of men were obese (BMI > or =30.0 kg/m²). The prevalence of obesity was significantly higher among female subjects than males throughout all the age groups. Overweight and obesity were more prevalent among those with higher levels of education and people with high incomes. A significant relationship was found between obesity and education, physical inactivity and TV watching of 16 hours a week or more. Subjects' self-appraisal and their report of physicians' diagnosis of health disorders revealed a significantly higher prevalence of ill health among obese subjects. There was a progressive decrease of BMI for male and female subjects with age. Although 28% of participants (564) had body mass index > or =30 kg/m², only 42% (267) of these obese individuals rated themselves as overweight. In addition, obesity was inversely related to physical activity at work in men.

CONCLUSION: We conclude that the prevalence of obesity among the native middle-aged and elderly Bahraini population is high. We noted that the prevalence of obesity increased as the level of education increased, which reflects the perception of obesity being a sign of affluence among Bahraini population. There is a necessity to develop an action plan for controlling obesity and its metabolic consequences among the populations of the Arabian Gulf.


Weight, Height, Body Mass Index and Prevalence of Obesity among the Adult Population in Bahrain.

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Abstract

PRIMARY OBJECTIVES: To determine anthropometric measurements (weight, height, body mass index, BMI), and the prevalence of overweight and obesity based on BMI.
METHODS AND PROCEDURES: A cross-sectional survey of 514 Bahraini native adults aged 30-79 years was selected from households using clustering sampling technique.

OUTCOMES AND RESULTS: Findings indicate that Bahraini adults were shorter but heavier, and have higher mean BMI than their Western counterparts, suggesting a trend to obesity. The overall prevalence of overweight and obesity was 35.2% and 21.2% for men, while that for women was 31% and 48.7%, respectively.

CONCLUSIONS: The results of this study confirmed the data in other Arabian Gulf countries, as obesity is a major public health problem among the adult population. Anthropometrics provided in this study can be used as baseline data for the adult population of Bahrain.

Ecology of Food and Nutrition, Volume 39, Issue 2, 2000, Pages 121 - 133

Lifestyle and Social Factors Associated with Obesity among the Bahraini Adult Population

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\textsuperscript{c} College of Science, Bahrain University, Bahrain

Abstract

A cross-sectional survey on 514 Bahraini natives aged 30-79 years was carried out to study the lifestyle and social factors associated with obesity. Body mass index, BMI (weight, kg/high, m\textsuperscript{2}) was used to determine obesity among the study population. Obesity was considered when the subject had BMI equal to or greater than 25. The overall prevalence of obesity was 56% in men and 79.6% in women. Age, sex, education, smoking and history of diabetes and hypertension, watching television and frequency of fruit intake had a significant association with obesity. When a multiple logistic regression was used to estimate the risk of occurrence of obesity, it was found that the risk of obesity is greater in subjects who were females, educated, currently married, watching television daily, non-smokers, consuming fresh fruit more than three times a week and having a history of diabetes and hypertension. Lifestyle, dietary habits and social factors should be considered, therefore, in any health programme to prevent and control obesity in this community.
Anthropometry of Adolescent Girls in Bahrain, Including Body Fat Distribution.

Musaiger AO, Al-Ansari M, Al-Mannai M.

Environmental and Biological Programme, Bahrain Center for Studies and Research, Manama.

Abstract

PRIMARY OBJECTIVE: To determine anthropometric measurements of adolescent Bahraini girls, including obesity and fat composition.

METHODS AND PROCEDURES: A cross-sectional sample of 584 Bahraini girls aged 12-19 years, were selected from schools using multistage stratified sampling procedure. Fifteen anthropometric measurements were taken (weight, height, circumferences for upper arm, upper forearm, upper chest, chest, waist, hip, thigh and medial calf, triceps, biceps, subscapular and suprailiac). Body mass index (BMI), waist/hip ratio, sum of skinfold thickness and % body fat were also computed.

MAIN OUTCOMES AND RESULTS: The findings revealed a significant increase in all anthropometric measurements with increase in age. The mean weights for girls was higher than those reported in 1986 for the same age group, but no difference was observed in the mean heights, indicating a trend toward overweight. Using the 85th and 95th centiles of the National Health and Nutrition Examination Survey I (NHANESI) BMI distribution to define respectively overweight and obesity, the prevalence of overweight was 38.5% and of obesity was 6.3%. The means for BMI, waist/hip ratio, sum of skinfold thickness and % body fat were higher than those reported in many developed and developing countries.

CONCLUSIONS: Bahraini adolescent girls have a higher proportion of body fat than their counterparts in many Western countries. This may contribute to some chronic diseases in adulthood. An intervention program, therefore, is urgently needed to reduce overweight and obesity at childhood and adolescent stages.
Profile of Body Composition of School Children (6-18y) in Bahrain.

Musaiger AO, Gregory WB.

Environmental and Biological Programme, Bahrain Center for Studies and Research, Manama.

Abstract

OBJECTIVE: To study the body composition of Bahraini school children.

DESIGN: Cross-sectional national school survey.

SUBJECTS: School children aged 6-18y. The sample comprised 818 boys and 775 girls.

MEASUREMENTS: Weight, height, arm circumference and skinfold thickness were measured. Sum of skinfold thickness, body mass index (BMI), mid arm circumference, percentage body fat, fat weight and lean body weight were then calculated to determine body composition.

RESULTS: A significant difference in the sum of skinfold thickness was observed between boys and girls. The girls have almost 50% extra skinfold thickness than boys at all ages. Similar trends were found in BMI, except at ages 9 and 18y. The percentage of body fat was higher in girls than boys. The mean BMI for Bahraini girls aged 13y and above exceeds that of their American counterparts, indicating a trend towards fat accumulation in the Bahraini girls.

CONCLUSION: The data obtained are useful for monitoring obesity in school children in Bahrain as well as being usable as reference data for similar countries in the region. The high proportion of body fat among Bahraini school children, especially girls, urges an intervention program to prevent and control obesity in this age group.
EGYPT

Current Psychiatry, 17(4) 1-7, 2010 October

**Anxiety and Social Anxiety Symptoms among Overweight Females Seeking Treatment for Obesity.**

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Lecturer of Community Medicine, Faculty of Medicine, Ain Shams University²
Professor of Nutrition, Faculty of Agriculture, Ain Shams University³

**Abstract**

**INTRODUCTION:** Obesity has become an epidemic problem worldwide. In the Egyptian community the status of overweight has reached an alarming level. About one out of four cases of obesity is associated with a mood or anxiety disorder, but the causal relationship and complex interplay between both problems is still unclear.

**AIM OF THE STUDY:** To determine the prevalence of anxiety and social anxiety symptoms among the female subjects seeking treatment for obesity; and to examine the correlation of anxiety and social anxiety symptoms with age, multiparity, duration of obesity, Body Mass Index (BMI) and Binge Eating (BE).

**SUBJECTS AND METHODS:** A cross-sectional study based on self-reporting used to screen 93 Arab females who are seeking treatment at the obesity clinic. The assessment tools included: Questionnaire on Eating and Weight Patterns-Revised (QEWP-R), Beck Anxiety Inventory (BAI), and Brief Social Phobia Scale (BSPS).

**RESULTS:** This study revealed BMI to be (37.140+8.0573). Binge eaters constituted 68.8% of the sample with a highly significant relationship between binge eating and anxiety symptoms. A comparison between social anxiety symptoms among obese subjects and subjects having morbid obesity showed high statistically significant difference. Correlation of the social anxiety symptoms with the duration since last pregnancy and the duration of obesity was significant.
CONCLUSION: The prevalence of social anxiety symptoms among overweight females seeking treatment for obesity is relatively high.

Body Mass Index as an Assessment Tool for Overweight and Obesity in School Children in El-Qalubia Governorate

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Abstract:

AIM: Aim of the study was to design BMI (Body Mass Index) charts to the studied group, to determine the prevalence of overweight and obesity in the group and to provide suitable recommendations for prevention overweight and obesity.

METHODS: This was a cross sectional study that included 500 students collected from primary and preparatory schools, aged 7-15 years and living in El-Qalubia governorate through the academic year 2010/2011. A self administered questionnaire was used; it included some socio-demographic characteristics and measurements for weight and height of students. Data was collected, revised and entered using the statistical package SPSS.

RESULTS: Obese students represented 20.4% of students. Obesity increased in younger students with mean age 9.33±2.094 years and increased in male students (55% of all obese students), while overweight increased in female students (54.5% of all overweight students). Female students recorded higher values over males in weight during the first 5 years of age (7-11 years old) then, boys become heavier than girls. Moreover, there was a gradual increase in height of female and male students at age 7-15 years old.

In addition, the current study indicated that female students have the higher values of BMI from age 7 to 15 years old than males.
Acute and Chronic Saturated Fatty Acid Treatment as a Key Instigator of the TLR-Mediated Inflammatory Response in Human Adipose Tissue, in Vitro.

Youssef-Elabd EM, McGee KC, Tripathi G, Aldaghri N, Abdalla MS, Sharada HM, Ashour E, Amin AI, Ceriello A, O'Hare JP, Kumar S, McTernan PG, Harte AL.
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Abstract

A post-prandial increase in saturated fatty acids (SFAs) and glucose (Glc) activates an inflammatory response, which may be prolonged following restoration of physiological SFAs and Glc levels - a finding referred to as 'metabolic memory'. This study examined chronic and oscillating SFAs and Glc on the inflammatory signalling pathway in human adipose tissue (AT) and adipocytes (Ads) and determined whether Ads are subject to "metabolic memory." Abdominal (Abd) subcutaneous (Sc) explants and Ads were treated with chronic low glucose (L-Glc): 5.6 mM and high glucose (H-Glc): 17.5 mM, with low (0.2 mM) and high (2 mM) SFA for 48 h. Abd Sc explants and Ads were also exposed to the aforementioned treatment regimen for 12-h periods, with alternating rest periods of 12 h in L-Glc. Chronic treatment with L-Glc and high SFAs, H-Glc and high SFAs up-regulated key factors of the nuclear factor-κB (NFκB) pathway in Abd Sc AT and Ads (TLR4, NFκB; P<.05), whilst down-regulating MyD88. Oscillating Glc and SFA concentrations increased TLR4, NFκB, IKKβ (P<.05) in explants and Ads and up-regulated MyD88 expression (P<.05). Both tumor necrosis factor α and interleukin 6 (P<.05) secretion were markedly increased in chronically treated Abd Sc explants and Ads whilst, with oscillating treatments, a sustained inflammatory effect was noted in absence of treatment. Therefore, SFAs may act as key instigators of the inflammatory response in human AT via NFκB activation, which suggests that short-term exposure of cells to uncontrolled levels of SFAs and Glc leads to a longer-term inflammatory insult within the Ad, which may have important implications for patients with obesity and Type 2 diabetes.
Subclinical Atherosclerosis in Obese Adolescents with Normal Left Ventricular Function.

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Abstract

OBJECTIVE: To assess the impact of obesity on carotid intima media thickness and left ventricular (LV) mass in obese adolescents.

METHODS: The study included 52 obese adolescents (mean age 14.16+/−2.64 years) and 52 healthy adolescents who served as a control group (mean age 12+/−2.3 years), who were attended the outpatient clinic at Suez Canal University Hospital, Ismailia, Egypt. The study population was submitted for medical history, clinical examination, laboratory investigations (fasting blood sugar and lipid profile), and echocardiographic examination of LV mass and dimensions. Assessment of carotid intima-media thickness was carried out by using carotid duplex. All children had normal LV function.

RESULTS: Obese adolescents had a significant increase in total cholesterol, triglyceride, LDL-C, and low HDL-C compared to the control group. Also, there was a significant increase in blood pressure, carotid intima media thickness, LV mass, and LV mass index. There was a significant correlation between BMI and dyslipidemia, blood pressure, carotid intima/media thickness, LV mass, and posterior wall thickness. Carotid intima-media thickness had a significant correlation with increased LDL-C and low HDL-C, blood pressure, LV mass, and posterior wall thickness.

CONCLUSION: Obesity in childhood and adolescents is associated with subclinical atherosclerosis. Although obese children had no LV dysfunction, yet there are LV structure changes.
Amylin, Food Intake, and Obesity
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Abstract

Amylin, also known as islet amyloid polypeptide, identified in 1987, is a naturally occurring hormone, released by the β cells of the pancreas and consists of 37 amino acids. Amylin seems to decrease food intake through both central and peripheral mechanisms and indirectly by slowing gastric emptying. The mean basal amylin concentration is higher in obese than in lean human subjects. The amylin response to oral glucose is also greater in obese subjects, whether or not they have impaired glucose tolerance. The elevated amylin levels in obesity may lead to down-regulation of amylin receptors and lessen the impact of postprandial amylin secretion on satiety and gastric emptying. Amylin administration may overcome resistance at target tissues, delay gastric emptying, and have potential for inducing weight loss in obese individuals.
BACKGROUND: Skin tags (ST) are common tumors. They mainly consist of loose fibrous tissue and occur on the neck and major flexures as small, soft, pedunculated protrusions. Decrease in endocrine, hormone level and other factors are thought to play a role in the evolution of ST. Leptin is an adipocyte-derived hormone that acts as a major regulatory hormone for food intake and energy homeostasis. Leptin deficiency or resistance can result in profound obesity and diabetes in humans. A role of mast cell in the pathogenesis of ST is well recognized.

AIMS: To investigate the role of leptin in the pathogenesis of ST and to clarify whether there is a correlation between mast cell count and leptin level in ST.

METHODS: Forty-five skin biopsies were taken from 15 patients with ST. From each patient, a biopsy of a large ST (length >4 mm), a small ST (length <2 mm) and a normal skin biopsy (as a control) were taken. The samples were processed for leptin level. Skin biopsies were stained with hematoxylin and eosin and toluidine blue-uranyl nitrate metachromatic method for mast cell count was used.

RESULTS: There was a significant increased level of leptin in the ST compared to the normal skin. It was highly significant in small ST than in big ST (P = 0.0001) and it was highly significant in small and big ST compared to controls, P = 0.0001 and P = 0.001, respectively. There was a significant increase in mast cell count in the ST, which did not correlate with the increased levels of leptin.

CONCLUSION: This is the first report to demonstrate that tissue leptin may play a role in the pathogenesis of ST. The significant increase in the levels of leptin and mast cell count in ST may indicate a possible role of adipoinnune in the benign skin growths.
Cut Off Values of Waist Circumference & Associated Cardiovascular Risk in Egyptians.

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Abstract

BACKGROUND: Recent guidelines stressed the need to adopt different values of waist circumference (WC) measurements to define abdominal obesity in different ethnic groups. The aim of this study is to identify WC cutoff points in normotensive and hypertensive subjects which are diagnostic of abdominal obesity in a Middle Eastern population and the prevalence of abdominal obesity in a nationwide sample.

METHODS: Data were collected during phase-2 of the Egyptians National Hypertension Project survey. Blood pressure, anthropometric measurements and laboratory studies were performed according to a standardized protocol by trained personnel. To derive the cutoff points for WC, we applied the factor analysis on CV risk factors: diabetes mellitus, decrease in HDL-C and increase in LDL-C, triglycerides and left ventricular mass index by echocardiography.

RESULTS: The sample included 2313 individuals above the age of 25 years. WC values (mean ± SD) were 88 ± 14 cm and 95 ± 14 cm for normotensive (NT) and hypertensive (HT) men respectively, and 89.6 ± 14.7 cm and 95.7 ± 15.9 cm for NT and HT women respectively. Applying factor analysis, the weighted average cutoff points were 93.5 cm for both NT and HT men and 91.5 and 92.5 cm for NT and HT women respectively. Based on these thresholds, the prevalence of abdominal obesity was 48% in men and 51.5% in women.

CONCLUSION: This is the first report of specific abdominal obesity cutoff points in a Middle Eastern country. The cutoff points were different from the Europid standards. There is a high prevalence rate of abdominal obesity among Egyptians which is associated with increased prevalence of cardiometabolic risk factors.
Obesity Modulate Serum Hepcidin And Treatment Outcome of Iron Deficiency Anemia in Children: A Case Control Study.

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Abstract

BACKGROUND: Recently, hepcidin expression in adipose tissue has been described and shown to be increased in patients with severe obesity. We tried to assess the effect of obesity on hepcidin serum levels and treatment outcome of iron deficiency anemia in children.

METHODS: This was a case control study included 70 children with iron deficiency anemia "IDA" (35 obese and 35 non-obese) and 30 healthy non-obese children with comparable age and sex(control group). Parameters of iron status (Serum iron, ferritin, transferrin, total iron binding capacity and transferrin saturation) and serum hepcidin levels were assessed initially and after 3 months of oral iron therapy for IDA.

RESULTS: Compared to the control group, serum hepcidin was significantly lower in non-obese children with IDA(p < 0.01) and significantly higher in obese children with IDA (p < 0.01). Hepcidin increased significantly in non-obese children with IDA after 3 months of iron therapy (P < 0.01). On the other hand, obese children showed non-significant change in hepcidin level after iron therapy (p > 0.05). Although hepcidin showed significant positive correlations with Hb, serum iron and transferrin saturation in non-obese children with IDA, it showed significant negative correlations with Hb, serum iron and transferrin saturation in obese children with IDA (P < 0.05).

CONCLUSIONS: Obesity increased hepcidin levels and was associated with diminished response to oral iron therapy in childhood iron deficiency anemia.
Evaluation of Microalbuminuria in Obese Children and Its Relation to Metabolic Syndrome.

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Abstract

Several epidemiologic studies have clearly demonstrated that obesity increases the risk of kidney diseases. We have attempted to evaluate the association of obesity with albuminuria, an early marker of kidney disease, among obese children and its relation to metabolic syndrome. This study included 150 obese children. Blood pressure, fasting blood glucose, plasma insulin and the lipid profile were assessed. The homeostasis model assessment of insulin resistance (HOMA-IR) was used to calculate in vivo insulin resistance. Urinary albumin and creatinine were estimated. Microalbuminuria was detected in 22 (14.7%) of the obese children. Waist circumference, blood pressure, triglyceride, low-density lipoprotein (LDL), insulin resistance and fasting blood glucose were significantly higher in obese children with microalbuminuria than in those with normoalbuminuria and showed significant positive correlations with microalbuminuria. High-density lipoprotein (HDL) was significantly lower in obese children with microalbuminuria than in those with normoalbuminuria, with a significant negative correlation with microalbuminuria. We found that body mass index, abdominal obesity, hypertension, impaired fasting glucose level and insulin resistance significantly increased the odds of microalbuminuria in the obese children enrolled in this study. Moreover, high triglyceride, high LDL and low HDL were significantly associated with microalbuminuria. In our patient group, childhood obesity was a risk factor for the development of microalbuminuria, which in turn was significantly associated with metabolic syndrome and its different constituents.
Homozygosity for a Novel Missense Mutation in the Leptin Receptor Gene (P316T) in Two Egyptian Cousins with Severe Early Onset Obesity.

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Abstract

Congenital deficiency of the leptin receptor is a very rare cause of severe early-onset obesity. To date, only 9 families have been reported in the literature to have mutations in the leptin receptor gene. The clinical features include severe early onset obesity, severe hyperphagia, hypogonadotropic hypogonadism, and T cell and neuroendocrine/metabolic dysfunction. Here we report two cousins with severe early onset obesity and recurrent respiratory tract infections. Their serum leptin levels were elevated but they were within the range predicted by the elevated fat mass in both cousins. Direct sequencing of the entire coding sequence of the leptin receptor gene revealed a novel homozygous missense mutation in exon 6, P316T. The mutation was found in the homozygous form in both cousins and in the heterozygote state in their parents. This mutation was not found in 200 chromosomes from 100 unrelated normal weight control subjects of Egyptian origin using PCR-RFLP analysis. In conclusion, finding this new mutation in the LEPR beside our previous mutation in the LEP gene implies that monogenic obesity syndromes may be common in the Egyptian population owing to the high rates of consanguineous marriages. Further screening of more families for mutations in LEP, LEPR, and MC4 might confirm this assumption.
Incidence of Perioperative Adverse Events in Obese Children Undergoing Elective General Surgery.

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Abstract

BACKGROUND: A worldwide increase in the prevalence of obesity has been observed in both developed and developing countries. Few studies have addressed the anaesthetic or perioperative implications of childhood obesity.

METHODS: Children aged 2-16 yr undergoing general surgery were classified using age- and sex-adjusted BMI. Patient characteristic, co-morbidity, and perioperative data were collected to ascertain the risks associated with overweight and obese children.

RESULTS: We enrolled 1465 subjects in our study, of which 154 (10.5%) were classified as obese and a further 223 (15.2%) as overweight. After adjusting for age, we identified increased rates of arterial hemoglobin desaturation, difficult mask ventilation, airway obstruction, and bronchospasm in obese children. The relative risk (RR) of adverse respiratory events was higher among obese subjects than non-obese subjects and higher in younger age groups. Controlling for age, adjusted-RR (confidence interval) was 1.49 (1.2-1.86). There was a significant association between obesity and asthma with a higher odds ratio (OR) in younger age groups controlling for age: adjusted-OR=1.8 (1.15-2.82). A significant association was detected between obesity and sleep apnoea controlling for age: adjusted-OR=4.03 (2.37-6.8).

CONCLUSIONS: These results suggest an increased incidence of perioperative adverse respiratory events in obese children, especially at younger ages.
Prevalence of Elevated Blood Pressure and Association with Obesity in Egyptian School Adolescents.

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Abstract

**AIM:** To investigate the relationship between high blood pressure (HBP) and obesity in Egyptian adolescents.

**METHODS:** A cross-sectional study of 1500 adolescents (11-19 years) in Alexandria, Egypt, was conducted. Resting BP was measured and measurements were categorized using the 2004 fourth report on blood pressure screening recommendations. Additional measures included height, weight, and waist and hip circumferences. Obesity was determined based on BMI, waist circumference (WC) and waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR) indicators. Crude and adjusted odds ratios were used as measures of association between BP and obesity.

**RESULTS:** Prevalence rates of prehypertension and hypertension were 5.7% and 4.0%, respectively. Obesity was seen in 34.6%, 16.1%, 4.5%, and 16.7% according to BMI, WHR, WC, and WHtR, respectively. Adjusting for confounders, HBP was significantly associated with overall obesity based on BMI (OR = 2.18, 95%, CI = 1.38-3.44) and central obesity based on WC (OR = 3.14, 95%, CI = 1.67-5.94). Conclusion. Both overall obesity and central obesity were significant predictors of HBP in Egyptian adolescents.
Relationship Between Pro-Anti-Inflammatory Cytokines, T-Cell Activation and CA 125 in Obese Patients with Heart Failure.

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Abstract

BACKGROUND: This researcher previously found that serum levels of some inflammatory cytokines are elevated in patients with cardiovascular disease (CVD). Hence, this study investigated the relationship between circulating levels of pro-anti-inflammatory cytokines, T-cell activation marker and carbohydrate antigen 125 (CA 125) for the first time in obese Egyptian patients with heart failure (HF).

MATERIAL/METHODS: This study included 60 HF patients, and 30 normal controls, with age range 50-70 years. HF patients were divided into 2 groups: non-obese mild HF according to clinical status (New York Heart Association Class) (NYHA class I/II) (n = 20) and obese severe HF (NYHA class III/IV) (n = 40). Serum pro-anti-inflammatory cytokine levels (TNF-α, IL-6, and IL-10), T-cell activation marker (sIL-2R/CD25), and CA 125; tumor marker were measured by ELISA.

RESULTS: Serum levels of TNF-α, IL-6, and IL-10 as pro-anti-inflammatory cytokines, sIL-2R/CD25 as T-cell activation marker, and CA 125 as tumor marker were significantly higher in HF patients than in normal controls. Moreover, serum levels of TNF-α, IL-6, sIL-2R/CD25, and IL-10, as well as CA 125 were significantly higher in the obese than in the non-obese mild HF patients. Correlation analysis showed that CA 125 was positively related to BMI, TNF-α, IL-6, and sIL-2R/CD25 in the HF patients group.

CONCLUSIONS: These findings show that CA 125 is markedly elevated in HF patients, and is correlated with serum TNF-α, IL-6, and sIL-2R/CD25 levels. Therefore, we can conclude that CA125, being a tumor marker, is closely related to the cytokine system.
Predictors of Non-Alcoholic Fatty Liver Disease in Obese and Overweight Egyptian Children: Single Center Study.

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Abstract

BACKGROUND/AIM: Pediatric non-alcoholic fatty liver disease (NAFLD) is a global problem which has been increasingly recognized with the dramatic rise in pediatric obesity. The aim of the present study was to identify the clinical, sonographic, and biochemical predictors for NAFLD in obese children.

MATERIALS AND METHODS: Seventy-six children (2-15 years) were included after an informed consent. All were subjected to full anthropometric assessment (including height, weight, body mass index, subscapular skin fold thickness, waist and hip circumference and calculation of waist: hip ratio), biochemical assessment of liver function tests, lipid profile and insulin resistance and sonographic assessment of hepatic echogenicity. Liver biopsy when indicated, was done in 33 patients.

RESULTS: Sixteen patients (21%) had elevated ALT and 6 (7.9%) had elevated AST. Significant dyslipidemia (low HDL-c, high total cholesterol, high LDL-c and triglycerides) and higher insulin resistance were found in obese patients (P<0.01). The main sonographic findings were hepatomegaly in 20 patients (26.3%) and echogenic liver in 41 patients (53.9%). Liver biopsy showed simple steatosis in eight cases (24.2%) and non-alcoholic steatohepatitis (NASH) in seven cases (21.2%). Anthropometric measurements, increased hepatic echogenicity by ultrasound, insulin resistance and lipid profile were good predictors of NAFLD in obese children if assessed together. However, LDL-c was the only sensitive predictor (independent variable) for NAFLD in both uni- and multivariate logistic regression analyses.
Elevated Serum Neutrophil Elastase is related to Prehypertension and Airflow Limitation in Obese Women.

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Abstract

BACKGROUND: Neutrophil elastase level/activity is elevated in a variety of diseases such as atherosclerosis, systolic hypertension and obstructive pulmonary disease. It is unknown whether obese individuals with prehypertension also have elevated neutrophil elastase, and if so, whether it has a deleterious effect on pulmonary function. Objectives: To determine neutrophil elastase levels in obese prehypertensive women and investigate correlations with pulmonary function tests.

METHODS: Thirty obese prehypertensive women were compared with 30 obese normotensive subjects and 30 healthy controls. The study groups were matched for age. Measurements: The following were determined: body mass index, waist circumference, blood pressure, lipid profile, high sensitivity C-reactive protein, serum neutrophil elastase, and pulmonary function tests including forced expiratory volume in one second (FEV1), forced vital capacity (FVC) and FEV1/FVC ratio.

RESULTS: Serum neutrophil elastase concentration was significantly higher in both prehypertensive (405.8 ± 111.6 ng/ml) and normotensive (336.5 ± 81.5 ng/ml) obese women than in control non-obese women (243.9 ± 23.9 ng/ml); the level was significantly higher in the prehypertensive than the normotensive obese women. FEV1, FVC and FEV1/FVC ratio in both prehypertensive and normotensive obese women were significantly lower than in normal controls, but there was no statistically significant difference between the prehypertensive and normotensive obese women. In prehypertensive obese women, there were significant positive correlations between neutrophil elastase and body mass index, waist circumference, systolic blood pressure, diastolic blood pressure, total cholesterol, triglyceride, low density lipoprotein cholesterol, high sensitivity C-reactive protein and negative correlations with high density lipoprotein cholesterol, FEV1, FVC and FEV1/FVC.
**CONCLUSION:** Neutrophil elastase concentration is elevated in obese prehypertensive women along with an increase in high sensitivity C-reactive protein which may account for dyslipidemia and airflow dysfunction in the present study population.


**Domestic Violence and Obesity in Egyptian Women.**

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**Abstract**

Domestic violence and obesity are global public health problems. This study explores associations of domestic violence and obesity in 5015 ever-married, non-pregnant women aged 15-49 years who took part in the 2005 Egypt Demographic and Health Survey (EDHS). Women’s mean body mass index (BMI) was 30.4 kg/m², and 48% were obese. Thirty-seven percent reported any prior psychological, physical or sexual domestic violence. Compared with their counterparts, the adjusted odds of being obese were marginally higher among women who reported any prior sexual (aOR=1.31), physical or sexual (aOR=1.18), or psychological, physical or sexual (aOR=1.17) domestic violence. Women who experienced severe or repeated domestic violence—as measured by reported exposure to three or more acts of physical (aOR=1.25), psychological or physical (aOR=1.18), physical or sexual (aOR=1.36), and psychological, physical or sexual (aOR=1.26) domestic violence—had higher adjusted odds of being obese. Marginally significant adjusted dose-response relationships remained between obesity and the number of specific acts of: (1) physical or sexual violence and (2) psychological, physical or sexual domestic violence. Obesity among women in poorer settings like Egypt may partly have its roots in gender subordination, as manifested in women’s exposure to multiple acts of domestic violence.
Day-Case Limberg Flap for Recurrent Pilonidal Sinus: Does Obesity Complicate the Issue?

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Abstract

The purpose of this study was to analyze the long-term outcome of rhomboid excision with Limberg flap reconstruction (LF) as one-day surgery in treatment of recurrent pilonidal sinus (RPS). The effect of obesity on outcome will be addressed. Forty-nine patients with RPS were treated by rhomboid excision and LF as one-day surgery. Data collected included demographics, body mass index, operative time, flap ischemia, wound infection, length of hospital stay, time of complete healing, and recurrence. Patients' mean age was 33.4 years and mean number of previous operations was 3.4. Operative time ranged from 40 to 70 minutes. Two patients developed sterile seroma (4.1%) and two patients (4.1%) had wound infections. No wound dehiscence or flap ischemia was reported. All patients returned to normal activity within 7 days. No recurrences were reported after a mean follow-up of 32.1 months. Obesity significantly increased the operative time, however, it affected neither the postoperative outcome nor the long-term recurrence. Rhomboid excision and LF as one-day surgery is a safe and reliable method for treatment of RPS. It guarantees low morbidity, short hospital stay, short time off work, and carries low risk of recurrence, even in obese patients.
Adiponectin in Acute Myocardial Infarction Non Obese Egyptian Men.
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Abstract

Adiponectin is an adipose tissue derived mediator with significant antiatherosclerotic properties and is involved in the regulation of insulin sensitivity and lipid oxidation, a few studies were done in acute phase of myocardial infarction, especially in none obese patients. The study investigated the association between adiponectin concentration and acute phase of myocardial infarction (MI) in non obese men patients. The results showed that adiponectin levels in patients with AMI (5.2ug/ml) were significantly lower than that of control group (7.5ug/ml) (P<0.001). Lower adiponectin levels were independently associated with higher risk of AMI (odd ratio= 6.12, 95%CIs: 2.4-18.6; P=<0.001). Adiponectin levels were negatively correlated with triglyceride (r=-0.34) in case group and (r=-0.41) in control group (P< 0.001). In addition, negatively correlated with BMI(r=-0.27) in case group and (r=-0.23) in control group (P< 0.001), but adiponectin levels is positively correlated with HDL-Cholesterol (r= 0.45) in case group and (r=0.51) in control group with (P<0.001).

Semen Parameters and Hormonal Profile in Obese Fertile and Infertile Males.

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Abstract

OBJECTIVE: To study the changes in semen parameters, gonadotropic and sex hormones, and serum leptin in obese fertile and infertile oligozoospermic men.

DESIGN: Prospective.

SETTING: University hospital.
PATIENT(S): Forty-two obese fertile and 80 obese infertile oligozoospermic men (body mass index [BMI] >30).

INTERVENTION(S): The BMI calculation, semen analysis, and serum FSH, LH, T, E(2), PRL, and leptin estimation.

MAIN OUTCOME MEASURE(S): Semen and hormonal profiles.

RESULT(S): Obese oligozoospermic patients had significant increase in mean BMI, serum FSH, LH, E(2), PRL, and leptin compared with obese fertile controls. The BMI had significant positive correlation with abnormal sperm morphology, LH, serum leptin and significant negative correlation with sperm concentration, sperm motility, serum T. Serum leptin demonstrated significant positive correlation with patients' age, abnormal sperm morphology, serum FSH, LH, PRL and significant negative correlation with sperm concentration, sperm motility, and serum T.

CONCLUSION(S): Serum leptin mediates a link between obesity and male infertility.


Effect of Obesity on Parameters of Ovarian Reserve in Premenopausal Women.

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Abstract

OBJECTIVE: To study the relationship between obesity and serum and ultrasound markers of ovarian reserve in premenopausal women.

METHODS: We performed a cross-sectional comparative study of two age-matched groups of premenopausal participants (early transition phase): 50 participants ("non-obese") had a BMI < 30 kg/m2, and the other 50 participants ("obese") had a BMI of 30 to 35 kg/m2. The obese women had a mean age of 46.2 years and the non-obese women had a mean age of 46.1 years. Blood samples were collected from all participants, anthropometric measurements were calculated, and transvaginal ultrasonography was performed to measure the antral follicle count (AFC) and ovarian volume during the early follicular phase. The blood samples were assayed for antimüllerian hormone (AMH), follicle-stimulating hormone (FSH), fasting blood glucose (FBG) and two-hour postprandial blood glucose (2h PP).

RESULTS: There was no significant difference between the two groups in mean age, levels of serum AMH, serum FSH, FBG, 2 hr PP, or AFC. Ovarian
volume was significantly lower in obese women (3.7 +/- 0.8 mL) than in non-obese women (6.6 +/- 0.4 mL) (P = 0.03). There was no significant correlation between BMI and serum AMH, serum FSH, FBS, or 2 hr PP.

**CONCLUSION:** Obesity has no association with levels of serum FSH, AMH, blood glucose, or AFC indicating that obesity is unlikely to affect ovarian reserve in the perimenopausal age group.


**Obesity-PSA Relationship: A New Formula.**

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**Abstract**

To clinically apply the inverse PSA-body mass index (BMI) correlation and enhance PSA sensitivity in obese cases, a new formula is warranted. An innovated BMI-PSA equation is designed. PSA-BMI adjusted formula (named Hekal's equation): measured total PSA (ng ml(-1)) multiplied by age (years) and divided by BMI of the patient. The formula is applied over a randomly chosen 1000 cases of different PSA, BMI, age and trans-rectal ultrasound biopsy results, the yield of new PSA is correlated with pathology and age-specific PSA adjustment values. Among the 988 cases with complete data, obesity (BMI: 30-35 kg m(-2)) in 236 cases (23.8%) and 79 cases (7.9%) have BMI>35 kg m(-2). Mean PSA was 5.8 ng ml(-1) (s.d.+/-8.4 ng ml(-1)). Cases stratified based on their age (every 10 years). The new equation was applied. Obesity is detected in 33.5 and 43.6% of fifth and sixth decade of life respectively (P=0.02), with low measured PSA values (2.1, 3.8 ng ml(-1), respectively). By such PSA measurement biopsy may be omitted, missing 53.3% of malignant cases. In contrast, PSA adjusted were 4 and 9.3 ng ml(-1) within the same group of patients. With such values, the decision of a biopsy could not be missed for the targeted groups. Specificity and sensitivity of adjusted PSA values at cutoff point 4 ng ml(-1) was 41.7 and 70%, respectively. Based on our results, the new PSA-BMI adjusted formula is reproducible, easy applied formula. With such a formula the higher sensitivity of PSA in obese patients could be achieved. The misleading low PSA in obese cases in the fifth and sixth decade will be corrected.
Prevalence Of Metabolic Syndrome And Insulin Resistance Among Egyptian Adolescents 10 To 18 Years Of Age.
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Abstract

BACKGROUND: The prevalence and magnitude of childhood obesity are increasing dramatically.

OBJECTIVES: To examine the effect of varying social, demographic, dietary, and activity factors on the prevalence of metabolic syndrome and its relation to insulin resistance, C-reactive protein, and homocysteine levels in a large, representative sample of Egyptian adolescents.

METHODS: Our survey included 4250 adolescents (from 10 to 18 years of age; male subjects comprised 42.5% of participants) from 7 governorates representing Egypt. Baseline measurements included blood pressure, fasting blood glucose, plasma lipids, C-reactive protein, and homocysteine levels. Because the body mass index varies according to age, we standardized the value for age and sex with the use of conversion to percentiles.

RESULTS: The overall prevalence of the metabolic syndrome was 7.4% with no sex or area of residence predilection. Results showed that adolescents with the full criteria of metabolic syndrome (ie, three criterion or more) constituted nearly one fourth of those exhibiting high values of different components, except for systolic blood pressure, where they were 42%, and TG, where they were 31%. Family history of obesity and diabetes mellitus increase the odds for metabolic syndrome significantly (1.68 and 1.3, respectively) as well as inactivity. A high level of C-reactive protein was reported among affected adolescents. Homocysteine level did not have an influence.

CONCLUSIONS: The prevalence of the metabolic syndrome is considerable among obese adolescents. Proinflammatory markers associated with an increased risk of adverse cardiovascular outcomes are already present in these youth.
**Relationship Between Overall and Abdominal Obesity and Periodontal Disease Among Young Adults.**

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**Abstract**

To assess overall and abdominal obesity and their relation to periodontal disease among young adults, body mass index (BMI) and waist circumference (WC) were measured and clinical attachment loss (CAL), gingival index (GI) and Community Periodontal Index (CPI) were estimated. The sample comprised 380 adults (170 males and 210 females) aged 20-26 years. There was a significant correlation between both BMI and WC and CAL, GI and CPI in females. In males, a significant correlation was only recorded between WC and GI and CPI. Overall and abdominal obesity in young adult females and abdominal obesity in males were significantly associated with periodontal disease.
healthy (with normal fasting glucose) adults matched for age and gender were considered as control. All were subjected to full medical history and clinical examination including blood pressure and body mass index. Biochemical studies including lipids profile, fasting glucose and homeostasis model assessment of insulin resistance (HOMA IR) test. Echocardiographic studies were done for assessment of the aortic stiffness index.

RESULTS: Significant increase in mean aortic stiffness index was seen in group A than group B. Stiffness was correlated with insulin resistance and the correlation appeared to be independent of glucose tolerance status and obesity. Similar correlations were observed with age, triglycerides and waist circumference.

CONCLUSIONS: Prediabetic subjects have an aortic stiffness which represent pattern of cardiovascular risk factors. These changes are predominantly observed in prediabetic subjects with increased HOMA IR and visceral obesity independent of glucose levels. KEYWORDS: Prediabetes; Insulin resistance; Aortic stiffness index.


Subcutaneous and Visceral Adipose Tissue: Structural and Functional Differences.

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Abstract

Obesity is a heterogeneous disorder. Obese individuals vary in their body fat distribution, their metabolic profile and degree of associated cardiovascular and metabolic risk. Abdominal obesity carries greater risk of developing diabetes and future cardiovascular events than peripheral or gluteofemoral obesity. There are differences between adipose tissue present in subcutaneous areas (SCAT) and visceral adipose tissue (VAT) present in the abdominal cavity. These include anatomical, cellular, molecular, physiological, clinical and prognostic differences. Anatomically, VAT is present mainly in the mesentery and omentum, and drains directly through the portal circulation to the liver. VAT compared with SCAT is more cellular, vascular, innervated and contains a larger number of inflammatory and immune cells, lesser preadipocyte differentiating capacity and a greater percentage of large adipocytes. There are more glucocorticoid and androgen receptors in VAT than in SCAT. VAT adipocytes are more
metabolically active, more sensitive to lipolysis and more insulin-resistant than SCAT adipocytes. VAT has a greater capacity to generate free fatty acids and to uptake glucose than SCAT and is more sensitive to adrenergic stimulation, while SCAT is more avid in absorption of circulating free fatty acids and triglycerides. VAT carries a greater prediction of mortality than SCAT.

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Abstract

BACKGROUND: The global obesity epidemic is spreading rapidly with a social distribution that varies according to the level of economic development: as countries develop, the burden of obesity appears to shift from the rich to the poor. Studying these changes as they occur can help shed further light on the social processes that fuel the obesity epidemic and determine its social distribution. Egypt provides a case in point for this research. Findings would be relevant to other low-and-middle income countries but may also be generalisable to an extent to poor communities in high income countries.

OBJECTIVES: To examine the social distribution of obesity among Egyptian women by socio-economic status and how it has changed over time.

DESIGN AND METHODS

Retrospective analysis using four nationally representative cross-sectional surveys (Demographic and Health Surveys) conducted in Egypt between 1995 and 2008. Socio-economic status was defined as the highest reported educational level attained.

SETTING: Egypt.

PARTICIPANTS: 64 605 women between 15 and 49 years excluding pregnant women.
**MAIN OUTCOME MEASURE:** Obesity: defined as BMI (height/weight\(^2\)) equal to or above 30.

**RESULTS:** The overall level of obesity among Egyptian women rises from 30% in 1995 (urban=33%; rural=27%) to 40% in 2008 (urban=43%; rural=34%). Among urban women, in 1995, the prevalence of obesity is lower in the group without education (24%; 95% CI 19 to 29) in comparison to the group with secondary education (33%; 95% CI 29 to 37). In 2008, the prevalence of obesity has risen in a statistically significant manner in both groups compared with 1995. In addition, the prevalence in the group without education (45%; 95% CI 41 to 50) appears to have exceeded the prevalence in those with secondary education (41%; 95% CI 38 to 44). Although there is overlap in the CI at the 95% level, the overall trend suggests that the social gradient in obesity may be reversing, as predicted elsewhere.

**CONCLUSION:** Egypt provides a dynamic model of the reversal of the social gradient of obesity. Further analysis of Demographic and Health Surveys using other indicators of socio-economic status and risk factors for obesity such as consumption of fruit and vegetables may shed light on the processes behind the probable gradient reversal, and the factors putting the poor at increased risk of obesity. This is important in informing urgent prevention efforts at a population level.
The Role of Anthropometric Indices in Predicting Comorbidities of Obesity in a Rural Egyptian Population

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A4 Faculty of Medicine, Department of Public Health and Community Medicine, Cairo University, 26A Sherif Basha Street, E-mobilia Building, Flat 913 – North wing, P.O. Box 889, Attaba 11511, Cairo, Egypt.

Abstract

Obesity is associated with higher prevalence of type2 diabetes and hypertension. Objectives were determining prevalence of obesity, type2 diabetes and hypertension in a rural village. This cross sectional study included 1,000 male and female ≥ 20 years. Blood pressure, anthropometry, fasting and 2 hr post-prandial glucose were determined. Results showed 29.7% overweight and 45.6% obese. Visceral obesity, by waist circumference (WC), was 24.4% in males and 69.2% in females. Prevalence of pre-diabetes and diabetes was 5.7% and 9.6%, respectively, while hypertension was 32.1%. BMI cut-off diabetes predictors were 27.5-29.8 Kg/m² while hypertension predictors were 26.05–28.6 Kg/m². WC cut-off diabetes predictors were 93.5 cm in males and 97.5 cm for females, while for hypertension were 90.5 and 94.5 cm similarly. Logistic regression showed WC, age and family history of diabetes increasing risk of comorbidities. To conclude, obesity is associated with increased prevalence of type2 diabetes and hypertension thus we recommend introducing simple anthropometry for early detection of obesity and its' comorbidities.
The social epidemiology of maternal obesity in Egypt

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Abstract

Obesity is emerging as one of the leading public health challenges in low and middle income countries. In particular, women of reproductive age are vulnerable to many compromised reproductive health outcomes associated with obesity. Egypt is an especially interesting country to study having experienced a rapid rise in obesity, with nearly half of women of reproductive age obese in 2005, exceeding levels of obesity seen in many high income countries. Despite the importance of obesity and its implications for health in developing countries, the subject has not received sufficient research interest; this dissertation contributes to addressing this deficiency. The dissertation is comprised of three empirical chapters all using Egyptian Demographic and Health Surveys from 1992 to 2005. The first uses factor and multilevel analysis to analyze the variables used to measure female empowerment. The findings highlight the difficulty in measuring female empowerment in a meaningful way, with questions around both the reliability and the validity of the data. In the second chapter, I conduct an analysis of the temporal changes in the relationship between maternal obesity and social determinants, using both recursive partitioning and logistic regression. The findings show that not only are Egyptian women becoming more obese but that the increase in obesity has disproportionately affected the most deprived: those with the least education, the poorest, the rural population, and those living in Upper Egypt. Finally, I look at the relationship between maternal obesity and maternal and child health outcomes, and at the mediating effect of socioeconomic status, using Cox proportional hazards and logistic regression models. The findings show that for some outcomes, there is a mediating effect of SES and that this relationship is also changing over time.
Prepregnancy obesity and pregnancy outcome.
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Abstract

BACKGROUND: Maternal obesity has long been correlated with an increased risk of chronic hypertension and diabetes prior to pregnancy and adverse pregnancy outcomes including preeclampsia, gestational diabetes, fetal macrosomia, Cesarean deliveries, postpartum endometritis and a prolonged hospital stay.

OBJECTIVE: To determine the effect of maternal pre-pregnancy obesity on pregnancy outcomes

Methods: One hundred and twenty two women were recruited in the study. The patients were allocated into two groups, group 1 obese patients (68) BMI 30 or more and group 2 non obese patients (54) BMI between 19.8-24.9.

OUTCOMES: About two - third of the study group were having mild obesity, moderate obesity comprised about 28% and about 4% only was morbidly obese. Hypertensive disorders were nine folds more among obese women (R.R 4.74). Obese pregnant women were significantly more prone to have gestational diabetes (R.R 6.35). Even anemia was significantly more amongst Obese women when compared to non obese ones (29/68, R.R 3.84). Ante partum hemorrhage had significantly more in obese women (R.R 3.14). There was no increased risk for PROM (R.R 0.71). Moreover The macrosomic babies were extremely commoner among obese (R.R 9.1).

CONCLUSION: Pre-pregnancy obesity is a risk factor for gestational diabetes, preeclampsia, labor induction, cesarean section for fetal distress, and wound infection. They should be considered as high risk and counseled accordingly.
Effects of Four Intraoperative Ventilatory Strategies on Respiratory Compliance and Gas Exchange During Laparoscopic Gastric Banding in Obese Patients.
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Abstract

BACKGROUND: Respiratory function is impaired in obese patients undergoing laparoscopic surgery. This study was performed to determine whether repeated lung recruitment combined with PEEP improves respiratory compliance and arterial partial pressure of oxygen (Pa(O2)) in obese patients undergoing laparoscopic gastric banding.

METHODS: Sixty patients with BMI >30 kg m(-2) were randomized, after induction of pneumoperitoneum, to receive either PEEP of 10 cm H2O (Group P), inspiratory pressure of 40 cm H2O for 15 s once (Group R), Group R recruitment followed by PEEP 10 cm H2O (Group RP), or Group RP recruitment but with the inspiratory manoeuvre repeated every 10 min (Group RRP). Static respiratory compliance and Pa(O2) were determined after intubation, 10 min after pneumoperitoneum (before lung recruitment), and every 10 min thereafter (after recruitment). Results are presented as mean (SD).

RESULTS: Pneumoperitoneum decreased respiratory compliance from 48 (3) to 30 (1) ml cm H2O(-1) and decreased Pa(O2) from 12.4 (0.3) to 8.8 (0.3) kPa in all groups (P<0.01). Immediately after recruitment, compliance was 32 (1), 32 (2), 40 (2), and 40 (1) ml cm H2O(-1) and Pa(O2) was 9.1 (0.3), 9.1 (0.1), 11.9 (0.1), and 11.9 (0.1) kPa in Groups P, R, RP, and RRP, respectively (P<0.01). Ten and 20 min later, Pa(O2) in Group R decreased to 9.2 (0.1) kPa and compliance in Group PR decreased to 33 (2) ml cm H2O(-1), respectively (P<0.01).

CONCLUSIONS: Group RRP recruitment strategy was associated with the best intraoperative respiratory compliance and Pa(O2) in obese patients undergoing laparoscopic gastric banding.
Is There a Role for Insulin Resistance in Nonobese Patients with Idiopathic Hirsutism?

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Abstract

BACKGROUND: Hirsutism is the presence of terminal hairs in women in a male-like pattern. It may result from various causes of androgen excess or may be idiopathic. Controversies exist concerning the presence of insulin resistance in idiopathic hirsutism (IH) or if it is a manifestation of a high body mass index (BMI).

OBJECTIVES: To assess insulin resistance in nonobese patients with IH.

METHODS: The study included three groups of age- and BMI-matched nonobese women: 30 patients with IH (group 1), 20 patients with hirsutism associated with polycystic ovary syndrome (PCOS) (group 2) and 20 healthy controls (group 3). The pattern of obesity based on waist to hip ratio (WHR), and insulin resistance based on fasting insulin levels and the homeostasis model assessment of insulin resistance (HOMA-IR) were assessed in all the groups.

RESULTS: Sixteen patients with IH and 17 with PCOS had insulin resistance with statistically significant differences in fasting insulin levels and HOMA-IR between the three groups, between patients with IH and healthy controls and between patients with PCOS and healthy controls; there were no significant differences between patients with IH and patients with PCOS. When classified according to the pattern of obesity, 23 patients in group 1, 17 in group 2 and two in group 3 had a WHR >or= 0.85 (android obesity) with highly significant higher values of fasting insulin levels and HOMA-IR in patients with a WHR >or= 0.85 when compared with those with a WHR < 0.85.

CONCLUSIONS: Insulin resistance occurs in nonobese patients with IH and appears to be related to android obesity.
Clinical Significance of Inflammatory Markers in Polycystic Ovary Syndrome: Their Relationship to Insulin Resistance and Body Mass Index.

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Abstract

BACKGROUND: Women with polycystic ovary syndrome (PCOS) have an increased prevalence of insulin resistance (IR) and related disorders. Elevated serum levels of high sensitivity CRP (hs-CRP), interleukin-6 (IL-6) and tumor necrosis factor alpha (TNF-alpha) reflect low-grade chronic inflammation and have been associated with several insulin-resistant states; they are useful cardiovascular risk markers. The objective of this study was to investigate whether soluble inflammatory markers are altered in PCOS focusing on its relationship with obesity and indexes of insulin resistance.

PATIENTS AND METHODS: One hundred and eight women with PCOS and 75 healthy women were recruited. Patients were divided according to body mass index (BMI) into two groups; group I (BMI < 27 kg/m(2)) and group II (BMI ≥ 27 Kg/m(2)). Serum levels of hs-CRP, IL-6, and TNF-alpha, lipid and hormone profiles were measured.

RESULTS: PCOS patients had increased levels of testosterone, luteinizing hormone (LH), androstendione, insulin level and HOMA index compared to healthy BMI matched controls. High-density lipoprotein (HDL) concentrations were significantly reduced in both patient groups compared to their controls, while triglyceride levels were significantly increased in obese group compared to controls. There were no significant difference in serum inflammatory markers hs-CRP, IL-6 and TNF-alpha between group I and their matched controls. On the other hand, there were significant increase in these markers between group II and their matched controls. There were highly significant positive correlation between hs-CRP and IL-6 (r=0.702, P< 0.001) and between hs-CRP and TNF-alpha (r=0.621, P<0.001), also between IL-6 and TNF-alpha (r=0.543, P< 0.001). These inflammatory markers correlated significantly with BMI and HOMA index. Multiple regression analysis revealed that BMI and HOMA were predictors of IL-6 levels (b=11.173, P< 0.001, b=13.564, P< 0.001 respectively) and BMI was the only predictor of hs-CRP levels (b=12.578, P< 0.001) and TNF-alpha levels (b=0.134, P<0.001).
CONCLUSION: PCOS and obesity induce an increase in serum inflammatory cardiovascular risk markers. The precise mechanisms underlying these associations require additional studies to clarify the state of the cardiovascular system in women with PCOS compared with controls in large numbers of patients to determine the relative contribution of different factors including insulin resistance, androgen status and BMI.


Evaluation of Some Markers of Subclinical Atherosclerosis
in Egyptian Young Adult Males with Abdominal Obesity.

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Abstract

Young adults with abdominal obesity are liable to have subclinical atherosclerosis that may contribute to an increased risk of cardiovascular disease later in life. This study aims to evaluate subclinical atherosclerosis and its possible correlation with some inflammatory and biochemical markers in Egyptian young adult males with abdominal obesity. The study includes 50 young adult males (age range: 19-29 years) divided into two groups. Group 1 comprises 20 non-obese subjects (controls). Group 2 comprises 30 apparently healthy obese subjects. Carotid intima media thickness (carotid-IMT) was estimated using B-mode ultrasonography of the common carotid arteries, and abdominal ultrasonography was performed to assess the presence of a fatty liver. Laboratory investigations included fasting levels of serum glucose, triglycerides (TG), cholesterol (total [TC], high-density [HDL-cholesterol] and low-density [LDL-cholesterol] lipoprotein fractions), high-sensitivity C-reactive protein (hs-CRP), neopterin, lipoprotein-a (Lp[a]), gamma glutamyl transferase (GGT), aspartate and alanine aminotransferases (AST, ALT), plasma plasminogen and fibrinogen. Results showed that carotid IMT, serum hs-CRP, neopterin, Lp(a), fibrinogen, plasminogen, TC, TG, LDL-cholesterol and liver enzymes were significantly elevated (P<0.001) in the obese group compared to controls. All obese subjects showed evidence of fatty liver. A significant positive correlation was found between carotid-IMT and body mass index, waist circumference, waist/hip ratio, cholesterol, triglycerides, neopterin, hs-CRP AST, ALT and GGT. Elevated serum levels of inflammatory biomarkers and increased ALT, AST and GGT, and non-alcoholic fatty liver disease biomarkers may be useful predictors of subclinical atherosclerosis.
Effect of Roux-En Y Gastric Bypass on Bone Metabolism in Patients with Morbid Obesity: Mansoura Experiences.

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Abstract

BACKGROUND: Roux-en-Y gastric bypass (RYGBP) has been found to be the most efficient way to lose weight and maintain the weight loss in morbid obesity. However, with the formation of a new stomach and the modification of intestinal anatomy, there are significant changes on bone metabolism. The objectives of this study were to evaluate effects of weight loss on bone metabolism after Roux-en Y gastric bypass in patients with morbid obesity.

METHODS: Our study included 70 patients with morbid obesity; RYGB was done for all patients. Daily postoperative oral supplementation with 1,000 mg of calcium and 800 IU of vitamin D was done for each patient. Body weight (BW), body mass index (BMI), total body fat, total lean tissue mass, bone mineral content (BMC), bone mineral density (BMD), total bone area (TBA; using dual energy X-ray absorptiometry), serum calcium, parathyroid hormone (PTH), 25-OH vitamin D, 24-h urinary calcium, and bone-specific alkaline phosphatase (BSAP) were assessed preoperatively and 1 year after surgery.

RESULTS: In our study, females comprised 70% of cases. The mean age was 35+/−8.8 years. One year after RYGB, BW decreased significantly from 132.8+/−26.5 to 90.3+/−17.3 kg (p=0.001). BMI decreased significantly from 48+/−7.3 to 32.6+/−4.1 kg/m(2) (p=0.001). BMC decreased significantly from 2,968.6+/−71.4 to 2,700.8+/−45.4 g (p=0.001). BMD decreased significantly from 1.026+/−0.03 to 1.22+/−0.015 g/cm(2) (p=0.001). TBA decreased significantly from 2,356.2+/−35.4 to 2,216.3+/−43.5 cm(2) (p=0.001). Serum calcium, 24-h urinary calcium, and BSAP were not significantly decreased while 25-OH vitamin D and PTH were not significantly increased after surgery.

CONCLUSIONS: From this study, it is shown that RYGBP operation gives very good results as regards reduction of body weight in morbidly obese patients. Postoperative supplementation with calcium and vitamin D partially corrects osteoporosis. Thus, these patients need periodic follow-up for BMD, PTH, calcium, serum vitamin D, and markers of bone resorption and formation specially postmenopausal female.
Waist Circumference and Central Fatness of Egyptian Primary-School Children.

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Abstract

This cross-sectional study of 1283 healthy children (681 boys, 602 girls) aged 6-11 years tested the degree of correlation between waist circumference measurements and adiposity. The children were classified as normal, overweight or obese according to their body mass index (BMI). For both sexes a highly positive correlation was found between waist circumference and BMI, percentage of body fat, subscapular and suprailiac skinfold thicknesses, and the sum of skinfold measures. Central overweight and obesity were indicators for central fatness for both overweight boys and girls and for obese girls except in age group 6.5 +/- 1 years. Waist circumference was a good indicator of central fatness (overweight and obesity) in children aged 8.5 +/- years and 10.5 +/- 1 years.

Obesity And Infertility in Egyptian Men

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Abstract

A clinical study was carried out to examine the relationships between obesity, hormone profiles and semen analysis young Egyptian males. Seventy-Five Egyptian volunteer apparently healthy adults were used to assess the association between BMI and both hormonal and semen parameters of obese young Egyptian men. Physical examination was performed by physician. Body weight, height and the BMI was calculated. Fasting blood samples were collected, serum level of total testosterone and estradiol concentration were measured using competitive immunoenzymatic quantitative colorimetric method. FSH,
LH and prolactin were measured using indirect solid phase sandwich type immunoassay methods. Semen quality measures for the first ejaculates were obtained at the start of the study. BMI, Semen analysis, Serum FSH, LH, Testosterone, Estradiol and Prolactin. The obtained results indicated that obesity has significant negative effects on reproductive physiology and may interfere with many testicular functions. Also, it associated with alteration in semen parameters and serum sex hormones. These results contribute additional information on the ability of obesity to reduced fertility in the Egyptian males.


Central Obesity Among Adults in Egypt: Prevalence and Associated Morbidity.

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Abstract

Through a home-based survey, all people aged 18 years and over (n = 1800) in the catchment areas of 12 primary health care centres in 4 Egyptian governorates were subjected to standardized waist and hip measurements. Central obesity was determined based on the waist circumference (WC) and waist-to-hip ratio (WHR) indicators. The age-adjusted prevalence of central obesity among adults was 24.1% and 28.7% based on the WC and WHR indicators respectively. After adjustment for sex and other confounding factors, WC was significantly associated with the risk of diabetes and hypertension, while WHR was not significantly associated with either diabetes or hypertension. No significant association was seen between body mass index and diabetes or hypertension.
Micronutrient Deficiency and The Prevalence of Mothers' Overweight/Obesity In Egypt.

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Abstract

I examine the relationship between micronutrient deficiency and the prevalence of mothers' overweight/obesity in Egypt using the 1997 Egyptian Integrated Household Survey. The ordered logit results show an overlap between micronutrient deficiency and the prevalence of mothers' overweight/obesity in Egypt. The odds of being overweight/obese are 80.8% higher for micronutrient deficient mothers than for non-deficient mothers, keeping all other variables constant. These results have at least two interesting policy implications. First, as the potential impact of the interaction between micronutrient deficiency and chronic diseases is not well known, the coexistence of micronutrient deficient and overweight/obese women can raise new and serious public health problems in the country. Second, the Egyptian food subsidy program, which lowers the relative prices of energy-dense, nutrient-poor food items, can be one of the major factors for the emergence of overweight/obese and micronutrient deficient mothers in the country. Changing the orientation of the food subsidy program may help to simultaneously address this double burden of mothers' malnutrition.

Clinical Significance of Serum Concentration of Anti-Müllerian Hormone in Obese Women with Polycystic Ovary Syndrome.


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Abstract

In the human ovary, expression of anti-Müllerian hormone (AMH) is detected primarily in granulosa cells of preantral and small antral follicles. The aim of this study was to compare serum AMH measurements in obese
women with polycystic ovary syndrome (PCOS) with those in obese normo-ovulatory women and to evaluate the role of AMH as a predictor of ovulation induction by clomiphene citrate compared to FSH. Sixty-eight obese women with PCOS were compared to 17 normoovulatory obese women. All women had a body mass index greater than 30 kg/m(2). Women with PCOS received clomiphene citrate (150 mg/day) for 5 days starting from day 3 of cycle and were subdivided into responsive and non-responsive groups. There was a significant difference in AMH concentration between women with PCOS and the control group (P < 0.05) and also between women with PCOS who responded to clomiphene citrate and those who did not (P < 0.01). A value of 1.2 ng/ml AMH could be used to predict response to clomiphene citrate in obese women with PCOS (sensitivity 71%, specificity 65.7%). AMH production increases in women with PCOS compared to controls. AMH measurement could also be useful in the prediction of ovarian response to clomiphene citrate.

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Androgen Deficiency and Abnormal Penile Duplex Parameters in Obese Men with Erectile Dysfunction.

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Abstract

INTRODUCTION: The clinical identification of metabolic syndrome is based on measures of abdominal obesity, atherogenic dyslipidemia, elevated blood pressure, and glucose intolerance. However, the impact of hypogonadism associated with obesity on penile hemodynamics is not well investigated.

AIM: In this retrospective study, we sought to evaluate the effect of obesity on serum total testosterone (TT) level and penile duplex parameters in men with erectile dysfunction (ED).

METHODS: Our participants (N = 158) were evaluated for erectile function using an abridged, five-item version of the International Index of Erectile Function-5. Determination of body mass index (BMI) was performed. Measurements of TT, fasting lipid profile, and blood sugar were conducted. Penile hemodynamics was assessed using intracavernosal injection and penile duplex study.
MAIN OUTCOME MEASURES: Bivariate associations among BMI and serum testosterone, blood pressure, and lipid profile, as well as penile duplex parameters. We compared all clinical, laboratory, and penile duplex parameters between lean men (BMI < 25) and overweight and obese men (BMI ≥ 25).

RESULTS: The participants' age ranged between 20 and 56 years. A significant negative correlation between BMI and TT was detected (r = -0.431, P = 0.0001). Hypogonadism was identified in 54/158 (34.2%) of men with ED. The incidence of hypogonadism varied from as low as 1/18 (5.6%) in lean men to as high as 18/35 (60%) in morbid and severe obesity, respectively. Vasculogenic ED was detected in 32/54 (59.3%) men with BMI ≥ 25, compared with 5/18 (27.8%) in lean men (P = 0.029). In order to study the effect of obesity on erectile function, cases with other risk factors were excluded. Of 67 men suffering from ED with no other risk factor(s) apart from obesity, vasculogenic ED was detected in 32/54 (59.3%) men with BMI ≥ 25, compared with 3/13 (23.1%) in lean men (P = 0.029).

CONCLUSION: Obesity is associated with lower TT and disturbances of penile hemodynamics. It is an independent clinical factor for vasculogenic ED.


Leptin and Insulin Homeostasis in Epilepsy: Relation to Weight Adverse Conditions.

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Abstract

During managing patients with epilepsy, there is a great risk of weight changes, particularly weight gain with some antiepileptic medications. Weight gain is not only a cosmetic problem that leads to non-compliance to medications but also increases the risk for atherosclerosis and its related complications. The mechanisms underlying weight gain in epilepsy are multiple and controversial and have been attributed to the effect of epilepsy and more commonly the effect of antiepileptic medications on the central and peripheral mechanisms regulating weight homeostasis including the two main homeostatic hormones, leptin, a protein product of obesity gene secreted by adipocytes and insulin, a protein product of pancreatic
beta-cells. Increased blood levels of leptin and insulin due to leptin and insulin resistance is observed in patients with epilepsy. Leptin forms an important link between weight gain, insulin resistance, epilepsy and atherosclerosis. The knowledge of the novel roles of leptin in patients with epilepsy will help identification of early markers for the related adverse weight changes, thus allowing proper characterization of suitable antiepileptic medication as initial step during management and follow up of patients.

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Androgen Deficiency And Abnormal Penile Duplex Parameters in Obese Men with Erectile Dysfunction.
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Abstract

INTRODUCTION: The clinical identification of metabolic syndrome is based on measures of abdominal obesity, atherogenic dyslipidemia, elevated blood pressure, and glucose intolerance. However, the impact of hypogonadism associated with obesity on penile hemodynamics is not well investigated.

AIM: In this retrospective study, we sought to evaluate the effect of obesity on serum total testosterone (TT) level and penile duplex parameters in men with erectile dysfunction (ED).

METHODS: Our participants (N = 158) were evaluated for erectile function using an abridged, five-item version of the International Index of Erectile Function-5. Determination of body mass index (BMI) was performed. Measurements of TT, fasting lipid profile, and blood sugar were conducted. Penile hemodynamics was assessed using intracavernosal injection and penile duplex study.

MAIN OUTCOME MEASURES: Bivariate associations among BMI and serum testosterone, blood pressure, and lipid profile, as well as penile duplex parameters. We compared all clinical, laboratory, and penile duplex parameters between lean men (BMI < 25) and overweight and obese men (BMI >or= 25).

RESULTS: The participants' age ranged between 20 and 56 years. A significant negative correlation between BMI and TT was detected (r = -0.431, P = 0.0001). Hypogonadism was identified in 54/158 (34.2%) of men
with ED. The incidence of hypogonadism varied from as low as 1/18 (5.6%) in lean men to as high as 18/36 (50%) to 21/35 (60%) in morbid and severe obesity, respectively. Vasculogenic ED was detected in 32/54 (59.3%) men with BMI >or= 25, compared with 5/18 (27.8%) in lean men (P = 0.029). In order to study the effect of obesity on erectile function, cases with other risk factors were excluded. Of 67 men suffering from ED with no other risk factor(s) apart from obesity, vasculogenic ED was detected in 32/54 (59.3%) men with BMI >or= 25, compared with 3/13 (23.1%) in lean men (P = 0.029).

CONCLUSION: Obesity is associated with lower TT and disturbances of penile hemodynamics. It is an independent clinical factor for vasculogenic ED.


Do Government Food Price Policies Affect the Prevalence of Obesity? Empirical Evidence from Egypt

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Abstract

Obesity has become one of the most serious but neglected global public health problems especially in developing countries. I examine the impact of the Egyptian food subsidy program on mothers’ weight. It is hypothesized that the program causes a wide disparity in per calorie costs between energy-dense and energy-dilute foods and thus aggravating the obesity problem. The estimated elasticities reveal that, mothers’ BMI is inversely related to the price of subsidized, energy-dense food and directly to the price of a high diet quality but expensive food items suggesting that the program aggravates obesity by lowering the direct costs of becoming obese.
Overweight And Obesity Status Among Adolescents From Mexico And Egypt.


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Abstract

BACKGROUND: Obesity is on the rise among adults, adolescents and children worldwide, including populations living in developing countries. This study aimed to describe body mass index of adolescents from Mexico and Egypt and to evaluate non-nutritional correlates from two cohort studies.

METHODS: Questionnaire data and weight and height measurements were collected in two large baseline studies in adolescents between 11 and 19 years old attending public school during the 1998-1999 school year in Mexico (n = 10,537) and the 1997 school year in Egypt (n = 1,502). The authors compared body mass index and correlates stratified by sex and country through multivariate linear regression.

RESULTS: Overall prevalence of overweight and obesity was 19.8 and 7.9%, respectively, among the Mexican adolescents and 12.1 and 6.2%, respectively, among the Egyptian adolescents. Based on U.S. Centers for Disease Control and Prevention (CDC) definition growth charts, for Mexico 18% of boys and 21% of girls were overweight and 11% of boys and 9% of girls were obese. In the Egyptian sample, 7% of boys and 18% of girls were overweight and 6% of boys and 8% of girls were obese. The most consistent correlates of body mass index in the Mexican population were age, years of education, smoking, vitamin intake and participating in sports, whereas the factors correlated among Egyptian adolescents were age and rural residence.

CONCLUSIONS: Obesity and overweight are becoming a problem among Mexican and Egyptian youth. Information about the risk factors associated with excessive weight gain during the adolescent period is a first step towards proposing prevention strategies.
Assessment Of The Nutritional Status Of Children With Special Needs In Alexandria. Part II: Anthropometric Measures.

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Abstract

The present study was undertaken to evaluate the nutritional status of children with special needs in Alexandria city, on the basis of anthropometric measures. The following variables were determined in a sample of 278 disabled children (171 males, 107 females) aged 6 to 24 years, recruited from five specialized day care centers for retarded children in Alexandria: birth order, type of disability, socioeconomic status, body weight, height, body mass index (BMI) and hemoglobin level. Mentally retarded children represent the highest proportion of subjects followed by Down's syndrome and autism. There is an increase in the mean body weight of males with the increase in age among the three type of disability except at age from 14 to 18 years, while there is a fluctuation in the mean body weight between ages and disability among females. Down syndrome groups at all ages are shorter than the other groups, while disabled males are taller than females at all ages. Based on BMI for age, the incidence of obesity was higher among Down's syndrome and mentally retarded females and among autistic males (19.8%, 16.1% of males versus 15.8%, 6.7% of females with mental retardation and autism were underweight). Majority of subjects have mild degree anemia. Hemoglobin levels below the cut-off levels issued by WHO were found higher among autistic and mentally retarded females. The levels were comparable among males with autism and mental retardation and among Down's syndrome males and females. The results also revealed that underweight, overweight and obesity were more common in subjects who showed an evidence of anemia.
Value of Subcutaneous Drainage System in Obese Females Undergoing Cesarean Section Using Pfannenstiel Incision.

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Abstract

OBJECTIVE: To determine whether closed subcutaneous drainage systems were efficacious in reducing the rate of wound breakdown of Pfannenstiel incision after cesarean section (CS) in obese females.

DESIGN: Prospective controlled clinical trial.

PARTICIPANTS: 118 obese pregnant females with a body mass index >32 undergoing CS were divided into two groups: group I (n = 78) with closed subcutaneous drainage system and group II (n = 40) without drainage system. Incision closure technique was standardized. Prophylactic antibiotics were given routinely to both groups.

OUTCOME MEASURES: Primary outcomes were the incidence of wound breakdown in both groups together with rate of hematoma formation and occurrence of fever. Secondary outcomes were amount of fluid drained, need for redressing.

RESULTS: Wound breakdown occurred in 9 cases in group I (11.5%), while it happened in 5 cases in group II (12.5%) (p > 0.05). Relative risk was 0.92 (95% CI 0.26-3.75). Hematoma formation was observed in only 1 case in the nondrainage group (group II). Fever was observed in 18 cases in group I (23.1%) in the first 24 h postoperative while in group II, 13 cases developed fever (32.5%) (p > 0.05). The need for redressing within the first 24 h was only in 2.5% of cases in group I while it was 17.9% in group II (p < 0.05).

CONCLUSION: We found no significant benefit in using a subcutaneous drain as a prophylactic measure against wound breakdown in obese pregnant females undergoing CS as long as they received a prophylactic antibiotic.
Impact of Life Style on the Nutritional Status of Medical Students at Ain Shams University.

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Abstract

This cross sectional study was carried out to assess the nutritional status of medical students and to determine its relation to their life style. The study involved 317 students at, Am Shams University. Anthropometric measurements such as weight, height, mid-arm circumference, triceps skin fold thickness and body mass index were measured. The students completed a self-administered questionnaire including data about some life style factors and food-frequency consumption. The study revealed that 41.3% of the students were of normal weight while 9.5% of the sample were underweight, 36.9% were overweight and 12.5% were obese. The mean mid upper arm circumference (MUAC) and mid arm muscle circumference (MAMC) of males was significant higher than that of females, while the mean triceps skin fold (TSF) of females was significant higher than that of males. The food frequency questionnaire analysis showed that most of students consume all food groups items faire. There was no statistical significant difference between the body mass index (BMI) of students and different types of food consumption. About two thirds of the students used to practice exercise, 26.9% of the students practiced exercise for less than 2 hours per week, while 33.9% of them for more than 2 hours. There was no statistical significant difference between the BMI of students and different types of exercise. However, there was significant higher percentage of males play sports and practice running (44.7% and 19.4% respectively) compared to (11.7% and 8.1%) of females. Sixty four percent of the students usually have regular meals. About 87.2% of obese compared to 64.9% of normal weight students eat snacks between meals, the difference was statistically significant. Obese individuals eat more during watching television and during feeling of stress compared to non-obese and the difference was statistically significant. The duration of practicing exercise, sports and playing computer was significantly higher in males than females. However, the duration of watching television was significantly higher in females than males. Logistic regression analysis results showed that family history of obesity and some life style factors as duration of computer use, eating more during stress time and snacking between meals were important risk factors for obesity. We concluded that about half of medical
students were overweight and obese. The most important life style factors responsible for obesity were longer time spent using computer, eating more during time of stress and snacking between meals. Also, genetic factors played an important role in development of obesity. It is recommended to develop nutritional education and physical activities programs to face the problem of increasing the rate of overweight and obesity among university students.


The Nutrition Transition in Egypt: Obesity, Undernutrition and The Food Consumption Context

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Abstract

OBJECTIVES: To describe changing food consumption patterns in Egypt over the last several decades, current levels of overweight and obesity, and current data on obesity-related morbidity.

DESIGN: Secondary analysis and synthesis of existing data from national-level food consumption surveys, large recent surveys of hypertension and diabetes, and documentation of historical and policy context.

SETTING: Arab Republic of Egypt.

SUBJECTS: As selected and described in primary data sources.

Results and conclusions: The nutrition transition in Egypt has occurred in the context of abundant dietary energy availability, urbanisation and moderate fat intakes. The prevalence of obesity in adults is very high, particularly among women. The prevalences of diabetes mellitus and of hypertension parallel that of obesity, and both are very high. Little information is available on physical activity, but it is likely that a large proportion of the population is quite sedentary, particularly in the cities. At the same time, rates of early childhood malnutrition remain stubbornly stable and relatively high. Public awareness of the increasing prevalence of obesity and of diet-related chronic disease is increasing, and attention has turned to documenting the problem(s).
Central Obesity in Elderly Individuals in South-Western Saudi Arabia: Prevalence and Associated Morbidity.

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Abstract

Central obesity in all individuals aged 65 years and over (n = 810) in the catchment areas of three primary health care centres in Abha was determined from the waist circumference (WC) and waist-to-hip ratio (WHR). The age-adjusted prevalence of central obesity was 32.4% and 43.5% based on the WC and WHR indicators respectively. WC was significantly associated with the risk of diabetes and hypertension, while WHR was significantly associated with the risk of diabetes only. These findings suggest that reducing the prevalence of central obesity in old age would decrease the risk of diabetes and hypertension. WC is a powerful independent predictor mainly of hypertension risk, while WHC is a good predictor of the risk of diabetes.
Laparoscopic Vertical Banded Gastroplasty: Early Experience.

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Abstract

BACKGROUND: The tremendous development of laparoscopic surgery in the last decade is being applied to bariatric surgery. Laparoscopic vertical banded gastroplasty (LVBG) is technically feasible by laparoscopy.

METHODS: From August 1998 to August 1999, 13 patients underwent LVBG. The technical difficulties are discussed.

RESULTS: Operating time ranged from 105 to 420 minutes. 11 patients have lost 45-55% of their original weight. Inserting an esophageal bougie no. 11 from the beginning of the operation and using the laparoscopic set-up described, made the procedure shorter, safer and easier for patients and surgeon.

CONCLUSION: LVBG is technically feasible for the laparoscopic bariatric surgeon who is experienced in the handling and control of laparoscopic instruments and hand-eye coordination. The early results are satisfactory. Preoperative counseling is an integral step for the operation.
Egyptian Experience in Laparoscopic Adjustable Gastric Banding (Technique, Complications And Intermediate Results).

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Abstract

BACKGROUND: Surgery can provide effective long-term treatment for morbid obesity. The purpose of this study is to present an Egyptian experience of laparoscopic adjustable silicone gastric banding (LASGB) as a safe and effective treatment.

METHODS: 108 morbidly obese patients having body mass index (BMI) > 40 kg/m² were studied. 26 patients had a BMI > 50 kg/m² and < 60 kg/m², while 21 patients had a BMI > or = 60 kg/m². The procedure was performed through a 4 or 5 trocar technique.

RESULTS: Mean age was 32.3 years. Mean BMI was 48.9 kg/m². All except two procedures were completed by laparoscopy. Mean hospital stay was 2.2 days. Mean BMI after 12 months was 37.2 kg/m² and after 24 months was 34.3 kg/m². Mean follow-up was 2.1 years and included 87 patients (81%). Complications included: gastric perforation (1), pleural injury (1), liver injury (1), port complications (6), periband sepsis (1) and slippage (3). There were no mortalities in this series.

CONCLUSIONS: LASGB proved to be safe and effective for the treatment of morbid obesity in Egyptian patients.
Bariatric Re-Operations: Are They Preventable?
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Abstract

BACKGROUND: Many operations are currently used for morbid obesity, and every procedure appears to have advantages, drawbacks and failures. Re-operation is a part of bariatric surgery practice that is necessary in the event of failure. We analyzed the reasons for failure in the bariatric re-operation group.

METHODS: From June 1998 to April 2000, 17 morbidly obese patients had a bariatric re-operation. Of 203 bariatric operations performed in our institution, 12 patients had a re-operation (5.9%), and 5 patients had their primary procedure performed elsewhere. Mean age was 36.5 +/- 11 years, mean original weight 151.3 +/- 44.3 kg, mean BMI 58.4 +/- 16.9 kg/m2 and mean excess body weight (EBW) 94.4 +/- 43.5 kg. Mean height was 161 +/- 7.7 cm, and 15 patients were female (88.2%). The primary bariatric operation was vertical banded gastroplasty (VBG) in 15 patients (88.2%), Roux-en-Y gastric bypass (RYGBP) in 1 patient (5.9%), and gastric banding in 1 patient (5.9%). Duration since the primary surgery was a mean of 15.6 months (range 1-72 months).

RESULTS: Reasons for re-operation were inadequate weight loss (47%) or food intolerance (53%). 11 patients had VBG converted to RYGBP, 1 patient had a gastric banding converted to a BPD, 4 patients had their VBG converted to a gastro-gastrostomy, and 1 patient had a RYGBP staple dehiscence re-stapled.

CONCLUSION: Incidence of bariatric re-operations may be decreased if super-obese patients, older patients, and sweets-consuming individuals undergo RYGBP or BPD as the primary operation rather than VBG or gastric banding. The use of staplers transecting and separating the gastric pouch from the remaining stomach can decrease staple dehiscence.
Nutritional Status of Institutionalized and Free-Living Elderly in Alexandria.

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Abstract

Because of an increase in the number of elderly and the problems of nutrition associated with them, it is of interest to study the nutritional status of elderly persons in Alexandria City. The purpose of this study was to assess the nutritional status of elderly population and to compare between the nutritional status of those institutionalized and those living free. The study was conducted on 240 elderly persons (120 institutionalized and 120 free living) selected randomly from institutions and from different sites. The basic data, weight, height, body mass index (BMI) of each were recorded. Dietary intake study was done by using 24 hours recall for 3 consecutive days and food frequency were used to obtain the best estimate of food intake. Energy and nutrient intakes were obtained and compared with the recommended dietary allowance (RDAs). The main findings of the study revealed that the mean age of the institutionalized elderly was greater than those living free. Percent of obesity among females was 71.7% among free living and 45% among institutionalized. Under-nutrition was present in 11.7% and 8.3% of institutionalized males and females respectively. Food habits showed that institutionalized subjects consume more amounts of many food items than free-living. Total daily energy intake was found to be below the recommendation for all subjects, with higher intake among institutionalized than free living. Nutrient intakes among institutionalized and free living elderly were inadequate except thiamin, riboflavin, vitamin C and iron. The nutrients least adequately supplied in the diets of elderly are vitamin A and calcium along with energy deficits. In conclusion both institutionalized and free living are at risk for developing nutrient deficiencies. Deficient energy, calcium and vitamin A are common problems among most subjects. The composition of the diet among free living subjects seem to be also poor in some micronutrients. We recommended a nutrition intervention program and nutrition education to improve nutritional status of elderly people.
Relationship between Obesity and Asthma Symptoms among Children in Ahvaz, Iran: A Cross Sectional Study

Tahereh Ziaei Kajbaf*, Shideh Asar†, Mohammad Reza Alipoor3†

Abstract

Background: Obesity has been identified as a risk factor for higher prevalence of asthma and asthma-related symptoms in children. The objective of this study was to evaluate the relationship between the prevalence of asthma symptoms and obesity among school-age children in the city of Ahvaz, Iran.

Methods: A total of 903 children, 7 to 11 years of age, were enrolled in this study through cluster sampling. The International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire was used to identify the children who were currently suffering from asthma. Height and weight were measured and body mass index (BMI) was calculated in kg/m2. Overweight was defined as BMI greater than the age- and sex-specific 85th percentile, and obesity as BMI greater than the 95th percentile. We determined the relationship between obesity and asthma symptoms by chi-square tests.

Results: The prevalence of wheeze ever, current wheezing, obesity, and overweight was 21.56%, 8.7%, 6.87%, and 9.5%, respectively. The current prevalence of wheezing among obese and overweight children was 68.75% and 37%, respectively, and there was a statistical association between obesity and the prevalence of current wheezing (p < 0.001), night cough (p < 0.001), and exercise-induced wheezing (p = 0.009), but obesity and overweight were not associated with eczema and allergic rhinoconjunctivitis, so it seems that the pathophysiology of asthma in obese and overweight children is not related to allergy.

Conclusion: There is a strong association between asthma symptoms and both overweight and obesity in both sexes among school-age children.
Prevalence of Obesity and Some Related Factors in 30-70 Year-Old Population of Semnan Province, Iran

Ali Rashidy Pour, Mojtaba Malek, Rahimeh Eskandarian, Raheb Ghorbani

Abstract

BACKGROUND: Nowadays, obesity is one of the most common diseases and its prevalence has been increased in recent years. As obesity is a risk factor for many diseases, we aimed to determine the prevalence of obesity, central obesity, and some related factors in Semnan province, Iran.

METHODS: This epidemiologic cross-sectional study was conducted on 3799 of 30-70 years old persons in Semnan, Iran. Multistage cluster sampling was performed and subjects were selected from the affiliated cities of Semnan province. Data was collected using a specific questionnaire. Body weight, height, and waist circumference (WC) were measured. Body mass index (BMI) and waist to hip ratio (WHR) were calculated, too. 25≤BMI.

From this Link:

Prevalence of Underweight, Overweight and Obesity in Preschool Children of Tehran, Iran

Abbasali Gaeini1, Majid Kashef2, Ali Samadi1, Aliasghar Fallahi1

Abstract

BACKGROUND: It is reported that prevalence of overweight and obesity have increased in all age groups, but little is known about prevalence of overweight and obesity in preschool children. Therefore, the purpose of this study was to survey the prevalence of underweight, overweight and obesity in 3-6 year-old Tehranian children in 2009-2010.

METHODS: This cross-sectional study was performed on a total of 756 (378 boys and 378 girls) preschool children aged 3-6. Subjects were selected through stratified sampling from 5 geographic regions of Tehran (east, west, north, south, and center). Body weight and height were measured directly. Underweight, overweight and obesity was defined as body
mass index (BMI) ≤ 5th percentile (underweight), 5th to 85th percentile (normal weight), 85th to 95th percentile (overweight), and > 95th percentile (obesity); based on recommendation of Centers for Disease Control (CDC) in 2000.

RESULTS: Findings showed that the prevalence of underweight, overweight and obesity was 4.77%, 9.81% and 4.77% in boys and 4.77%, 10.31% and 4.49% in girls, respectively.

CONCLUSIONS: Our findings showed a relatively high prevalence of overweight and obesity in Tehranian preschool children that is a serious problem. This result can be used in clinical setting and preventive programs.

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P01-311 - Obesity in Children with High-Function Autism

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Abstract

INTRODUCTION: Childhood obesity is a major issue and puts children at risk of physical and psychological health complications. Some studies have evaluated obesity in autism in different countries. However there is few data on the rate of obesity in high-function autism (HFA).

AIM: To evaluate the weight status of children with HFA in Iran

METHODS: This cross-sectional survey was carried out in autism specific schools of Tehran in 2010. In total 113 children with HFA ages 6–15 were evaluated. They were classified according to WHO references (2007) for body mass index (BMI) for age and sex as obese, overweight, healthy weight and underweight. We then examined the associations of weight status of these children with some variables and comorbidities.

RESULTS: The prevalence of obesity in children with HFA was 27.0%, overweight 13.0% and underweight 7.0%. There was a significant correlation between age and BMI (r = 0.26, P value < 0.01). Underweight was associated with neurologic comorbidities (p < 0.05). The rate of obesity has not correlated with some other medical and psychiatric comorbidities, as well as sex, and parents’ weight status.
CONCLUSIONS: Prevalence of obesity in autistic children with high intelligence profile is high and at the same levels of both normal children and children with autistic spectrum disorders.


Comparison of the Effects of Cows' Milk, Fortified Soy Milk, and Calcium Supplement on Weight and Fat Loss in Premenopausal Overweight and Obese Women.

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Abstract

BACKGROUND AND AIMS: Recent studies suggest that calcium metabolism and perhaps other components of dairy products may contribute to shifting the energy balance and thus play a role in weight regulation. We compared the effects of cows' milk, calcium fortified soy milk and calcium supplement on weight and body fat reduction in premenopausal overweight and obese women.

METHODS AND RESULTS: In this clinical trial, 100 healthy overweight or obese premenopausal women were randomized to one of the following dietary regimens for 8 weeks: (1) a control diet providing a 500kcal/day deficit, with 500-600mg/day dietary calcium; (2) a calcium-supplemented diet identical to the control diet with 800mg/day of calcium as calcium carbonate; (3) a milk diet providing a 500kcal/day deficit and containing three servings of low-fat milk; (4) a soy milk diet providing a 500kcal/day deficit and containing three servings of calcium fortified soy milk. At baseline and after 8 weeks, weight, waist circumference, and hip circumference were measured. Three 24-h dietary records and physical activity records were also taken. Comparing the mean differences in weight, waist circumference, body mass index (BMI) and waist-to-hip ratio (WHR) using repeated measure of variance analysis showed that changes in waist circumference and WHR were significant among the four groups (p=0.029 and p=0.015, respectively). After adjustment for baseline values, changes in weight and BMI were also significant (p=0.017 and p=0.019, respectively). Weight reductions in high milk, soy milk, calcium supplement and control groups were 4.43±1.93(kg), 3.46±1.28(kg), 3.89±2.40(kg) and 2.87±1.55(kg),
respectively. The greatest changes were seen in the high dairy group in all variables.

**CONCLUSION:** Increasing low fat milk consumption significantly reduces the general and central obesity beyond a low calorie diet.


**Pioglitazone Reduces Central Obesity in Polycystic Ovary Syndrome Women.**

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**Abstract**

**OBJECTIVE:** Based on the role of polycystic ovary syndrome as a cause of metabolic syndrome with chronic anovulation, obesity, hyperinsulinemia and hyperandrogenism, development of effective treatment for its obesity is a priority.

**MATERIALS/METHODS:** We designed a study, involving 52 patients of 19-36 years of age, to test the pioglitazone in women with polycystic ovary syndrome. Subjects were assigned to receive pioglitazone for 3 months. Body mass index, waist circumference and hip circumference were measured before and after 3 months of pioglitazone prescription.

**RESULTS:** Fifty patients completed the study. No complication reported during the study period. Waist circumference, hip circumference and waist to height ratio decreased significantly. Body weight and body mass index increased. No significant improvement was seen in acne, acanthosis, hirsutism and menstrual irregularities.

**CONCLUSION:** Pioglitazone has beneficial effects on central obesity of the patients with polycystic ovary syndrome but other clinical consequences of the syndrome may not improve with the drug.
Abstract

Eur J Clin Invest 2011 ABSTRACT: Background High-density lipoprotein cholesterol (HDL-C) levels are low in Iranians. Low HDL-C is the most frequent phenotype in metabolic syndrome (MetS) among the Iranian population (32%). This has been claimed to be related to genetic factors. Materials and methods To investigate possible genes linked to this disorder, 12 microsatellite markers were selected. They were used in 107 families with MetS and low HDL-C to analyze relevant association and linkage signals. Result Family-based association tests under the biallelic mode gave many positive association signals. Higher association - after correction for multiple testing - was found to be linked with marker D8S1743 and D11S1304 ($P < 0.003$). The obtained results suggested evidence for association with regions on chromosome 8, 11 and to a lesser degree on chromosome 16. Nonparametric linkage analysis performed by Merlin software gave no significant correlation for any of the chromosomal regions. By considering only families with positive Nonparametric Logarithm of odds (LOD) scores, higher association can clearly be visible with D16S3096 and D11S934. Conclusions These results suggest that 8q22-24; 11q23-25 and 16q23-24 regions are very likely to contain genes that control HDL-C level in Iranian families with metabolic syndrome.
Decreased Plasma Levels of Ceruloplasmin after Diet-Induced Weight Loss in Obese Women.


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Abstract

BACKGROUND: Plasma ceruloplasmin (Cp) has been shown to be a risk factor for cardiovascular disease and also to be associated with obesity. However, it is not known whether weight loss could decrease the plasma Cp levels.

AIM: To investigate the effect of diet-induced weight loss on plasma Cp in obese women. Subjects and Methods. Sixty-seven healthy obese women (age=33.4±8.7 years, BMI=36.0±4.8 Kg/m2) were entered into a medically supervised program aimed at reducing body weight by 10% or more. Weight loss was achieved through a diet providing a daily energy deficit of 500-1000 kilocalories/day. In addition, all patients were prescribed to use 50 grams of a fiber supplement per day. For all subjects, assessment of dietary intake, anthropometric indices and plasma levels of C-reactive protein (CRP) and Cp was performed at the first visit and repeated at 12th week of follow-up.

RESULTS: By completing the program, weight (delta= -9.5%, p < 0.0001), body mass index (delta= -9.7%, p < 0.0001), waist-circumference (delta= -6.1%, p < 0.0001), and triceps skinfold thickness (delta= -14.9%, p < 0.0001) significantly decreased. Plasma Cp significantly decreased after 12 weeks of dietary intervention (33.6±5.6 mg/dL vs. 25.15±5.8 mg/dL, p < 0.0001). Percent change in Cp was correlated with percent change in waist-circumference (r = 446, p = 0.015).

CONCLUSION: Our study suggests that an improved body composition induced by restriction of energy intake is associated with decreased serum concentrations of Cp in obese women which in turn might have reduced the subjects' risk of developing cardiovascular disease.
Which Food Patterns are Predictors of Obesity in Tehranian Adults?

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Abstract

OBJECTIVES: To determine whether changes in food patterns over a period of 6 years were related to obesity in Tehranian adults.

DESIGN: Data on dietary intake, using the food frequency questionnaire, and anthropometry were obtained in 2 periods of the survey (1999-2001 and 2005-2007).

SETTING: Participants of the Tehran Lipid and Glucose Study.

PARTICIPANTS: Two hundred six adults.

MAIN OUTCOME MEASURES: Waist circumference, body mass index, and waist-to-hip ratio.

ANALYSIS: Food patterns were derived using factor analysis.

RESULTS: Three dietary patterns, the healthful (HDP), the western (WDP), and the mix, were identified. Increased WDP score was directly related to change in body mass index (β = .41, \( R(2) = 0.22, P < .001 \)) among overweight/obese individuals. Alterations in waist circumference was better predicted by increased WDP score (β = .49, \( R(2) = 0.21, P < .01 \)) than by increased HDP score (β = -.20, \( R(2) = 0.11, P < .05 \)). Subjects in the higher quartile of increased HDP score had lesser change in waist-to-hip ratio (β = -.77, \( R(2) = 0.43, P < .01 \)).

CONCLUSION: Results of this study indicate that increased adherence to the WDP and decreased adherence to the HDP could contribute to obesity.


Evidence of a Role of ANGPTL6 in Resting Metabolic Rate and its Potential Application in Treatment of Obesity.

Mirzaei K, Hossein-Nezhad A, Chamari M, Shahbazi S.
Abstract

AIM: ANGPTL6 (Angiopoietin-related growth factor 6) is a circulating protein which is suggested to antagonize obesity. The purpose of this study was to evaluate a potential relationship between fasting serum ANGPTL6 and resting metabolic rate (RMR) as well as the body composition in obese and subjects with normal weight.

METHODS: Participants were 62 obese and 41 non-obese subjects who were assessed following an overnight fasting for RMR by means of indirect calorimetry. Body composition was measured using Bodystat devise. Serum ANGPTL6 levels were quantified by ELISA method.

RESULTS: Based on ROC analysis best RMR/kg cut-off value for predicting the risk of obesity was 20 kcal/24h /kg. The participants with RMR/kg≥20 kcal/24h/kg were considered as and subjects with RMR/kg<20 kcal/24h/kg were categorized as. In group I, 72.3% of subjects were obese, whereas, 47.4% subjects in group II were suffering from the disease. Participants in group II who showed significantly lower HDL and ANGPTL6 levels. Moreover, we found significantly higher triglyceride and hs-CRP levels in this group. There was significant difference in weight, body mass index, fat mass, visceral fat, RMR/kg, fasting serum glucose, insulin and hs-CRP among those with different levels of the serum ANGPTL6 concentration. We found higher values of RMR/kg in subjects with higher circulating ANGPTL6 concentration.

CONCLUSION: ANGPTL6 affects RMR and significantly improves lipid profile and slightly does so regarding insulin concentrations and sensitivity to it. Further study is warranted as it seems that the results of this study might potentially lead to advent of a pharmacological treatment for obesity.
Associates of Visceral Obesity among Women
Leila Azadbakht, Maryam Bahreinian, Ahmad Esmaillzadeh

Abstract

BACKGROUND: Previous studies in Iran used the World Health Organization (WHO) cut-off points to determine visceral obesity and no studies used the suggested cut-off points. This study was performed to investigate the correlates of central obesity based on the optimal cut-off values in a representative population of women.

METHODS: In a cross-sectional study of 926 women aged 40-60 years, usual dietary intakes were assessed by means of a semi quantitative food frequency questionnaire. Demographic data and anthropometric indices were collected according to standard protocols. The suggested cut-off points for waist-to-hip ratio (WHR ≥ 0.84) were used to determine the correlates of visceral obesity. The components of dietary intakes were determined by factor analysis.

FINDING: Mean WHR was 0.82 ± 0.06. There was a higher tendency for central obesity among less active women (odds ratio: 2.11; 95% confidence interval: 1.40-2.53). Depression (1.36; 1.02-1.93), smoking (1.21; 1.02-1.56), and unemployment (1.41; 1.13-1.72) were correlated with central adiposity. Marriage (1.31; 1.10-1.82), menopause (1.22; 1.02-1.61), low vitamin C intake (2.31; 1.25-4.25), and low calcium intake (1.30; 1.07-3.78) were also associated with central fat accumulation. We found an inverse relationship between dairy consumption and central obesity (r = -0.2, P < 0.05).

CONCLUSION: Since adverse fat accumulation is associated with increasing age, unemployment, marriage, parity and poor lifestyle factors like inactivity, smoking, depression, low intake of vitamin C and calcium, and high fat consumption, lifestyle modifications should be encouraged to achieve a healthier body shape.
Comparison of Artificial Neural Networks with Logistic Regression for Detection of Obesity.

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Abstract

Obesity is a common problem in nutrition, both in the developed and developing countries. The aim of this study was to classify obesity by artificial neural networks and logistic regression. This cross-sectional study comprised of 414 healthy military personnel in southern Iran. All subjects completed questionnaires on their socio-economic status and their anthropometric measures were measured by a trained nurse. Classification of obesity was done by artificial neural networks and logistic regression. The mean age±SD of participants was 34.4 ± 7.5 years. A total of 187 (45.2%) were obese. In regard to logistic regression and neural networks the respective values were 80.2% and 81.2% when correctly classified, 80.2 and 79.7 for sensitivity and 81.9 and 83.7 for specificity; while the area under Receiver-Operating Characteristic (ROC) curve were 0.888 and 0.884 and the Kappa statistic were 0.600 and 0.629 for logistic regression and neural networks model respectively. We conclude that the neural networks and logistic regression both were good classifier for obesity detection but they were not significantly different in classification.

"Predictability of Body Mass Index for Diabetes: Affected by the Presence of Metabolic Syndrome?".

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Abstract

BACKGROUND: Metabolic syndrome (MetS) and body mass index (BMI, kg.m(-2)) are established independent risk factors in the development of
diabetes; we prospectively examined their relative contributions and joint relationship with incident diabetes in a Middle Eastern cohort.

METHOD: participants of the ongoing Tehran lipid and glucose study are followed on a triennial basis. Among non-diabetic participants aged ≥ 20 years at baseline (8,121) those with at least one follow-up examination (5,250) were included for the current study. Multivariate logistic regression models were used to estimate sex-specific adjusted odd ratios (ORs) and 95% confidence intervals (CIs) of baseline BMI-MetS categories (normal weight without MetS as reference group) for incident diabetes among 2186 men and 3064 women, aged ≥ 20 years, free of diabetes at baseline.

RESULT: During follow up (median 6.5 years); there were 369 incident diabetes (147 in men). In women without MetS, the multivariate adjusted ORs (95% CIs) for overweight (BMI 25-30 kg/m^2) and obese (BMI ≥30) participants were 2.3 (1.2-4.3) and 2.2 (1.0-4.7), respectively. The corresponding ORs for men without MetS were 1.6 (0.9-2.9) and 3.6 (1.5-8.4) respectively. As compared to the normal-weight/without MetS, normal-weight women and men with MetS, had a multivariate-adjusted ORs for incident diabetes of 8.8 (3.7-21.2) and 3.1 (1.3-7.0), respectively. The corresponding ORs for overweight and obese women with MetS reached to 7.7 (4.0-14.9) and 12.6 (6.9-23.2) and for men reached to 3.4(2.0-5.8) and 5.7(3.9-9.9), respectively.

CONCLUSION: This study highlights the importance of screening for MetS in normal weight individuals. Obesity increases diabetes risk in the absence of MetS, underscores the need for more stringent criteria to define healthy metabolic state among obese individuals. Weight reduction measures, thus, should be encouraged in conjunction with achieving metabolic targets not addressed by current definition of MetS, both in every day encounter and public health setting.
Childhood Overweight, Obesity, and the Metabolic Syndrome in Developing Countries.

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Abstract

The incidence of chronic disease is escalating much more rapidly in developing countries than in industrialized countries. A potential emerging public health issue may be the increasing incidence of childhood obesity in developing countries and the resulting socioeconomic and public health burden faced by these countries in the near future. In a systematic review carried out through an electronic search of the literature from 1950-2007, the author compared data from surveys on the prevalence of overweight, obesity, and the metabolic syndrome among children living in developing countries. The highest prevalence of childhood overweight was found in Eastern Europe and the Middle East, whereas India and Sri Lanka had the lowest prevalence. The few studies conducted in developing countries showed a considerably high prevalence of the metabolic syndrome among youth. These findings provide alarming data for health professionals and policy-makers about the extent of these problems in developing countries, many of which are still grappling with malnutrition and micronutrient deficiencies. Time trends in childhood obesity and its metabolic consequences, defined by uniform criteria, should be monitored in developing countries in order to obtain useful insights for primordial and primary prevention of the upcoming chronic disease epidemic in such communities.
Childhood Overweight, Obesity, and the Metabolic Syndrome in Developing Countries.

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Contribution of Serum Leptin to Metabolic Syndrome in Obese and Nonobese Subjects.


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Abstract

BACKGROUND AND AIMS: Little evidence exists regarding the association of leptin with metabolic syndrome (MetS) as defined by conventional criteria. Moreover, the contribution of obesity to this relationship is not well understood. This study aimed to evaluate the association between leptin concentrations with MetS in obese and nonobese subjects.

METHODS: Data from the Third National Surveillance of Risk Factors of Non-Communicable Diseases (SuRFNCD) in Iran was used. In a cross-sectional study of 3045 adults (48.2% men) aged 25-64 years, anthropometric indices, blood pressure, fasting plasma glucose, fasting insulin, lipid profile [triglycerides, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C) and triglycerides], and fasting leptin were measured. Homeostasis Model Assessment for Insulin Resistance (HOMA-IR) was also calculated.

RESULTS: Leptin concentrations were 2.6 fold higher in women compared with men. Subjects with MetS had significantly higher leptin concentrations. Leptin concentrations increased steadily with an increment in the number of MetS components (p <0.001). Leptin was significantly associated with MetS after adjustment for age, cigarette smoking, medication use, physical activity, HOMA-IR, and LDL-C. The significant association between leptin and MetS persisted after adjustment for body mass index (OR: 1.31, 95% CI: 1.09-1.58 in males and 1.17, 95% CI: 1.01-1.38 in females) and waist circumference (OR: 1.24 95% CI: 1.01-1.51 in men and 1.22, 95% CI: 1.04-1.43 in women). After dividing subjects into obese and nonobese, leptin concentrations were again significantly higher in subjects with MetS in both groups.
CONCLUSIONS: We demonstrated that leptin concentrations are significantly associated with International Diabetes Federation (IDF)-defined MetS, independent of overall and central obesity. Our findings point to an independent role for leptin in development of MetS.


Barriers to a Healthy Lifestyle among Obese Adolescents: A Qualitative Study from Iran.


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Abstract

PURPOSE: Existing data show a rising prevalence of overweight and obesity among Iranian adolescents. The current study investigates adolescents' perceptions regarding overweight/obesity and explores barriers to a healthy lifestyle among Iranian adolescents.

METHODS: A grounded theory approach was used for analyzing the participants' experiences, and their perceptions. To collect data, semi-structured focus group discussions and in-depth interviews were conducted with 51 adolescents (27 girls and 24 boys), aged 15-17 years, who were either overweight or obese. Qualitative content analysis of the data was conducted manually and differences in coding were resolved via discussion by four independent reviewers.

RESULTS: Two main barriers, personal and environmental emerged from data analysis. Positive perception of condition, priority of studying, lack of willingness, unsatisfactory results, low self-esteem, and perceived lack of control were the major personal barriers while lack of family and cultural support, inadequate education and scarcity of resources were the common environmental barriers to adolescents' healthy lifestyles.

CONCLUSIONS: Findings demonstrated the main personal and environmental barriers for a healthy lifestyle as perceived by adolescents. Understanding these barriers might contribute to existing literature by providing evidence from a different culture, and help to design effective preventive strategies, and implement appropriate interventions.
Mothers' Perception of Obesity in Schoolchildren: A Survey and the Impact of an Educational Intervention.

[Article in English, Portuguese]

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Abstract

OBJECTIVES: To investigate mothers' awareness of their children's weight problem, and to evaluate the impact of an educational intervention on improving mothers' recognition of obesity in their children.

METHODS: Twelve primary schools from Tehran, Iran, were randomly chosen. Obese children were selected, and 300 mothers participated in the study. A questionnaire was completed by the mothers, who were then randomly divided into two groups. One group received education on obesity, whereas the other group did not receive any intervention. After 2 months, the same questionnaire was completed by both groups. A multiple logistic regression was performed.

RESULTS: Mother's pre-existing knowledge on obesity, their education and occupation, as well as family income, had significant effects on mothers' accuracy in identifying obesity in their children. The educational intervention significantly improved mothers' ability to identify obesity in their children compared with those without any intervention (OR = 15.23; 95%CI 5.95-38.96).

CONCLUSIONS: In Iran, a large proportion of mothers do not have general knowledge on healthy body weight for children, thus failing to recognize that their children are obese. Educational interventions could reduce the rate of such mistake and subsequently alter parental care.
The Relationship Between Uric Acid and Metabolic Syndrome in Normal Glucose Tolerance and Normal Fasting Glucose Subjects.

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Abstract

Elevated serum uric acid (SUA) concentrations have been suggested to associate with metabolic syndrome (MetS) and its components. However, limited information is available regarding the relationship between SUA and MetS in subjects with normal glucose levels. A total of 501 subjects with normal fasting glucose and normal glucose tolerance were included in the study. Anthropometrical and biochemical parameters were examined using standard methods. The updated NECP criteria were used to define the MetS. Values of SUA above the sex-specific percentile 75 were used to define hyperuricemia. The prevalence of general and abdominal obesity, hypertension, hypertriglyceridemia, low-HDL, smokers, MetS and insulin resistance was significantly greater in the fourth SUA quartile. Multiple regression indicated that SUA was independently predicted by BMI, triglyceride and 2 h glucose in women, and BMI, triglyceride, 2 h glucose and cholesterol in men. Logistic regression analysis showed that the obesity, hypertriglyceridemia, MetS and insulin resistance were independent determinants of hyperuricemia in women. In men, hyperuricemia was associated with the obesity, hypertriglyceridemia and hypercholesterolemia. Factor analysis yielded three factors interpreted as weight/waist, blood pressure and lipid/glucose. Including SUA in the model did not affect total variance of factor analysis. Our results indicate that SUA is associated with MetS and its components even in subjects with normal glucose levels. General obesity was the major determinant of hyperuricemia in this population. The data from this study do not show the contribution of SUA as an additional component of the MetS.
Plasma Leptin, hTERT Gene Expression, and Anthropometric Measures in Obese and Non-Obese Women with Breast Cancer.

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Abstract

INTRODUCTION: Expression of human telomerase reverse transcriptase (hTERT) occurs in most cancers but its relation with obesity is unclear. This study explores the association between leptin levels and anthropometric indices with hTERT mRNA levels in breast cancer patients of different obesity grades.

MATERIALS AND METHODS: In this case-control study, 65 breast cancer patients participated. Expression of tissues hTERT mRNA was carried out by real-time reverse transcription polymerase chain reaction. Leptin concentrations were measured by enzyme-linked immunoassay.

RESULTS: Twelve patients (18.46%) were hTERT negative and 53(81.54%) were positive. hTERT mRNA levels were associated with BMI but not with waist circumference (WC) ($r = 0.219$, $P = 0.22$) and waist to hip ratio (WHR) ($r = 0.212$, $P = 0.237$). Leptin level and hTERT mRNA levels ($r = 0.484$, $P = 0.008$) were correlated as well as BMI and hTERT expression.

CONCLUSIONS: This study has shown a correlation between leptin levels and hTERT expression. These findings may clarify the role of leptin in breast carcinogenesis, and hence obesity could be responsible for increased incidences in breast cancer as well as its progression via enhanced production of leptin.
The Effect of Rhythmic Endurance Training on Abdominal Obesity Indices among Working Women in Iran University of Medical Sciences.

S. Nikpour, SH Vahidi, M. Hedayati, H. Haghani, H. AghaAlinejad, L. Borimnejad, and B. Soudmand

Abstract

INTRODUCTION: Improvement of abdominal obesity indices in middle-aged obese women by exercise training has significant importance. The aim of the study was to assess the effects of rhythmic Endurance training on abdominal obesity indices (waist to hip ratio, waist circumference, waist to high ratio, body fat %) in working women.

MATERIALS AND METHODS: This study was a randomized controlled clinical trial conducted on middle-aged women, aged >35 years, with abdominal obesity, regular menstrual cycle, without regular exercising, registered nurses & midwives, medicine, rehabilitation, para clinic, health sciences university and all administrative departments of the Iran university of Medical Sciences. Volunteer participants (n=31) were randomly separated into cases (n=17) and controls (n=14). The case group has Endurance training for 8 weeks. At the beginning and the end of the study, in addition to completion of questionnaires, anthropometrical data, VO2 Max determined by tape, calipers and a chronometer.

RESULTS: The results obtained showed that Endurance training had no significant effect on waist-to-hip ratio in the cases, but significant positive changes on waist circumference, waist-to-high ratio and body fat percentage were seen.

CONCLUSION: Decrease in waist to hip ratio was not significant after Endurance training, probably due to short duration of exercise (8 weeks) and also may be related to lack of diet control.
Serum Resistin Level in Obese Male Children.

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Abstract

OBJECTIVES: Resistin is a member of cysteine-rich molecules. Several studies have been carried out to determine the biological effect of resistin, nevertheless a significant number are animal studies. All the studies performed regarding the relationship between serum resistin and obesity were merely accomplished in women. To the best of our knowledge, there is no survey on the correlation of the serum resistin level and obesity in male children. The aim of the present study is to assess serum concentration of resistin in obese male children.

METHODS: Between June 2009 and January 2010, we enrolled 42 randomly selected obese male students (body mass index (BMI) >95th percentile, age 15.7 ± 1.5). Thirty-eight healthy age-matched male students with normal BMI (<85th percentile) were selected as a control group for the purpose of comparison of the serum resistin levels.

RESULTS: Serum resistin levels were measured in obese and control group. No significant difference was found between resistin levels of the 2 groups (obese: 9.21 ± 5.6 ng/mL versus normal: 9.83 ± 4.3 ng/mL; P = .582). There was no significant correlation between serum resistin level and BMI. Assessing the resistin level in male subjects was the distinct feature of our study. The outstanding finding of this research is that there is no correlation between serum resistin level and obesity.

CONCLUSION: We have demonstrated that there is no correlation between obesity in male children and resistin level. Consequently, metabolic abnormalities of insulin resistance seen in obese male patients are not related to resistin.
An Examination of Pre/Post-Adenotonsillectomy Obesity Indices in 3-10 Year Old Children in Mashad, Iran

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6 Ear, Nose, Throat, Head and Neck Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

INTRODUCTION: Adenotonsillectomy is one of the most frequent surgical operations on children, which may result in weight gain in a number of ways, for instance, by increasing IGF-1 or decreasing respiratory hyperactivity.

MATERIALS AND METHODS: This was an intervention study with a control group, conducted on fifty 3-10-year-old children who had undergone adenotonsillectomy and on fifty children as the control group. The intervention and control groups were identical in terms of age and sex. Height, weight, mid-arm muscle circumference, waist circumference, and percent body fat measures were performed on the intervention group before and six months after the surgery. The same measurements were also performed on the control group at zero time and six months later. Ultimately, the results were examined and compared.

RESULTS: The body mass index (BMI) and percent body fat in the intervention group showed a significant change after six months, with P values of 0.002 and 0.024 respectively. There were no significant correlations for other variables.
CONCLUSION: Based on the findings of this study, children who had undergone adenotonsillectomy for various indications showed a gradual postoperative increase in their BMI and percent body fat.


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Abstract

OBJECTIVE: Extra fat mass is usually accompanied by metabolic as well as clinical derangements, including systemic inflammation and high blood pressure. This study aimed to evaluate the associations among anthropometric indicators, blood levels of high-sensitivity C-reactive protein (hsCRP), lipid profile, blood glucose, insulin resistance, and blood pressure and determine the actual predictors of hsCRP and blood pressure in overweight/obese nondiabetic women in Tehran.

SUBJECTS AND METHODS: A total of 200 women with body mass index (BMI) of ≥25 kg/m² were enrolled in a cross-sectional study. Dietary intake and anthropometric as well as laboratory evaluations, including fasting plasma glucose (FPG), lipid profile, serum insulin, and hsCRP, were performed for all the subjects. Pearson (r) and Spearman (r(s)) correlation coefficients and multivariate linear regression analysis were used to establish a model to predict hsCRP and systolic blood pressure (SBP) variations.

RESULTS: Although serum hsCRP directly correlated with levels of FPG, triglycerides (TG), total cholesterol, BMI, and waist circumference (WC), its strongest association was found with percent of body fat mass (FM) (r(s)=0.326, p<0.001). Also, SBP directly correlated with FPG, TG, and FM, but it was more strongly correlated with BMI (r=0.343, p<0.001) and WC (r(s)=0.350, p<0.001). No association was found between
blood or anthropometric variables and dietary data. In different regression models, WC and FM were the predictors of hsCRP, but BMI was the significant predictor of SBP.

**CONCLUSION:** Adiposity in Iranian middle-aged women can affect both inflammatory biomarkers and SBP, thus predisposing for metabolic syndrome and further morbidities. We identified FM and WC as the predictors of serum hsCRP levels and BMI as the predictor of SBP in our population.


**Prevalence of Overweight and Obesity and Associated Risk Factors in Urban Primary-School Children in Babol, Islamic Republic of Iran.**

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**Abstract**

Childhood obesity is a major public health problem globally because of changes in lifestyles. We assessed the prevalence of overweight/obesity and associated factors in urban schoolchildren in Babol in a cross-sectional study of 1000 schoolchildren aged 7-12 years. Weight and height were measured and data on sports activities and leisure time physical activities were collected by questionnaire. Overweight/obesity were assessed by comparing body mass index (BMI) values to the BMI index for age and sex percentiles set by CDC, Atlanta. The prevalence of obesity and overweight was 5-8% and 12.3% respectively. The prevalence was significantly lower in girls compared with boys (age-adjusted OR = 0.69, 95% CI: 0.50-0.96) and higher among private-school educated children compared with public-school educated students (age adjusted OR = 2.17, 95% CI: 1.47-3.18). For each additional score of leisure time physical activity, the age-adjusted OR decreased significantly.
Serum Visfatin is Associated With Type 2 Diabetes Mellitus Independent of Insulin Resistance and Obesity.


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Abstract

OBJECTIVE: The aim of this study was to evaluate the association of serum visfatin, adiponectin and leptin with 2 diabetes mellitus (T2DM) in the context of the role of obesity or insulin resistance, which is not well understood.

METHODS: A total of 76 newly-diagnosed T2DM patients and 76 healthy control subjects, matched for age, body mass index (BMI) and sex ratio, were enrolled. Anthropometric parameters, glycemic and lipid profile, insulin resistance (measured by homeostasis model assessment of insulin resistance index [HOMA-IR]), leptin, adiponectin, and visfatin were assessed.

RESULTS: On the contrary to adiponectin, serum leptin and visfatin levels were higher in T2DM patients compared with controls (10.07 ± 4.5, 15.87 ± 16.4, and 5.49 ± 2.4 vs. 12.22 ± 4.9 μg/ml, 8.5 ± 7.8 ng/ml and 3.58 ± 2.2 ng/ml, respectively, P<0.01). Waist circumference and BMI were correlated with leptin and adiponectin but not with visfatin. Leptin, adiponectin and visfatin all were associated with T2DM following adjusting for obesity measures. After controlling for HOMA-IR, visfatin remained as an independent predictor of T2DM (odds ratio=1.32, P<0.05). In a multiple regression analysis to determine visfatin only triglycerides and fasting glucose remained in the model (P<0.05).

CONCLUSION: Elevation of visfatin in T2DM is independent of obesity and insulin resistance and is mainly determined by fasting glucose and triglycerides.
Dietary Diversity Score is related to Obesity and Abdominal Adiposity among Iranian Female Youth.

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Abstract

OBJECTIVE: To assess the relationship between diet and disease, consideration of whole-diet indices may be more informative than single-nutrient intake. The present study was conducted to report the relationship among dietary diversity score (DDS), obesity and abdominal adiposity among female university students.

DESIGN: Cross-sectional study.

SETTING: Isfahan, Iran.

SUBJECTS: A representative sample of 289 healthy female students aged 18-28 years was selected randomly from Isfahan University of Medical Sciences, Iran. Usual dietary intake was assessed using a validated semi-quantitative FFQ. DDS was calculated according to the scoring of the five food groups based on the US Department of Agriculture Food Guide Pyramid. This is a score of diet variety, and shows the diversity of the consumed diet. Participants were categorised on the basis of quartile cutoff points of DDS. Potential confounders such as age, total energy intake and physical activity were considered in all the analyses.

RESULTS: The means (sd) of BMI and waist circumference were 25.9 (sd 5.1) kg/m² and 85.5 (sd 14) cm, respectively. The probability of obesity decreased with quartiles of DDS (OR among quartiles: 1.00, 0.41, 0.31 and 0.21, $P = 0.03$; this was the same for abdominal adiposity: 1.00, 0.55, 0.36 and 0.21, $P = 0.02$). Those in the lowest quartile of the DDS had the highest risk for being overweight.

CONCLUSIONS: There were inverse associations among DDS, obesity and abdominal adiposity among the female students of Isfahan University. Further prospective investigations are needed to confirm this finding.
Relationship between Obesity and Asthma Symptoms among Children in Ahvaz, Iran: A Cross-sectional Study.

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Abstract

BACKGROUND: Obesity has been identified as a risk factor for higher prevalence of asthma and asthma-related symptoms in children. The objective of this study was to evaluate the relationship between the prevalence of asthma symptoms and obesity among school-age children in the city of Ahvaz, Iran.

METHODS: A total of 903 children, 7 to 11 years of age, were enrolled in this study through cluster sampling. The International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire was used to identify the children who were currently suffering from asthma. Height and weight were measured and body mass index (BMI) was calculated in kg/m². Overweight was defined as BMI greater than the age- and sex-specific 85th percentile, and obesity as BMI greater than the 95th percentile. We determined the relationship between obesity and asthma symptoms by chi-square tests.

RESULTS: The prevalence of wheeze ever, current wheezing, obesity, and overweight was 21.56%, 8.7%, 6.87%, and 9.5%, respectively. The current prevalence of wheezing among obese and overweight children was 68.75% and 37%, respectively, and there was a statistical association between obesity and the prevalence of current wheezing (p < 0.001), night cough (p < 0.001), and exercise-induced wheezing (p = 0.009), but obesity and overweight were not associated with eczema and allergic rhinoconjunctivitis, so it seems that the pathophysiology of asthma in obese and overweight children is not related to allergy.

CONCLUSION: There is a strong association between asthma symptoms and both overweight and obesity in both sexes among school-age children.
The Relationship between Obesity and Quality Of Life in School Children

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Abstract

BACKGROUND: To determine relationships between healths related quality of life and body mass index in children aged 9-11 years old.

METHODS: This cross sectional study was conducted on 240 children 9-11 year olds who were selected via multi stage cluster sampling design from primary schools in the Shahre Qods of the Tehran, Iran in 2007. Pediatric Quality of Life inventory was completed by child self report with measured height and weight used to determine body mass index percentile/weight classification. Obesity was defined as body mass index (BMI) ≥95th percentile for age and gender and one way analyses of variance (ANOVA) was used for data analyses.

RESULTS: Physical, social and school functioning was significantly lowered for obese when compared to normal weight children (P<.05). The impairment in QOL in the community-based sample of elementary school children was less marked than clinical sample of obese. Obese children maintain emotional health.

CONCLUSION: These results highlight the importance in considering dimensions of quality of life at further understanding obesity in children.
Lower Level of Physical Activity Predisposes Iranian Adolescent Girls to Obesity and Its Metabolic Consequences

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Abstract

Physical activity has been investigated among Asian populations as a factor that influences the clustering of cardiovascular risk factors. However, the magnitude of these associations has not been well studied among adolescents, particularly in Middle East countries. This study aimed to investigate associations between physical activity level, metabolic abnormalities and body composition among adolescent girls in Iran. Socio-demographic and physical activity information were assessed using selfadministered questionnaire in 538 adolescent girls aged 15-18 years from Mashhad high schools. Anthropometric, blood pressure and biochemical assessment were performed. Bioelectrical Impedance Analyses was applied to measure total and regional fat mass. The prevalence of overweight, obesity and metabolic syndrome was 14.6, 3.4 and 6.5% respectively. Subjects with lower levels of physical activity had higher anthropometric indices, fat mass, fat free mass and metabolic abnormalities especially systolic blood pressure. There were inverse correlations between physical activity with hypertension, dyslipidemia and body composition parameters. Physical activity was negatively associated
with weight (%R = 2.8 B = -0.168, p<0.0001), systolic blood pressure (%R = 3.9 B = -0.158, p<0.0001), triglyceride concentration (%R = 3.9 B = -0.106, p<0.018) and fat free mass (%R = 4.2 B = -0.205, p<0.0001) after adjusting for age and socioeconomic status of family. Subjects with metabolic syndrome had lower levels of physical activity (1.37 vs 1.39, p<0.05) and higher basal metabolic rate (1426 kcal vs 1360, p<0.0001). To avoid increasing risk of cardiovascular diseases, programs to promote greater physical activity should be implemented.


Secular Trends in the National Prevalence of Overweight and Obesity during 2007-2009 in 6-Year-Old Iranian Children

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Abstract

**BACKGROUND:** This study aimed to determine the secular trends in the national prevalence of overweight and obesity among 6-year-old Iranian children, and to compare the results in Northern, Central and Southern parts of the country.

**METHODS:** The data were collected as part of a routine and mandatory national screening program on children entering elementary schools in 2007, 2008 and 2009.

**RESULTS:** The study population comprised 2,600,065 children including 862,433 in 2007, 782,244 in 2008 and 955,388 in 2009. Of total children 12.8%, 13.5% and 10.9% were overweight in 2007, 2008 and 2009, respectively (P > 0.05).

The corresponding figures for obesity were 3.4%, 3.5% and 3.4%, respectively (P > 0.05). In all surveys, the prevalence of overweight was higher in Southern region than in the other two regions. P for trend was not significant for prevalence rates of overweight and obesity in any of the regions.

**CONCLUSIONS:** To the best of our knowledge, this study was the first of its kind in presenting the nationwide trend of overweight and obesity in young children living in a developing country. It showed a considerably high prevalence of overweight and obesity, but with a constant rate in three years. The higher prevalence of overweight in Southern region than in Central and Northern regions might be related to the lower socioeconomic position of this population. At a very young age, children’s lifestyle is more under control of parents. Primordial and primary prevention efforts against the overweight epidemic can be effective and shall be further strengthened.


**Metformin 2,500 Mg/Day in the Treatment of Obese Women with Polycystic Ovary Syndrome and its Effect on Weight, Hormones, and Lipid Profile.**

Aghahosseini M, Aleyaseen A, Safdarian L, Moddaress-Hashemi S, Mofid B, Kashani L.

Infertility Ward, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran.
Abstract

PURPOSE: The objective of this study was to assess the efficacy and safety of metformin at the dosage of 2,500 mg/day in the treatment of obese women with PCOS and also to evaluate its effect on weight, hormones, and lipid profile.

METHOD: This study was a 4-month open-label clinical trial. Sixty-nine PCOS patients aged 20-35 were recruited in the study. Testosterone, free testosterone, sex hormone-binding globulin (SHBG), fasting insulin, dehydroepiandrostenedione-sulphate (DHEAS), FBS, LDH, HDL, TG, total cholesterol, body mass index (BMI), and waist-to-hip ratio were measured before treatment and after 4 months of treatment.

RESULTS: Significant reductions in serum insulin, BMI, waist/hip ratio, and LDL were observed. In addition, a significant increase in SHBG was obtained. Over the 4 months of the trial, 12 patients faced nausea, six patients had bloating, five patients had diarrhea and two had headache; none of these symptoms were severe except for two cases that dropped out due to severe vomiting.

CONCLUSION: The results of this study show that 2,500 mg daily dose of metformin in obese patients with PCOS is effective in the reduction of BMI, waist hip/ratio, LDL, serum insulin and increases SHBG. In general this dose was relatively safe and well tolerated.

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Physical Activity is correlated with Serum Leptin Independent of Obesity: Results of the National Surveillance of Risk Factors of Noncommunicable Diseases in Iran (Surfnccd-2007).


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Abstract

Reports on the relationship between leptin and physical activity (PA) at the population level are scarce. The present study examined the relationship
between serum leptin concentrations and PA in a nationally representative sample of 3001 Iranian adults aged 25 to 64 years. Data of our third national surveillance of risk factors of noncommunicable diseases were analyzed. Using the Global Physical Activity Questionnaire, the duration and intensity of PA were evaluated in 3 domains: work, commuting, and recreation. Total PA was calculated using metabolic equivalents for PA intensity. Serum leptin was measured with an enzyme-linked immunosorbent assay. After adjustment for age, area of residence, smoking, body mass index, and waist circumference, total PA (r = -0.129, P = .038 in men and r = -0.226, P = .006 in women), the duration of vigorous-intensity activity (r = -0.120, P = .044 in men and r = -0.154, P = .019 in women), the duration of moderate-intensity activity (r = -0.114, P = .047 in men and r = -0.160, P = .018 in women), and time spent on sedentary behaviors (r = 0.194, P = .014 in men and r = -0.204, P = .007 in women) were significantly correlated with serum leptin. In both sexes, participants in higher categories of PA had significantly lower serum leptin levels. In conclusion, our results demonstrated an inverse association between leptin concentrations and PA independent of age, sex, smoking, and body adiposity. Our results point to the regulatory effects of PA on serum leptin.


**Effect of Zinc Supplementation on Markers of Insulin Resistance, Oxidative Stress, and Inflammation Among Prepubescent Children With Metabolic Syndrome.**


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**Abstract**

**OBJECTIVE:** This trial aimed to evaluate the effects of zinc sulfate in comparison with placebo on markers of insulin resistance, oxidative stress, and inflammation in a sample of obese prepubescent children.

**METHODS:** This triple-masked, randomized, placebo-controlled, crossover trial was conducted among 60 obese Iranian children in 2008. Participants were randomly assigned to two groups of equal number; one group received 20 mg of elemental zinc and the other group received placebo.
on a regular daily basis for 8 weeks. After a 4-week washout period, the groups were crossed over. In addition to anthropometric measures and blood pressure, fasting plasma glucose, lipid profile, insulin, apolipoproteins A-1 (ApoA-I) and B, high-sensitivity C-reactive protein (hs-CRP), leptin, oxidized low-density lipoprotein (ox-LDL), and malondialdehyde were determined at all four stages of the study.

RESULTS: Irrespective of the order of receiving zinc and placebo, in both groups, significant decrease was documented for Apo B/ApoA-I ratio, ox-LDL, leptin and malondialdehyde, total and LDL-cholesterol after receiving zinc without significant change after receiving placebo. In groups, hs-CRP and markers of insulin resistance decreased significantly after receiving zinc, but increased after receiving placebo. In both groups, the mean body mass index (BMI) Z-score remained high, after receiving zinc, the mean weight, BMI, BMI Z-score decreased significantly, whereas these values increased after receiving placebo.

CONCLUSION: These results are particularly important in light of the deleterious consequences of childhood obesity and early changes in markers of inflammatory and oxidative stress. We suggest exploring the direct clinical application of zinc supplementation in childhood obesity in future studies.


Metformin 2,500 Mg/Day in the Treatment of Obese Women with Polycystic Ovary Syndrome and its Effect on Weight, Hormones, and Lipid Profile.

Aghahosseini M, Aleyaseen A, Safdarian L, Moddaress-Hashemi S, Mofid B, Kashani L.

Infertility Ward, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

PURPOSE: The objective of this study was to assess the efficacy and safety of metformin at the dosage of 2,500 mg/day in the treatment of obese women with PCOS and also to evaluate its effect on weight, hormones, and lipid profile.

METHOD: This study was a 4-month open-label clinical trial. Sixty-nine PCOS patients aged 20-35 were recruited in the study. Testosterone,
testosterone, sex hormone-binding globulin (SHBG), fasting insulin, dehydroepiandrosterone-sulphate (DHEAS), FBS, LDH, HDL, TG, total cholesterol, body mass index (BMI), and waist-to-hip ratio were measured before treatment and after 4 months of treatment.

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**CONCLUSION:** The results of this study show that 2,500 mg daily dose of metformin in obese patients with PCOS is effective in the reduction of BMI, waist hip/ratio, LDL, serum insulin and increases SHBG. In general this dose was relatively safe and well tolerated.


**Gender Differences in Obesogenic Behaviour, Socioeconomic and Metabolic Factors in a Population-Based Sample of Iranians: The IHHP Study.**


Cardiology Department, Isfahan University of Medical Sciences, Isfahan, Iran.

**Abstract**

This study investigated the gender differences in association of some behavioural and socioeconomic factors with obesity indices in a population-based sample of 12,514 Iranian adults. The mean body mass index (BMI), waist circumference (WC), and the waist-to-hip ratio (WHR) were significantly higher in women than in men. Current and passive smoking had an inverse association with BMI among males whereas current smoking, transportation by a private car, and longer duration of watching television (TV) had a positive association with BMI among females. Current and passive smoking, cycling, and Global Dietary Index (GDI) had an inverse association with WC among males. Higher consumption of fruits and vegetables, current and passive smoking, duration of daily sleep, and GDI had an inverse association with WC among females. Using a private car for
transportation had a significant positive association with WHR among both males and females. Living in an urban area, being married, and having a higher education level increased the odds ratio of obesity among both the genders. Non-manual work also increased this risk among males whereas watching TV and current smoking increased this risk among females. Such gender differences should be considered for culturally-appropriate interventional strategies to be implemented at the population level for tackling obesity and associated cardiometabolic risk factors.


**Obesity Among Iranian Old Adult Women in Urban and Rural Areas in Guilan.**

Maddah M, Sharami SH.

**Abstract**

This study aimed to describe the prevalence of overweight and obesity in a population of women older than 50 years (50-83 years) in urban and rural areas in Guilan. A total number of 731 women aged 50 years and above were randomly selected from the urban area (n=420) and rural areas (n=291). Data on age, educational levels, employment status, parity, body weight and height were collected. Prevalence of overweight/obesity was higher among older women in the urban area than rural areas (82.1% vs. 66.1% p<0.0001). Overweight/obesity was not related to educational level in this population. In conclusion, these results showed that overweight and obesity is highly prevalent among older women in the urban and rural areas in Guilan. Obesity in old age is associated with a poor quality of life. Preventive measures may lessen the burden of disease and impaired quality of life associated with excess weight.


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Erratum in:

Abstract

AIMS: The prevalence of diabetes is increasing dramatically worldwide. Less is known about whether this trend is similar among obese and lean individuals.

METHODS: We analysed the data sets of three cross-sectional national surveys in adults aged 25-64 years: the National Health Survey-1999 (n=21,576), and the national Surveys of Risk Factors of Non-Communicable Diseases (SuRFNCD)-2005 (n=70,981) and SuRFNCD-2007 (n=4233). Diagnosed diabetes was ascertained, and height and weight were measured in all surveys. In SuRFNCD-2005 and SuRFNCD-2007, fasting plasma glucose was used to identify subjects with newly diagnosed diabetes (≥ 7 mmol/l) and impaired fasting glucose (5.6 - 6.9 mmol/l) among individuals not reporting diabetes.

RESULTS: The prevalence of diagnosed diabetes (after adjustment for age, sex and residential area) was 2.5, 4.0 and 4.6% in 1999, 2005 and 2007, respectively. The total prevalence of diabetes increased from 7.7% in 2005 to 8.7% in 2007, about half of which was attributed to newly diagnosed disease (in both surveys). The prevalence of diabetes increased in all categories of obesity, with the most evident trend being among subjects with body mass index <25 kg/m².

CONCLUSIONS: The prevalence of diabetes among Iranian adults has increased more than 1.8-fold in a period of only 8 years since 1999. This is
the first report from Iran, and urgent measures need to be taken in order to prevent the progression and worsening of the problem and emergence of its undesired consequences.


Obesity in Relation to Gender, Educational Levels and Living Area in Adult Population in Rasht, Northern Iran.

Maddah M, Solhpour A.

Abstract

This study aimed to investigate the prevalence of overweight/obesity by sex, educational levels and living area in adult population in Rasht City, northern Iran. A cross-sectional survey on 6223 women aged 38.6±5.9 years and 6028 men aged 43.1±6.4 years was conducted in 2006. A random sample of 35 schools was selected from different parts of Rasht. The parents were asked about their age, education, body weight and height and home address. The overall prevalence of overweight/obesity in men and women were 55.6% and 67.9% (p<0.0001), respectively. Prevalence of overweight/obesity was positively related to educational level in men. In women, a U shaped association between educational level and overweight/obesity was found. Overweight/obesity was more prevalent in women living in high income area than those who live in low income area (70.7% vs. 65.3% p<0.0001). Living area was not related to the prevalence of overweight/obesity in men. These data suggested that overweight/obesity is a public health concern in Rasht. Knowing the risk factors in subgroups is important for planners at country level because it helps to target interventions.
The Effect of Hypocaloric Diet Enriched in Legumes with or without L-Arginine and Selenium on Anthropometric Measures in Central Obese Women.


Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran.

Abstract

BACKGROUND: Identifying new ways to decrease adiposity will be very valuable for health. The aim of this study was to find out whether L-Arginine (Arg) and selenium alone or together can increase the effect of hypocaloric diet enriched in legumes (HDEL) on anthropometric measures in healthy obese women.

METHODS: This randomized, double-blind, placebo-controlled trial was undertaken in 84 healthy premenopausal women with central obesity. After 2 weeks of run-in on an isocaloric diet, participants were randomly considered to eat HDEL, Arg (5 g/d) and HDEL, selenium (200 µg/d) and HDEL or Arg, selenium and HDEL for 6 weeks. The following variables were assessed before intervention and 3 and 6 weeks after it: weight, waist circumference, hip circumference, waist to hip ratio (WHR), body mass index (BMI), and fasting nitrite/nitrate (NO(x)) concentrations. Other variables (arm, thigh, calf and breast circumferences, subscapular, triceps, biceps and suprailiac skinfold thicknesses, sum of skinfold thicknesses (SSF), body density (D) and estimated percent of body fat (EPF)) were assessed before and after intervention.

RESULTS: HDEL showed a significant effect in reduction of waist, hip, arm, thigh, calf and breast circumferences, triceps, biceps, subscapular and suprailiac skinfold thicknesses, WHR, SSF, D and EPF. HDEL + Arg + selenium significantly reduced suprailiac skinfold thicknesses; and there was no significant effect of HDEL, Arg, selenium and Arg plus selenium on weight, BMI and fasting NO(x).

CONCLUSIONS: The study indicates that HDEL + Arg + selenium reduce suprailiac skinfold thicknesses which represents the abdominal obesity reduction.
Underweight and Overweight among Children in Zahedan, South-East Iran.

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Abstract

OBJECTIVE: The present study examined the prevalence of underweight and overweight in a group of primary-school children in Zahedan, south-east Iran.

DESIGN: A cross-sectional study in a randomly selected population of schoolchildren.

SETTING: Primary-school children in Zahedan city.

SUBJECTS: A random sample of 1079 students (boys = 500 and girls = 579). Data on child's age, parental educational levels, body weight and height were collected.

RESULTS: The rate of overweight/obesity among boys and girls was 8.9 % and 10.3 %, respectively; and of underweight among boys and girls was 22.8 % and 19.9 %, respectively. Prevalence of overweight increased as the boys and girls approached adolescence and it was more prevalent among girls than boys. Prevalence of overweight was directly related to maternal education in this population.

CONCLUSIONS: High prevalence of underweight in young children as well as increase in the prevalence of overweight in girls and boys near adolescence are of concern. Early poor growth and subsequent rapid weight gain near to adolescent stage is related to adulthood obesity.
The Appropriate Waist Circumference Cut-Off for Iranian Population.

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Abstract

AIM: To estimate the prevalence of obesity particularly abdominal obesity among adults aged between 19 to 65 years in five major cities in Iran.

METHODS: In this cross-sectional study, the anthropometric measurements including weight, height, body mass index, waist and hip circumferences were performed in 5724 healthy adults, representative sample of Iranian population, in the urban areas of five great cities of Iran. The prevalence of obesity was calculated in each district. ROC curves were used to evaluate an optimal WC cutoff for predicting obesity.

RESULTS: Considering BMI categories, 38.5% were overweight and 19.7% were obese. Abdominal obesity by WC criteria was reported in 45.1% and 19.6% of women and men, respectively. The waist circumference cut-off points corresponding to BMI values of ≥ 30 kg/m2 were 99.5 cm for men and 94.25 cm for women.

CONCLUSION: The present study provides alarming evidences for health professionals and policy makers about the high prevalence of generalized and abdominal obesity in Iran.

The Effect of Male Body Mass Index on Sperm Parameters.

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Abstract

Overweight and obese men have been reported to have lower sperm quality. The aim of this study was to evaluate, whether body mass index (BMI) is related to changes in semen parameters. In a cross-sectional study,
sperm parameters were reviewed in 852 normal, healthy men, of reproductive age (25-50). BMI was divided into four groups: underweight, normal, overweight and obese. Sperm concentration of overweight and obese men were 63 and 62, respectively, which were lower than subjects with normal BMI (71). Total sperm count and sperm motility in overweight and obese men were significantly lower than men with normal BMI too. Sperm morphology in study groups was similar. The results revealed a significant inverse correlation between the BMI and the sperm parameters.

Arch Iran Med. 2010 Sep;13(5):384-90.

Association Study of the -866G/A UCP2 Gene Promoter Polymorphism with Type 2 Diabetes and Obesity in a Tehran Population: A Case Control Study.

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Abstract

BACKGROUND: A functional polymorphism in the uncoupling protein 2 (UCP2) gene promoter has been associated with obesity and type 2 diabetes (T2D) in some populations. The impact of UCP2 polymorphisms on diabetes and obesity is still under debate. Contradictory results have been reported in different populations world-wide. To clarify the contribution of the UCP2 gene -866 G/A polymorphism in the Iranian population, we studied its association with obesity and T2D.

METHODS: A total of 225 unrelated subjects were studied: 75 T2D patients without obesity, 75 obese patients without diabetes and 75 control subjects. The UCP2 -866 G/A polymorphism was determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP).

RESULTS: In the normal Iranian population, GG polymorphism was significantly associated with an increased HDL-C level (P=0.027). G/A polymorphism was not associated with obesity and T2D in our study population, but the odds ratio (OR) between GG and G/A polymorphism was 0.61 with a confidence interval (CI) range of 0.34 - 1.08 in obese patients. Subjects with AA genotypes in all of the studied groups showed a lower body mass index (BMI) than subjects with the GG genotype.
CONCLUSION: Although the data in our study population is not statistically significant, the A allele in the UCP2 gene promoter seems to be protective against obesity. This may suggest the possibility of UCP2 as a target molecule for studies on the etiology and treatment of obesity.


The Link Between BMI and Waist Circumference In Northern Iranian Adults.

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Abstract

BACKGROUND AND OBJECTIVES: Waist circumference and not body mass index explains a greater variance in obesity-related health risk. The present study assesses the link between BMI and WC in Iranian adults.

METHODS: In a population based cross-sectional study on 3600 adults, northern Iran, we investigated the link between WC and BMI using linear regression model.

RESULTS: The Pearson correlation coefficient between WC and BMI were $R = 0.61$ ($p < 0.001$) for male and $R = 0.75$ ($p < 0.001$) for female. The fitted models were: $WC(\text{cm}) = 44.45 +/\ 1.79\ BM, (R^2 = 0.37, p < 0.001)$ and $WC(\text{cm}) = 36.85 +/\ 1.89\ BM (R^2 = 0.57, p < 0.001)$ respectively. After adjusting of age, gender and marital status, the association of BMI on WC is persisted. The overall discrimination ability of BMI for abdominal obesity as estimated by AUC was $0.865$ (95% CI: $0.851-0.879$, $p < 0.001$).

CONCLUSION: The present linear link between BMI and WC measurements would help to estimate WC and its upper and lower confidence bond from height and weight.
Factors Related To Obesity Among Iranian Men: Results From The National Health Survey.

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Abstract

OBJECTIVE: To our knowledge, only a few Iranian studies have investigated factors associated with obesity among men. The aims of the present study were to explore the associations between sociodemographic factors, smoking and obesity in Iranian men and compare these associations between Iranian men and women.

DESIGN: We used data from the National Health Survey in Iran. A generalised estimating equations model included 11,697 men and 14,854 women aged 20-69 years (12,850 households). Body weight and height were objectively measured. BMI was calculated as kg/m2, and subjects were classified into obese (BMI $\geq$ 30 kg/m2) and non-obese (BMI < 30 kg/m2).

RESULTS: Among men, adjusted obesity OR were 0.62 (95 % CI 0.52, 0.74), 1.09 (95 % CI 0.90, 1.32), 1.003 (95 % CI 1.00, 1.007) and 0.57 (95 % CI 0.40, 0.81) for smokers, married, economic index and active workforce groups, respectively. Using low education as the reference group, the obesity OR for men were 1.06 (95 % CI 0.89, 1.26) and 0.75 (95 % CI 0.57, 0.99) for the moderate and high education groups, respectively. Using rural as the reference group, the obesity OR was 1.87 (95 % CI 1.56, 2.26) for urban men.

CONCLUSIONS: Our findings may point towards a better understanding of the social and cultural mechanisms of obesity in Iranian men. The above sociodemographic factors are large contributors to obesity and provide the greatest opportunity for actions and interventions designed for prevention and treatment.
Secular Trends of Obesity in Iran between 1999 and 2007: National Surveys of Risk Factors of Non-Communicable Diseases

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³Departments of Preventive Medicine, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.
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Abstract

BACKGROUND: Obesity is a rapidly progressing pandemic and a central feature of the metabolic syndrome. There is no solid evidence on the recent trends of obesity in Iran. In this study we present the secular trends of overweight and obesity among Iranian adults (25–64 years old) within an 8-year period (1999–2007).

METHODS: The analyses were performed on the datasets of three cross-sectional national surveys: The National Health Survey–1999 (n = 21,576), National Surveys of Risk Factors for Non-Communicable Diseases (SuRFNCD)–2005 (n = 70,945), and SuRFNCD–2007 (n = 4,186).

RESULTS: The overall prevalence of obesity increased from 13.6% in 1999 to 19.6% in 2005 and 22.3% in 2007 [odds ratio (OR) = 1.08 per year; P < 0.001]. For overweight subjects, the rates were, respectively, 32.2%, 35.8% and 36.3% (OR = 1.02 per year; P < 0.001). During these years, the mean body mass index (BMI) (kg/m²) increased from 25.03 in 1999, to 26.14 in 2005, and 26.47 and 2007 (P < 0.001). The increase in prevalence of obesity was seen in both males (OR = 1.09 per year; P < 0.001) and females (OR = 1.07 per year; P < 0.001) and both urban (OR = 1.07 per year; P < 0.001) and rural (OR = 1.10 per year; P < 0.001) residents.
CONCLUSIONS: In conclusion, the present study highlighted the rapid growth of obesity during recent years in Iran. Our findings indicate the crucial necessity of primary prevention programs to counteract this undesired condition.

Diseases of the Esophagus, September 2010:23(7):597–602

Associations of Risk Factors Obesity and Occupational Airborne Exposures with CDKN2A/P16 Aberrant DNA Methylation in Esophageal Cancer Patients

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SUMMARY

It is known that obesity and occupational airborne exposure such as dust are among risk factors of esophageal cancer development, in particular squamous cell carcinoma (SCC) of esophagus. Here, we tested whether these factors could also affect aberrant DNA methylation. DNAs from 44 fresh tumor tissues and 19 non-tumor adjacent normal tissues, obtained from 44 patients affected by SCC of esophagus (SCCE), were studied for methylation at the CDKN2A/p16 gene promoter by methylation-specific polymerase chain reaction assay. Statistical methods were used to assess association of promoter methylation with biopathological, clinical, and personal information data, including obesity and airborne exposures. Methylation at the CDKN2A/p16 gene promoter was detected in 12 out of 44 tumor samples. None of the non-tumor tissues exhibited the aberrant methylation. Our results confirmed previously described significant association with low tumor stage ($P=0.002$); in addition, we found that obesity ($P=0.001$) and occupational exposure ($P=0.008$) were both significantly associated with CDKN2A/p16 promoter methylation. This study provides evidence that obesity and occupational exposure increase the risk of developing esophageal cancer through an enhancement of CDKN2A/p16 promoter methylation.
Performance of Different Definitions of Metabolic Syndrome for Children and Adolescents in a 6-Year Follow-Up: Tehran Lipid and Glucose Study (Tlgs).


Obesity Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

AIM: To assess the utility of different definitions of the metabolic syndrome (MetS) in predicting adulthood MetS among Tehranian adolescents in a 6-year follow-up.

METHODS: A random sample of 2645 adolescents was selected from the Tehran Lipid and Glucose Study (TLGS) in 1999-2001; MetS was assessed based on five definitions for adolescents. In 2005-2007, 572 age 18 years and over were assessed for MetS by NCEP ATP III adults' criteria. Sensitivity, specificity, and area under receiver operating curve for attaining adulthood MetS, obesity and overweight were calculated for each MetS definitions.

RESULTS: The prevalence of adolescence MetS varied from 0.7+/-0.2 to 15.1+/-0.8% by different definitions in adolescents and 4.0+/-0.9% among adults. The highest area under curve for prediction of adulthood MetS pertained to the de Ferranti's definition (0.723), and for prediction of adulthood obesity and overweight were 0.723 and 0.606, respectively, for this definition. Kappa for agreement between these definitions was fair (0.195).

CONCLUSIONS: Definition of MetS for adolescents showed a fair agreement with adult definition. Yet, a diagnosis of MetS in adolescents seems to be a good predictor of developing adulthood MetS within a short time.
Arch Iran Med. 2010 Sep;13(5):384-90.

Association Study of The -866G/A UCP2 Gene Promoter Polymorphism with Type 2 Diabetes and Obesity in a Tehran Population: A Case Control Study.


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Abstract

BACKGROUND: A functional polymorphism in the uncoupling protein 2 (UCP2) gene promoter has been associated with obesity and type 2 diabetes (T2D) in some populations. The impact of UCP2 polymorphisms on diabetes and obesity is still under debate. Contradictory results have been reported in different populations world-wide. To clarify the contribution of the UCP2 gene -866 G/A polymorphism in the Iranian population, we studied its association with obesity and T2D.

METHODS: A total of 225 unrelated subjects were studied: 75 T2D patients without obesity, 75 obese patients without diabetes and 75 control subjects. The UCP2 -866 G/A polymorphism was determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP).

RESULTS: In the normal Iranian population, GG polymorphism was significantly associated with an increased HDL-C level (P=0.027). G/A polymorphism was not associated with obesity and T2D in our study population, but the odds ratio (OR) between GG and G/A polymorphism was 0.61 with a confidence interval (CI) range of 0.34 - 1.08 in obese patients. Subjects with AA genotypes in all of the studied groups showed a lower body mass index (BMI) than subjects with the GG genotype.

CONCLUSION: Although the data in our study population is not statistically significant, the A allele in the UCP2 gene promoter seems to be protective against obesity. This may suggest the possibility of UCP2 as a target molecule for studies on the etiology and treatment of obesity.
Body Mass Index and Waist Circumference are Predictor Biomarkers of Breast Cancer Risk in Iranian Women.

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Abstract

Both obesity and breast cancer incidence increased dramatically during two recent decades in a rapidly changing society in northern Iran. In this study, we examined the ability of body mass index (BMI) and waist circumference (WC) as predictor biomarkers of breast cancer risk in Iranian women. In a case-control study of 100 new cases of histological confirmed breast cancer and 200 age-matched controls, in Babol, we measured weight, height, waist and hip circumference at time of diagnosis with standard methods. The data of demographic, characteristics, reproductive and lifestyle factors were collected by interview. We used both regression and receiver operator characteristics (ROC) analysis to estimate the predictive ability of BMI and WC for breast cancer as estimated by area under the curve (AUC). The results showed a significant difference in the mean of weight, BMI and WC between patients and controls in pre- and postmenopausal women (P < 0.001). While after adjusting for BMI, no longer an association between WC and breast cancer was found. The overall accuracy of observed BMI and WC were 0.79 (95% CI: 0.74-0.84) and 0.68 (95% CI: 0.61-0.74), respectively. The accuracy of BMI and WC were 0.82 (95% CI: 0.76-0.89), 0.75 (0.67-0.83) for premenopausal and 0.77 (0.68-0.85), 0.60 (0.50-0.71) for postmenopausal women, respectively. BMI and WC are predictor biomarkers of breast cancer risk in both pre- and postmenopausal Iranian women while after adjusting for BMI, no longer an association between WC and breast cancer was observed. These findings imply to perform breast cancer screening program in women with a higher BMI and WC.
The Influence of Calcium Supplement on Body Composition, Weight Loss and Insulin Resistance in Obese Adults Receiving Low Calorie Diet.


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Abstract

BACKGROUND: Obesity and diabetes are the most important problems of public health. Evidence from molecular animal research and epidemiologic investigations indicate that calcium intake may have an influence on body composition, weight and insulin resistance. The objective of this study was to determine the effects of calcium supplementation on body composition, weight, insulin resistance and blood pressure in the face of calorie restriction in obese adults.

METHODS: A double blind randomized placebo-controlled trial on 40 adults with Body Mass Index > 25kg/m(2) was conducted. Subjects were maintained for 24 weeks on a balanced deficit diet (-500 kcal/d deficit) and randomly assigned into two groups with 1000 mg ca/d as calcium carbonate or placebo.

RESULTS: There were no significant differences in variables at the 12th and 24th week between the two groups. The lean mass showed no significant increase in the calcium group at the 12th week compared to baseline and in placebo group at the 24th week compared to the 12th week. The insulin concentration showed a significant decrease in the calcium group at the 12th week compared to the baseline (p < 0.05). The diastolic blood pressure had a significant decrease at the 24th week compared to the 12th week in both groups (p = 0.013-0.009).

CONCLUSIONS: Results from this study suggest that 24 weeks of supplementation with 1000 mg ca/d did not have any effect on weight, body composition, insulin resistance and blood pressure beyond what can be achieved in an energy restricted diet in obese adults.


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Abstract

This study aimed to assess the effects of a 2-month lifestyle modification trial on cardio-metabolic abnormalities and C-reactive protein (CRP) among obese adolescents with metabolic syndrome [phenotypically obese metabolically abnormal (POMA)] and obese adolescents without a cardio-metabolic disorder [phenotypically obese metabolically normal (POMN)], as well as in normal-weight adolescents with at least one cardio-metabolic disorder [phenotypically normal metabolically obese (PNMO)]. The study comprised 360 adolescents assigned in three groups of equal number of POMN, POMA and PNMO. They were enrolled in a trial consisting of aerobic activity classes, diet and behaviour modification, and were recalled after 6 months. Overall, 94.7% of participants completed the 2-month trial, and 87.3% of them returned after 6 months. The mean CRP was not significantly different between the POMA and PNMO groups, but was higher than in the POMN group. After the trial, body mass index (BMI) and waist circumference (WC) decreased in obese participants, and the mean body fat mass decreased in all groups. At 2 months, the mean total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG) and CRP decreased in the POMA and PNMO groups. After 2 and 6 months, the decrease in mean TC, LDL-C, TG, CRP and systolic blood pressure was greater in the POMA than in the POMN group. The magnitude of decrease in CRP correlated with that of BMI, WC, fat mass, TG, TC and LDL-C. Lifestyle modification programmes for primordial/primary prevention of chronic diseases would be beneficial at the population level and should not be limited to obese children.
Prevalence of Impaired Glucose Tolerance and Insulin Resistance among Obese Children and Adolescents.

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Abstract

PURPOSE: Obesity is one of the most important nutritional disorders in the world which has an obvious relationship with the incidence of metabolic diseases. Obesity prevalence has increased among children and adolescents during recent decades, leading to a rise in Type 2 diabetes mellitus (DM II) prevalence in these two age brackets. Hence, the aim of this study was to assess impaired glucose tolerance and insulin resistance, and gather metabolic findings in obese children and adolescents.

METHODS AND MATERIALS: We studied 110 obese children and adolescents (body mass index > 95th percentile for age and gender) 4-18 years of age referred to the endocrine clinic of the Children's Hospital at Tabriz University in a descriptive cross-sectional study. Fasting glucose, insulin, and lipid profile in all subjects were determined. Oral glucose tolerance test after eating 75 g/kg glucose was performed. Homeostatic model assessment was used to estimate insulin resistance.

RESULTS: Impaired glucose tolerance and insulin resistance prevalence in 68 obese adolescents was 14.7% and 31.8%, respectively. Impaired glucose tolerance and insulin resistance was not seen in 23.8% of 42 obese children. No case of DM II was seen. There was a significant statistical difference in glucose (P = 0.003) and insulin (P < 0.001) level at minute 120 in individuals with impaired glucose tolerance compared to obese children and adolescents without impaired glucose tolerance. Rate of insulin resistance in patients with impaired glucose tolerance was greater and had a significant statistical difference (P = 0.03).

CONCLUSION: Obesity has a close relationship with increased risk of impaired glucose tolerance and insulin resistance in children and adolescents. Oral glucose tolerance test, unlike fasting glucose test, is a benefit test to predict impaired glucose tolerance. With prompt identification and treatment of obese children with impaired glucose tolerance, we can prevent it from progression towards DM II.
Association of Educational Level with Risk of Obesity and Abdominal Obesity in Iranian Adults.

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Abstract

BACKGROUND: The impact of education on obesity may vary according to population and geographic region. The objective of the present study was to determine the association between education and obesity.

METHODS: A cross-sectional study of 3600 subjects aged 20-70 years was conducted by using a cluster sampling technique in an adult population residing in the north of Iran, in 2004. Weight, height, waist and hip circumference were measured and data concerning education level, demographic characteristics and physical activities were collected by interview. Logistic regression analysis was used to estimate the association between education and general obesity (body mass index \( \geq \)30) as well as abdominal obesity (waist circumference \( >88 \) cm in women and 102 cm in men).

RESULTS: The adjusted odds ratio (OR) for general obesity at education level of high school and college compared with illiterate and primary level was 0.55 [95% confidence interval (CI): 0.43-0.71]. A greater negative association was observed for education at university level (OR = 0.32, 95% CI: 0.22-0.47) irrespective to sex. However, with regard to abdominal obesity, after controlling for confounding factors, the adjusted OR for education at university level remained significant only in women but not in men.

CONCLUSION: The findings of this study indicate that education level is inversely associated with general obesity in both sexes but with abdominal obesity only in women.
Pictogram Use Was Validated for Estimating Individual's Body Mass Index.


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Abstract

OBJECTIVE: We designed this study to assess the validity and reliability of pictogram for estimating body mass index (BMI).

STUDY DESIGN AND SETTING: Participants of Golestan cohort study during 2000-2004 were recruited in this study. Demographic and anthropometric information (weight, height, and BMI) were collected on all participants. A set of drawings (pictogram) ranging from very lean to obese were used to assess the individual's perception of their body size. Sensitivity and specificity of each pictogram score were calculated and cutoff points were determined using sensitivity/specificity plots. We used receiver operating characteristic curves to assess the validity of pictogram scores.

RESULTS: Of the 15,437 subjects enrolled in the study, 6,574 (42.6%) were males and 8,863 (57.4%) were females. Their mean+/-standard deviation age was 52.58+/-9.28 years. Pictogram scores 1, 2, and 3 were assigned to normal participants; pictogram score 4 was selected by overweight subjects, and finally, pictogram scores equal or higher than 5 were selected by obese ones (area under curve: 0.83-0.85).

CONCLUSION: According to our results, pictogram is a valid measure for discriminating obese or overweight from normal individuals, and for distinguishing obese from overweight or normal individuals. So it can be concluded that body image pictogram is valid for discriminating normal and obese individuals.


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Abstract

BACKGROUND: Obesity is a rapidly progressing pandemic and a central feature of the metabolic syndrome. There is no solid evidence on the recent trends of obesity in Iran. In this study we present the secular trends of overweight and obesity among Iranian adults (25-64 years old) within an 8-year period (1999-2007).

METHODS: The analyses were performed on the datasets of three cross-sectional national surveys: The National Health Survey-1999 (n = 21,576), National Surveys of Risk Factors for Non-Communicable Diseases (SuRFNCD)-2005 (n = 70,945), and SuRFNCD-2007 (n = 4,186).

RESULTS: The overall prevalence of obesity increased from 13.6% in 1999 to 19.6% in 2007 [odds ratio (OR) = 1.08 per year; P < 0.001]. For overweight subjects, the rates were, respectively, 32.2%, 35.8% and 36.3% (OR = 1.02 per year; P < 0.001). During these years, the mean body mass index (BMI) (kg/m(2)) increased from 25.03 in 1999, to 26.14 in 2005, and 26.47 and 2007 (P < 0.001). The increase in prevalence of obesity was seen in both males (OR = 1.09 per year; P < 0.001) and females (OR = 1.07 per year; P < 0.001) and both urban (OR = 1.07 per year; P < 0.001) and rural (OR = 1.10 per year; P < 0.001) residents.

CONCLUSIONS: In conclusion, the present study highlighted the rapid growth of obesity during recent years in Iran. Our findings indicate the crucial necessity of primary prevention programs to counteract this undesired condition.
Prevalence of Obesity and Overweight among Adults in Iran.

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Abstract

The prevalence of overweight and obesity in most developed and developing countries have been increasing markedly over the past two decades. This increase includes all ages, genders, racial and ethnic groups, income, and educational levels. This study examined the prevalence of overweight and obesity among adults aged 25-55 years in Shiraz (Southern Iran). The data are based on a random multistage sample survey of 2282 married adults (1141 pairs) living in Shiraz, whose heights and weights were measured in the 2002-2003 academic year. The prevalence of overweight or obesity (body mass index > or = 25) was 49.7% in men and 63.9% in women. The prevalence of obesity (body mass index > or = 30) was 10.5% and 22.5% in men and women, respectively, which shows an increased secular change of 5.8% in men and 17.4% in women during a 14-year period. Overweight and obesity are common in Iran. Obesity and overweight were significantly more common among women than among men (P-value = 0.000). There is a need to establish programmes for prevention and treatment of obesity especially Iranian’s women.
Waist Circumference Has Heterogeneous Impact on Development of Diabetes in Different Populations: Longitudinal Comparative Study between Australia and Iran.


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Abstract

AIMS: Comparing waist circumference (WC) role in diabetes risk prediction and diagnosis of metabolic syndrome (MS) in different populations.

METHODS: Population-based samples from Australia (n=9026) and Iran (n=8259) were studied in 2000 and followed for approximately 4 years. Follow-up attendance was approximately 58% and mean age was 51 vs. 47. Pearson correlations calculated between WC and other MS components. ROC for the role of WC in the prediction of incident diabetes was used.

RESULTS: Prevalences of MS (48% vs. 28%), an increased WC (58.5% vs. 54.5%), low HDL-C (35% vs. 11.2%), high triglyceride (52.2% vs. 29.6%) were significantly higher in Iran. Fasting glucose ≥5.6mmol/L was higher in Australia (26% vs. 23%). Hypertension was no different (approximately 38%). Pearson correlations between WC and other MS components were stronger in Australians: FPG (0.32 vs. 0.2), HDL (0.47 vs. 0.16), TG (0.38 vs. 0.30) and SBP (0.38 vs. 0.36). Among women, area under ROC curve for WC as a predictor for diabetes was significantly higher for Australians (0.76 vs. 0.68, p<0.001) with no difference among men (0.69 vs. 0.71, p=0.4).

CONCLUSION: WC was more strongly related to other components of MS in Australia. Association between WC and MS or incident diabetes varies between ethnicities.
Association of Cell Blood Counts and Cardiometabolic Risk Factors among Young Obese Children.


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Abstract

OBJECTIVE: To determine the association of cell blood count with obesity and cardiometabolic risk factors in children.

METHODS: This cross-sectional study was conducted from 1st November 2007 to 1st October 2008 in the Obesity and Metabolic Syndrome Research Clinic of the Preventive Pediatric Cardiology Department, Isfahan Cardiovascular Research Center, Isfahan, Iran. It comprised 326 (172 girls and 154 boys) obese children aged 6-12 years.

RESULTS: The mean age of participants was 8.8 +/− 2.7 years. A significant increasing trend in the mean body mass index (BMI), waist circumference (WC), triglycerides (TG), total- and low density lipoprotein (LDL)- cholesterol were documented across the quartiles of the white blood cell (WBC) count, and for waist-to-hip ratio and total cholesterol across platelet quartiles. A similar increasing trend was documented for BMI, waist and hip circumference, diastolic blood pressure, LDL-C, and for TG from the second to the fourth quartile of the red blood cells. By the increase in the number of components of metabolic syndrome, the mean BMI, WBC, and TG increased significantly. The highest correlation was documented between WBC count and TG. The WBC count increased the risk of increased BMI (odds ratio [OR]=1.45, confidence interval [CI] 95%; 1.11-1.65, p=0.001), increased WC (OR; 1.47, CI 95%; 1.15-1.74, p=0.001), and high TG (CI 95%; 1.241-1.44, p=0.005 ).

CONCLUSION: We found significant associations between CBC components and cardiometabolic risk factors in young obese children. These findings are confirmatory evidence of the pro-inflammatory state of obese individuals, even in young children.
The Prevalence of Impaired Fasting Glucose and Type 2 Diabetes in a Population-Based Sample of Overweight/Obese Children in the Middle East.

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Abstract

BACKGROUND: Type 2 diabetes mellitus (T2DM) and impaired fasting glucose (IFG) are increasing in young population who are facing an escalating trend of overweight. The aim of this study was to determine the prevalence of IFG and T2DM for the first time in a population-based sample of Iranian obese children.

METHODS: This cross-sectional, population-based study was conducted in Isfahan, the second large city of Iran. Overall, 672 overweight and obese school students, selected from 7554 students, aged 6-19 yr, were screened for IFG and T2DM. Fasting plasma glucose (FPG) and lipid profile were measured in all participants. Oral glucose tolerance test and insulin level were measured in those children with IFG. Insulin resistance was defined as homeostasis model assessment for insulin resistance (HOMA-IR) > 3.10.

RESULTS: Among the 7554 students (48.7% boys and 51.3% girls) studied, 9.34% (n = 706) were overweight and 5.3% (n = 403) were obese. A number of 672 overweight and obese students including 302 (44.9%) boys and 370 (55.1%) girls, with a mean age of 12.8 +/- 3.10 yr underwent biochemical work up. Overall, the prevalence of IFG was 4.61% (n = 31), the corresponding figure was 2% (n = 4) in the 6-10 yr age group, and 5% (n = 27) in those aged 10.1-19 yr. The prevalence of T2DM was 0.1% (n = 1; age, 18.00 yr). Impaired glucose tolerance and insulin resistance were detected in three and six participants with IFG, who consisted 0.4 and 0.8% of total obese and overweight students, respectively.

CONCLUSIONS: Although the prevalence of T2DM is low in Iranian obese children, IFG is not uncommon. Preventive measures and screening of FPG should be considered for these children.
Obesity and Cardiometabolic Risk Factors In a Representative Population of Iranian Adolescents and Adults in Comparison to a Western Population: The Isfahan Healthy Heart Programme.


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Abstract

OBJECTIVE: The aim of the present study was to develop reference data for the Iranian population for anthropometric values and cardiometabolic data in comparison with those in Americans, as representative of a Western population.

DESIGN: The present cross-sectional survey, conducted as part of the baseline survey of a community-based interventional study (the Isfahan Healthy Heart Programme), used a two-stage clustering design and was conducted in 12 600 randomly selected adults (> or =19 years of age) and 2000 adolescents (aged 11-18 years) living in three cities in the central part of Iran. For comparison with a Western population, comparable data for Americans were derived from the data sets of the Second and Third National Health and Nutrition Examination Surveys (NHANES II and NHANES III).

RESULTS: Iranian women had significantly higher mean BMI, waist circumference (WC), hip circumference (HC) and waist:hip ratio (WHR) than Iranian men and American women; but the mean BMI of Iranian men was lower than that of American men. The mean serum TAG level of Iranian men was significantly higher than that of Iranian women, whereas the mean serum total cholesterol (TC), LDL cholesterol (LDL-C) and HDL cholesterol (HDL-C) levels were significantly higher in Iranian women than in men. The Iranian population had lower mean TC, LDL-C and TAG levels than the Americans, but such difference was not documented for HDL-C. Iranian adolescents had significantly lower mean BMI and higher mean TAG than did American adolescents.
CONCLUSIONS: Our findings provide serious evidence for health professionals and policy makers about the very high prevalence of generalized and abdominal obesity in Iran. Controlling this emerging health problem, notably in women, should become a national priority in Iran and necessitates comprehensive public health programs.


Decreased Adiponectin Levels in Polycystic Ovary Syndrome, Independent of Body Mass Index.

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Abstract

BACKGROUND: Insulin resistance has been shown to have an association with polycystic ovary syndrome (PCOS). This study was designed to evaluate the potential role of adiponectin, which is linked with insulin resistance, in the etiology of PCOS and its relationship to obesity.

METHODS: This case-control study consisted of 103 newly diagnosed PCOS cases and 73 female controls seen at a referral university hospital in Zanjan, Iran. Serum adiponectin, insulin, plasma fasting glucose, and lipid levels were measured. The homeostasis model assessment index was used to determine the level of insulin resistance. Women were classified as follows: Group I (normal nonlean women); group II (normal lean women); group III (nonlean women with PCOS); and group IV (lean women with PCOS)

RESULTS: Adiponectin levels were decreased in women with PCOS (8.4 +/- 2.7 ng/mL vs. 13.6 +/- 5 ng/mL in the control group, P < 0.001). There was no significant difference between the adiponectin concentrations of women in group III and that in group IV (8.1 +/- 2.8 ng/mL vs. 9.2 +/- 2.6 ng/mL, respectively, P = 0.1). Adiponectin levels were significantly lower in group I compared with group II. A weak but significant negative correlation was found between adiponectin and insulin levels in all the subjects. Multiple regression analyses showed that the presence of PCOS was the only significant determinant of serum adiponectin levels.

CONCLUSIONS: Adiponectin levels were reduced in all the women with PCOS. There seemed to be an interaction between adiponectin and PCOS pathogenesis that was independent of body mass index.
Factors Associated with Overweight in Children in Rasht, Iran: Gender, Maternal Education, Skipping Breakfast and Parental Obesity.

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Abstract

OBJECTIVE: The present study aimed to investigate the determinants of overweight and obesity among 6- to 11-year-old schoolchildren in Rasht, Iran.

DESIGN: Cross-sectional survey. Data on age, weekly frequency of skipping breakfast, physical activity and hours of television viewing were collected. Information on birth weight, parental age, parental educational levels, parental weight and height, and mother’s employment status were gathered through self-administrated questionnaires given to the parents.

SETTING: Elementary schools in Rasht.

SUBJECTS: A total of 6635 children (3551 boys and 3084 girls) attending elementary schools in Rasht were studied.

RESULTS: The overall prevalence of overweight was 11.5 % and 15.0 % for boys and girls, respectively; while the overall prevalence of obesity was 5.0 % and 5.9 %, respectively. Children with more educated mothers had a higher prevalence of overweight than children with less educated mothers. Logistic regression analysis showed that children with overweight/obese parents, children with more educated mothers and children who often skipped breakfast were more prone to overweight and obesity.

CONCLUSIONS: These data suggest that overweight and obesity is a public health concern in this age group in Rasht. The observed sex and social differences in the prevalence of overweight and obesity call for policy makers' attention.
Obesity among Iranian Adolescent Girls: Location of Residence and Parental Obesity.

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Abstract

This cross-sectional study was conducted to investigate the prevalence and predictors of overweight and obesity by location of residence among randomly-selected 2,577 urban school girls aged 12-17 years in Rasht, Iran. Data on age, frequency of skipping breakfast per week, physical activity, hours of television viewing, self-perception about body condition, and home address were collected. Birthweight of the girls, educational levels of parents, weights and heights of parents, and employment status of mothers were asked to the parents using a self-administrated questionnaire. The overall prevalence of overweight and obesity in this population was 18.6% and 5.9% respectively. Overweight or obesity was more common among girls from low-income areas compared to high-income areas (21.6% vs 17.1%, p<0.001). Maternal education was positively related to overweight/obesity of the girls. Results of logistic regression analysis showed that risk of overweight/obesity was higher in girls whose either parent was overweight or obese. Furthermore, living in low-income areas and skipping breakfast were independently related to overweight/obesity. These data suggest that overweight and obesity are a public-health concern among school girls, especially in low-income areas in Rasht. Knowing risk factors in population subgroups is important for planners in the country because it helps target interventions.
Leptin and Immunology of Obesity
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Abstract:
Today, obesity is a major health problem in both developing and developed countries and investigations discovering its mechanisms are ongoing. Obesity is considered as a state of low-grade inflammation and it is believed that inflammation could be regarded as cause or consequence of obesity. Among all studied factors involved in obesity, leptin has been subject of extensive research. Leptin is a product of the ob gene and is regulated dynamically in the body. Leptin, which is mostly produced by adipocytes, has a role in satiety and is elevated in obesity. It can affect many cells in the immune system and is a target in immunological approaches. Other energy-regulating molecules are also under investigation and research in this field can help to discover new treatments for inflammatory diseases and also to reverse obesity and prevent its disastrous complications.


Familial Aggregation of the Metabolic Syndrome: Tehran Lipid and Glucose Study.
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Abstract
AIMS: Familial aggregation of the metabolic syndrome has been reported in some nations. The aim of this study was to evaluate familial aggregation of the metabolic syndrome in Tehranian families.

METHODS: In a cross-sectional study, anthropometry, blood pressure and biochemical data were collected for 4,558 individuals in the Tehran Lipid and Glucose Study. Variables of the metabolic syndrome in offspring were correlated with those of their parents.
RESULTS: There were 1,274 fathers, 1,576 mothers, 802 sons and 906 daughters. Prevalence of metabolic syndrome was 24.4% for fathers, 39.7% for mothers, 9.0% for sons and 7.6% for daughters. Triglycerides and HDL-C of children whose fathers had metabolic syndrome, and BMI, triglycerides and HDL-C of those whose mothers had it were significantly different from those adolescents whose parents were free of metabolic syndrome. Compared with children whose parents did not have metabolic syndrome, the odds ratio (confidence interval) for children with both parents having metabolic syndrome was 4.53 (2.42-8.8) for metabolic syndrome, 2.22 (1.17-4.19) for abdominal obesity, 1.90 (1.15-3.13) for high blood pressure, 2.66 (1.77-4.00) for low HDL-C and 3.16 (2.10-4.75) for high triglyceride levels.

CONCLUSION: This survey provides evidence suggesting that there is a familial aggregation of the metabolic syndrome among Iranian families.


The Association of General and Central Obesity with Major Dietary Patterns of Adult Women Living in Tehran, Iran.

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Abstract

OBJECTIVES: Using a dietary pattern analysis method could provide more information about the nutritional etiology of chronic diseases such as obesity. The aim of this study is to determine the association between major dietary patterns and general and central obesity among adult women living in Tehran.

MATERIALS AND METHODS: A cross-sectional study was conducted in Tehran, Iran, with 460 women aged 20-50 y. Dietary intake in the previous year was collected by a semi-quantitative food frequency questionnaire. Weight, height and waist circumstance (WC) were measured with standard methods and body mass index (BMI) was calculated. General obesity was defined as BMI \( \geq 30 \) kg/m(2) and central obesity as WC \( \geq 88 \) cm. Factor analysis was used for identifying major dietary patterns. The association between major dietary patterns and general and central obesity were assessed by logistic regression analysis.
RESULTS: Two major dietary patterns were extracted: "Healthy" and "Unhealthy" dietary patterns. After adjusting for confounders, individuals in the highest quartile of the unhealthy dietary pattern score were more likely to have general (OR=7.33, 95% CI: 2.39-22.51) and central obesity (OR=4.99, 95% CI: 2.08-11.94), whereas, those in the upper quartile of healthy dietary pattern were less likely to have general (OR=0.38, 95% CI: 0.15-0.98) or central obesity (OR=0.33, 95% CI: 0.16-0.71).

CONCLUSION: Our data suggest that a dietary pattern rich in fruit, vegetables, low-fat dairy products and poultry might be negatively associated with obesity. Furthermore our data showed that a dietary pattern high in processed meats, soft drinks, sweets, refined grains, snacks and processed juice might be positively associated with obesity among women aged 20-50 y.


Relationship between C-Reactive Protein and Physical Fitness, Physical Activity, Obesity and Selected Cardiovascular Risk Factors in Schoolchildren.

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Abstract

OBJECTIVES: The aim of this study was to investigate the relation between C-reactive protein (CRP) with physical fitness, physical activity, obesity, and selected cardiovascular risk factors in school-children.

METHODS: Forty-four boy schoolchildren (mean ± SD: age 10.25 ± 0.75 years, height 144 ± 0.2 cm, body weight 46.1 5± 4.59 kg, body mass index 22.16 ± 2.16 kg/m(2)) voluntarily participated in this study. Physical fitness and physical activity were assessed using the 20-meter fitness test. Adiposity was estimated using body mass index. Blood samples were taken after an overnight fast and measured for CRP, LDL, HDL and cholesterol. Pearson's correlation was calculated to determine the relations between these factors.

RESULTS: Mean (SD) CRP concentration was 1.07 (0.82) mg/l. A significant correlation was observed between CRP and VO2max (r=-0.45, P= 0.001), body mass index (r=0.55, P=0.000) and cholesterol (r=-0.35, P=0.04). No
significant relation was found between CRP and physical activity, LDL and HDL (P> 0.05). Moreover, significant associations were observed between body mass index and VO2max (r=-0.33, P=0.02) and physical activity (r=-0.43, P=0.04).

**CONCLUSIONS:** Body mass index was the most powerful predictor of serum concentrations of CRP in schoolchildren. It may be an important factor to control body weight to prevent an increase in serum CRP in children and to help the primordial prevention of chronic diseases.


Dietary Patterns by Reduced Rank Regression Predicting Changes in Obesity Indices in a Cohort Study: Tehran Lipid and Glucose Study.


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**Abstract**

**OBJECTIVE:** To examine the association between dietary patterns and obesity indices (BMI, WC, WHR) among Tehranian adults in a 6-year follow-up study.

**METHODS:** Within frame of a cohort study in Tehran (mean follow up 6.6+/=0.9 years), 141 adults were recruited with: two 24 hour dietary recalls at the beginning, as well as obesity indices at the beginning and end of the study period. Dietary intakes were converted into grams of intakes of food items and categorized into 16 groups. Reduced rank regression analysis derived five patterns with total and polyunsaturated-to-saturated fat intake, cholesterol, fiber and calcium intake as response variables. Factors (dietary patterns) were generated retaining a corresponding factor loading > or = |0.17| on the food groups. Changes in obesity indices were scrutinized within quintiles of factor scores.

**RESULTS:** There were high loadings on refined carbohydrates, whole grain, starchy vegetables, other vegetables, red and refined meat, saturated/trans fat, and egg for the first factor named "traditional". All obesity indices had increasing trend across quintiles of pattern score. The fifth pattern (namely egg pattern) had high loading for eggs, salty snacks, as well as fruits and dry
fruits, and negative loadings for red and processed meat, saturated and trans fat, plant oils, and dairy products. This pattern showed increasing trends for WC and WHR after adjustment for potential confounders. Other patterns showed non-significant trends for obesity indices.

CONCLUSIONS: The results were indicative of a traditional pattern which is dominated in the Tehran region and associated with increase in obesity indices.

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The Prevalence of Obesity and its Related Risk Factor in the North of Iran in 2006

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Abstract

Background: The main objective of this study was to evaluate the prevalence of the obesity and the related risk factors in the north of Iran.

Methods: This was a population-based cross-sectional study that enrolled 2495 subjects (1247 males and 1248 females) using stratified cluster sampling. Interviewers recorded the data using a multidimensional questionnaire including anthropometric indexes. Body mass index equal to or greater than 25 was considered as overweight and that of 30 and 40 as obese and pathologic obese respectively. SPSS 16.0 software was used for statistical data analysis.

Results: Mean age of the subjects was 39.2 [95% CI: 38.6, 39.8] yr. Mean body mass index was 25.3 [95% CI: 25.0, 25.6] kg/m² for men and 27.5 [95% CI: 27.2, 27.9] kg/m² for women. The prevalence rates of overweight, obesity and pathologic obesity were 29.9% (745/2495), 22.5% (561/2495) and 1.8% (44/2495) respectively. The prevalence of obesity was higher in urban residents than rural ones, 27.3% versus 18.9% respectively (P =0.001). The odds ratio estimate was 1.68 [95% CI: 1.40, 2.02] for urban area compared to rural area; 2.60 [95% CI: 2.14, 3.15] for females compared to males; 5.95 [95% CI: 3.54, 9.99] for married people compared to single people; 1.89 [95% CI: 1.44, 2.84] for age group of 55-65 years compared to age group of 15-24 years; 1.76 [95% CI: 1.17, 2.64] for illiterate people compared to those who had academic education; 1.98 [95% CI: 1.13, 2.49] for poor people compared to people with high economic level.
Conclusion: The prevalence of obesity and overweight is very high in the north of Iran, hence is a signal of serious health problem, and should be the focus of special attention.


Effects of Aerobic Training on Serum Omentin-1 and Cardiometabolic Risk Factors in Overweight and Obese Men.

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Abstract

Omentin-1 is a newly discovered protein expressed and secreted from visceral adipose tissue that increases insulin sensitivity. We examined the effects of 12 weeks of aerobic training on serum omentin-1 concentrations together with cardiovascular risk factors in overweight and obese men. Eighteen overweight and obese participants (age 43.1 ± 4.7 years, BMI ≥ 25 kg . m⁻²) were assigned to exercise training (n = 9) and control (n = 9) groups. A matched control group of normal weight participants (n = 8; age 42.2 ± 3.8 years, BMI < 25 kg . m⁻²) were also recruited for baseline comparison. The obese exercise group participated in 12 weeks of progressive aerobic training 5 days a week. Measures of serum omentin-1, insulin resistance, lipid profiles, blood pressure, and body composition were obtained before and after the 12 weeks. At baseline, normal weight participants had significantly higher serum omentin-1 concentrations than overweight and obese participants, and there were inverse correlations between omentin-1 and each of waist circumference, fasting glucose, insulin resistance, total cholesterol, triglyceride, and systolic blood pressure (P < 0.05). After the aerobic training, waist circumference, percent body fat, fasting glucose, insulin resistance, triglyceride, total cholesterol, low-density lipoprotein cholesterol, and systolic blood pressure were all significantly decreased (P < 0.05). In contrast, serum omentin-1 concentration was significantly increased after the aerobic programme (P < 0.05), and correlated with changes in insulin resistance (r = − 0.67, P = 0.04), glucose (r = − 0.65, P = 0.05), waist circumference (r = − 0.70, P = 0.03), and aerobic fitness r = − 0.68, P = 0.04). Aerobic training resulted in an improvement in cardiometabolic risk factors in obese participants, and this improvement was accompanied by increased omentin-1 concentrations.
The Prevalence of Obesity and Overweight in Isfahan Veterans

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Abstract

Background: Several studies showed the relationship of obesity and overweight with body mass index. According to these studies, because of severe complications of obesity and overweight we wanted to indicate the outbreak rate of obesity and overweight in the certain group of veterans.

Methods: This study was cross-sectional in design. The numbers of subjects was 106 individuals in Isfahan city. Anthropometric data and medical history were collected and handled with SPSS 10 statistical software.

Findings: The mean and standard deviation of anthropometric indices were as follow: height, 168.39 ± 8.04 cm, weight, 78.75 ± 13.44 kg, body mass index, 27.98 ± 4.68 Kg/m², mid-arm circumference, 33.19 ± 4.12 cm, calf circumference, 31.96 ± 7.38 cm, mid-arm muscle circumference, 27.34 ± 11.02 cm, biceps skinfold, 12.10 ± 5.47 mm, triceps skinfold, 16.35 ± 6.08 mm, scapular skinfold, 30.17 ± 8.10 mm, suprailliac skinfold, 32.62 ± 7.33 mm, total fat, 89.13 ± 24.16 mm.

Conclusion: According to the findings, more than half of the study population were obese and overweight, however spinal cord injured patients with the same body mass index had excessive fat mass compared to other veterans. The main reason is sedentary life style but, additional investigations with larger samples size are encouraged.

Prevalence of Obesity, Overweight and Underweight among Elementary School Children in Southern Iran, 2009

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Abstract

STATEMENT: In recent years obesity has become epidemic in children and adolescents and was one of the main problems in developed and developing countries. Considering the importance of obesity complications
for the health state of society and its increasing rate, careful evaluation, monitoring and follow up of obesity in children and adolescents was of a great importance. The aim of the present study was to determine the prevalence of obesity, overweight and underweight in elementary schoolchildren in Kerman, Iran.

**APPROACH:** This cross-sectional study was performed on 1566 elementary schoolchildren aged 7-11 years in Kerman/Iran in 2009. A questionnaire consisted of age, sex, type of school, parents’ educational level, family size, weight and height was filled out for each student. Weight and height were measured by standard methods. Obesity, overweight and underweight based on Body Mass Index (BMI) were determined for age and sex and in comparison to standard percentiles of World Health Organization (WHO).

**RESULTS:** The prevalence of obesity, overweight and underweight was 9.7, 4.4 and 0.57% respectively. There was no significant relationship between BMI and gender. There was an increasing rate of obesity and overweight risk in children of parents with higher educational levels and the prevalence of underweight was higher in the students of public schools. No significant relationship was found between BMI and family size.

**CONCLUSION:** Based on the results, although obesity was still relatively uncommon in 7-11 year old urban students, the more important problem was the increasing rate of obesity and overweight prevalence. Establishing interventional measures in order to prevent risky behaviors leading to obesity and overweight seems to be highly necessary.
Appropriate Cutoff Values of Anthropometric Variables to Predict Cardiovascular Outcomes: 7.6 Years Follow-Up in an Iranian Population.

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Abstract

OBJECTIVE: To determine cutoff points of anthropometric variables for predicting incident cardiovascular disease (CVD) in Iranian adults.

DESIGN: It is a population-based longitudinal study.

SUBJECTS: A total of 1614 men and 2006 women, aged > or =40 years, free of CVD at baseline were included in the study.

MEASUREMENTS: Body mass index (BMI), waist circumference (WC), waist-to-hip ratio (WHR), waist-to-height ratio (WHtR) and cardiovascular risks were assessed. Incident CVD was ascertained over a median of 7.6 years follow-up. The adjusted hazard ratios (HRs) for CVD were calculated for 1 s.d. change in all obesity variables using Cox proportional hazards regression analysis. Receiver operator characteristic (ROC) curve analysis was used as the method of defining the points of the maximum sum of sensitivity and specificity (MAXss) of each variable as a predictor of CVD.

RESULTS: We found 333 CVD events during follow-up. The risk-factor-adjusted HRs were significant for all anthropometric variables in males and WHR in females and were 1.19, 1.24, 1.21 and 1.24 for BMI, WC, WHR and WHtR in males and 1.27 for WHR in females, respectively (all P<0.05). ROC analysis showed the highest area under curve (AUC) for WHR, WHtR and WC, followed by BMI in males and both genders aged< or =60 years. In females, WHR and WHtR had the highest AUC, followed by WC and BMI. Among those >60 years old, all the anthropometric variables showed same CVD predicting power. The cutoff values (MAXss) for CVD prediction in males and females were BMIs 26.95 and 29.19 kg m(-2),WCs 94.5 and 94.5 cm, WHRs 0.95 and 0.90, and WHtR 0.55 and 0.62, respectively.

CONCLUSION: There was no difference between central obesity variables in predicting CVD in males, whereas in females WHR and WHtR were more appropriate. The cutoff values of anthropometric variables were higher in the Iranian than in other Asian populations.
Trends of Obesity and Abdominal Obesity in Tehranian Adults: A Cohort Study.

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Abstract

BACKGROUND: Considering the increasing trend of obesity reported in current data, this study was conducted to examine trends of obesity and abdominal obesity among Tehranian adults during a median follow-up of 6.6 years.

METHODS: Height and weight of 4,402 adults, aged 20 years and over, participants of the Tehran Lipid and Glucose Study (TLGS), were measured in 1999-2001 (phase I) and again in 2002-2005 (phase II) and 2006-2008 (phase III). Criteria used for obesity and abdominal obesity defined body mass index (BMI) > or = 30 and waist circumference > or = 94/80 cm for men/women respectively. Subjects were divided into 10-year groups and the prevalence of obesity was compared across sex and age groups.

RESULTS: The prevalence of obesity was 15.8, 18.6 and 21% in men and 31.5, 37.7 and 38.6% in women in phases I, II and III respectively (p < 0.001). The prevalence of abdominal obesity in men was 36.5, 57.2 and 63.3% and in women was 76.7, 83.8 and 83.6% in the three periods mentioned (p < 0.001). Men aged between 20-29 years had highest increase rates of obesity and abdominal obesity in phase III in comparison with phase I (with a respective rates of 2.2- and 3.3-fold). In both sexes, an increased trend was observed between phases I and II, whereas between phases II and III, this trend was observed in men, but not in women.

CONCLUSION: This study demonstrates alarming rises in the prevalences of both obesity and abdominal obesity in both sexes especially in young men, calling for urgent action to educate people in lifestyle modifications.
Investigation of the Effect of High Dairy Diet on Body Mass Index and Body Fat in Overweight and Obese Children.


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Abstract

OBJECTIVE: To investigate whether an increase in dairy food consumption improves the changes in BMI and adiposity in children on an energy restricted diet.

METHODS: Overweight and obese children (n = 120, age: 12-18 y, BMI: 27-40 kg/m2) were randomized to receive a calorie restricted diet providing a 500 kcal/d deficit from total energy expenditure and two (n = 40), three (n = 40) or four (n = 40) servings of dairy products/day. Anthropometric measurements in addition to serum hs-CRP and lipid profile were measured at baseline and after 12 weeks.

RESULTS: Among the 96 children who completed the study, significant reductions in overall BMI, BMI z-score, weight, total body fat percentage and total body fat mass were observed (p < 0.001) but these reductions were not significantly affected by increasing dairy intake (p > 0.05). Overall waist/hip ratio, Serum vitamin D and lipid profile did not change significantly (p > 0.05) apart from a significant increase in HDL-cholesterol (p < 0.001) which was independent of dairy intake (p > 0.05).

CONCLUSION: Increased intake of dairy products does not lead to an augmented change in BMI, weight and body fat in overweight and obese children beyond what is achieved by calorie restriction.
Prevalence of Metabolic Syndrome in an Adult Urban Population of the West of Iran.

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Abstract

OBJECTIVES: We determine the prevalence of the metabolic syndrome in an urban population of Zanjan, a province located to the west of Tehran.

METHODS: Randomly selected adults >20 years were studied using stratified sampling. Target study sample was 2941 (1396 males and 1545 females). Metabolic syndrome was diagnosed using Adult Treatment Panel-III (ATP-III) guidelines when any three of the following were present: central obesity, raised triglycerides > or =150 mg/dl, low high-density lipoprotein (HDL) cholesterol, blood pressure > or = 130/ > or = 85 mm Hg, and diabetes or fasting plasma glucose (FPG) > or = 100 mg/dl.

RESULTS: Metabolic syndrome was present in 697 (23.7%) subjects (CI 95%:22%-25%, P = .001), prevalence was 23.1% in men and 24.4% in women (P : .4). The prevalence increased from 7.5% in the population younger than 30 y to 45.6% in ages more than 50 years. Low HDL was the most common metabolic abnormality in both sexes. Most of those with metabolic syndrome had three components of the syndrome (75.6%), 170 subjects (24.4%) had four and none had five components simultaneously. The prevalence of obesity (BMI > or = 30 kg/m(2)), hypercholesterolemia (> or > =200 mg/dl) and high LDL cholesterol (> or =130 mg/dl) was greater in the metabolic syndrome group than normal subjects (P = .00).

CONCLUSIONS: There is a high prevalence of metabolic syndrome in this urban population of the northern west of Iran. Focus of cardiovascular prevention should be undertaken in this area.
Prevalence of Obesity and its Association with Socioeconomic Factors in Elderly Iranians from Razavi-Khorasan Province.


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Abstract

There are few data regarding the prevalence of obesity and its socioeconomic determinants among elderly individuals, particularly in Iran. We wished to determine the prevalence of overweight and obesity in free-living elderly people and the relationship to nutritional and socioeconomic factors in the Razavi-Khorasan province of Iran. Free-living elderly persons (917 males/1045 females), aged ≥60 years, were recruited using cluster sampling. Overweight and obesity were evaluated using body mass index (BMI) and subjects were categorized as thin (BMI <18.5 kg/m2), normal (18.5-24.9 kg/m2), overweight (25-29.9 kg/m2), and obese (≥ or =30 kg/m2). The association between the prevalence of overweight or obesity with socioeconomic and demographic factors, including gender, place of residence, literacy, type of living, source of income, use of supplements during the past 3 months, and employment status, was examined using regression analysis. The distribution of BMI values indicated that 13, 46.5, 28.9, and 11.7% of the total population were thin, normal, overweight, and obese, respectively. The prevalence of central obesity was higher among Iranian women than men (63.1 vs. 18.6%, respectively). Regression analysis results indicated that gender (p < 0.001), place of residence (p < 0.001), literacy (p = 0.01), and source of income (p < 0.001) were significantly associated with the incidence of overweight or obesity. This study showed that 40.6% of elderly subjects were overweight or obese. Results reinforce the need to plan strategies for primary prevention of this fast-growing public health problem.
Effect of Zinc Supplementation on Insulin Resistance and Components of the Metabolic Syndrome in Prepubertal Obese Children.


Isfahan Endocrine & Metabolism Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.

Abstract

OBJECTIVE: Zinc, an essential trace element and a component of many enzymes, is involved in the synthesis, storage and release of insulin. The aim of the present study was to assess the effect of zinc supplementation on insulin resistance and components of the metabolic syndrome in prepubertal obese children.

DESIGN: This triple-masked, randomized, placebo-controlled cross-over trial was conducted among 60 obese Iranian children in 2008. Pertinent clinical findings, fasting serum glucose, insulin and lipid profile were assessed. Participants were randomly assigned to two groups of equal number; one group received 20mg elemental zinc and the other group received placebo on a regular daily basis for eight weeks. After a 4-week wash-out period, the groups were crossed over.

RESULTS: The mean age of participants was 9.1 +/- 1.1 years. After receiving zinc, the mean fasting plasma glucose (FPG), insulin and HOMA-IR decreased significantly, while body mass index (BMI), waist circumference (WC), LDL-C and triglycerides (TG) did not significantly change. After receiving placebo, the mean FPG, insulin and HOMA-IR increased significantly, while BMI, WC, LDL-C and TG showed a non-significant increase.

CONCLUSION: Besides lifestyle modification, zinc supplementation might be considered as a useful and safe additional intervention treatment for improvement of cardiometabolic risk factors related to childhood obesity.

Polymorphism of Pro12Ala in the Peroxisome Proliferator-Activated Receptor Gamma2 Gene in Iranian Diabetic and Obese Subjects.

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Abstract

BACKGROUND: Peroxisome proliferator-activated receptor gamma2 (PPARgamma2) is a nuclear receptor that regulates adipocyte differentiation, lipid metabolism, and insulin sensitivity. The aim of this study was to investigate the association between the Pro12Ala single nucleotide polymorphism (SNP) at the PPARgamma2 gene and type II diabetes (T2DM) and obesity in an Iranian population.

METHODS: The genomic DNA of the 312 subjects included four groups: (1) nonobese with type II diabetes, (2) obese without type II diabetes, (3) obese with type II diabetes, and (4) nondiabetic nonobese controls. The Pro12Ala polymorphism was detected by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) analysis.

RESULTS: Frequencies of the Ala allele in obese subjects were significantly different from those control subjects (odds ratio [OR], 2.358; 95% confidence interval [CI], 1.101-5.05) (P = 0.025). In contrast, no significant association was detected between the Pro12Ala polymorphism and type II diabetes (OR, 0.652; 95% CI, 0.261-1.628). In all subjects, the Ala carriers had a higher body mass index (BMI) compared with the common allele.

CONCLUSIONS: Our results showed that the Pro12Ala polymorphism in the PPARgamma2 gene is associated with obesity in Iranian subjects and the presence of the Ala allele could predict higher BMI.
Can a Dairy-Rich Diet Be Effective in Long-Term Weight Control of Young Children?


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Abstract

OBJECTIVE: To determine the long-term effect of a randomized controlled trial of a dairy-rich diet on generalized and abdominal obesity, as well as on the components of the metabolic syndrome, among obese prepubescent children.

METHODS: This trial was conducted among a population-based sample of 120 obese prepubescent children who were randomly assigned to 3 groups of equal number. In addition to attending 6 consecutive monthly family-centered education sessions about healthy lifestyle, an isocaloric dairy-rich diet (>800 mg ca/d) was recommended to the children of one group (DR: dairy-rich diet), the second group was placed on a caloric-restricted regimen (ER: energy-restricted), and the third group received no additional recommendation (C: controls). The groups were then followed-up twice a year for 3 years.

RESULTS: The mean age of the children was 5.6 +/- 0.5 years. Of 120 participants, 95 (75%) completed the study; the DR group had the highest retention rate. In all groups, body mass index-standard deviation score (BMI-SDS) and waist circumference decreased significantly after the 6-month trial, but had a sustained significant rise during the follow-up period to the end of the study; however, in the DR group, this rise was significantly lower than in the 2 other groups. After the 6-month trial, in all groups, serum triglycerides (TG) and insulin levels decreased, and serum high-density lipoprotein cholesterol (HDL-C) level and homeostasis model assessment of insulin resistance (HOMA-R) increased. In the DR group, the TG, insulin and HOMA-R levels remained significantly lower than baseline until the 12-month follow-up.

CONCLUSIONS: We suggest that in addition to lifestyle changes, an isocaloric diet rich in dairy products may be a well-accepted regimen and can be a safe and practical strategy for weight control in young, overweight children.
Relationship between Body Mass Index and Left Main Disease: the Obesity Paradox.


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Abstract

BACKGROUND AND AIMS: Obesity is a well-known risk factor for development of diabetes, hypertension, and coronary artery disease. However, the obesity paradox shows that short-term outcome has been reported to be superior after revascularization in overweight patients. We conducted this study to examine this theory in patients who were candidates for coronary artery bypass graft and to determine if there is a relationship between obesity and the severity of coronary artery involvement and left main disease in Iranian patients.

METHODS: A total of 15,550 patients who had undergone isolated coronary artery bypass graft were studied retrospectively. All medical records of the aforementioned patients were derived from our hospital surgery data bank. Preoperative angiography was used for angiographic data.

RESULTS: After adjusting for confounding variables, we still found a significant relationship with higher BMI and lower prevalence of left main disease.

CONCLUSIONS: We found that despite a higher prevalence of hypertension, diabetes mellitus, and dyslipidemia, overweight and obese patients who were candidates for coronary artery bypass graft surgery were significantly less likely to have left main disease according to preoperative angiography. This study suggests that obese patients are more likely to be referred for coronary artery bypass graft in earlier stages of coronary involvement.
Association of Serum Leptin Levels with Homeostasis Model Assessment-Estimated Insulin Resistance and Metabolic Syndrome: The Key Role of Central Obesity.

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Abstract

BACKGROUND: Leptin is correlated with several features of metabolic syndrome; however, possible confounders (eg, obesity) of this association are not known. This study evaluated the relationship between leptin, metabolic syndrome, and insulin resistance in an Iranian population and further investigated whether this relationship is confounded by obesity or central obesity.

METHODS: A total of 387 participants (18-65 years old) who referred to a large university general hospital for routine health examinations were categorized into 2 groups with (n = 130) and without (n = 257) metabolic syndrome. Fasting plasma glucose, insulin, lipids, and leptin levels were measured and the homeostasis model assessment of insulin resistance (HOMA-IR) was calculated. Metabolic syndrome was defined according to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) criteria.

RESULTS: Age- and sex-adjusted leptin levels were significantly higher in patients with than those without metabolic syndrome (29.62 +/- 1.67 vs. 18.50 +/- 1.21 ng/mL, P < 0.001). After adjustment for age, sex, and body mass index (BMI), leptin values were significantly correlated with HOMA-IR (P < 0.001), metabolic syndrome, and its components (P < 0.05). After adjustment for waist circumference, however, these associations were no longer statistically significant.

CONCLUSIONS: We demonstrated that high leptin levels are associated with insulin resistance and metabolic syndrome independent of BMI but these associations are significantly mediated through the effects of central obesity.
Prevalence of Underweight, Overweight and Obesity among High-School Girls in Sistan Va Baluchistan.

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Abstract

This descriptive study determined the prevalence of underweight, overweight and obesity among 752 high-school girls aged 14-18 years in Sistan va Baluchistan province, Islamic Republic of Iran. Using the Centers for Disease Control and Prevention body mass index percentiles, the prevalences of underweight, overweight and obesity were 16.2%, 8.6% and 1.5% respectively. These rates were similar to the ones obtained using World Health Organization, First National Health and Nutrition Examination Survey, and International Obesity Task Force criteria. The frequency of underweight in high-school girls in this province is higher than most countries and other parts of the Islamic Republic of Iran.

Risk Factors for Overweight in Urban and Rural School Girls in Iran: Skipping Breakfast and Early Menarche.

Maddah M.

Abstract

This study aimed to investigate the predictors of overweight among Iranian 14-17 years adolescent girls in urban and rural areas in Guilan, Iran. Between December 2005 and March 2006 a cross-sectional survey on 2090 high-school girls (1054 in urban and 1036 in rural areas) in Guilan, northern Iran was performed. Data on age, mother’s education, age at menarche, physical activity, hours of TV viewing, birth weight, duration of any breast feeding and skipping breakfast were collected using questionnaire and body weight and height of the girls were measured. Logistic regression analysis showed that in urban residents, low age group (14 years) OR=13.9 (1.15-1.61), lower menarcheal age OR=0.76 (0.61-0.95) and skipping breakfast OR=1.96 (1.52-2.35) were independently related to overweight and obesity. In rural residents, low menarcheal age, OR=0.82 (0.69-0.98), skipping
breakfast OR=2.23 (1.37-3.65), and high maternal education OR=2.01 (1.62-2.85) were predictors of overweight/obesity. In conclusion, these data indicated that skipping breakfast is a potential risk factor for overweight/obesity in both urban and rural girls. High maternal education as a risk factor for overweight in the rural girls is notable.


**Effect of Dietary Behaviour Modification on Anthropometric Indices and Eating Behaviour in Obese Adolescent Girls.**

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**Abstract**

**AIM:** This paper is a report of a study conducted to evaluate the effects of behaviour modification on anthropometric indices and to explore if behaviour modification could improve eating behaviour in adolescents.

**BACKGROUND:** Obesity is currently the most important nutritional disease of children and adolescents. To date, several attempts to achieve weight loss in children have been made, but little is known about their effects on improving eating behaviours.

**METHOD:** Sixty obese adolescent girls participated in a behaviour modification program which was held for 16 weeks in 2007. The participants were randomly selected from two different schools and were assigned to an experimental and control group (30 participants each). Anthropometric indices and eating behaviours were assessed before and after the program. Eating behaviour was assessed using the Dutch Eating Behaviour Questionnaire.

**RESULT:** There were statistically significant differences in changes in body weight (-2.75 kg vs. 0.62 kg), body mass index (-1.07 kg/m(2) vs. 0.24 kg/m(2)) and arm circumference (-2.31 cm vs. 0.5 cm) in the experimental group in contrast to controls (P < 0.001). There were also statistically significant differences in scores for eating behaviour, emotional eating (0.63, 0.17), external eating (0.99, 0.05) and restrained eating (0.72, 0.03) in the experimental vs. the control group respectively (P < 0.001).
CONCLUSION: Nurses, more than other healthcare professionals, can address obesity in adolescents and they should not concentrate solely on weight reduction, but also encourage children to acquire a healthy lifestyle.


Waist Circumference: A Better Index of Fat Location Than WHR for Predicting Lipid Profile in Overweight/Obese Iranian Women.

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Abstract

We carried out a clinical cross-sectional study on 728 overweight and obese women aged 20-60 years during July 2005-May 2006 in Sistan and Baluchestan, Islamic Republic of Iran. Body mass index (BMI) and waist circumference (WC) showed significant correlation with total cholesterol (TC), triglycerides (TG) and low-density lipoprotein cholesterol. After adjustment for age and BMI, this was also true for WC with TC and TG. There was no such correlation between waist-to-hip ratio (WHR) and lipid profile. Hence, WC was a better anthropometric index of fat location than WHR to estimate lipid profile in overweight and obese adult women.


A Systematic Review of The Efficacy and Safety of Herbal Medicines Used in the Treatment of Obesity.

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Abstract

This review focuses on the efficacy and safety of effective herbal medicines in the management of obesity in humans and animals. PubMed, Scopus, Google Scholar, Web of Science, and IranMedex databases were searched up to December 30, 2008. The search terms were "obesity" and ("herbal medicine" or "plant", "plant medicinal" or "medicine traditional") without
narrowing or limiting search elements. All of the human and animal studies on the effects of herbs with the key outcome of change in anthropometric measures such as body weight and waist-hip circumference, body fat, amount of food intake, and appetite were included. In vitro studies, reviews, and letters to editors were excluded. Of the publications identified in the initial database, 915 results were identified and reviewed, and a total of 77 studies were included (19 human and 58 animal studies). Studies with Cissus quadrangularis (CQ), Sambucus nigra, Asparagus officinalis, Garcinia atroviridis, ephedra and caffeine, Slimax (extract of several plants including Zingiber officinale and Bofutsushosan) showed a significant decrease in body weight. In 41 animal studies, significant weight loss or inhibition of weight gain was found. No significant adverse effects or mortality were observed except in studies with supplements containing ephedra, caffeine and Bofutsushosan. In conclusion, compounds containing ephedra, CQ, ginseng, bitter melon, and zingiber were found to be effective in the management of obesity. Attention to these natural compounds would open a new approach for novel therapeutic and more effective agents.


Relationship of Body Mass Index with Serum Lipids in Elementary School Students.

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Abstract

OBJECTIVE: To determine the relationship of body mass index with serum lipids in elementary students.

METHODS: This prospective analytic study was conducted among 954 elementary school students (9-11 years), selected by multi stage random systematic method from 6 cities and their rural areas from The South Khorasan province (eastern Iran) from September to December 2006. Height and weight was measured and Body mass index was calculated. Total cholesterol (TC), triglyceride (TG), low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) were determined.

RESULTS: 954 students 9-11 years old were studied. 45.4% were boys. 76.5% were living in the city. 1.8% of students were obese and 3.4% were overweight. There was no significant relation between obesity and
overweight with sex, age and the area of residence. There was significant relation between BMI with TC (P= 0.003), TG (P< 0.001) and LDL-C (P= 0.04). TG was significantly higher in obese and overweight students than in normal weight students (P< 0.001). TC (0.002) and LDL-C (0.01) were significantly higher in obese students than normal weight students. The prevalence of high TG was significantly higher in obese and overweight students than normal weight students (0.003). There was no significant difference between different kinds of dyslipidemia with area of residence.

CONCLUSION: it is necessary to measure serum lipid profile in obese and overweight children.


Associations Between Single-Nucleotide Polymorphisms of the Adiponectin Gene, Serum Adiponectin Levels and Increased Risk of Type 2 Diabetes Mellitus in Iranian Obese Individuals.

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Abstract

INTRODUCTION: Adiponectin is an adipose tissue-secreted hormone with important metabolic effects. There have been inconsistent reports about SNPs of the adiponectin gene and risk of type 2 diabetes (T2DM). The aim of this study was to investigate any association between SNPs (+45 T/G and +276 G/T) of the adiponectin gene with serum adiponectin levels, metabolic factors and risk of T2DM in obese individuals.

DESIGN AND METHODS: Genotyping for two common SNPs of adiponectin gene was performed in 50 unrelated obese type 2 diabetic patients and 52 obese non-diabetic control subjects by the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Lipid profile was measured by enzymatic methods. Serum adiponectin, insulin, leptin and glucose levels were measured by immunoassay, and glucose oxidase methods, respectively.

RESULTS AND CONCLUSION: It was observed that obesity and T2DM are associated with low serum adiponectin levels. The G allele and TG/GG genotype of SNP 45 occurred more frequently than the T allele and TT
genotype in T2DM patients compare to the controls (p<0.05). Subjects with
the G/G + TG genotype of SNP 45 were at increased risk for T2DM [Odds
Ratio (OR) 2.574; 95% Confidence Interval (CI) 1.051-6.302; p=0.036]
compared with those T/T genotype. There was no statistically significant
difference in allele and genotype frequencies of SNP 276 comparing control
group with T2DM group. Thus, our results demonstrated that, adiponectin
SNP 45T/G, rather than SNP 276G/T, is more associated with risk of T2DM
in obese individuals.


The Prevalence of Obesity in Iran in Recent Decade; a
Systematic Review and Meta-Analysis Study

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Abstract:

Background: There is a great deal of descriptive studies on obesity in Iran,
mostly assessed the prevalence and its relationship with various risk factors
and chronic diseases. In order to obtain/give a better insight into the
epidemiology of obesity in Iran in recent years and assess its heterogeneity
around the country, we reviewed systematically all available studies and
analyzed their findings using Meta-analysis.

Methods: All published papers in Iranian and international journals, final
reports of research projects, papers in relevant congresses, proceeding
books and dissertations of students were reviewed. Those findings, which
published between 1997 and 2007 and met eligible criteria, were entered in
meta-analysis (Random Model).

Results: Fifty eight eligible papers (out of 219) including 132864 individuals
were entered into analysis. The overall prevalence of obesity for adults (>18
yr) and children (<18y) was 21.5% (CI95% 17.4-25.6) and 5.5% (CI95% 4.5-
6.4), respectively. The prevalence of obesity in boys and girls (<18y) was
5.3% (CI95% 4.1-6.4) and 4.8% (CI95% 4.0-5.7), respectively. It increased in
both adult men and women to 13.7% (CI95% 10.9-16.7) and 27.3% (CI95%
Meta regression indicated that only age explained a considerable proportion of the observed heterogeneity among women. **Conclusion:** In overall, the risk of obesity was greater in women, but even in adults, the prevalence was less than that in developed countries. The percentage of obesity was increased by aging, especially in women. There were large variations in the reported prevalence of obesity in Iran; it is mainly because of the different in the distributions of age and sex among the subjects.

**Obesity Aand Functional Constipation; A Community-Based Study in Iran.**

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**Abstract**

**BACKGROUND:** Many factors have been linked to the occurrence of constipation, but few studies exist regarding the link between obesity and constipation. The aim of this study was to assess the association between body mass index (BMI) and functional constipation in the Iranian community.

**METHODS:** From May 2006 to December 2007, a cross sectional study was conducted in the Tehran province and a total of 18,180 adult persons were drawn up randomly. One questionnaire was filled in two stages through interviews. In the first part, personal characteristics and 11 gastrointestinal symptoms were listed. Those who reported at least one of these 11 symptoms were referred for the second interview. The second part of the questionnaire consisted of questions about different gastrointestinal disorders based on the Rome III criteria including functional constipation.

**RESULTS:** 459 adult persons were found to have functional constipation. The mean +/- SD of BMI was 26.5 +/- 4.7 and 60% of the patients had a BMI more than 25. Age and education were significantly associated factors with obesity, showing that older patients and less educated patients were more overweight and obese. Smoking, marital status and sex were not significantly associated with obesity but, up to 60% of low educated women who had functional constipation, had a BMI more than 25.
CONCLUSIONS: Our study showed that about 60% of patients with functional constipation were overweight, which was more than the mean of our community. In addition there may be an association between higher BMI level and the low education level with constipation in Iranian women.


**Anthropometric Indices of Obesity and the Prediction of Cardiovascular Risk Factors in an Iranian Population.**


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**Abstract**

The prevalence of hypertension, diabetes, dyslipidemia, and metabolic syndrome are increasing globally. The present study was conducted in an attempt to define optimal cutoff values for several anthropometric variables in an Iranian population, as these may vary with ethnicity. Iranian subjects (2483 men and 2445 women), aged 15-65 years, were recruited using a cluster-stratified sampling method from rural and urban areas within the Khorasan province. Receiver operating characteristics (ROC) analysis was used to define optimal anthropometric cutoff values. The prevalence of hypertension, diabetes, dyslipidemia, and metabolic syndrome were 28, 5.5, 67, and 39.9%, respectively. The gender-specific cutoff values for waist:height ratio to predict hypertension, diabetes, dyslipidemia, and metabolic syndrome among men were 0.52 (sensitivity = 66%; specificity = 66%), 0.54 (sensitivity = 65%; specificity = 65%), 0.50 (sensitivity = 58%; specificity = 57%), and 0.53 (sensitivity = 73%; specificity = 73%), and for women were 0.59 (sensitivity = 61%; specificity = 61%), 0.61 (sensitivity = 64%; specificity = 64%), 0.57 (sensitivity = 61%; specificity = 61%), and 0.59 (sensitivity = 77%; specificity = 77%) (p < 0.05). Significant correlations were found between waist:height ratio and hypertension, diabetes mellitus, dyslipidemia, and metabolic syndrome, particularly in women. Waist circumference cutoffs were higher for women than men for hypertension, diabetes mellitus, and dyslipidemia.
Anthropometric Predictors of Incident Type 2 Diabetes Mellitus in Iranian Women.

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Abstract

BACKGROUND AND OBJECTIVES: Studies have shown a strong association between excess weight and risk of incident diabetes in Iranian women. Therefore, we investigated anthropometric indices in the prediction of diabetes in Iranian women.

SUBJECTS AND METHODS: We examined 2801 females aged > or =20 years (mean [SD] age, 45.2 [12.9] years) in an Iranian urban population who were non-diabetic or had abnormal glucose tolerance at baseline. We estimated the predictive value of central obesity parameters (waist circumference [WC], waist-to-hip ratio [WHR], waist-to-height ratio [WHtR], body mass index [BMI]) in the prediction of diabetes. We classified each parameter in quartiles and compared the lowest with the highest quartile after adjusting for confounding variables, including age, hypertension, triglyceride levels, HDL-cholesterol, family history of diabetes, and abnormal glucose tolerance in a multivariate model. Receiver operator characteristic (ROC) curves were used to determine the predictive power of each variable.

RESULTS: Over a median follow up of 3.5 years (11 months-6.3 years), 114 individuals developed diabetes (4.1%). The risk for developing diabetes was significantly higher for the highest quartile of BMI, WC, WHR and WHtR, respectively, compared to the lowest quartile, and the risk decreased but remained statistically significant when abnormal glucose tolerance was included in the multivariate model. WHtR had the highest area under the ROC curve.

CONCLUSIONS: In Iranian women, BMI, WC, WHR, WHtR were predictive of development of type 2 diabetes, but WHtR was a better predictor than BMI.
Abstract

AIMS: Familial aggregation of the metabolic syndrome has been reported in some nations. The aim of this study was to evaluate familial aggregation of the metabolic syndrome in Tehranian families.

METHODS: In a cross-sectional study, anthropometry, blood pressure and biochemical data were collected for 4,558 individuals in the Tehran Lipid and Glucose Study. Variables of the metabolic syndrome in offspring were correlated with those of their parents.

RESULTS: There were 1,274 fathers, 1,576 mothers, 802 sons and 906 daughters. Prevalence of metabolic syndrome was 24.4% for fathers, 39.7% for mothers, 9.0% for sons and 7.6% for daughters. Triglycerides and HDL-C of children whose fathers had metabolic syndrome, and BMI, triglycerides and HDL-C of those whose mothers had it were significantly different from those adolescents whose parents were free of metabolic syndrome. Compared with children whose parents did not have metabolic syndrome, the odds ratio (confidence interval) for children with both parents having metabolic syndrome was 4.53 (2.42-8.8) for metabolic syndrome, 2.22 (1.17-4.19) for abdominal obesity, 1.90 (1.15-3.13) for high blood pressure, 2.66 (1.77-4.00) for low HDL-C and 3.16 (2.10-4.75) for high triglyceride levels.

CONCLUSION: This survey provides evidence suggesting that there is a familial aggregation of the metabolic syndrome among Iranian families.
The Effects of Triple Therapy (Acupuncture, Diet And Exercise) on Body Weight: A Randomized, Clinical Trial.

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Abstract

OBJECTIVES: The purpose of this study was to compare the effects of diet and exercise vs acupuncture, diet and exercise on the body weight and related parameters of adult women.

METHODS: Twenty-seven obese women with a body fat percentage of more than 30% were randomized into three groups. The first experimental group had diet and exercise, whereas the second experimental group had diet, exercise and acupuncture. The control group received no intervention at all. The study period lasted for 8 weeks. Body weight, skin fold thickness, body mass index and fat mass were measured before and after 8 weeks.

RESULTS: Body mass index and fat mass, decreased significantly (P<0.05) in both experimental groups when compared with the control group. However, there was no significant difference between the two experimental groups. Changes in lean body mass after 8 weeks were not significantly different from those in the control group.

CONCLUSION: It is concluded that acupuncture combined with diet and exercise does not generate larger reductions in body weight, fat mass or body mass index than diet and exercise alone.
Comparison of Overall Obesity and Abdominal Adiposity in Predicting Chronic Kidney Disease Incidence among Adults.

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Abstract

OBJECTIVE: Epidemiological data on the association between different aspects of adiposity and the risk for chronic kidney disease (CKD) in a cohort are limited. We compared the independent power of waist circumference (WC), waist-to-hip ratio (WHR), and body mass index (BMI) in predicting CKD in a large cohort of adults.

DESIGN: This was a population-based cohort study. SETTING, PARTICIPANTS, AND MEASUREMENTS: A representative sample of 3107 subjects (1309 men and 1798 women), aged over 20 years, and free of CKD at baseline, was followed for 7 years.

METHODS: We estimated glomerular filtration rate (GFR) by using the abbreviated equation from the Modification of Diet in Renal Disease Study, and defined CKD as an estimated GFR of less than 60 mL/min/1.73 m(2). Adjusted relative hazards of CKD were modeled using Cox proportional hazards regression, including BMI, WC, and WHR as risk factors.

RESULTS: During the 7-year follow-up (median of 2183 days), 13.5% of participants (n = 419) developed CKD. The WC was positively related to risk of CKD, after multivariable adjustment for age, sex, smoking, menopause, physical activity, blood pressure, prevalent and incident diabetes, and change in WC during study period: Hazard ratios for CKD incidence were 1.00 (reference), 1.60 (95% CI: 1.06, 2.42), 1.86 (0.95 CI: 1.21, 2.85), and 1.88 (0.95 CI: 1.17, 3.01) for WC categories 1 to 4, respectively (P for trend < .02). The WHR was not independently associated with CKD. The rate of GFR decline (measured in mL/min/1.73 m(2)/year) was associated with baseline waist categories: regression coefficient for 1 SD increase in WC = -0.18 (0.95 CI: -0.28, -0.07). Based on Harrell's measure of concordance statistics, baseline WC was a better predictor of CKD than WHR (P < .05) and BMI (P < .05).

CONCLUSIONS: Abdominal adiposity measured with WC, irrespective of general adiposity, is a more important determinant of CKD risk in adults than are WHR and BMI.
Overweight among Rural Girls in Iran: A Terrifying Prospects of Cardiometabolic Disorders.

Maddah M.

Abstract

This study aimed to investigate the prevalence of overweight and obesity among Iranian adolescent girls 14-17 year old in rural areas in Guilan province in 2006. A multistage sampling method was used and 1036 randomly selected school girls were studied in rural areas in Guilan-Iran. Data on age and mother's years of schooling were collected using questionnaire and body weight and height were measured. These results showed that the overall prevalence of overweight and obesity in this population was 18.6% and 5.2%, respectively. Results of logistic regression analysis showed that the risk of overweight was higher in the lower age group (OR=2.5, 95% CI 0.16-3.3). In this study, overweight was more common in girls with more educated mothers than the girls with less educated mothers (30.0% vs. 20.3% P=0.0001). In conclusion, these data indicated that overweight is highly prevalent among the rural adolescent girls and the rate is exceeding those reported in urban residents.

Patterns and Predictors of Long-Term Weight Change in Patients with Type 2 Diabetes Mellitus.

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Abstract

This study describes patterns of long-term weight changes among patients with type 2 diabetes mellitus (DM) and identifies factors associated with weight changes. During the mean follow-up period of 9.1 (SD 3.6; range 1-15) years, 7,820 patients with type 2 DM have been examined to determine weight changes. Their weight at the last clinic visit was compared with that at the initial visit. The mean age of the participants was 51.3 (SD 10.5)
years, with a mean DM duration of 6.1 (SD 5.6) years at initial registration. Mean weight change was -1.9% (95% confidence interval, CI -2.1 to -1.7) and varied according to the severity of baseline obesity (-4.1%; 95% CI -4.6 to -3.6) for normal weight, -8.9% (95% CI -13.0 to -4.8) for underweight, -1.7% (95% CI -2.1 to -1.3) for overweight and -0.3% (95% CI -0.03 to +0.73) for obese, and +0.2% (95% CI -1.8 to +2.1) for morbidly obese patients. Using a stepwise multiple regression model, higher body mass index, follow-up, fasting plasma glucose, systolic blood pressure, triglyceride level and treatment with insulin increased the percent weight change, and higher number of follow-up, cholesterol and smoking significantly decreased it. Although this Iranian patients with type 2 DM had negligible weight change over 9.1 years on average, several clinical and lifestyle characteristics were associated with weight change.

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Effects of Body Mass Index on Early Outcome of Coronary Artery Bypass Surgery.

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Abstract

AIM: Obesity is commonly thought to be a risk factor for morbidity and mortality after cardiac surgery. The aim of the present study is to evaluate the effects of variations in body mass index on in-hospital outcome of coronary artery bypass grafting (CABG).

METHODS: The authors conducted a retrospective review of 10191 consecutive patients who had undergone isolated CABG at the center from February 2002 to November 2006. Patients were divided into four groups according to Body Mass Index (BMI). Underweight patients (BMI<18.5 kg/m(2)) were assigned to group 1 and obese patients (BMI 30 kg/m(2)) were put into group 4. Patients with normal BMI and those who were overweight were placed in group 2 and 3 respectively.

RESULTS: Analysis of the BMI groups showed: of 10191 patients 0.7% was underweight; 31.2% of cases had normal BMI, 47.1%; overweight and
21.0% were obese. Compared with other groups, the members of the obese group were younger, included more women and were more likely to have all the risk factors for coronary artery disease except for cigarette smoking (P<0.0001). The underweight patients had an excess of left main coronary artery disease, previous history of myocardial infarction. In-hospital mortality did not show any difference between groups (P=0.46). There was a significant increase in postoperative gastrointestinal complications among the underweight group in comparison with other groups (P=0.027).

**CONCLUSIONS:** According to this study, obese patients undergoing CABG are not at a greater risk of perioperative death and other adverse outcomes compared to normal weight. After CABG, underweight patients are at higher risk of developing gastrointestinal complications compared to normal patients.

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**Relationship between Obesity and Cardiovascular Risk Factors in Adults Living in Central Iran: Results of Isfahan Healthy Heart Program**

**Abstract**

Background and objectives: As previous studies on the association between obesity and cardiovascular (CVD) risk factors have been made in limited populations, this study was performed to determine the association in 3 cities in the central parts of Iran. Materials and methods: In this cross-sectional study, data collected in the1st phase of the Isfahan Healthy Heart Program (IHHP), involving 12514 subjects ≥19 years old, conducted during 2000-2001, in Isfahan and the Central Provinces of Iran, were analyzed. Fasting blood sugar (FBS), 2-hour post-load plasma glucose (2hpp), serum lipid profile, anthropometric parameters and blood pressure were determined by standard methods. Results: FBS, 2hpp, serum lipids fractions (except for HDL-C) and blood pressure had significant positive relations with body mass index (BMI) and waist circumference (WC) (all p-values<0.001). As compared to the 1st quartile of WC, odds ratios (OR 95%CI) of hypertension, diabetes and dyslipidemia in the 4th quartile were 2.8 (1.2-3.3), 3 (1.6-4.3) and 2.4 (1.9-3.1) in men and 2.5 (1.8-3.4), 2.7 (1.3-3.8) and 2.5 (2-3.2) in women, respectively. Also, ORs (95%CI) of hypertension, diabetes and dyslipidemic in 4th quartile of BMI, as compared to the 1st, were 1.6 (1.2-2), 2.8 (1.7-3.9) and 3 (2.4-3.8) in men and 1.9 (1.4-2.4), 2.6 (1.4-3.7) and1.6 (1.2-2) in women, respectively. Conclusion: ORs of these risk factors increased with increasing WC and BMI. Therefore, it is concluded that both obesity indicators increase the chance of CVD risk factors.
Effect of Calcium Supplementation on Lipid Profile in Overweight or Obese Iranian Women: A Double-Blind Randomized Clinical Trial.

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Abstract

BACKGROUND: There is some evidence that suggests a beneficial effect of calcium intake on serum lipid profile. The objective of this study was to determine the effect of 1000 mg calcium supplementation for 30 days on serum lipid profile in overweight or obese women.

METHODS: A double-blind, randomized clinical trial was conducted in 44 overweight or obese adult women (body mass index (BMI) >or=25 kg m(-2), age: 25+/6y) receiving 1000 mg elemental calcium daily (n=24) or placebo (n=20). Serum lipids, lipoproteins and apolipoproteins including triglyceride, total cholesterol, HDL cholesterol (HDLc), LDLc, VLDLc, ApoA-I and ApoB were obtained at baseline and after intervention. Dietary calcium and energy intake were estimated using 24 h dietary recall for 3 days. Statistical analyses were performed using SPSS software.

RESULTS: No significant differences were observed in dietary, anthropometric and serum variables between groups at baseline. Although serum total, LDL cholesterol and triglycerides tended to increase in both groups, total cholesterol elevation was significant only in placebo group (P=0.01). Triglyceride and VLDLc increased significantly only in the calcium group (P=0.03). LDLc elevation was significant in both groups (P<0.05). HDLc decreased significantly in both groups (P<0.01). Apolipoproteins did not change significantly in any group. No significant differences were observed in serum variables between groups after intervention.

CONCLUSIONS: No considerable beneficial effect due to short-term calcium supplementation in overweight or obese women's lipid profile was observed.
In-School Snacking, Breakfast Consumption, and Sleeping Patterns of Normal and Overweight Iranian High School Girls: A Study in Urban and Rural Areas in Guilan, Iran.

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Abstract

OBJECTIVE: To investigate the relationship of snacking during school hours, sleep time, and breakfast consumption by weight status of Iranian high school girls in urban and rural areas in Guilan Province, Iran.

DESIGN: Data were collected by self-administered questionnaire and measure of body weight and height.

SETTING: High schools in urban and rural areas in Guilan Province, northern Iran.

PARTICIPANTS: Representative sample of 2302 school girls (1106 in Rasht City and 1196 in rural areas) selected by multistage cluster sampling.

MAIN OUTCOME MEASURES: Breakfast skipping, snacking habits at school, sleep habits, body weight, and height.

ANALYSIS: Differences in the frequency of the measured variables between the urban and rural girls and overweight and normal weight girls were tested using the chi-square test, P < .05.

RESULTS: Prevalence of obesity was significantly (P < .05) lower in urban areas (4.1%) than in rural areas (5.2%). Prevalence of overweight was significantly higher in those who usually skipped breakfast (P < .001). Consumption of food items of low nutrient density as snacks during the school day was common in this population, especially in rural areas.

CONCLUSION AND IMPLICATIONS: The school environment may contribute to the high prevalence of overweight/obesity observed among Iranian adolescent females. Students should be encouraged to eat breakfast and choose nutritious snacks during the school day.

Sonographic Fatty Liver in Overweight and Obese Children, A Cross Sectional Study in Isfahan.

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Abstract

INTRODUCTION: Children's obesity is a known health problem in the world and is a strong predictor of obesity in adulthood which increases the incidence of related diseases such as metabolic syndrome. According to the MONIKA project by the World Health Organization (WHO), Iran is one of the seven countries with a high rate of child obesity. Fatty liver is an abnormality related to metabolic syndrome, with higher prevalence in obese children according to some previous studies. This study investigates the presence of Sonographic Fatty Liver (SFL) in Iranian obese children in comparison with normal and overweight children.

MATERIAL AND METHODS: This was a cross-sectional study on 962 randomly selected children between the ages of 6 to 18 years. The subjects were divided into three groups of normal, overweight and obese based on body mass index (BMI). A questionnaire including demographic and anthropometric characteristics was filled for each one. To detect the presence of SFL all the subjects underwent assessments with ultrasonography by radiologist who was not aware of their BMI. The incidence of SFL was determined based on the ultrasonographic diagnosis criteria.

RESULTS: The average age of the children in the study was 12.59 +/- 3.25 years. The mean of the liver span in the normal, overweight and obese groups were 111.36 +/- 18.73, 121.18 +/- 16.63 and 118.21 +/- 19.15 respectively. The prevalence of SFL in obese children was 54.4%, which was significantly higher than overweight (10.5%) and normal ones (1%). According to present results, there was no significant difference in prevalence of SFL between sexes.

CONCLUSIONS: The high rate of detected SFL in obese children in this study suggests that Iranian obese children are at risk of metabolic syndrome. Moreover, the WHO indicated Iran as one of the countries with high rate of obese children. Based on this information, we can conclude that the prevalence of metabolic syndrome and its related non-
communicable diseases will be increasing future in . Therefore, it is necessary to develop some plan to control overweight problem including teaching healthy lifestyle in schools and kindergartens as well as mass media.


Obesity in the Iranian Population.

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Abstract

There is an obesity epidemic worldwide, which has been increasing in recent years. An epidemiologic cross-sectional study was conducted among 3799 persons who were 30-70 years old in Semnan Province, Iran. Multistage cluster sampling was performed, and subjects were selected from urban and rural populations. Body weight, height and waist circumference (WC) were measured, and body mass index (BMI) and waist to hip ratio (WHR) were calculated. Overweight and obesity were defined as $25 < \text{BMI} < 30$ and $\geq 30$ respectively in men with WHR $\geq 0.9$ or WC $\geq 102$ cm, and women with WHR $\geq 0.8$ or WC $\geq 88$ cm were considered centrally obese. Prevalence of obesity and overweight was 26.3% and 40.6% respectively. Prevalence of obesity was more among women (39.5%) than men (14.5%) with central obesity prevalence using WHR and WC cut-points of 72.2% and 26.6% respectively. There was a significant association between obesity and age, gender, residential area and educational level ($P < 0.01$). In conclusion, prevalence of obesity and overweight among 30-70 years old, especially among women, was higher than expected. A comprehensive educational programme on obesity risk factors and obesity-related diseases is necessary.
Dyslipidemia in Iranian Overweight and Obese Children.
Ghergerehchi R.
Department of Pediatrics, Tabriz University (Medical Sciences), Tabriz, Iran.

Abstract

OBJECTIVE: To evaluate the frequency and patterns of dyslipidemia in overweight and obese children and to determine the extent of blood lipid abnormality in overweight and obese children.

METHODS: A prospective matched case control study on 230 overweight and obese children and adolescents (body mass index [BMI] > 85th percentile) aged 4 to 18 years undertaken at the outpatient endocrine clinic of the Children's Hospital at Tabriz University between 2006-2008. This study was conducted to compare the frequency of abnormal plasma lipid levels in overweight and obese children compared with 50 nonobese children (BMI = 50th-85th percentile).

RESULTS: The total frequency of dyslipidemia was 69.58%. The prevalence of dyslipidemia increased with severity of obesity and reached 76.9% in the severely obese (P < 0.005). High triglycerides was the most common dyslipidemia in combination (26.08%) and in isolation (18.6%). There was a significant difference in mean of triglycerides between the severely obese and other groups (P < 0.004).

CONCLUSION: In the present study, dyslipidemia is more common in severely obese children and the most common component of dyslipidemia is a high triglyceride level.

Association between Socioeconomic Factors and Obesity In Iran
Habibollah Esmaeily, Mohsen Azimi-Nezhad, Majid Ghayour-Mobarhan, Mohammad-Reza Parizadeh, Mohammad Safarian, Mohammad-Javad Parizadeh, Bahareh Hassankhani, Elahe Salardini, Zaim-Kohan Houshang, Hossini Javad, Oladi Mohammad Reza and Gordon Ferns

Abstract

The present study was conducted to determine the relationship between socio-economic factors and obesity within a population from Iran. Male and female subjects (n=4977) aged 15-65 years, were recruited from the Great Khorasan province of Iran using a cluster-stratified sampling method.
Demographic and socioeconomic data were collected by questionnaire. Of the study population, 29.1% were overweight and 13.8% were obese. Being overweight and obese was significantly more prevalent among women than men and urban- compared to rural-dwellers. A high prevalence of overweight and obesity was seen among individuals who were divorced or widowed and among housewives, or individuals with poor education. Urbanization, age, illiteracy, female gender and divorced, or widowed status were significant predictors of obesity (p<0.001). The association of obesity with urban-dwelling which is consistent with previous reports was also found to be the most important determinant of obesity. The prevalence of obesity in urban residents of Iran is high, particularly among poorly educated women. A community-based approach using multiple strategies including appropriate education will be required to address this problem.


Third National Surveillance of Risk Factors of Non-Communicable Diseases (Surfncd-2007) in Iran: Methods and Results on Prevalence of Diabetes, Hypertension, Obesity, Central Obesity, and Dyslipidemia

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The electronic version of this article is the complete one and can be found online at: http://www.biomedcentral.com/1471-2458/9/167

Abstract

BACKGROUND: The burden of non-communicable diseases is rising globally. This trend seems to be faster in developing countries of the Middle East. In this study, we presented the latest prevalence rates of a number of important non-communicable diseases and their risk factors in the Iranian population.
METHODS: The results of this study are extracted from the third national Surveillance of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007), conducted in 2007. A total of 5,287 Iranian citizens, aged 15–64 years, were included in this survey. Interviewer-administered questionnaires were applied to collect the data of participants including the demographics, diet, physical activity, smoking, history of hypertension, and history of diabetes. Anthropometric characteristics were measured and serum biochemistry profiles were determined on venous blood samples. Diabetes (fasting plasma glucose ≥ 126 mg/dl), hypertension (systolic blood pressure ≥ 140 mmHg, diastolic blood pressure ≥ 90 mmHg, or use of anti-hypertensive drugs), dyslipidemia (hypertriglyceridemia: triglycerides ≥ 150 mg/dl, hypercholesterolemia: total cholesterol ≥ 200 mg/dl), obesity (body mass index ≥ 30 kg/m^2), and central obesity (waist circumference ≥ 80 cm in females and ≥ 94 cm in males) were identified and the national prevalence rates were estimated.

RESULTS: The prevalence of diabetes, hypertension, obesity, and central obesity was 8.7% (95%CI = 7.4–10.2%), 26.6% (95%CI = 24.4–28.9%), 22.3% (95%CI = 20.2–24.5%), and 53.6% (95%CI = 50.4–56.8%), respectively. The prevalence of hypertriglyceridemia and hypercholesterolemia was 36.4% (95%CI = 34.1–38.9%) and 42.9% (95%CI = 40.4–45.4%), respectively. All of the mentioned prevalence rates were higher among females (except hypertriglyceridemia) and urban residents.

CONCLUSION: We documented a strikingly high prevalence of a number of chronic non-communicable diseases and their risk factors among Iranian adults. Urgent preventive interventions should be implemented to combat the growing public health problems in Iran.
Third National Surveillance of Risk Factors of Non-Communicable Diseases (SurfnCD-2007) in Iran: Methods and Results on Prevalence of Diabetes, Hypertension, Obesity, Central Obesity, and Dyslipidemia

Alireza Esteghamati¹, Alipasha Meysamie², Omid Khalilzadeh¹, Armin Rashidi¹, Mehrdad Haghažali³, Fereshteh Asgari³, Mandana Kamgar¹, Mohammad Mehdi Gouya³ and Mehrshad Abbasi¹.

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Abstract

BACKGROUND: The burden of non-communicable diseases is rising globally. This trend seems to be faster in developing countries of the Middle East. In this study, we presented the latest prevalence rates of a number of important non-communicable diseases and their risk factors in the Iranian population.

METHODS: The results of this study are extracted from the third national Surveillance of Risk Factors of Non-Communicable Diseases (SurfNCD-2007), conducted in 2007. A total of 5,287 Iranian citizens, aged 15–64 years, were included in this survey. Interviewer-administered questionnaires were applied to collect the data of participants including the demographics, diet, physical activity, smoking, history of hypertension, and history of diabetes. Anthropometric characteristics were measured and serum biochemistry profiles were determined on venous blood samples. Diabetes (fasting plasma glucose ≥ 126 mg/dl), hypertension (systolic blood pressure ≥ 140 mmHg, diastolic blood pressure ≥ 90 mmHg, or use of anti-hypertensive drugs), dyslipidemia (hypertriglyceridemia: triglycerides ≥ 150 mg/dl, hypercholesterolemia: total cholesterol ≥ 200 mg/dl), obesity (body mass index ≥ 30 kg/m²), and central obesity (waist circumference ≥ 80 cm in females and ≥ 94 cm in males) were identified and the national prevalence rates were estimated.
RESULTS: The prevalence of diabetes, hypertension, obesity, and central obesity was 8.7% (95%CI = 7.4–10.2%), 26.6% (95%CI = 24.4–28.9%), 22.3% (95%CI = 20.2–24.5%), and 53.6% (95%CI = 50.4–56.8%), respectively. The prevalence of hypertriglyceridemia and hypercholesterolemia was 36.4% (95%CI = 34.1–38.9%) and 42.9% (95%CI = 40.4–45.4%), respectively. All of the mentioned prevalence rates were higher among females (except hypertriglyceridemia) and urban residents.

CONCLUSION: We documented a strikingly high prevalence of a number of chronic non-communicable diseases and their risk factors among Iranian adults. Urgent preventive interventions should be implemented to combat the growing public health problems in Iran.


Prevalence of the Metabolic Syndrome and its Influencing Factors among Adolescent Girls in Mashhad, Iran.

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Abstract

INTRODUCTION: This study sought to determine the prevalence of the metabolic syndrome, one of the major public-health challenges worldwide, and its influencing factors among 15 to 17 years old adolescent girls in Mashhad, Iran.

METHODS: A total of 622 high school adolescents participated in a cross-sectional study. A self-administered questionnaire was used to assess socio-demographic characteristics and dietary habits. Anthropometric assessments, blood pressure measurement and biochemical assessment were done.

RESULTS: Applying BMI Z-score for age and gender (WHO 2007), 14.6 % and 3.4 % of subjects were classified as overweight and obese, respectively. Enlarged WC (> 80 cm) was seen in 9.5% of subjects. The prevalence of combined hypertension was 6.1% which was increased by the severity of obesity. A total of 24.5% of subjects had hypertriglyceridemia and 57% of them had low level of HDL-cholesterol. Hyperglycemia was present in 16.7% of subjects. Based on the NCEP ATP III (2001) criteria, the prevalence of the metabolic syndrome was 6.5% and increased to 45.1% in obese subjects.
Increasing BMI or WC, led to significant increment in the number of metabolic syndrome features \( (p < 0.001) \). High socioeconomic status of family, medical history of parents and dietary habits especially high consumption of carbohydrates were influencing factors in the prevalence of the metabolic syndrome.

**CONCLUSION:** Approximately 6.5% of all and 45% of obese subjects met the criteria for the metabolic syndrome. Dietary habits especially carbohydrate consumption, socioeconomic status of family and medical history of parents can be influential factors in the prevalence of the metabolic syndrome.

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**Risk Scoring System for Prediction of Abdominal Obesity in a National Sample of Youths: Caspian Study**

Mohsen Hosseini, Mohammad Amir Amirkhani, Marjan Mansourian, Hasan Ziaoddini, Gelayol Ardalan, Parinaz Poursafa, Roya Kelishadi

**Abstract**

**BACKGROUND:** Abdominal obesity is a predictor for many cardio-metabolic disorders in different age groups. The use of available information on factors associated with abdominal obesity has been proposed as an effective way of identifying at-risk individuals.

To assess the effectiveness of a risk scoring system for abdominal obesity in a large and representative population of youths.

**METHODS:** Waist-to-height ratio (WHtR) is an effective surrogate measure of abdominal obesity in children. This analysis was performed to find out the normal cut-off value for WHtR by calculating the risk score.

To develop a risk score to identify high-risk individuals for abdominal obesity, we analyzed data from a national survey, entitled CASPIAN Study, that was conducted on a nationally - representative sample of Iranian students aged 6-18 years. The risk equation was determined by a multiple logistic regression analysis, and Receiver Operator Characteristics (ROC) analysis was used to determine the cut-off value for the risk equation.

**RESULTS:** The independent risk factors associated with abdominal obesity were living in rural area, attending public school, positive family history of diabetes and obesity in first and second degree relatives, lower mother’s education level, number of household members; whereas physical activity
decreased this risk. The area under curve (AUC) for the ROC was 63% (95% CI: 0.612, 0.643). A CASPIAN study population value >= 39 had optimum sensitivity (64%) and specificity (54%) for determining abdominal obesity score.

**CONCLUSION:** This method can be helpful in screening and prevention of abdominal obesity by identifying those at-risk individuals in a timely manner.


**Socioeconomic Status and Obesity Relationship in Non-Menopause Women Aged 15-49 Years in Tehran, Iran**

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2Dept. of Basic Sciences, School of Medicine, Shahroud University of Medical Sciences, Iran
3Dept. of Statistics and Computer, University of Welfare and Rehabilitation Sciences, Iran

**Abstract:**

**BACKGROUND:** To investigate the association between socio-economic status and obesity in non-menopause women aged 15-49 years in Tehran, Iran.

**METHODS:** This study was based on Iran National Health Survey conducted in 1999. Obesity is defined as a Body Mass Index over ≥30. Constructed area (per-person), educational level and job are considered as factors indicating the socioeconomic status. The results have been adjusted for age and mental health using univariate and multiple logistic regression.

**RESULTS:** A total number of 2859 non-menopause women aged 15-49 yr from urban areas of Tehran have been studied. The prevalence of obesity and overweight were 16.4% and 28.4% respectively. Women aged 30-49 yr had greater risk of obesity (adjusted OR=2.53, 95% CI: 1.99-3.20). Comparing with students, homemakers and employees were at higher risk of obesity (adjusted OR= 4.33, 95% CI: 2.47-7.76, adjusted OR= 2.82, 95% CI: 1.41-5.63 respectively). Those with >= 12 yr of education had lower risk of obesity compared to illiterate women (adjusted OR=.57, 95% CI: 0.38-0.86).

**CONCLUSION:** The role of social factors is dominant over economic factor
on obesity. This fact should be considered as one of the most important research priorities in future researches.

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Prevalence of Overweight and Obesity in 7 to 18 Year-Old Children in Birjand/ Iran

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Abstract:

OBJECTIVE: The aim of this study was to estimate the prevalence of overweight and obesity in 7 to 18-year-old children in Birjand (east Iran) in 2005-2006. Individuals selected using multistage stratified random sampling.

METHODS: This cross-sectional study was performed on 6093 students (2995 boys and 3098 girls) aged 7-18 years in Birjand (2005-2006). Subjects were selected via step-wised random sampling in four districts of the city. Body weight and height were measured directly. Percentiles were calculated for body mass index (BMI). Overweight and obesity was defined based on the 85th and 95th percentiles of body mass index for age and sex, respectively, as proposed by CDC in 2000.

FINDINGS: The overall prevalence rates of overweight and obesity were 4.8% and 1.8%, respectively. Overweight prevalence varied by age from 1.6% to 9.1% in girls and 0.5% to 7.8% in boys, with obesity rate from 0.8% to 2.5% in girls and 0.5% to 3.7% in boys.

CONCLUSION: According to this study, prevalence rate of overweight and obesity in Birjandi children is lower than that in many other parts of Iran and some neighboring countries.
Metabolic Syndrome: An Emerging Public Health Problem In Iranian Women: Isfahan Healthy Heart Program.


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Abstract

OBJECTIVES: To determine the gender-specific prevalence of the metabolic syndrome (Met S) in a representative sample of Iranian adults, and to identify some possible related lifestyle factors.

METHODS: As the baseline survey of a community-based interventional program entitled Isfahan Healthy Heart Program, we performed this cross-sectional study on 12,514 adults (> or =19 years) living in urban and rural areas of 3 cities in Iran. We assessed the prevalence of the Met S (according to the ATP III criteria) as well as dietary intake (based on food frequency questionnaire) and physical activity habits of all of the participants. We also evaluated dietary intake at the micronutrient level by using a one-day food record in a sub-sample of 2000 participants.

RESULTS: The age-adjusted prevalence of Met S was 23.3%, with a higher prevalence in women compared to men (35.1% vs. 10.7%, P<0.05) and in urban residents compared to rural residents (24.2% vs. 19.5%, P<0.05). In all age groups and in both urban and rural areas, the Met S affected a significantly larger number of women than men. Among women, abdominal obesity (71.7%) was more prevalent followed by low HDL-C (60.9%) and hypertriglyceridemia (56.6%), whereas among men, the most frequent components were hypertriglyceridemia (49.1%) and low HDL-C (35.1%), respectively. Abdominal obesity was nearly six times as prevalent in women as in men (71.7% vs. 12%, P<0.05) and had a significant association with metabolic disorders even after adjustment for age, sex and the living area. In general, dietary intake had no effect on the prevalence of Met S. The prevalence of Met S in subjects with a sedentary lifestyle was significantly higher than in active subjects of both genders (25.6% vs. 14.4%, respectively, P<0.05).
CONCLUSION: The Met S is highly prevalent in the Iranian population, notably in women living in urban areas. Abdominal obesity and dyslipidemia characterize this syndrome. Implementing community-based strategies for lifestyle change is of great significance.


Sociodemographic and Smoking Associated with Obesity in Adult Women in Iran: Results from the National Health Survey.


Department of Biostatistics, School of Public Health and Institute of Public Health Research, Tehran University/Medical Sciences, Iran.

Abstract

BACKGROUND: There is no study that had a sample size sufficient to study the association between sociodemographic and smoking with obesity in Iran. The goal was to investigate these associations in the Iranian women.

METHODS: Multivariate statistical techniques included 14 176 women between 20 and 69 years of age. Height and weight were measured rather than self-reported.

RESULTS: In Iranian adult women, obesity OR(S) for the moderate and high education were 0.78 and 0.41, respectively, compared with basic level. Using low economy index as the reference, Obesity OR(S) for the urban women were 1.29, 1.25 and 1.28 for the lower-middle, upper-middle and high groups, respectively. Obesity OR(S) for the rural women were 1.71, 1.71 and 2.02 for the lower-middle, upper-middle and high groups, respectively. Obesity OR was 0.48 for active workforce compared with inactive group. Obesity OR was 0.70 for smokers women compared with nonsmokers. Using non-married as the reference group, Obesity OR(S) were 1.23 and 2.34 for married urban and rural women, respectively.

CONCLUSIONS: Our results on the associations between age, smoking, education level, workforce and obesity are consistent with most studies, but between economic level and obesity are consistent with some study in developing countries.
Comparison of Body Mass Index and Waist/Height Ratio in Predicting Definite Coronary Artery Disease.

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Abstract

BACKGROUND: Body mass index (BMI), waist circumference (WC), waist/hip ratio, waist/height ratio (WHtR) and skin fold thickness are clinical tools enabling the evaluation of obesity. WHtR is a recently introduced index to assess central fat distribution. This study was performed to compare the prognostic value of WHtR and BMI for definite coronary artery disease (CAD).

METHODS: A cross-sectional study was performed in the Shahid-Chamran Hospital, Isfahan, Iran. The study included 591 patients undergoing coronary angiography for suspected ischemia. We measured BMI, WC and coronary artery scores of the patients. Prevalence of CAD was compared between obese (BMI $\geq 30$) and abdominal obese (WHtR $\geq 0.55$) participants.

RESULTS: Prevalence of CAD was significantly higher in abdominal obese patients (WHtR $\geq 0.55$) than in patients without abdominal obesity (odds ratio, OR=1.63, $p=0.008$). The difference in CAD prevalence between obese (BMI $\geq 30$) and non-obese patients nearly reached significance (OR=1.48, $p=0.058$). There was a significant positive correlation between CAD score and age ($p<0.01$), WC ($p<0.05$), and WHtR ($p<0.01$) in male participants.

CONCLUSION: WHtR may be a better marker of central obesity and may better predict CAD than BMI and WC.
Short- and Long-Term Relationships of Serum Ghrelin with Changes in Body Composition and the Metabolic Syndrome in Prepubescent Obese Children Following Two Different Weight Loss Programmes.

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Abstract

OBJECTIVES: Ghrelin has been proposed to be a regulator of energy balance, and its dysregulation may be important in obesity. The aims of this study were (i) to compare short- and long-term changes in circulating ghrelin concentration after increasing energy expenditure vs. its changes after decreasing energy intake, (ii) to determine factors associated with changes in ghrelin level, and (iii) to assess relationships of ghrelin concentration with metabolic syndrome (MetS) in prepubescent obese children.

DESIGN: Randomized controlled trial.

PATIENTS: About 100 obese children aged 7-9 years.

MEASUREMENTS: After baseline testing, children were randomly assigned to two interventional groups, either receiving dietary recommendations or engaging in physical training classes for 6 months. Ghrelin, insulin, leptin, fasting blood sugar, lipid profile and anthropometric indexes, as well as energy intake and expenditure were measured.

RESULTS: Of the participants, 92 completed the 6-month trial, and 87 returned for the 1-year follow-up. Except ghrelin level, other biochemical variables had no significant change at 12- vs. 6-month follow-up. In both groups, ghrelin showed a progressive increase in the periods of time with significant reduction of overweight and negative energy balance; while after the end of the trial, when children regained weight, it decreased toward baseline levels. Baseline ghrelin had strong negative correlation with measures of central obesity. The odds of having the MetS were 12% lower in the middle and 37% lower in the highest tertile of ghrelin level. As the number of MetS components increased, there was a progressive
decrease in ghrelin and quantitative insulin sensitivity check index (QUICKI), with a progressive increase in serum insulin, HOMA-R and leptin levels.

CONCLUSIONS: Ghrelin increases in response to overweight reduction and negative energy balance resulting from either an exercise intervention or reduction in food intake in prepubescent obese children. It is unlikely to regulate long-term energy balance in young obese children.


Metabolic Syndrome and Insulin Resistance Significantly Correlate with Body Mass Index.

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Abstract

BACKGROUND: Metabolic syndrome (MetS) is a cluster of metabolic risk factors for cardiovascular disease. This study aimed to compare the prevalence of MetS and its components in different degrees of obesity in Iranian subjects.

METHODS: A total of 2309 adults were divided into four groups according to their body mass index (BMI): 1511 subjects were non-obese (BMI <30 kg/m(2)); 535 were moderately obese (BMI > or =30<35); 176 were severely obese (BMI > or =35<40) and 87 were morbidly obese (BMI > or =40). Fasting blood samples were obtained and plasma glucose, lipids, insulin and HbA1c were measured. The homeostasis model assessment of insulin resistance (HOMA-IR) was calculated. The prevalence of MetS, according to the definitions of the International Diabetes Federation (IDF) and National Cholesterol Education Program Adult Treatment Panel III (ATPIII), was compared across increasing grades of BMI.

RESULTS: Prevalence of MetS gradually rose with increasing grades of obesity (p<0.001), from 31.9% in the non-obese to 69.0% in the morbidly obese according to the IDF criteria and from 31.2% to 62.1% according to the ATPIII criteria. After controlling for age and sex, one grade increase in the BMI category was associated with 2.5-3 times higher risk of MetS depending on the definition used. In addition, HOMA-IR was significantly correlated with BMI in all subjects (r=0.343, p<0.001) and in moderately (r=0.184, p<0.01), severely (r=0.147, p<0.01) and morbidly (r=0.101, p<0.05) obese participants separately.
CONCLUSIONS: MetS and its components, including high blood pressure, central obesity, hyperglycemia, IR, hypertriglyceridemia and low high-density lipoprotein-cholesterol increase in parallel with increasing obesity grades.


Physical Activity and Body Mass Index in Elderly Iranians in Sweden: A Population-Based Study.

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Abstract

BACKGROUND/OBJECTIVES: To analyze whether elderly Iranians in Sweden have a higher mean body mass index (BMI) and are less physically active than elderly Swedes after adjustment for possible confounders.

SUBJECTS/METHODS: A total of 402 men and women (167 Iranian-born and 235 Swedish-born) aged 60-84 years residing in Stockholm, Sweden, were included in this population-based survey. Iranian participants were weighed and their height was measured. BMI values from the Swedish participants were based on self-reported data adjusted for the known discrepancy between objectively measured and self-reported weight and height. The outcome variables, BMI and self-reported leisure-time physical activity, were analyzed by linear regression and unconditional logistic regression.

RESULTS: Overall, Iranian women had the highest mean BMI (29.2) of all subgroups. The model that included an interaction between sex and length of time in Sweden showed that there was no significant difference in BMI between Swedish men (reference) and Swedish women or Iranian men. In contrast, Iranian women had significantly higher BMI than the reference group after adjustment for age, education and marital status. The largest difference in BMI compared to the reference group was found among Iranian women who immigrated to Sweden in 1989 or later (beta-coefficient=3.41, 95% CI=1.99-4.83). Iranians and Swedes had almost the same odds of >or= once-weekly leisure-time physical activity.

CONCLUSIONS: Elderly Iranian immigrants and especially women who immigrated to Sweden in 1989 or later must be targeted in order to decrease their burden of risk factors for cardiovascular disease.
Cardiovascular Disease Risk Factors, Metabolic Syndrome and Obesity in an Iranian Population.

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Abstract

As part of the Isfahan Healthy Heart Program, we evaluated the prevalence of cardiovascular disease risk factors in Iranians with generalized and abdominal obesity. We carried out a cross-sectional study on 3694 > or = 19 years. Overall, 36.6% of men and 35.9% of women were overweight; 11.2% of men and 28.1% of women were obese. Mean body mass index (BMI), waist circumference (WC) and waist/hip ratio (WHR) increased with age up to 65 years. Total serum cholesterol, triglycerides and 2-hour post-load plasma glucose increased with BMI, WC and WHR in both sexes. Prevalence of metabolic syndrome was 19.8% in females with normal BMI, 48.1% in overweight females and 63.2% in obese females. In males, corresponding values were 3.7%, 18.0% and 40.1%.

Weight, Height, Body Mass Index and Risk of Breast Cancer in Postmenopausal Women: A Case-Control Study.


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Abstract

BACKGROUND: Many women in Iran have a relatively high body mass index. To investigate whether the condition contributes to excess breast cancer cases, a case-control study was conducted to assess the relationships between anthropometric variables and breast cancer risk in Tehran, Iran.
METHODS: All incident cases of breast cancer in the Iranian Centre for Breast Cancer (ICBC) were identified through the case records. Eligible cases were all postmenopausal women with histological confirmed diagnosis of breast cancer during 1996 to year 2000. Controls were randomly selected postmenopausal women attending the ICBC for clinical breast examination during the same period. The body mass index (BMI) was calculated based on weights and heights as measured by the ICBC nursing staff. Both tests for trend and logistic regression analysis were performed to calculate odds ratios and 95% confidence intervals as measures of relative risk.

RESULTS: In all, 116 breast cancer cases and 116 controls were studied. There were no significant differences between cases and control with regard to most independent variables studied. However, a significant difference was observed between cases and controls indicating that the mean BMI was higher in cases as compared to controls (P = 0.004). Performing logistic regression analysis while controlling for age, age at menopause, family history of breast cancer and parity, the results showed that women with a BMI in the obese range had a three fold increased risk of breast cancer [odds ratio (OR) = 3.21, 95% confidence interval (CI): 1.15-8.47].

CONCLUSION: The results suggest that obesity in postmenopausal women could increase risk of breast cancer and it merits further investigation in populations such as Iran where it seems that many women are short in height, and have a relatively high body mass index.


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Abstract

AIMS: To examine changes in anthropometric parameters and lipid profiles over a period of 3.6 years in an Iranian adult population according to body mass index (BMI) groups.
METHODS: Between 1998 and 2001 (phase 1) and 2002 and 2005 (phase 2), 5,618 nondiabetic Iranian adults aged > or =20 years were examined. Analysis of covariance was used to delineate trends in anthropometric parameters as well as total and low- and high-density lipoprotein cholesterol (TC, LDL-C and HDL-C, respectively) across BMI groups.

RESULTS: Although BMI increased in women, this increase was not significant in obese persons. Among the men, however, a significant increase in BMI was observed only in lean persons. Waist circumference (WC) increased across all BMI groups in both sexes. A significant decrease was observed in TC [men: -0.83 mmol/l, 95% confidence interval (CI) -1.27 to -0.40; women: -0.78 mmol/l, CI -0.97 to -0.60] and LDL-C (men: -0.63 mmol/l, CI -1.13 to -0.13; women: -0.51 mmol/l, CI -0.78 to -0.24). A significant decrease in mean HDL-C was observed only among men (-0.09 mmol/l, CI -0.13 to -0.04), with no difference among BMI groups (p = 0.3). There were no significant decreases in TC/HDL-C and LDL-C/HDL-C ratios in men or women.

CONCLUSIONS: Despite an increase in WC, favorable trends were observed in TC and LDL-C levels. The favorable trend in TC levels was counterbalanced by changes in HDL-C, as reflected by the absence of a significant decrease in TC/HDL-C or LDL-C/HDL-C.


Gastro-Eosophageal Reflux Symptoms and Body Mass Index: No Relation Among the Iranian Population.


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Abstract

An association between obesity and symptoms of gastro-esophageal reflux disease (GERD) has been frequently reported in western societies. A recent study indicated a consistent association between abdominal diameter and reflux-type symptoms in the white population, but no consistent association in the black population or Asians. It is unclear whether an association persists after adjusting for known risk factors of GERD among Asian populations. We did a population-based, cross-sectional interview
study to estimate the strength of association between body mass and symptoms of reflux. During interviews, participants completed a valid gastro-esophageal reflux questionnaire. Odds ratio (OR) with 95% confidence interval (CI), calculated by logistic regression with multivariate adjustments for covariates, were the measures of association. Symptoms of reflux at least once a week over the past 3 months were reported by 522 (9.1%) of the 5733 interviewees. Among those who were overweight or obese (BMI > 25 kg/m²), the OR of having symptoms of reflux was 0.88 (95% CI: 0.66-1.16) compared with those who were not overweight or obese. Thus, among Asians, symptoms of GERD occur independently of body mass index.


The Effects of Socio-Economic Status on BMI, Waist:Hip Ratio and Waist Circumference in a Group of Iranian Women.

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Abstract

OBJECTIVE: To assess the effects of socio-economic status (SES) on BMI, waist:hip ratio (WHR) and waist circumference (WC) in a group of Iranian women.

METHODS: A cross-sectional study was conducted on 888 women in Sistan and Baluchestan Province. SES was measured using level of education. In addition, parity, marital status and physical activity were assessed. Standardized measurements were taken, BMI and WHR were calculated.

RESULTS: Low education level was a strong determinant of overweight and obesity among Iranian women. After controlling for age, women with higher education level had significantly lower BMI, WC and parity. Multiple linear regression analysis found a significant negative association of BMI and WC with education level and a significant positive association of BMI and WC with parity. Significant factors associated with obesity by a logistic regression model were education level (OR for university graduates v. illiterate or low literacy levels: 1.00 v. 3.70; P = 0.01), living with spouse (OR for married v. single subjects: 1.00 v. 0.15; P = 0.05), parity (OR for more
than five v. less than two pregnancies: 1.00 v. 0.34; P = 0.03) and WC (OR for < 0.88 cm v. > or = 0.88 cm: 1.00 v. 11.20; P = 0.001).

**CONCLUSION:** The present study revealed that educational level, multiple pregnancies, marital status and lack of exercise are some possible explanations for the obesity among Sistan and Baluchestan women.

**BMC Public Health.** 2008 Jun 15;8:213.

**The Positive Association between Number of Children and Obesity in Iranian Women and Men: Results from the National Health Survey.**


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**Abstract**

**BACKGROUND:** To date, few studies have assessed the association between the number of children and obesity in couples. We aimed to investigate this association in men and women aged 20-75 years.

**METHODS:** Data from the National Health Survey were considered in this investigation. It included 2728 women and men (1364 couples) aged 20-75 years. Height and weight were actually measured rather than self-reported. A generalized estimating equation model was used to estimate the odds of obesity (body mass index (BMI > or = 30)) as a function of the number of children adjusted for age, sex, education, economic index, workforce, smoking and place of residence.

**RESULTS:** We infer that each additional child has at least 5% and at most 34% increase in the odds of obesity in men and at least 4% and at most 29% increase in the odds of obesity in women. Our test of interaction by sex showed that the association between the number of children and obesity was not different among men and women. Among women, factors that increased obesity included age, low education, having more children, being inactive workforce and being nonsmoker. Among men, these factors included high economic index, low education, having more children, and being nonsmoker.
CONCLUSION: Our results show an association between the number of children and obesity among men. We would recommend interventions to reduce the number of children to prevent obesity in men.


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Abstract

BACKGROUND: To estimate the prevalence of diagnosed and undiagnosed diabetes mellitus, impaired fasting glucose (IFG), impaired glucose tolerance (IGT), and combined IFG/IGT in a large urban Iranian population aged > or = 20 years.

METHODS: The study population included 9,489 participants of the Tehran Lipid and Glucose Study with full relevant clinical data. Age-standardized prevalence of diabetes and glucose intolerance categories were reported according to the 2003 American Diabetes Association definitions. Age-adjusted logistic regression models were used to estimate the numbers needed to screen (NNTS) to find one person with undiagnosed diabetes.

RESULTS: The prevalence of diagnosed and undiagnosed diabetes, isolated IFG, isolated IGT, and combined IFG/IGT were 8.1%, 5.1%, 8.7%, 5.4% and 4.0% in men and 10%, 4.7%, 6.3%, 7.6%, and 4.5% in women respectively. Participants with undiagnosed diabetes had higher age, body mass index (BMI), waist circumference, systolic and diastolic blood pressures, triglycerides (all p values <0.001) and lower HDL-cholesterol (only in women, p < 0.01) compared to normoglycemic subjects. Undiagnosed diabetes was associated with family history of diabetes, increased BMI (> or = 25 kg/m2), abdominal obesity, hypertriglyceridemia, hypertension and low HDL-cholesterol levels. Among men, a combination of increased BMI, hypertension, and family history of diabetes led to a NNTS of 1.6 (95% CI: 1.57-1.71) and among women a combination of family history of diabetes and abdominal obesity, yielded a NNTS of 2.2 (95% CI: 2.1-2.4).
CONCLUSION: In conclusion, about one third of Tehranian adults had disturbed glucose tolerance or diabetes. One-third of total cases with diabetes were undiagnosed. Screening individuals with BMI \( \geq 25 \text{ kg/m}^2 \) (men), hypertension (men), abdominal obesity (women) and family history of diabetes may be more efficient.


**Dietary and Non-Dietary Determinants of Central Adiposity among Tehrani Women.**

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**Abstract**

**OBJECTIVE:** To determine the correlates of central adiposity.

**DESIGN:** Population-based cross-sectional study.

**SUBJECTS:** A total of 926 women (aged 40-60 years) from all districts of Tehran.

**METHODS:** Demographic data were collected and anthropometric indices were measured according to standard protocols. Dietary intakes were assessed by means of a semi-quantitative food-frequency questionnaire. The suggested cut-off point for waist-to-hip ratio (WHR\(>\text{or}=0.84\)) for Tehrani people, adjusted for their age group, was used to determine central adiposity. Logistic regression analysis was used to determine the correlates of WHR, which were adjusted for age, taking medications and body mass index (BMI). The components of dietary intake were determined by factor analysis. Pearson correlation was used to determine the association between the dietary components and WHR. Analysis of covariance was employed to compare the mean values of WHR in different lifestyle groups, with adjustment for BMI and age.

**RESULTS:** Mean WHR was 0.82 +/- 0.06. The possibility of being centrally obese was higher in women with light physical activity (odds ratio: 2.11; 95% confidence interval: 1.40-2.53), depressed women (1.36; 1.02-1.93), smokers (1.21; 1.02-1.56) and unemployed women (1.41; 1.13-1.72). Marriage (1.31; 1.10-1.82), menopause (1.22; 1.02-1.61), low vitamin C intake (2.31; 1.25-4.25) and low calcium intake (1.30; 1.07-3.78) were
associated with central fat accumulation. Dairy consumption was inversely correlated with central fat accumulation ($r = -0.2$, $P < 0.05$).

**CONCLUSION:** Central adiposity is associated with poor lifestyle factors including low physical activity, depression, smoking, low intake of vitamin C, low intake of calcium and dairy products and high fat consumption. Thus lifestyle modifications should be encouraged to achieve a healthier body shape.

**Arch Iran Med.** 2008 May;11(3):274-81.

**Association of Body Mass Index and Abdominal Obesity with Marital Status in Adults.**

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**Abstract**

**BACKGROUND:** Obesity continues to be an important public health problem worldwide. The objective of this study was to determine the association of body mass index and abdominal obesity with current marital status among the adult population of Iran.

**METHODS:** A nation-wide cross-sectional survey was conducted from December 2004 through February 2005. The subjects were selected by stratified probability cluster sampling through household family members in Iran. Weight, height, waist circumference, and marital status of 89,404 men and women aged 15 - 65 (mean: 39.2) years were recorded. Four classes of body mass index, i.e., <18.5, 18.5 - 24.9, 25 - 29.9, and $\geq$30 kg/cm², and three marital status, i.e., currently-, formerly-, and never-married were used. Abdominal obesity was defined as waist circumference $\geq$102 cm in men and $\geq$88 cm in women.

**RESULTS:** The prevalence of overweight was twofold higher in married men (OR: 2.24; 95% CI: 2.08 - 2.41) and women (OR: 2.36; 95% CI: 2.20 - 2.53) than never-married men and women, even when age, educational level, leisure time physical activity, smoking habits, and place of residence were controlled. The multivariate OR of obesity was increased about threefold in married men (2.82; 95% CI: 2.51 - 3.18) and women (3.64; 95% CI: 3.31 - 3.99). The prevalence of abdominal obesity was twofold higher among
married men (2.02; 95% CI: 1.79 - 2.29) and about threefold higher among married women (2.87; 95% CI: 2.69 - 3.06).

CONCLUSION: The marital status appears to influence the likelihood of developing overweight, obesity, and abdominal obesity in both men and women in Iran.


Childhood Obesity and Early Prevention of Cardiovascular Disease: Iranian Families Act Too Late.

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Abstract

This study described overweight/obese children and adolescents seeking weight loss treatment regarding their age, gender, severity of obesity and maternal education in Rasht city, northern Iran. Data on 1465 overweight/obese children and adolescents aged 2-18 years engaged in weight loss program were analyzed in this study. These data included age, sex, weight, height, self-reported parental weight and height, history of dieting, and mother's level of education. There were more overweight/obese girls engaged in weight loss program than overweight/obese boys (71.2% vs. 28.8% p<0.0001). These data showed that only 18.2% of the overweight/obese children and adolescents were from families with low maternal education. These data suggest that parents of overweight/obese children and adolescents from low social level, boys and young children across all maternal educational levels should be warned against the risk of obesity.
The Relation between Total Daily Caloric Intake and Blood Pressure.

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Abstract

BACKGROUND: More caloric intake and less physical activity engenders more obesity and any degree of weight gain even to the level that is not defined as overweight is associated with an increase of hypertension. It is not defined that if total caloric intake irrespective of weight gain had any effect on blood pressure. This is an observational study about the relationships between blood pressure and daily calorie intake in 1,061 female and 890 male aged 20-51 years.

METHOD: Relation of daily total caloric intake and blood pressure in normotensive and hypertensive samples. Dietary data were obtained from a food-frequency questionnaire which was analyzed by software designed for Iranian foods designed by Isfahan cardiovascular research center to calculate the total daily caloric intake. Blood pressure was measured three times by korotkoff method. The relation between daily total caloric intake and blood pressure was analyzed by general linear regression and logistic regression.

RESULTS: Generalized linear regression revealed no significant relation between either systolic or diastolic blood pressure and daily total caloric intake irrespective of normal or abnormal blood pressure. This association remained non-significant even after adjustment for body mass index (BMI) p<0.05. Logistic regression analysis revealed that there is no significant relation between total caloric intake and existence of systolic or diastolic hypertension OR=1, p>0.05. After adjustment for BMI also, there was no significant relation between these two parameters OR=1, p>0.05.

CONCLUSION: Usual relation between caloric intake and blood pressure in obese may be due to insulin resistance induced by obesity. So total daily caloric intake in general population had no significant effect on blood pressure and on development of hypertension when the effect of obesity is adjusted.
Nationwide Survey of Prevalence and Risk Factors of Prehypertension and Hypertension in Iranian Adults.

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Abstract

OBJECTIVE: The aim of this study was to estimate the prevalence and risk factors of prehypertension (Pre-HTN) and hypertension (HTN) among the adult population of Iran.

METHODS: A nationwide cross-sectional survey was conducted from December 2004 to February 2005. The selection was conducted by stratified probability cluster sampling through household family members in Iran. Blood pressure (BP) and associated risk factors of 35,048 men and 34,674 women aged 25-65 years (mean 44.1 years) were measured.

RESULTS: The prevalence of Pre-HTN was 59.6% in men and 44.5% in women; and 19.8% of men and 26.9% of women were hypertensive, according to Joint National Committee 7 criteria. Pre-HTN was more common among men whereas HTN was more common among women. Multivariate analysis revealed that age, overweight, obesity, abdominal obesity and high cholesterol were strongly associated with Pre-HTN in both genders. In women, low educational attainment, residence in an urban area and high blood glucose were also associated with Pre-HTN. Age, low educational attainment, overweight, obesity, abdominal obesity and high cholesterol and blood glucose were strongly associated with HTN in both genders.

CONCLUSION: Pre-HTN and HTN appear to be quiet common in Iran and were associated with obesity. More men than women present with Pre-HTN, whereas more women than men present with HTN. Prevention and treatment strategies are urgently needed to address the health burden of Pre-HTN and HTN and to prevent prehypertensive people from developing HTN and cardiovascular disease.
Determination of the Leading Central Obesity Index among Cardiovascular Risk Factors In Iranian Women.

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Abstract

BACKGROUND: It is unknown whether the waist circumference (WC) or the waist-to-hip ratio (WHR) is a better predictor of cardiovascular risk factors at different ages.

OBJECTIVE: To compare WC and WHR as predictors of cardiovascular risk factors and to determine the prevalence of some cardiovascular risk factors in overweight and obese adult women at different ages.

METHODS: In this clinical cross-sectional study, 714 overweight and obese women aged 20 to 70 years who were referred to two nutrition clinics in Sistan and Baluchestan province, Islamic Republic of Iran, were studied. The subjects were classified into three groups, 20 to < 35, 35 to < 50, and > or = 50 years of age. Anthropometric indices were measured according to the standard protocol. Total cholesterol (TC), triglycerides (TG), high-density lipoprotein cholesterol (HDL-C), and TC/HDL-C ratios were enzymatically determined.

RESULTS: Older subjects (> or = 50 years old) had significantly higher values of body mass index (BMI), WC, TC, TG, and LDL-C than those in the two younger age classes. The prevalence rates of obesity, high WC, high WHR, high TC, high TG, high LDL-C, and high TC/ HDL-C ratios were higher in the older subjects. After adjustment for age and BMI, multiple linear regressions showed that WC was significantly related to TC and TG in the 20- to < 35-year-old group and to TG in the 35- to < 50-year-old group. In the older participants, WHR was significantly related to TG.

CONCLUSIONS: The prevalence of cardiovascular risk factors increases with age. In clinical practice, WC is a better index for predicting some cardiovascular risk factors in younger and middle-aged women; however, for older women, WHR is better.
Triceps Skinfold Thickness Centile Charts in Primary School Children in Shiraz, Iran.

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Abstract

Triceps skinfold thickness charts of a random sample of 2,234 healthy school children (1,161 boys and 1,073 girls) in Shiraz, Iran are presented. Triceps skinfold thickness increases by age and is higher in girls than boys, except for upper extreme centiles. Triceps skinfold thickness may be used with reasonable success to detect childhood obesity, which would be of great importance in public health promotion. It favors adequacy and simplicity in screening for adiposity. The charts presented here are likely to be applied to urban population of school-aged children in Iran, however, it should be updated periodically.

Obesity and Associated Lifestyle Behaviours in Iran: Findings from the First National Non-Communicable Disease Risk Factor Surveillance Survey.


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Abstract

OBJECTIVE: To assess the national prevalence of overweight and obesity, as well as some associated lifestyle behaviours, for the first time in Iran.

DESIGN AND SETTINGS: This population-based study was performed in early 2005 as part of the World Health Organization (WHO) STEPwise approach to non-communicable diseases' risk factor surveillance. Dietary and physical activity habits were assessed by WHO questionnaires.

SUBJECTS: The study population comprised 89,532 subjects aged over 15 years living in the 28 provinces of Iran.
RESULTS: Overall, 50.4% (n = 45,113) of the participants were male and 64.6% (n = 57,866) were from the urban areas. The national estimates of overweight, obesity and morbid obesity were 28.6%, 10.8% and 3.4%, respectively. Body mass index (BMI) > or = 25 kg m$^{-2}$ in men, women, urban residents and rural residents were found in 37%, 48%, 46.7% and 35.5%, respectively. Abdominal obesity was present in 43.4% of women, 9.7% of men, 28.5% of the urban residents and 23% of the rural residents. Overweight as well as generalised and abdominal obesity were more prevalent in the 45-64-year age group. Although there was no significant difference in frequency of consumption of the food groups in subjects with different BMI categories, various kinds of physical activities showed a steady decline with increasing BMI.

CONCLUSIONS: The findings of the present study provide alarming evidence for health professionals and policy makers about the very high prevalence of generalised and abdominal obesity in Iran. The unhealthy lifestyle habits, notably sedentary lifestyles in our community, are the major contributing factors for this emerging public health problem.


Major Dietary Patterns In Relation To General Obesity and Central Adiposity among Iranian Women.

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Abstract

Studying the links between dietary patterns and obesity is especially relevant for Middle-Eastern populations because of their high prevalence of a particular type of obesity, the so-called Middle-Eastern pattern, and their diets' unique characteristics. Therefore, we wondered if major dietary patterns are related to the prevalence of general obesity and central adiposity among Iranian women. In this cross-sectional study of 486 women aged 40-60 y, usual dietary intakes were evaluated using a FFQ and anthropometric measurements. By the use of factor analysis, we extracted 3 major dietary patterns: healthy dietary pattern, western dietary pattern, and Iranian dietary pattern. Individuals in the upper category of the healthy pattern score were less likely to be generally (OR = 0.28; 95% CI = 0.14-0.53) and centrally obese (OR = 0.30; 95% CI = 0.16-0.55), whereas those in the
upper quintile of western pattern had greater odds (for general obesity: 2.73; 95% CI = 1.46-5.08 and for central obesity: 5.74; 95% CI = 2.99-10.99). Controlling for potential confounders attenuated the associations, but even after adjusting for energy intake, the associations were significant for both general and central obesity. Although the Iranian dietary pattern and general obesity were not significantly associated, subjects in the highest quintile had greater odds of being centrally obese, either before (OR = 2.15; 95% CI = 1.18-3.90) or after (OR = 2.08; 95% CI = 1.09-3.65) control for confounders. This study indicates significant associations among major dietary patterns, general obesity, and central adiposity in a Middle-Eastern country. Further prospective investigations are required to confirm such associations.


Is There Any Association between Overweight, Obesity and Symptoms of Reflux Disease?

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Abstract

The present study was aimed to identify the association of overweight and obesity with gastroesophageal reflux disease (GERD). This age- and sex-matched case-control study was carried out in a sample of subjects referred to the specialized clinic of Tabriz University of Medical Sciences from November 2006 to March 2007. Data were collected using a demographic questionnaire and a checklist to determine reflux symptoms. Weight and height were measured and Body Mass Index (BMI) was calculated. Logistic regression was used to examine the association between overweight, obesity and reflux symptoms. The study population included 106 cases (with reflux symptoms) and 111 controls with a mean age of 35.2 +/- 12.9 years. The mean BMI was 2.4 units greater in cases than controls (p = 0.0001). In unadjusted model, overweight (OR = 3.41, CI: 1.8-6.44) and obesity (OR = 2.84, CI: 1.38-5.82) were significantly associated with GERD. Results of multivariate logistic regression revealed significant association between overweight and GERD after adjusting for confounders (OR = 2.87, CI: 1.49-5.53). Given the increasing prevalence of patients with both overweight/obesity and GERD, Serious dietary intervention studies for weight loss as a therapeutic strategy should be carried out in GERD patients complicated with obesity.
Relationship between Obesity and Periodontal Status in a Sample of Young Iranian Adults.

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Abstract

AIM: To examine the possible relationship between body weight and periodontal disease in a sample of the young Iranian population.

DESIGN: An analytical (Case-Control) study.

PARTICIPANTS: Eighty individuals aged 18 to 34 years (40 normal and 40 overweight and obese subjects) were evaluated in this study.

METHODS: The periodontal examination consisted of: Plaque Index (PLI), Probing Pocket Depth (PPD) and Clinical Attachment Level (CAL). Body Mass Index (BMI) and Waist circumference (WC) were used as measures of overall and abdominal fat content. Socio-demographic variables and periodontal disease risk factors (age, gender, education, time elapsed since last dental visit, smoking and diabetes) were evaluated as covariates. The statistical tests used were: Kolmogorov-Smirnov, Independent Samples T-test, ANOVA, Exact fisher, Chi-Square test and Spearman's rank correlation (Rsp).

RESULTS: PPD and CAL were significantly higher in the case group compared to control (2.82 +/- 0.4 versus 2.56 +/- 0.36, P < 0.002 and 1.98 +/- 0.5 versus 1.63 +/- 0.335, P < 0.000 respectively). Subjects with a high waist circumference had significant differences of PPD and CAL when compared to normal waist circumference subjects (P < 0.000). There were also positive correlations between measures of overall fat content BMI and PPD (Rsp = 0.33), CAL (Rsp = 0.39) and age (Rsp = 0.42) on one side and the measure of WC and PPD (Rsp = 0.32), CAL (Rsp = 0.44), age (Rsp = 0.48) and PLI (Rsp = 0.3) on the other.

CONCLUSION: The results indicate that overall and abdominal obesity were associated with the extent of periodontal disease in a sample of Iranian young individuals and therefore prevention and management of obesity may be an additional factor for improving periodontal health.
Association of Changes in Oxidative and Proinflammatory States with Changes in Vascular Function after a Lifestyle Modification Trial among Obese Children.

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Abstract

BACKGROUND: The association of changes in oxidative and proinflammatory states with vascular function after diet and exercise intervention among obese children has not been previously explored.

METHODS: In this 6-week diet and exercise intervention study in 35 obese children, age 12 to 18 years, we evaluated the relationship between changes in anthropometric indices, measures of insulin resistance, C-reactive protein (CRP), oxidized LDL (ox-LDL), and oxidative stress markers with changes in carotid intima-media thickness (C-IMT) and flow mediated dilation (FMD) of the brachial artery.

RESULTS: At the end of the study, body mass index (BMI), waist circumference, and percentage body fat were decreased (P <0.05), but participants remained overweight (BMI ≥ 95th percentile). Although FMD improved (P <0.05), the improvement in C-IMT did not reach statistical significance. The changes in BMI, waist circumference, fat mass, ox-LDL, malondialdehyde (MDA), CRP, insulin, and homeostasis model assessment for insulin resistance (HOMA-IR) had an inverse correlation with the changes in mean FMD after adjustment for age and sex, with the highest correlations documented for ox-LDL, CRP, and WC. The age- and sex-adjusted changes in ox-LDL, waist circumference, CRP, MDA, and body fat mass had the highest correlations with changes in C-IMT.

CONCLUSIONS: Our findings suggest that a common inflammatory stress condition associated with childhood obesity, notably with abdominal fat deposition, may play a role in the development of the earliest stages of proatherosclerotic inflammatory processes and subsequent vascular dysfunction. These changes might be partially reversible by short-term diet and exercise intervention, even if patients do not reach ideal body weight.
Child Care Health Dev. 2008 Jan;34(1):44-54.

**Thinness, Overweight and Obesity in a National Sample of Iranian Children and Adolescents: CASPIAN Study.**


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**Abstract**

**BACKGROUND:** This study was conducted to assess the national prevalence of different grades of nutritional status (underweight, normal weight, overweight and obesity) among Iranian school-students and to compare the prevalence of overweight and obesity using three different sets of criteria.

**METHODS:** This cross-sectional national survey was conducted on a representative sample of 21111 school students including 10253 boys (48.6%) and 10858 girls (51.4%) aged 6-18 years, selected by multistage random cluster sampling from urban (84.6%) and rural (15.4%) areas of 23 provinces in Iran. The percentage of subjects in the corresponding body mass index (BMI) categories of the Centers of Disease Control and Prevention (CDC), the International Obesity Task Force (IOTF) and the obtained national percentiles were assessed and compared.

**RESULTS:** There was no gender differences in BMI, but was higher in boys living in urban than in rural areas (18.4 +/- 3.88 vs. 17.86 +/- 3.66 kg/m(2) respectively, P < 0.05). The prevalence of underweight was 13.9% (8.1% of boys and 5.7% of girls) according to the CDC percentiles, and 5% (2.6% of boys and 2.4% of girls) according to the obtained percentiles. According to the CDC, IOTF and national cut-offs, the prevalence of overweight was 8.82%, 11.3% and 10.1% respectively; and the prevalence of obesity was 4.5%, 2.9% and 4.79% respectively. The prevalence of overweight was highest (10.98%) in the 12-year-old group and that of obesity (7.81%) in the 6-year-old group. The kappa correlation coefficient was 0.71 between the CDC and IOTF criteria, 0.64 between IOTF and national cut-offs, and 0.77 between CDC and national cut-offs.
CONCLUSIONS: The findings of this study warrant the necessity of paying special attention to monitoring of the time trends in child obesity based on uniform definitions, as well as to design programmes to prevent and control associated factors.


Metabolically Obese Normal Weight And Phenotypically Obese Metabolically Normal Youths: The CASPIAN Study.


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Abstract

OBJECTIVES: The objectives of this study were to estimate the prevalence and distribution of cardiovascular risk factors and the metabolic syndrome in children with generalized, central, or combined types of obesity and to possibly discover if a phenotypically obese metabolically normal and a metabolically obese normal weight phenotype could be identified in children and adolescents.

DESIGN: This cross-sectional study is the baseline survey of a national longitudinal study. SUBJECT/SETTING: Overall 4,811 nationally representative children, aged 6 to 18 years, were recruited from the community through randomly selected schools within six provinces in Iran. In addition to physical examination, fasting glucose and lipid profile were assessed.

MAIN OUTCOME MEASURE: Obesity type was considered the independent variable, cardiovascular risk factors and the metabolic syndrome were dependent variables. Prevalence of risk factors in different types of obesity was compared by multivariate analysis of variance and post-hoc tests. Logistic regression analysis was used to examine the associations between obesity type and the metabolic syndrome.

RESULTS: Varying with age and sex groups, 6% to 9% of children were categorized into the isolated central obesity group, 7.5% to 11% into the isolated generalized obesity, and 14% to 16.5% into the combined type group. The prevalence of dyslipidemia, high blood pressure, and metabolic syndrome was higher in those children with combined obesity than in those
with the other two types of obesity, as well as in the central than in the generalized obesity groups. Phenotypically obese metabolically normal subjects were more prevalent in the generalized obesity group. The likelihood of metabolic syndrome was highest in those with combined obesity (odds ratio 3.7, 95% confidence interval 3.1 to 4), and lowest in generalized obesity group (odds ratio 2.1, 95% confidence interval 1.8 to 2.5).

CONCLUSIONS: This study complements recent research about the adverse health hazards of abdominal obesity in children. The finding of metabolically obese normal weight children suggests that additional investigation for cardiovascular risk factors may be warranted in normal-weight children with an ethnic predisposition to chronic diseases.


The Associations between Current Recommendation for Physical Activity and Cardiovascular Risks Associated with Obesity.

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Abstract

OBJECTIVE: To examine associations between current recommended physical activity levels and body mass index (BMI) with some cardiovascular disease (CVD) risk factors (total cholesterol, high-density lipoprotein cholesterol (HDL-C), non-HDL-cholesterol (non-HDL-C), C-reactive protein (CRP), fibrinogen, and blood pressure), general health score (GHQ12) and predicted coronary heart disease (CHD) risk.

DESIGN: Further analysis of the cross-sectional Scottish Health Survey 1998 data.

SUBJECTS: Five thousand four hundred and sixty adults 16-74 years of age.

RESULTS: After controlling for some confounding factors, obesity was significantly associated with higher odds ratio (OR) for elevated cholesterol, CRP, systolic blood pressure, non-HDL-C and lower HDL-C (P<0.001), and with greater predicted CHD risk compared to BMI <25 kg/m(2). Regular self-reported physical activity was associated with smaller OR of lower HDL-C and higher CRP, and average predicted 10-year CHD risk in obese subjects,
but did not eliminate the higher risk of the measured CVD risk factors in this group. The OR of these two risk factors were still high 4.39 and 2.67, respectively, when compared with those who were inactive with BMI <25 kg/m(2) (P<0.001). Those who reported being physically active had better GHQ scores in all BMI categories (P<0.001).

**CONCLUSION:** Reporting achievement of recommended physical activity levels may reduce some CVD risk factors, predicted CHD risk and improve psychosocial health, but may not eliminate the extra risk imposed by overweight/obesity. Therefore, increasing physical activity and reducing body weight should be considered to tackle CVD risk factors.

Arch Iran Med. 2008 Jan;11(1):10-5.

**Overweight Adolescents: A Group at Risk for Metabolic Syndrome (Tehran Adolescent Obesity Study).**

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**Abstract**

**BACKGROUND:** Metabolic syndrome not only is a serious problem for adults, but is also afflicting an increasing number of children and adolescents. This syndrome is a risk factor for type 2 diabetes mellitus and cardiovascular diseases. The aim of this study was to estimate the prevalence of metabolic syndrome in a sample of Iranian adolescents.

**METHODS:** A total of 554 overweight adolescents (aged 11 - 17 years) participated in a community-based cross sectional survey. Anthropometric examinations including height, weight, body mass index, and blood pressure were assessed. A fasting blood sample was taken for measurement of glucose and lipid profile. Metabolic syndrome was determined by the definition released by the National Cholesterol Education Program Adult Treatment Panel III, which was modified for age.

**RESULTS:** The overall prevalence of metabolic syndrome was 26.6%. There was no gender difference in the distribution of metabolic syndrome. When stratified by body mass index, 22.5% were overweight (BMI> or =95th percentile) besides having the criteria for metabolic syndrome, while the remaining 4.1% of the adolescents were at risk for overweight (BMI between 85th and 95th percentile) together with metabolic syndrome.
Hypertriglyceridemia was the most common and high-density lipoprotein was the least common constituent of metabolic syndrome.

**CONCLUSION:** This study suggests a high prevalence of metabolic syndrome among overweight Iranian adolescents. This poses a serious threat to the current and future health of Iranian youth.

Jqums, 2008;12(1):73-79

**Prevalence of Obesity among School Children in Neishabour (2005)**

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**Abstract**

**BACKGROUND:** At present, the prevalence of obesity among children and youngsters is rapidly increasing in developed countries. Few studies have been carried out on childhood obesity in Iran using standard references.

**OBJECTIVE:** Assessing the prevalence of obesity among school children in Neishabour using several references including Iranian reference, CDC 2000 and IOTF 2000.

**METHODS:** In a cross-sectional trial, 1471 students aged 6-12 were selected by a two-stage cluster sampling. Height and weight of students were measured and BMI was calculated. Obesity was defined as having a BMI $\geq$95th percentile of Iranian reference or CDC. Also, the students with BMI greater than IOTF values were identified as obese.

**FINDINGS:** The prevalence of obesity according to the Iranian reference, CDC and IOTF were 8.5% (CI 95%, 7.1-10.0%), 4.6% (CI 95%, 3.5-6.0%), and 7.3% (CI 95%, 6.0-9.0%), respectively. Using CDC reference, a significant difference in prevalence of obesity between girls and boys (5.8% vs. 3.1%) was found ($p<0.05$). When the Iranian reference was applied, the prevalence of obesity was shown to be significantly higher in boys aged 7 and 8 compared to girls (15.2% vs. 6.4% and 12.5% vs. 4.0%), respectively ($p<0.05$). Finally, the application of IOTF reference produced no significant difference in prevalence of obesity between girls and boys.

**CONCLUSION:** As the results of different references in determining the prevalence of obesity were not the same, use of relevant BMI percentile is recommended.
Longitudinal Pattern and Reference Values of Obesity Indices of Infants in Jahrom (Southern Region of), Iran

Seyed Taghi Heidari, Mohammad Ali Vakili, Fatemeh Emamghorashi

Abstract

OBJECTIVE: Obesity (scaled weight-by-height index) charts of a cohort of 597 healthy infants (391 boys and 206 girls) living in Jahrom (Southern Iran) are presented.

MATERIAL & METHODS: An adjusted weight-for-height was used to develop power type obesity indices, \( I_p = W/H^p \). Polynomial modeling was used by applying HRY (Healy, Rasbash, Yang) nonparametric method to estimate age-related smoothed centiles of obesity.

FINDINGS: The optimal value of \( p \) was found to be 2.5 for girls and 2 for boys. No more than cubic and quadratic polynomials were needed to fit obesity-for-age smoothly for infants. Infant's obesity increases from birth to six months of age and decreases later on to the age of 20 months when it becomes stable.

CONCLUSION: Using age-dependent obesity index (scaled weight by height) is an appropriate index which explores the degree of fatness. A local standard for assessing obesity in clinical practice as well as community health programs in Iran is of urgent need; our data serve this purpose.
Total Calcium Intake and Metabolic Syndrome in Middle Aged Women, Babol, Iran

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Abstract

The metabolic syndrome is an increasingly common condition, especially in women. The objective was to examine the relationship between total calcium and metabolic syndrome in Babolian middle aged women. A systematic random sampling method was used to select 984 women aged 30-50 years of age from urban area in Babol, Mazandaran, Iran. The ATP III criteria were used to classify study participants as having metabolic syndrome. We evaluated eating and drinking patterns by a food frequency questionnaire. Dairy products significantly were consumed in women with metabolic syndrome lower than women without metabolic syndrome (p =0.0001). Those in the highest quartile of calcium intake were lower fasting glucose (p =0.0001), less likely to be abdominal obese (p = 0.0001) and had higher HDL-cholesterol (p = 0.0001), lower triglyceride (p =0.0001 and lower prevalence of the metabolic syndrome (p =0.0001). The risk of metabolic syndrome for women in the first quartile category of calcium was higher than for those in the highest quartile (OR= 13.200; 95% CI =0.12, 21.93). This study showed that an inverse favorable association of total calcium intake and the metabolic syndrome. It may be supported current dietary recommendations to increase intakes of foods contain calcium but still ambiguous, suggests that high calcium intake has benefits on traits of the metabolic syndrome.
Association of Body Mass Index with Digestive Symptoms and Signs in Northwest of Iran

Manouchehr Khoshbaten

Abstract

Aim: To evaluate the association between body mass index (BMI) and certain digestive symptoms and signs.

Background: Obesity is of substantial health significance all over the world, and it is categorized by the world health organization among top ten global health problems. There is much evidence that indicates a higher prevalence of digestive symptoms in obese people.

Patients and methods: This cross-sectional study was conducted in city of Tabriz in north-west of Iran. One-thousand and seventy-one families with 4225 members were randomly selected. The association of digestive symptoms and signs with BMI was assessed.

Results: Of 4225 family members, 2485 who were above 18 years old agreed to participate in the study. The prevalence of obesity was 20.1%, and 33.3% were overweight. There was a positive relation between increased BMI and specific digestive symptoms. Constipation (P=0.043), bloating (P=0.03), dysphagia (P=0.024), protruding anal mass (P

Overweight and Obesity in Iranian Adolescents

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Abstract

INTRODUCTION: The problem of increasing prevalence of overweight and obesity as a consequence of new life styles is worrying the scientists and health officers in less developed countries. In Iran that is experiencing an accelerated nutrition transition overweight has turned into a major public health problem.

OBJECTIVE: To determine overweight and obesity prevalence in Iranian adults.
MATERIAL AND METHODS: We have used data on 35,924 individuals (17,996 male) from the National Food Consumption Survey. This survey recruited 7,158 households from urban and rural regions of all the 28 provinces of the country. Age was confirmed by observing the ID, weight and height were measured due to standard protocols and BMI was calculated. Pre-obesity was defined as BMI ≥25 and obesity as BMI ≥30. Overweight was defined as the sum of the pre-obesity and obesity.

FINDINGS: The average BMI was 25.5 among women and 26.4 among men. The prevalence of overweight was %42.4 among men and %56.5 among women. Obesity prevalence was %10 among men and %24 among women (P<0.001). Prevalence of pre-obesity and obesity among rural individuals is higher than their urban counterparts (P<0.001).

CONCLUSION: Our data show that the prevalence of overweight and obesity in Iran especially among rural women can be considered as a public health problem. After conducting analytic studies to determine the determinants and risk factors of overweight in different social layers, proper and feasible action plans are needed to slow down the accelerated trend of obesity.

Endocrine Abstracts, 2008 16 P502

The Obesity, Physical Activity Status and Dietary Pattern in 10–12 Years Old Girls of a Mountainous Region in North Of Iran

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Abstract

BACKGROUND: It has been shown that one of major causes of obesity in young people could be explained by physical inactivity and fat intake.

PURPOSE: This study was carried out to investigate the prevalence of obesity, dietary pattern and physical activity status in Tonekabon girls, a mountainous city in north of Iran.

METHODS: In a cross-sectional study 311 girls aged 10–12 years old in Tonekabon were studied. Weight, height, waist and hip circumferences of subjects were measured. Body mass index (BMI) and WHR (waist-to-hip
ratio) were calculated. Food intake was assessed by using three 24-hour dietary recall and food frequency questionnaire. Physical activity level was measured using the physical activity questionnaire. Subjects were classified based on the intensity of effort as having light, moderate, heavy and very heavy levels of physical activity.

RESULTS: The prevalence of overweight and obesity was 17 and 6%, respectively. 65% of subjects had normal weight and 12% were underweight. In 30% of the participants WHR was ≥0.85. The mean percentage values of energy intake derived from carbohydrate, protein and fat were 60, 11 and 29%, respectively. The physical activity level of subjects was 45, 43 and 12% that was light, moderate and heavy, respectively.

CONCLUSION: This study showed that overweight and obesity is common in this population. Thus prevention of overweight and obesity through a healthy diet and increasing the physical activity programs should be considered. In addition, the educational program to improve nutritional knowledge of this population is essential.

Early Child Development and Care, 2008;178(6):655-658(4)

Prevalence of Low Birth Weight and Obesity in Central Iran

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Routledge, part of the Taylor & Francis Group

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Abstract:

To estimate the prevalence of low birth weight (LBW) and to document distribution of body mass index (BMI) at birth in Arak (central Iran) neonates of the 10,241 live neonates (5241 boys, 5000 girls, sex ratio 105) born in 2004 in Arak. A birth weight of less than 2500 g was classified as LBW. BMI based on the original supine length and weight data was calculated and compared with BMI at birth of Iran reference data. The overall prevalence of LBW was calculated as nine per cent, less pronounced among boys than girls. Over two-thirds of Arak neonates enjoyed normal weight and some five per cent of them were overweight or obese. However, one-quarter of neonates were classified underweight. Girls' BMI
centiles lie below those of boys. Arak neonates were relatively free of obesity. However, the rate of neonatal underweight was striking. Neonatal LBW was more prevalent than the developed world. While LBW is a crude index, underweight BMI class is an adjusted index, which should be taken into consideration when one studies neonatal weight.


**Laparoscopic Total Gastric Vertical Plication in Morbid Obesity.**

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**Abstract**

**BACKGROUND:** The aim of this study was to introduce a new technique, total gastric vertical plication (TGVP), as a restrictive operation. It has the same result of weight loss as others with minimal risk of complication and very low cost, especially in developing countries.

**METHODS:** This technique was used by one surgeon in private hospitals during 3 years in Tehran, Iran. Patients were placed in the supine position with a 30-degree reverse Trendelenburg position. Trocars were inserted based on an ergonomic assessment (three 5 mm and one 10 mm). After the release of the greater curvature, continuous sutures were used with 00 nylon from the fondus to 3 cm of the pylorus. A vertical plication was performed in one or two layers. Distance between the stitch and lesser curvature was 2 cm in the anterior and posterior and between each stitch, all of them getting extra mucosal (far away from acid effect) owing to mild tension on the sutures that cut mucosa and put on a submucosa layer.

**RESULTS:** TGVP was performed in 100 cases (mean age, 32; standard error of the mean = 2.1); mostly female (F/M = 76/24) and with average body mass index of 47 (36-58). The mean weight loss in our patients was 21.4% of excessive weight loss (EWL) 1 month after the operation, 54% after 6 months (72 cases), 61% after 12 months (56 cases), 60% after 24 months (50 cases), and 57% after 36 months (11 cases). The average time of follow-up was 18 months. The mean time of operation was 98 (70-152) minutes and all of the patients were discharged from the hospital after an average of 1.3 days (range, 1-4). The main postoperative complications were permanent vomiting, intracapsular liver hematoma, hypocalcemia at early
postoperative period, hepatitis, leakage at the suture line, and acute gastric perforation. The volume of the stomach in this condition was 100 cc, but just one half of it was effective. If more than 50 cc was used, a painful condition would occur.

**CONCLUSIONS:** The percentage of EWL in this technique is comparable to other restrictive methods, but EWL appears more rapidly. Early postoperative complications of this method are minimal, without any important late complications. This technique needs more expertise and is more time consuming. A long-term follow-up is advised.


**First Nationwide Survey Of Prevalence Of Overweight, Underweight, And Abdominal Obesity In Iranian Adults.**

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**Abstract**

**OBJECTIVE:** The goal was to estimate the prevalence of overweight, obesity, underweight, and abdominal obesity among the adult population of Iran.

**RESEARCH METHODS AND PROCEDURES:** A nationwide cross-sectional survey was conducted from December 2004 to February 2005. The selection was conducted by stratified probability cluster sampling through household family members in Iran. Weight, height, and waist circumference (WC) of 89,404 men and women 15 to 65 years of age (mean, 39.2 years) were measured. The criteria for underweight, normal-weight, overweight, and Class I, II, and III obesity were BMI <18.5, 18.5 to 24.9, 25 to 29.9, 30 to 34.9, 35 to 39.9, and >or=40 (kg/m(2)), respectively. Abdominal obesity was defined as WC >or=102 cm in men and >or=88 cm in women.

**RESULTS:** The age-adjusted means for BMI and WC were 24.6 kg/m(2) in men and 26.5 kg/m(2) in women and 86.6 cm in men and 89.6 cm in women, respectively. The age-adjusted prevalence of overweight or obesity (BMI >or=25) was 42.8% in men and 57.0% in women; 11.1% of men and 25.2% of women were obese (BMI >or=30), while 6.3% of men and 5.2% of women were underweight. Age, low physical activity, low educational attainment, marriage, and residence in urban areas were strongly
associated with obesity. Abdominal obesity was more common among women than men (54.5% vs. 12.9%) and greater with older age.

**DISCUSSION:** Excess body weight appears to be common in Iran. More women than men present with overweight and abdominal obesity. Prevention and treatment strategies are urgently needed to address the health burden of obesity.


**Population Attributable Risk For Diabetes Associated With Excess Weight In Tehranian Adults: A Population-Based Cohort Study.**

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Source
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Abstract

**BACKGROUND:**
Little evidence exists regarding the magnitude of contribution of excess weight to diabetes in the Middle East countries. This study aimed at quantification of the impact of overweight and obesity on the incidence of type 2 diabetes mellitus (T2DM) at a population level in Tehran, Iran.

**METHODS:**
Using data of a population-based short-term cohort study in Iran, which began in 1997 with 3.6-year follow-up, we calculated the adjusted odds ratios (OR) and population attributable risks (PAR) of developing T2DM, i.e. the proportion of diabetes that could have been avoided had overweight and/or obesity not been present in the population.

**RESULTS:**
Of the 4728 subjects studied, aged > or = 20 years, during the 3.6-year follow-up period, 3.8% (n = 182) developed T2DM. This proportion was 1.4%, 3.6%, and 7.8% for the normal, overweight, and obese subjects, respectively. When compared to normal BMI, the adjusted ORs for incident diabetes were 1.76 [95% confidence interval (CI) 1.07 to 2.89] for
overweight and 3.54 (95% CI 2.16 to 5.79) for obesity. The PARs adjusted for family history of diabetes, age, triglycerides, systolic blood pressure was 23.3% for overweight and 37.1% for obesity. These figures were 7.8% and 26.6% for men and 35.3% and 48.3% for women, respectively.

CONCLUSION:

Incident T2DM is mainly attributable to excess weight, significantly more so in Tehranian women than men. Nonetheless, the contribution of excess weight in developing T2DM was lower in our short-term study than that reported in long-term periods. This probably reflects the significant role of other risk factors of T2DM in a short-term follow-up. Hence, prevention of excess weight probably should be considered as a major strategy for reducing incidence of T2DM; the contribution of other risk factors in developing T2DM in short-term period deserve to be studied and be taken into account.


Modified Jejunoileal Bypass Surgery with Biliary Diversion for Morbid Obesity And Changes in Liver Histology During Follow-Up.

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Abstract

BACKGROUND AND AIMS: Bariatric surgery is the most effective treatment for morbid obesity. The classic procedure, jejunoileal bypass, has many complications including rapid progress of liver disease. The senior author (I.F.) has developed a modification of jejunoileal bypass, which we believe overcomes many of the shortcomings of the classic procedure.

METHODS: Consecutive patients referring for bariatric surgery were included. A modified jejunoileal bypass in which the defunctionalized limb is eliminated by anastomosing its ends to the gall bladder and cecum was performed. Liver biopsies were taken during operation and at a mean of 16 months later. The patients were followed for 5 years.

RESULTS: Forty-three patients were enrolled. The mean value of weight and body mass index (BMI) fell from 128 kg and 46 kg/m(2) before operation to 85 kg and 31 kg/m(2) at 5 years, respectively (p < 0.001). There
was no significant change in the degree of liver steatosis and necroinflammation. The mean liver fibrosis score increased from 0.1 to 0.9 (p = 0.015). No sign of advanced liver disease was observed during the 5-year follow-up.

CONCLUSION: The modified jejunoileal bypass is very effective in inducing and maintaining weight loss for 5 years and does not lead to hepatic failure or rapid progression of liver disease.


Association of Gender and Education with Blood Lipids and Fasting Glucose Levels in a Sample of Iranian Obese Adults.

Maddah M.

Abstract

This study aimed to assess the relationship between gender and educational level with obesity related conditions in a sample of adult obese subjects in Rasht, northern Iran. A total of 1113 of men and 1279 women took part in this study. Data on age, original body weight, and educational level were collected. Blood lipids, fasting serum sugar (FBS), waist circumference, body weight and height were measured. The findings showed that the men had significantly higher serum triglyceride levels (270.0 +/- 202.2 vs. 203.4 +/- 180.1 P=0.0001) and FBS (126.5 +/- 103.8 vs. 118.2 +/- 53.8 P=0.03) and they had lower serum HDL-cholesterol levels than the women when differences in severity of obesity, age, original weight, waist circumference, and educational levels were taken into account. These findings showed that blood lipid levels and FBS were not different between educational groups in men. In women, serum HDL-cholesterol was lower, and serum triglyceride and FBS levels were higher in lower educational groups than higher educational ones.
Risk Factors of Breast Cancer in North of Iran: A Case-Control in Mazandaran Province.

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Abstract

INTRODUCTION: Breast cancer is the most common cancer among Iranian women. This study aimed to determine risk factors for breast cancer in the north of Iran.

METHOD: A matched case-control study was conducted in Mazandaran province of Iran in 2004 of 250 biopsy proven cases of breast cancer and 500 neighbor controls that were matched by age within a 3 year period. Statistical analysis was carried out using conditional logistic regression with the backward elimination method and crude and adjusted odds ratios with related 95% CIs were estimated with Stata 8.0 software.

RESULTS: Multivariate analysis showed that higher education (OR=4.70, 95%CI: 1.71-12.88), late menopause (OR=4.18, 95%CI: 2.54-6.88), history of induced abortion (OR=1.62, 95%CI: 1.13-2.31), positive first-degree family history of breast cancer (OR=3.14, 95%CI: 1.37-7.20), and BMI (OR=1.02, 95%CI: 1.01-1.03) were risk factors for breast cancer. Furthermore, having more episodes of full term pregnancy (OR=0.87, 95%CI: 0.80-0.95), longer duration of breast feeding (OR=0.993, 95%CI: 0.989-0.997) and parity more than 2 were shown to be protective factors.

CONCLUSIONS: Our study revealed the role of some modifiable determinants of breast cancer that can be focused by public health intervention in the northern community of Iran. Accordingly, the women who have one or more of the following risk factors should take the special attention to risk of breast cancer: obesity, being menopause, positive family history of breast cancer and history of induced abortion. The protective effect of longer duration of breast feeding should be encouraged too.

Prevalence of Obesity among Schoolchildren in Iran.

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Abstract

The prevalence of overweight and obesity among schoolchildren aged 6.5-11.5 years in Shiraz (southern Iran) are presented in this paper. The body mass index (BMI) percentiles of these children are compared with the Center for Disease Control and Prevention (CDC) reference data and with the Iranian standard. The data are based on a random multistage sample survey of 2397 healthy school attenders (1268 boys, 1129 girls) living in Shiraz, whose heights and weights were measured in the 2002-2003 academic year. Joint height and weight measurements were obtained for 2195 schoolchildren (91.6%), consisting of 1138 boys (89.7%) and 1057 girls (93.6%). A total of 77 boys (6.8%) and 40 girls (3.8%) were overweight, and the difference between them was significant (P = 0.001). However, obesity was significantly less prevalent in boys (3.3%) than in girls (6.1%) (P = 0.001). Our children's median BMI lie almost on the 38th centile of the CDC reference data, whereas that of their counterparts born more than 10 years ago lay on the 20th centile of their American counterparts, showing the development of children's obesity in a period of less than 15 years in Iran. A positive secular trend in BMI has been seen during the past decade in Iran, suggesting policymakers and health professionals should pay special attention to children's health.
The Prospective Association of General and Central Obesity Variables with Incident Type 2 Diabetes in Adults, Tehran Lipid and Glucose Study.

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Abstract

OBJECTIVE: To investigate which anthropometric index is the best predictor of diabetes in relation to age.

METHODS: In this longitudinal study 4479 non-diabetic men and women aged > or =20 years were followed for 3.6 years. Diabetes with its risk factors and obesity were defined according to the ADA and the WHO criteria, respectively. Logistic regression analysis was used to estimate the odds ratio (OR) of developing diabetes in model 1 including only the anthropometric measure and in model 2 adjusted for common diabetes risk factors and in model 3 adjusted for other anthropometric indices plus all the variables in model 2.

RESULTS: A total of 166 new cases of type 2 diabetes were diagnosed. In subjects aged <60 years general obesity and high waist-to-hip ratio (WHR) predicted diabetes in all three models with OR of 2.4 and 2.6 in model 3, respectively, while high waist circumference (WC) lost its association with diabetes in the full model. In subjects aged > or =60 years, however, high WC was the only independent predictor of diabetes in model 3 with OR of 3.8 while high WHR and general obesity predicted diabetes in models 1 and 2, respectively.

CONCLUSION: General obesity and high WHR in Iranian subjects aged <60 years and high WC in older ones are the important predictors of type 2 diabetes.

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Abstract

Both asthma and obesity have become more common in affluent societies during the recent decades, and several studies have shown a correlation between the presence of asthma and obesity.

Overweight And Obesity Among Iranian Female Adolescents In Rasht: More Overweight In The Lower Social Group.

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Abstract

OBJECTIVE: This study aimed to investigate the frequency of overweight and obesity among Iranian adolescent girls aged 14-17 years and its possible association with maternal education in Rasht city in 2005.

DESIGN: A cross-sectional survey on 1054 schoolgirls.

SETTING: High schools in Rasht city, Iran.

METHODS: A multistage sampling method was used and 1054 randomly selected schoolgirls were studied. Data on age and mother's years of schooling were collected by questionnaire and body weight and height were measured. Overweight and obesity were defined using age- and sex-specific body mass index (BMI) cut-off points proposed by the International Obesity Task Force (IOTF), and compared with 85th and 95th BMI percentile curves of the IOTF reference population, respectively. Data analyses
included two groups based on mother's years of schooling: less educated (< 12 years) and more educated (≥ 12 years).

**RESULTS:** The overall prevalence of overweight and obesity in this population was 21.9 and 5.3%, respectively. Results of logistic regression analysis showed that the risk of overweight was higher for lower age group (odds ratio = 2.0, 95% confidence interval 0.18-3.09). Overweight was more common in girls with less educated mothers than in girls with more educated mothers (26.0 vs. 19.8%, P = 0.03).

**CONCLUSION:** These data indicate that overweight is highly prevalent among adolescent girls, especially in lower social groups in Rasht, and the rate is exceeding those reported in other parts of the country. Preventive strategies need to be adopted to combat the epidemic of overweight and obesity in this population.


**Obesity and Dyslipidemia among Young General Physicians in Iran.**
Maddah M.

**Abstract**

This study describes overweight, obesity and dyslipidemia in young general physicians aged 26-40 years in Rasht City, northern Iran. A random sample of 272 physicians (137 men and 135 women) was studied. Data on age, body weight, height and original weight were collected; and blood lipid levels were measured. The findings showed that the prevalence of overweight/obesity among men and women were 54.5% and 13.3% respectively. High serum LDL-c levels (54.5%) and low serum level of HDL-c (66.7%) was the main feature of dyslipidemia in the study men and women, respectively. These data showed that overweight and blood lipid abnormality is highly prevalent in this group of young physicians. The increasing prevalence of obesity in the Iranian medical professions is a cause for concern.
An Open-Label Pilot Study of the Combination Therapy of Metformin and Fluoxetine for Weight Reduction.

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Abstract

BACKGROUND: Obesity is a very important risk factor for cardiovascular disease, type 2 diabetes mellitus, hypertension, osteoarthritis, fatty liver, metabolic syndrome and respiratory problems. Many weight-reducing drugs cannot be used in obese patients because of numerous complications. Fluoxetine, an antidepressant, and metformin, an antidiabetic drug, reduce weight as their side effect, but the potency of each drug is not always enough. Here, we studied the effects of combination therapy of them for weight reduction in obese women.

MATERIALS AND METHODS: This study was designed as an open, prospective, controlled clinical trial. Obese and overweight patients referred to obesity clinics were first put under a diet and behavior therapy education program before being invited to this study. The patients who accepted drug therapy were put in the case group. Those who did not accept drug therapy were put in the control group. Fluoxetine, 20 mg daily, and metformin, 500 mg three times daily, were prescribed to the participants. Weight and body mass index (BMI) changes within case and control groups were analyzed by paired t-tests and between groups by t-testing. Side effects were evaluated by interview and questionnaire.

SUBJECTS: Two hundred and three patients were referred to obesity clinics. Of these, 177 were female with 91 being volunteers for this study. Of this 91, 66 were in the case group and 25 in the control group.

RESULTS: In a 6.68-month period, a 7.89 kg decrease in weight (9.32%) and a 3.43 U decrease in BMI (10.14%) were observed in participants of the case group that was statistically significant (P<0.0001). The participants of the control group were followed for a mean period of 8.12 months. In this period, the participants of the control group showed a 0.48 kg decrease in weight (0.52%) and a 0.11 U decrease in BMI (0.42%). This was not significant. No serious side effects of the drugs were observed in the case group.
CONCLUSION: This open-label pilot study of combination therapy of metformin and fluoxetine gave encouraging weight reduction, and these results suggest the need for a randomized double-blind clinical trial comparing the two components and the combination to placebo.


Comparison between Bioelectrical Impedance Analysis and Body Mass Index Methods in Determination of Obesity Prevalence in Ahvazi Women.

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Abstract

BACKGROUND: Obesity has an increasing trend worldwide. Recently, application of body mass index (BMI) cutoff points of obesity classification for all population studies has been questioned. On the other hand, bioelectrical impedance analysis (BIA) is a safe, accurate, reliable and inexpensive method for screening the overweight and obesity in such studies.

OBJECTIVES: There were three objectives followed in this research: to determine the prevalence of obesity and overweight in married women using BMI and BIA methods; to evaluate the correlation between these methods; and to compare the women's obesity degrees according to their educational levels.

METHOD: Six hundred and thirty-seven healthy married women 18-40 years aged, who had referred to 14 health centers of the city of Ahvaz (center of Khouzestan province, south-west of Iran) were recruited in a cross-sectional design, and their socio-economic and anthropometric questionnaires were completed by the trained students. Body fat percent (%BF) and body fat mass (BFM) were measured using BIA method. BMI>25 and >30 kg/m(2) were used as criteria for determining the overweight and obese women, respectively. %BF>35% was regarded as cutoff for defining obesity.

RESULTS: Mean age+/-s.d. of the women was 26.9+/-5.8 years and majority of them were housewives with secondary educational level. Their BMI, %BF, waist-to-hip ratio, and mid-upper arm circumference means
were: 25.9(4.7) kg/m(2), 27.6(7.3)%, 0.75(0.08) and 27.9(3.9) cm, respectively. Central obesity was prevalent in 21.2% of the subjects. Prevalence of obesity determined by BMI and BIA methods was 18.3 and 15.5% and women within normal ranges were detected in 44.7 and 46% of the subjects by these methods, respectively. However, thin (underweight) women were 2.6 and 14.6% of the subjects studied, respectively. About one half of the women were overweight or obese. BMI was statistically correlated with BFM (r=0.86; P<0.0001) and %BF (r=0.77; P<0.0001). Women with higher educational levels had lower body fat percentage and BMI than the other subjects with lower degrees (P<0.05).

CONCLUSION: Obesity and overweight is prevalent in about one-half of the Ahvazian married women and more than one-fifth of the subjects have central obesity. BIA and BMI methods can similarly detect the normal and obese married women but they are different in determining the underweight female subjects. Women with higher educational grades tend to have lower BMI levels.
Abstract

OBJECTIVE: To study the prevalence of overweight and obesity among Iranian schoolgirls and to identify risk factors which lead to obesity.

METHOD: This cross-sectional study was conducted in 2002 and a sample of 1800 female students between 7-12 years old was obtained using a multistage cluster sampling method from Tehran. Height and weight were measured and related socio-economic information was collected.

RESULTS: The overall percent of overweight and obesity was 13.3% and 7.7% respectively. BMI (Body Mass Index) was directly and significantly \( r = +0.28, P < 0.001 \) correlated with increasing age. Physical activity was significantly different between obese and non-obese children. \( P = 0.03 \) Also, economical factors such as the type of school (private & public) were different in these children. \( P = 0.03 \) The statistical analysis of the data revealed a significant and inverse correlation \( r = -0.03, P = 0.04 \) between maternal education and occurrence of overweight and obesity in children.

CONCLUSION: The prevalence of overweight and obesity in young Iranian girls was high. Advanced age, lack of physical inactivity, low economical factors and maternal educational status could be risk factors for obesity in children.

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Abstract

Obesity is an undesirable outcome of changing of lifestyle and behaviours. It is also reversible predisposing factor for the development of several debilitating diseases. This study was aimed to determine the prevalence rate of obesity, overweight, central obesity and their associated factors in the north of Iran. We conducted a population-based cross-sectional study with a sample of 1800 women and 1800 men with respective mean ages of 37.5 +/- 13.0 and 38.5 +/- 14.2 years of urban population aged 20-70 years living in the north of Iran. The demographic and lifestyle data, in particular, age, gender, marital status, marriage age, family history of obesity, educational level, occupation, occupational and leisure time physical activity, duration of exercise per week, parity and the number of children were collected with a designed questionnaire. Diagnosis of obesity and central obesity were confirmed by the WHO standard recommended method by determining of body mass index (BMI) and waist circumference (WC). Logistic regression model was used to estimate the adjusted odds ratio (OR) and its 95% confidence interval. Over half of the study subjects were at educational levels of high school or higher; 79.4% of population was married and 35.3% had a family history of parental obesity. The majority of subjects in particular women had none or low levels of physical activity. The overall prevalence rates of obesity and overweight were 18.8% and 34.8% respectively. The overall prevalence rate of central obesity was 28.3%. The rate of obesity in women was higher than men (P < 0.0001). In both genders, particularly in the women, the rate of obesity was raised by increasing age. There was an inverse relation between the risk of obesity and marriage age, the high level of education (OR = 0.19, P < 0.0001), severe occupational activity (OR = 0.44, P < 0.0001), the level of exercise (in subjects with 3-4 h exercise per week, OR = 0.58, P < 0.001) and leisure time activity. Marriage, history of parental obesity and parity > or =5 were associated with increased risk of obesity (OR = 2.2, P < 0.001 and OR = 2.43,
P < 0.0001 and OR = 3.73, P < 0.0001 respectively). The results of this study indicate an increased rate of obesity and overweight in the north population of Iran. With respect to these findings, low level of activity and education, parity, family history of obesity, marriage at earlier age and ageing are responsible for both obesity and central obesity in the north of Iran. Therefore, a community-based multiple strategies are required to combat with increasing rate of obesity and its subsequent complications such as diabetes, coronary artery disease, hypertension and osteoarthritis.


Correlation of Dyslipidemia with Waist to Height Ratio, Waist Circumference, and Body Mass Index in Iranian Adults.

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Abstract

Overweight and obesity are increasing problems in many countries and are related to multiple cardiovascular risk factors. Although imaging techniques can determine total body fat and its distribution reliably, anthropometric measurements remain important in clinical practice. The purpose of this study was to determine the association between some anthropometric measurements and dyslipidemia as an important cardiovascular risk factor in Iranian population. A total of 750 subjects (580 females and 170 males) were selected by multistage random sampling from residents of Arak (Iran) and related villages in 2005. None of them had any significant past medical history. Body mass index(BMI), waist circumference(WC), and waist to height ratio(W/Ht) of subjects were measured to identify their relationship with their lipid profile including total cholesterol(TC), triglyceride(TG), high density lipoprotein cholesterol(HDL-C), low density lipoprotein cholesterol(LDL-C), and the ratio of total cholesterol to high density lipoprotein cholesterol(TC/HDL-C). Fasting blood sugar (FBS) was also measured. WC and W/Ht showed greater correlation with TC, TG, LDL-C, TC/HDL-C level than did BMI. Among lipid profile, TG showed the closest correlation with W/Ht (r=0.309, p<0.001) and WC (r=0.308, p<0.001). HDL-C level did not show any statistical relationship with W/Ht, but it was weakly correlated with WC (r=0.088, p<0.05). None of the indices showed any association with FBS level. It can be concluded that W/Ht and WC can best
predict dyslipidemia in an Iranian adult population. We suggest using both W/Ht and WC as inexpensive and easy methods in clinical and epidemiological fields.


**Association of Body Mass Index and Trp64Arg Polymorphism of the Beta3-Adrenoreceptor Gene and Leptin Level in Tehran Lipid and Glucose Study.**

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**Abstract**

In this study the association between beta3-adrenoceptor gene polymorphism and serum concentration of leptin with body mass index (BMI) is investigated. Using subjects in the Tehran Lipid and Glucose Study, genotyping of the Trp64Arg polymorphism of the beta3-adrenoceptor gene was performed using a restriction fragment length polymorphism-polymerase chain reaction (RFLP-PCR) technique was used and the association with obesity was investigated. At total of 197 men and 204 women were divided into four groups (BMI<20, 20< or =BMI<25, 25< or =BMI<30, BMI< or =30) and 97, 98, 104 and 102 subjects, respectively, were placed randomly in the four groups. Leptin level was determined by an enzyme immunoassay (EIA) method and FBS, HDL-C, triglyceride and total cholesterol levels were determined by an enzyme colorimetric method. Body mass index (BMI) was also measured. The A (Arg) allele frequency was 0.08 among the population and its presence was significantly associated with increase of leptin level (AA/TA, 30.5+/-24.8 ng/mL; TT, 22.6+/-20.9 ng/mL; P=0.014) but there was no significant association with increased BMI (AA/TA, 27+/-5.6 kg/m2; TT, 25.4+/-5.5 kg/m2; P=0.072). These data show that the presence of the Arg64 allele at the beta3-adrenoceptor gene locus is related to increase in leptin level in this population, but is not related to body mass index.

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Abstract

AIM: To document the epidemiological features and influencing factors of obesity in the north-west of Iran, to provide baseline information for setting up a regional population-based centre to control and prevent obesity-related disorders in the area.

METHODS: In this cross-sectional study, a total of 300 subjects were selected/studied in Tabriz, one of the major cities in Iran. Data on basic characteristics, anthropometric measurements, dietary assessment and physical activity were collected. Obesity was defined as body mass index > or =30 kg m(-2) for both women and men.

RESULTS: Total prevalence of obesity in the area was 22.4% (95% confidence interval (CI): 18.0-27.6). The prevalence of obesity was 24% (95% CI: 18.5-31.4) for women and 18% (95% CI: 12.5-25.6) for men. For both women and men obesity prevalence showed a positive association with age (P<0.001), while there was a negative correlation of obesity with education and income (P<0.001). Fruit consumption decreased the risk of obesity in both women and men (odds ratio (OR)=0.60, 95% CI: 0.49-0.71 vs. OR=0.62, 95% CI: 0.51-0.74, respectively). The same significant pattern was observed for the consumption of green vegetables (OR=0.71, 95% CI: 0.57-0.63 vs. OR=0.86, 95% CI: 0.77-0.98 for women and men, respectively), legumes (OR=0.70, 95% CI: 0.59-0.84 vs. OR=0.78, 95% CI: 0.66-0.91 for women and men, respectively) and dairy products (OR=0.73, 95% CI: 0.61-0.91 vs. OR=0.77, 95% CI: 0.63-0.93 for women and men, respectively).

CONCLUSIONS: Our study showed that educational attainment, higher income and consumption of certain food groups (i.e. vegetables, fruits, legumes and dairy products) may decrease the risk of obesity. Our findings also indicate the crucial necessity of establishing a population-based centre for obesity in the area. The essential information is now achieved to propose to local health authorities to act accordingly. However, more population-based investigations on dietary choices are needed to develop
effective preventive strategies to control overweight and obesity disorders in different regions.


**Obesity and Associated Cardiovascular Risk Factors in Iranian Children: A Cross-Sectional Study.**


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**Abstract**

**BACKGROUND:** Obesity is a growing public health problem in developing countries considering its association with cardiovascular risk factors. Relationship between childhood obesity and these risk factors has not been attested in the Iranian population before. The aim of the present study was to investigate frequency of cardiovascular risk factors and their association with severity of obesity in a sample of Iranian obese children.

**METHODS:** A total of 13 086 children aged 7-12 years were screened and those with waist circumference = 90th percentile of their age were invited for further evaluations. Participants were divided into two groups of overweight or obese according to International Obesity Task Force criteria. Cardiovascular risk factors were defined as high fasting total cholesterol, high low density lipoprotein, low high density lipoprotein, high triglycerides, and systolic or diastolic hypertension. These factors were compared between obese and overweight children and their correlations with body mass index and other measures of obesity were tested.

**RESULTS:** Of 532 children (274 boys, mean age 9.5 +/- 1.3) enrolled in the study, 194 were overweight and 338 were obese. Mean levels of triglyceride and Apo-lipoprotein B in obese children were significantly higher than overweight participants. A total of 81.9% of obese children and 75.4% of overweight children had at least one cardiovascular risk factor. There were significant correlations between body mass index and systolic blood pressure, diastolic blood pressure, serum triglyceride, and Apo-lipoprotein B levels (P values <0.01).
CONCLUSION: The high prevalence of cardiovascular risk factors in overweight and obese children and positive correlation of these factors with severity of obesity emphasizes the need for prevention and control of childhood obesity from early stages.


Metabolic Syndrome and Leptin Concentrations in Obese Children.

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Abstract

OBJECTIVE: Obesity and its complications including metabolic syndrome has been increased in children and adolescents recently. Leptin is known to play an important role in the pathogenesis of obesity.

METHODS: The objective of this study was to evaluate the relationship of leptin and metabolic syndrome in obese Iranian children. A cross sectional study was carried out in 65 primary schools in Tehran. The children with waist circumferences equal or above 90th percentile for their height and age were chosen for further evaluations. 505 children aged 7-12 years participated in the study. Anthropometric variables measurements, blood pressure, fasting plasma glucose, triglyceride, high-density lipoprotein cholesterol and serum leptin were obtained from the study sample.

RESULTS: Serum leptin levels were significantly higher in girls in comparison to the boys (with median 11.0 Vs 8.25 ng/dl; P value = 0.007). Serum level of leptin were higher in children with metabolic syndrome (median 11.3 Vs 8.9 ng/dl; P value = 0.045). However, after adjustment for sex, this association was removed.

CONCLUSION: Leptin did not appear to have a major role in metabolic syndrome, even though it was strongly associated with obesity parameters. More studies evaluating the relationship between leptin and metabolic syndrome in various ethnic groups are recommended.
Overweight and Obesity and Their Associated Factors in Adolescents in Tehran, Iran, 2004-2005.


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Abstract

OVERVIEW: Obesity is a significant health crisis around the world. Of great concern are the data pointing to the recent increase in the prevalence of obesity irregardless of age group and country. Overweight and obesity in adolescence are markers of overweight and obesity in adults, respectively. Very little data are currently available on the prevalence of childhood obesity in Iran, and more research on the risk factors is required before preventive public health programs can be formulated and put into practice.

OBJECTIVE: The objective of this study was to quantify the prevalence of overweight and obesity and their associated factors in adolescent children living in Tehran.

MATERIALS AND METHODS: During a multistage stratified cluster sampling, 2900 students (1200 males and 1700 females) aged 11-17 years were selected from 20 secondary schools in the school year of 2004-2005. A questionnaire was filled, and weight and height were measured.

DISCUSSIONS AND CONCLUSIONS: The body mass index (BMI) was calculated and adjusted for age and sex. Prevalences of overweight and obesity were 17.9 and 7.1%, respectively. BMI increased with age, and it was higher in those who had lower levels of physical activity. Age at menarche was negatively associated with BMI. There was no relationship between macro- and micronutrient intake and overweight and obesity. This study highlights the high prevalence of overweight and obesity in adolescent children in Tehran.
**Waist/Height Ratio as A Better Predictor of Type 2 Diabetes Compared to Body Mass Index in Tehranian Adult Men--A 3.6-Year Prospective Study.**

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Abstract

**OBJECTIVE:** To investigate whether central obesity variables are more important than general obesity variables in predicting the incidence of type 2 diabetes in Iranians.

**METHODS:** In this population-based longitudinal study, a representative sample of 1852 males aged > or = 20 years, participants of the Tehran Lipid and Glucose Study, were followed for a mean duration of 3.6 years. Demographic data were collected; blood pressure and anthropometric variables such as body mass index (BMI), waist circumference (WC), waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR) were measured according to a standard protocol. Biochemical analyses including measurements of plasma glucose in the fasting state and 2 hours after ingestion of 75 g glucose as well as fasting serum lipids were done. Diabetes and abnormal glucose tolerance (impaired fasting glucose or impaired glucose tolerance) were defined according to ADA criteria. Logistic regression models with the stepwise conditional method were used to estimate the relative risk (RR) of developing diabetes associated with each quartile of each anthropometric variable in a multivariate model adjusted for age, hypertension, smoking, family history of diabetes (model 1), and a full model adjusted for all the variables in model 1 plus abnormal glucose tolerance (model 2). Receiver operating characteristic (ROC) curves were used to determine the predictive power of each variable for development of type 2 diabetes, after adjustment for age.

**RESULTS:** A total of 69 new cases of type 2 diabetes (3.7%) were diagnosed during 3.6 years of follow-up, with an incidence rate of approximately one percent per year. The RR of developing diabetes associated with the highest quartile of anthropometric variables, was highest for WHtR in model 1. After further adjustment for abnormal glucose tolerance (model 2) only WHtR and WC were significantly associated with type 2 diabetes. According to the ROC curve analysis, among central obesity variables only WHtR had a higher ROC curve than BMI. WHtR also continued to be the best predictive
central obesity variable compared to BMI, even when the analysis was restricted to subjects with BMI < 27 kg/m^2 (0.678 vs. 0.631, p < 0.05). In those with BMI > or = 27 kg/m^2, none of the central obesity variables proved to be superior to BMI.

CONCLUSION: Among abdominal obesity variables, WHtR appears to be stronger than BMI in identifying men with type 2 diabetes in the future.


Obesity and Hypertension in an Iranian Cohort Study; Iranian Women Experience Higher Rates of Obesity and Hypertension than American Women.


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Abstract

BACKGROUND: Once considered as the main public health problem in developed countries, obesity has become a major problem throughout the world and developing countries, like Iran, are joining the global obesity pandemic. We determined the prevalence of overweight, obesity, and hypertension in a large cohort of Iranians and compared age-adjusted rates with the rates in the US.

METHODS: Golestan Cohort Study is a population-based study of 8,998 men and women, aged 35-81 years, from urban and rural areas. Anthropometric parameters were measured by interviewers. Prevalence rates were directly adjusted to the 2000 United States standard population.

RESULTS: The age-adjusted prevalence rates of overweight (BMI > or = 25 kg/m^2) and obesity (BMI > or = 30 kg/m^2) in this Iranian population were 62.2% and 28.0%, respectively. Both overweight and obesity were more common in women than men. Age-adjusted prevalence of overweight was significantly higher in Iranian women compared to the American women (68.6% vs. 61.6%), while the age-adjusted prevalence of obesity is closer in these two populations (34.9% vs. 33.2%). Iranian men compared to American men had significantly lower age-adjusted prevalence of overweight (53.7% vs. 68.8%) and obesity (16.2% vs. 27.5%). Age-adjusted prevalence of hypertension was higher in Iranian women than American
women (35.7% vs. 30.5%). Diabetes mellitus was reported in 6.2% of participants. Mean waist-to-hip ratio (WHR) among women was 0.96. Smoking rates in men and women were 33.2% and 2.2%, respectively.

CONCLUSION: The prevalence of obesity, overweight, and hypertension in Iran is as high as the US. However, Iranian women are more obese than American women and Iranian men are less obese than their American counterparts. This discrepancy might be due to the low rate of smoking among Iranian women. Iranian women have higher mean WHR than what WHO has defined in 19 other populations.


Coronary Artery Disease in Iranian Overweight Women.

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Abstract

BACKGROUND: Coronary artery disease is the leading cause of mortality in Iran. This study aimed to evaluate coronary risk factors in Iranian overweight and obese women.

METHODS AND SUBJECTS: Of all overweight and obese women examined in the main heart clinic in Rasht city, Iran, between 2000 and 2003, those with angiographically approved coronary artery disease (n=180) and overweight normal coronary women (n=224) participated in this study. The subjects in both groups had body mass index above 25 kg/m(2). Data on age, educational level, cigarette smoking, alcohol drinking and current drug therapy were collected using questionnaires. Total serum cholesterol, high density lipoprotein cholesterol, triglyceride, apoprotein B, apoprotein A1, lipoprotein (a), blood glucose, body weight, height, and waist circumference were measured in both groups.

RESULTS: The findings indicated that mean age (57.3+/−10.9 vs 40.3+/−10.1 p<0.0001) was significantly higher in coronary artery diseased group than normal overweight and obese subjects. Other measured risk factors including waist circumference, blood lipids and blood pressure were higher in overweight patients with coronary artery disease than overweight normal subjects. Results of logistic regression analysis showed that age (OR=1.16, 95% CI 1.10-1.21) and diabetes (OR=6.31, 95% CI 1.95-20.3) were the only predictors of coronary artery disease in this population of coronary obese patients. The proportion of low educated level was remarkably
higher in overweight women with coronary artery disease than normal groups.

**CONCLUSION:** The findings suggested that advancing age and diabetes are independent predictors for development of coronary artery disease in this group of overweight and obese Iranian women. The high proportion of low educated people in these patients with coronary artery disease implicates an important public health message for targeted preventive measures in lower social groups.


**Obesity and Dyslipidemia among Young General Physicians in Iran.**

**Maddah M.**

**Abstract**

This study describes overweight, obesity and dyslipidemia in young general physicians aged 26-40 years in Rasht City, northern Iran. A random sample of 272 physicians (137 men and 135 women) was studied. Data on age, body weight, height and original weight were collected; and blood lipid levels were measured. The findings showed that the prevalence of overweight/obesity among men and women were 54.5% and 13.3% respectively. High serum LDL-c levels (54.5%) and low serum level of HDL-c (66.7%) was the main feature of dyslipidemia in the study men and women, respectively. These data showed that overweight and blood lipid abnormality is highly prevalent in this group of young physicians. The increasing prevalence of obesity in the Iranian medical professions is a cause for concern.

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Abstract

Both asthma and obesity have become more common in affluent societies during the recent decades, and several studies have shown a correlation between the presence of asthma and obesity.

The Effect Of Pre-Pregnancy Body Mass Index and Gestational Weight Gain on Pregnancy Outcomes in Urban Care Settings in Urmia-Iran.

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Abstract

BACKGROUND: Nutritional status of women has been considered an important prognostic indicator of pregnancy outcomes. Few studies have evaluated patterns of weight gain and pre-pregnancy body mass index in developing regions where malnutrition and poor weight gain as well as maternal obesity have significant influences on the pregnancy outcome. This study aims to show effect of pregnancy body mass index and the corresponding gestational weight gain on the outcome of pregnancy.

METHODS: On a prospective cross sectional study, two hundred and seventy women from urban areas of Northwest Iran were recruited for participation during their first eight weeks of pregnancy. Body mass index (BMI) was categorized and gestational weight gain was divided into two groups of normal and abnormal based on recommendations of Institute of Medicine (IOM) published in 1990. Chi square and one way ANOVA were used in the univariate analysis of the association between weight gain and
corresponding adverse outcomes including cesarean, preterm labor and low neonatal birth weight. Adjusted odds ratios for adverse outcomes were determined by multiple logistic regression models, while controlling for the following factors: maternal age, parity, and education.

RESULTS: Both pre-pregnancy BMI < 19 and abnormal weight gain during pregnancy were found to be associated with low neonatal birth weight defined as < 2500 g. Abnormal weight gain, during pregnancy was not related to an increased risk of preterm labor or cesarean delivery but it was highly associated with low birth weight (LBW)(P < 0.05).

CONCLUSION: Low pre-pregnancy BMI is an established risk factor for LBW. Abnormal gestational weight gain may further complicate the pregnancy as an additional risk factor for neonatal LBW. All women, regardless of their pre-pregnancy BMI may be at risk for abnormal weight gain and hence low birth weight. Pre-pregnancy and gestation nutritional assessments remain significant part of all prenatal visits.


Comparative Evaluation of Anthropometric Measures to Predict Cardiovascular Risk Factors in Tehranian Adult Women.

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Abstract

OBJECTIVE: To compare the ability of waist circumference (WC), body mass index (BMI), waist-to-hip ratio (WHR) and waist-to-height ratio (WHtR) to predict cardiovascular risk factors in an urban adult population of Tehranian women.

DESIGN: Population-based cross-sectional study.

SETTING: Tehran, the capital of Iran.

SUBJECTS: This study was conducted on 5073 women aged 18-74 years, participants of the Tehran Lipid and Glucose Study. Demographic data were collected. Anthropometric indices were measured according to standard protocols. Cut-off points of BMI, WC, WHR and WHtR were considered as 25 kg m(-2), 80 cm, 0.8 and 0.5, respectively. Blood pressure was measured
and hypertension was defined based on the sixth report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Biochemical analyses were conducted on fasting blood samples. Diabetes was defined as fasting plasma glucose > or = 126 mg dl(-1) or 2-hour plasma glucose > or = 200 mg dl(-1) and dyslipidaemia based on the third report of the National Cholesterol Education Program Expert Panel. The presence of 'at least one risk factor' from the three major cardiovascular risk factors (hypertension, dyslipidaemia and diabetes) was also evaluated.

RESULTS: Mean (+/-standard deviation) age of women was 39.9+/-14.6 years; mean BMI, WC, WHR and WHtR were 27.1+/-1.5 kg m(-2), 86.5+/-13.5 cm and 0.83+/-0.08 and 0.55+/-0.08, respectively. Of the four anthropometric measures, WC had the highest sensitivity and specificity to identify subjects with risk factors in both the 18-39 year and the 40-74 year age categories. WC was seen to have a higher percentage of correct prediction than BMI, WHR and WHtR.

CONCLUSION: It is concluded that WC is the best screening measure for cardiovascular risk factors, compared with BMI, WHR and WHtR, in Tehranian adult women.

Metab Syndr Relat Disord. 2006 Fall;4(3):172-8.

Metabolic Syndrome and Related Insulin Levels in Obese Children.


Endocrinology and Metabolism Research Center, Doctor Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Insulin resistance syndrome is a cluster of metabolic abnormalities that is accompanied with an increased risk of diabetes and cardiovascular diseases. This has become an important problem in urban children due to their increasing levels of obesity. A total of 535 obese 7-11- year-old students of all the primary schools of the 6th district of Tehran were screened according to their waist circumference and then confirmed according to the International Obesity Task Force (IOTF) criteria. Waist circumference, fasting serum triglycerides, high-density lipoprotein (HDL) cholesterol, blood pressure, fasting plasma glucose, and insulin levels were measured. Response rate of the study was 96.3%. The crude prevalence
rate of metabolic syndrome in these children was 20.6%. There was no significant difference between genders. Only 8.2% of the studied children were without any of the criteria of the metabolic syndrome. The most common metabolic abnormality was hypertriglyceridemia, and the less common one was low HDL levels. Fasting blood sugar, triglyceride, HDL, blood pressure, and waist circumference were all related to the metabolic syndrome with odds ratio of 9.6, 18.71, 6.12, 17.64, and 13.68, respectively. Moreover, insulin levels were significantly higher in these children (12.25 +/- 5.25 vs. 10.75 +/- 4.25 AmicroIU/mL, p = 0.019). This difference was significant in girls with and without metabolic syndrome, but such a difference was not detected in boys. The prevalence of metabolic syndrome is high in Iranian obese children. Early intervention in this population who will become our future obese adults is needed, not only to increase their life quality, but also to decrease the future burden of diabetes and cardiovascular diseases on the society.


Obesity among University Students, Tehran, Iran.

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Abstract

Evaluating the nutritional status of individuals and population groups is an important tool in public health and a feasible indicator of standards of living. The objective of this study was to determine the frequency of obesity and present nutritional status of university students of Iran University of Medical Sciences in Tehran. The survey was conducted between Oct 2004 and June 2005. The statistical population included all students from School of medicine, nursing and midwifery, health services, management, science, and rehabilitation. The method of sampling was multistage random. The sample size for the survey was 1,150 students. We used a self-administered 24h food recall questionnaire. We categorized BMI to two groups in bivariate analysis (BMI <25 kg m(-2) as obese and less than 25 kg m(-2) as non-obese). Mean BMI for all subjects was 21.7 +/- 2.9 kg m(-2). Almost 88% of the subjects were classified into a non-obese group (BMI <25 kg m(-2)). About 10% were underweight and 12.4% of the students had a BMI more than 25 kg m(-2). A significant difference was observed for BMI between males and females; 7.9% of males versus 22.5% of females had
BMIs over 25. About 18% of students aged 23 years and over had BMIs over 25 versus 7.7% of students aged under 18. Intakes of fiber, pre-vitamin A, folacin and iron were significantly different between BMI groups. Intakes of these nutrients were higher in the obese students than the students with BMIs less than 25 kg m(-2). Our results indicate that about 12.4% of the students had a BMI more than 25 kg m(-2). There was a significant association between BMI, and smoking habits, age, sex, place of resident and having specific dietary regimen.


**Diet Composition and Body Mass Index in Tehranian Adults.**

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**Abstract**

Human studies investigating the relationship between macronutrients intake and obesity, have failed to achieve consistent findings. This study was undertaken to assess the relationship between macronutrients intake and body mass index in a group of Tehranians. From 15,005 participants of the Tehran Lipid and Glucose Study, 1290 subjects aged over 10 years (565 males and 725 females) were selected randomly for dietary survey. Anthropometric indices were measured according to standard protocols and BMI was calculated. Dietary data were collected by trained interviewers using two non-consecutive 24-hour dietary recalls. Data on smoking habits, educational level and physical activity were compiled. Under- and over-reporting of energy intake were defined as EI: BMR < 1.35 and ≥ or = 2.4, respectively. Calorie-adjusted amounts of macronutrients were calculated by the residual method, following which energy intakes from all calorie-adjusted macronutrients were simultaneously included in the multiple regression models controlling for age, physical activity, educational level and smoking and mutual effects of macronutrients. Total energy intake was not included to avoid collinearity. BMI increased with age in either gender. Controlling for confounding variables, energy intake from fat was positively associated with BMI in males in the 10-18, 19-24, 25-50 and 51+ year age categories (beta = 0.06, 0.13, 0.33, 0.48, P<0.05 for all, respectively) and females in the 19-24, 25-50 and 51+ age categories (beta = 0.17, 0.43, 0.52, P<0.05 for all, respectively). This relationship remained
after excluding misreporters (beta = 0.06, 0.15, 0.36, 0.50 for males and beta = 0.21, 0.46, 0.54 for females in the corresponding age categories, respectively). The correlation of fat intake to BMI was not significant in younger females (10-18 year). No association was seen between energy intake from protein and carbohydrate with BMI in subjects before and after exclusion of misreporters. In conclusion, energy from fat was found to be independently and positively associated with obesity in adults. No other association was observed between energy from protein and carbohydrate with BMI.

An Evaluation of Gender, Body Mass Index, Wrist Circumference and Wrist Ratio as Independent Risk Factors for Carpal Tunnel Syndrome.

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Abstract

OBJECTIVES: The aim of this study was to evaluate the role of gender, body mass index (BMI), wrist ratio (WR) and wrist circumference as independent risk factors for carpal tunnel syndrome (CTS) and to analyze the strength of association of these factors.

METHODS: We have undertaken a case-control study in 128 CTS patients and 109 controls. Based on clinical and electrophysiologic criteria, 109 female and 19 male CTS patients as well as 62 female and 47 male control subjects were selected from patients and their relatives referred to our hospital. In total, 179 hands with CTS in three groups of severity (mild, moderate and severe) were examined. Height, weight, BMI, wrist width, depth, circumference and ratio were measured in all patients and control group. Mean values of different risk factors for CTS group and controls were measured. A logistic regression analysis was conducted to evaluate odds ratio of different risk factors.

RESULTS: The mean values for BMI and WR were greater in CTS patients than in the subject group. Thirty-four, 89 and 57 patients had mild, moderate and severe CTS, respectively. Mean age, BMI, wrist circumference and ratio were not statistically significant in the three
groups. Female gender, increased BMI and increased WR had odds ratio of 9.95, 1.75 and 1.12, respectively.

**CONCLUSION:** Our study confirms that female gender, obesity and square wrists are independent risk factors for CTS.


**Association between Asthma Severity and Obesity in Two Asthma Clinics in Tehran.**

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**Abstract**

The prevalence of both obesity and asthma has increased in recent years. Thus we decided to investigate the relation between obesity and asthma severity. We undertook a cross-sectional study in outpatient asthma clinics of 2 tertiary hospitals in Tehran. Obesity was defined as a body mass index greater than 30. Asthma severity was defined by using the Guide for Asthma Management and Prevention 2004 guidelines, according to patients' clinical and/or spirometrical parameters. Active cigarette smoking patients and patients with a history of other lung diseases were excluded. A total of 116 individuals, aged 16-83 years with a mean age of 46.57+/-15.05 years, met the entry criteria. There were 73 females and 43 males. The prevalence of obesity in our study population was 29.3%. The Spearman correlation coefficient between asthma severity and body mass index was r= 0.275 (p= 0.001). Mean body mass index of females and males were 28.95+/-5.41 and 25.17+/-4.17, respectively. Mean body mass index of females with asthma was significantly higher than males (p< 0.0001). The odds ratios for obesity were 8.650, 8.746, and 22.491 for mild, moderate and severe persistent asthma, respectively, compared to patients with mild intermittent asthma. With increasing asthma severity, we observed higher occurrence of obesity in adults. The association of asthma severity with obesity suggests that obesity may be a potentially modifiable risk factor for asthma or asthma exacerbation.
Evaluation of Waist Circumference to Predict Cardiovascular Risk Factors in an Overweight Tehranian Population: Findings from Tehran Lipid and Glucose Study.

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Abstract

This study was conducted to evaluate the waist circumference (WC) cut-off points to predict cardiovascular risk factors in the overweight Tehranian population. Anthropometric measures, blood pressure, and biochemical analyses were evaluated for the 15,005 participants of the Tehran Lipid and Glucose Study. Three thousand sixty-five subjects aged 18-74 years with a body mass index of 25-29.9 were enrolled in this study. Abdominal obesity was defined as WC > or =102 cm for men and > or =88 cm for women. Sensitivity of WC > or =102 cm to detect various cardiovascular risk factors for men aged 35-54 years was between 5% and 14%, and for men aged 55-74 years, was between 12% and 19%. The specificity of this cut-off point was between 93% and 98% and between 86% and 96% for corresponding age-categories, respectively. WC > or =88 cm had a sensitivity of between 28% and 41% for identifying cardiovascular risk factors in women aged 18-34 years. Sensitivity tended to increase with age and specificity tended to decrease with age in both genders. These cut-off points had the highest positive predictive value for the more prevalent risk factors in both genders. The negative predictive values were different for various risk factors among age groups. The classic cut-off points of WC failed to provide adequate evidence for the use of WC in detecting cardiovascular risk factors. Further studies should be conducted to determine optimal WC cut-off points for Iranians.
Dairy Consumption is Inversely Associated with the Prevalence of the Metabolic Syndrome in Tehranian Adults.

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Abstract

BACKGROUND: Although previous studies showed some benefits from dairy consumption with respect to obesity and insulin resistance syndrome, epidemiologic data on the association between dairy intakes and metabolic syndrome are sparse.

OBJECTIVE: The objective was to evaluate the relation between dairy consumption and metabolic syndrome in Tehranian adults.

DESIGN: Dairy consumption and features of metabolic syndrome were assessed in a population-based cross-sectional study of 827 subjects (357 men and 470 women) aged 18-74 y. Metabolic syndrome was defined according to guidelines of the Adult Treatment Panel III. Multivariate logistic regression adjusted for lifestyle and nutritional confounders was used in 4 models.

RESULTS: Mean (+/−SD) consumption of milk, yogurt, and cheese was 0.7 +/- 0.2, 1.06 +/- 0.6, and 0.9 +/- 0.3 servings/d, respectively. Subjects in the highest quartile of dairy consumption had lower odds of having enlarged waist circumference [odds ratio (OR) by quartile: 1, 0.89, 0.74, 0.63; P for trend < 0.001], hypertension (OR by quartile: 1, 0.88, 0.79, 0.71; P for trend < 0.02), and metabolic syndrome (OR by quartile: 1, 0.83, 0.74, 0.69; P for trend < 0.02). The values of ORs became weaker after further adjustment for calcium intake.

CONCLUSION: Dairy consumption is inversely associated with the risk of having metabolic syndrome. It seems that this relation is somewhat attributed to calcium.
Effect of Body Mass Index at Time of Transplantation and Weight Gain after Transplantation on Allograft Function in Kidney Transplant Recipients in Shiraz.


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Abstract

Chronic renal allograft dysfunction is the most common cause of graft loss, for which there are multiple risk factors, including obesity before transplantation, which is believed to lower long-term renal allograft survival. One hundred eighty-two kidney transplant recipients were studied. Body mass index (BMI) at the date of transplantation was calculated. BMI values were classified into 4 categories: (1) patients with BMI <20, (2) BMI between 20 and <25, (3) BMI between 25 and <30, and (4) BMI ≥30. The minimum follow-up period in this study was 3 years after transplantation. The link between categorized BMI and the presence of renal allograft dysfunction and mortality within 3 years posttransplantation was investigated using independent sample t test. BMI at the date of transplantation showed statistically significant association with presence of renal allograft dysfunction and mortality within 3 years posttransplantation (P = .008, P = .01, respectively). BMI at the date of transplantation has a strong association with outcomes after renal transplantation. The extremes of very high and very low BMI are important risk factors for chronic renal allograft dysfunction; therefore, weight adjustment before kidney transplantation can be useful in improving the function of a transplanted kidney and increasing patient's survival.
A Study of the Relation Between Body Mass Index and the Incidence of Age Related Macular Degeneration.

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Abstract

BACKGROUND: Age related macular degeneration (ARMD) is the most frequent cause of blindness among the elderly. Obesity may be one of the risk factors of ARMD as suggested, yet not proved, by several studies. This study assesses the relation between body mass index (BMI) and the incidence of ARMD.

METHODS: This case-control study included 50 patients with ARMD and 80 subjects who were adjusted for age, sex, cigarette smoking, blood pressure, and diabetes. Data analysis was performed by SPSS V9.0 using Student's t and chi2 tests.

RESULTS: 42% of the subjects in the case group and 35% of those in the control group were men. Mean age of subjects in the case and control groups was 69.9 years (62-77 years) and 64.08 years (56-71 years), respectively. Mean BMI measured 25.38 (range 21-29) and 30.24 (26-34) in the case and control groups, respectively (p>0.05). 12% of subjects in the case group were obese, 42% were overweight, and 14% were lean. 22.5% of subjects in the control group were obese, 45% were overweight, and 7.5% were lean (p>0.05).

CONCLUSION: 43% of patients in this study were aged 70 years or older, which is similar to other studies. There was no significant difference in BMI between the case and control groups. Recent studies indicate that obesity is a probable risk factor for progression of ARMD, but there is no significant relation with the presence of ARMD. With multifactorial analysis, the authors could identify no significant relation between the presence of ARMD and the studied risk factors.
**Prevalence of Obesity in Iran.**

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**Abstract**

Recent descriptive studies suggest that Iran has geared in the nutrition and epidemiological transition processes. Therefore, while the problems of undernutrition (e.g. growth retardation and micronutrient deficiencies) still exist, the burden of overweight/obesity and diet-related chronic diseases is increasing. The prevalence of overweight (body mass index ≥ 85th reference percentiles) among urban 15-39 and 40-69 year olds is estimated at about 22% and 40% respectively. Corresponding values in rural areas are 16% and 26%. The transition seems faster among female population at national level. There are however, great differences between different provinces. Urgent preventive strategies are needed to simultaneously tackle both forms of malnutrition in the country.

**General Obesity and Central Adiposity in a Representative Sample of Tehranian Adults: Prevalence and Determinants.**

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**Abstract**

**AIMS:** To determine the prevalence and associations of general and central obesity in adults residing in district 13 of Tehran and to examine the associations of obesity with certain factors.

**DESIGN:** Population-based cross sectional study.

**SETTING:** Tehran, the capital of Iran.

**SUBJECTS:** A total of 9984 subjects (4164 men and 5820 women) aged 20-70 years.
METHODS: Demographic data were collected and anthropometric indices including weight, height, and waist and hip circumference were measured, according to standard protocols. Dietary intake was assessed by means of two 24-hour dietary recall forms. To determine the prevalence and association of general and central obesity, the suggested cut-off for Tehranian people, adjusted for their age group, was used. A body mass index (BMI) of > or =24 for men and > or =25 for women was used to determine the characteristic of obesity. Central obesity was determined as a waist-hip ratio (WHR) of > 0.86 for men and WHR > or = 0.78 for women. To determine the associations between general and central obesity and other factors, logistic regression was used.

RESULTS: The means of BMI, waist circumference (WC), and WHR were 25.8 +/- 4.1 kg/m2, 88.3 +/- 11.4 cm, and 0.91 +/- 0.07 in men and 27.3 +/- 5.4 kg/m2, 87.5 +/- 12.9 cm, and 0.83 +/- 0.08 in women, respectively. Obesity and central obesity were higher in women than in men; 67% vs. 29% for obesity and 93% vs. 74.1% for central obesity, respectively. Illiteracy (OR = 1.65; 95% CI = 1.13-2.41 in men; OR = 1.87, 95% CI = 1.59-2.21 in women), marriage (OR = 3.84, 95% CI = 3.63-4.29 in men; OR = 3.20, 95% CI = 3.63-4.19 in women), and very low physical activity (OR = 1.35, 95% CI = 1.09-1.53 in men; OR = 1.39, 95% CI = 1.10-1.76 in women) were factors associated with obesity. The risk of being centrally obese for men in the fourth quartile of legumes intake was lower than men in other quartiles (p < 0.05). Women in the first quartile of dairy consumption had the highest risk of being generally and centrally obese (OR = 2.16, 95% CI = 1.72-2.48 for general obesity and OR = 3.01, 95% CI = 2.36-3.67 for central obesity). The risk of obesity for women in the fourth quartile of energy and saturated fatty acid consumption was higher than for those in the first quartile (OR = 2.69, 95% CI = 2.39-3.11 for energy and OR = 1.36, 95% CI = 1.10-1.64 for saturated fatty acids). The risk of being centrally obese was higher for women in the first quartile of protein intake compared with women in the fourth quartile (OR = 1.71, 95% CI = 1.02-2.32).

CONCLUSIONS: The results from this national population-based study in Iran show high prevalence of obesity in Tehranian adults. The strong associations between obesity and certain life style factors confirm the necessity of multifactorial intervention.
Is there an Independent Association between Waist-To-Hip Ratio and Cardiovascular Risk Factors in Overweight and Obese Women?

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Abstract

BACKGROUND: This study was conducted to evaluate the relationship between waist-to-hip ratio (WHR) and cardiovascular risk factors in overweight and obese women and to determine a point of WHR above which the chances of having cardiovascular risk factors increased.

METHODS: In this cross-sectional study, 2892 pre- and postmenopausal women aged 20-78 years with body mass index (BMI) > or = 25 selected from among 5791 women of the Tehran Lipid and Glucose Study (TLGS) population (n = 15,005), by multistage cluster random sampling method, were included. Anthropometric indices were measured and BMI and WHR were calculated. Blood pressure was evaluated according to standard protocols. Biochemical indices were measured in the fasting state. Subjects were placed into the high-risk categories for cardiovascular disease on the basis of population-defined norms. Women were divided into quartiles based on their WHR: quartile 1: < 0.78, quartile 2: 0.78- < 0.83, quartile 3: 0.83- < 0.88, quartile 4: > or = 0.88 for premenopausal women, and quartile 1: < 0.84, quartile 2: 0.84- < 0.9, quartile 3: 0.9- < 0.94 and quartile 4: > or = 0.94 for postmenopausal women.

RESULTS: A lower proportion of pre- and postmenopausal women with BMI > or = 35 were in quartile 1 and a higher proportion in quartile 4. A significant increasing trend was observed for odds ratio of having low HDL-C, high triglyceride, high total-/HDL-cholesterol and high fasting blood sugar (FBS) with increasing WHR. Controlling for BMI and simultaneously adjusting for confounding variables had no effect on this trend. Although no significant increasing trends were seen for having high total cholesterol, LDL-cholesterol, systolic and diastolic blood pressure with quartiles of WHR in both pre- and postmenopausal women, subjects with higher quartiles of WHR still had higher chances for having high total cholesterol. In the case of postmenopausal women having of higher odds for high LDL-cholesterol and high systolic blood pressure in the fourth quartile of WHR should also be added to the high total cholesterol.
CONCLUSION: The results showed that in overweight and obese women, chances of having cardiovascular risk factors increased with WHR ≥ 0.78 for premenopausal and with WHR ≥ 0.84 for postmenopausal women.


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Abstract

AIMS: Recent estimates show the prevalence of obesity to be increasing at alarming rates. This study was conducted to examine trends of prevalence in overweight, obesity and central fat accumulation among Tehranian adults between 1998 and 2002.

METHODS: Height and weight of 2,102 adults, aged 20-80 years, participants of the Tehran Lipid and Glucose Study, were measured in 1998-1999 and remeasured in 2001-2002, after 3 years. Criteria used to state prevalence of overweight and obesity were body mass index (BMI) 25-29.9 and > or =30, respectively. Central fat accumulation was defined as waist-hip ratio (WHR) > or =0.8 in women and > or =0.9 in men. Individuals were divided into 10-year groups and the prevalence of obesity was compared according to sex and age.

RESULTS: In 1998-1999 and 2001-2002, mean BMI was 26.1 +/- 4.1 and 26.7 +/- 4.1 kg/m(2) in men (p < 0.001) and 27.8 +/- 4.9 and 28.7 +/- 5.9 kg/m(2) in women (p < 0.001), respectively. Mean WHR in women was 0.84 +/- 0.08 in 1998-1999 and 0.88 +/- 0.08 in 2001-2002 (p < 0.001). The prevalence of overweight in men was 42.5 and 46% and 40 and 39.5% in women in the two mentioned periods. The prevalence of obesity was 32.7 and 40.3% in men and 16.5 and 20.8% in women in 1998-1999 and 2001-2002 respectively. In both sexes the fastest increasing trends in obesity and central fat accumulation were seen in the 30- to 40- and 20- to 30-year-old age groups. Comparison of the 50th percentile of BMI in all age groups showed a significant increase in 2001-2002 as compared to 1998-1999 (p < 0.01).
CONCLUSION: The findings demonstrate significant rises in the prevalence of both total and central fat accumulation, calling for urgent action to educate people in lifestyle modifications.


High Prevalence of Overweight and Obesity in Women of Islamshahr, Iran.

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Abstract

This study determined the prevalence of overweight, overall and central obesity in female adolescents and women and their possible association with marital status, occupation, literacy, parity, daily meal and snack consumption. The study was a cross-sectional, random survey of households. Rural and urban areas of Islamshahr district in Iran were selected and 1003 female adolescents and women aged 10-65 years were studied. The frequency of overweight and obesity were similar in rural and urban areas. On the basis of body mass index (BMI), more than 19% of adolescents were overweight or at risk of it and 66.8% of adult females were overweight or obese. Frequency of central obesity [waist to hip ratio (WHR) > or = 0.85]was 35.7% in all females. The mean BMI was significantly higher in married women and in women with less than 8 years of formal education. The mean WHR was significantly higher in women with less than 8 years of education or with more than 6 parity female adults. In addition, the mean BMIs and WHRs were significantly higher in women without any daily snack consumption. Overweight and obesity was very common in adult females of Islam shahr thus prevention of overweight and obesity through a healthy diet and increased physical activity should now be an important priority area.
Obesity Pandemic: An Iranian Perspective

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Abstract

The prevalence of overweight and obesity in most developed and developing countries have been increasing markedly over the past two decades. This increase includes all ages, genders, racial and ethnic groups, income, and educational levels. A variety of genetic, environmental, physiological, psychological and sociocultural factors influence the development of obesity. Iran like many other developing countries is now experiencing the global epidemic of obesity and its consequences. Recent epidemiological studies have revealed that the prevalence of obesity, overweight, and metabolic syndrome in Iran is equal to or higher than Europe and the United States and it is the primary cause of the rising prevalence of type 2 diabetes and the important comorbid states such as hypertension, cardiovascular, renal, and gastrointestinal diseases along with increasing the burden of cancers. This is also in line with the present etiologies of death in Iran with cardiovascular disease and cancer accounting for nearly 60% of causes of nontraumatic death. The prevalence of obesity in Iran has reached epidemic proportions and is specifically affecting women and younger age groups also. The increased consumption of calorie-dense regular and fast foods and sucrose-enriched drinks, together with an increasingly sedentary lifestyle, appear to be major factors contributing to this epidemic. The per capita consumption of carbonated beverages in Iran is 42 liters per year and 40% of Iranians consume more food than they need, and the average Iranian consumes 40% more carbohydrate and 30% more fat than needed. To deal with this epidemic, prevention should receive high priority and social measures such as taxing
fast foods, subsidizing fresh food and vegetables, and spending more public money on projects to promote physical activity are necessary. There is also emerging evidence that treating obese subjects, particularly those with metabolic syndrome or type 2 diabetes, has short-term effects on the prevention of diabetes; improves glucose, lipid, and blood pressure parameters; and is likely to have beneficial effects on long-term health outcomes.


Overweight and Obesity among School-Aged Children of Metropolitan Tehran, Iran

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Abstract

To investigate the prevalence of overweight and obesity based on Body Mass Index (BMI) values among children in Tehran. Cross-sectional survey of a randomized sample of school aged children in Tehran. A total of 3104 boys and girls in 3 aged groups with mean age 6, 8 and 10 years. The data consisted of parents-reported measures of height and weight that were obtained from questionnaires, and then BMI [weight (kg) / height (m)^2] was calculated. The prevalence of overweight and obesity was higher than expected as related to recent Centers for Diseases Control and Prevention (CDC) growth charts in comparison to a recent International Obesity Task Force (IOTF) approach. These differences were higher among Iranian girls than boys. While obesity prevalence might not be important as a definition of IOTF and CDC, but rapid increases of obesity in recent years are potentially dangerous. International authorities should accelerate the efforts regarding construction a global BMI reference data, based on obesity definition in developing countries.

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Abstract

Under- and over-reporting of energy intake are problems in dietary intake assessment. This study was conducted to assess the correlates of under- and over-reporting of energy intake in Tehranians. Dietary data on 947 participants (415 males and 532 females) of the Tehran Lipid and Glucose Study was collected by trained interviewers using two 24-hour recalls. Weight and height were measured by digital scale and tape measure according to standard protocols and recorded to the nearest 100 g and 1 cm, respectively. Under-, normal- and over-reporting of energy intake was defined as ratio of energy intake to basal metabolic rate (EI:BMR) <1.35, 1.35-2.39 and > or = 2.4, respectively. Mean +/- SD of age was 37.3 +/- 14.6 and 32.9 +/- 13.6 years for men and women, respectively. Men had higher EI:BMR than women (1.72 +/- 0.44 vs 1.27 +/- 0.44, P<0.001). EI and EI:BMR was highest in the youngest age groups in both sexes. The prevalences of under- and over-reporting were 31% and 5%, respectively. Fewer men than women underreported EI (19% vs 40%, P<0.001). The fraction of over-reporters was significantly higher in men than women (7% vs 3%, P<0.05). EI:BMR decreased with age. Under-reporters were older and had higher BMI than normal-reporters, but their educational level did not differ significantly. Over-reporters were younger and had lower BMI than normal-reporters, but their educational levels did not differ significantly. Most over-reporters had normal BMI. Smoking was more prevalent in over-reporters than in the normal-reporters (28% vs 19% in men and 6% vs 1% in women, P<0.01). The results showed a high prevalence of misreporting of energy intake in Tehran. This phenomenon is related to age, obesity and smoking habits.
Obesity and Cardiovascular Disease Risk Factors in Tehran Adults: A Population-Based Study.

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Abstract

The relationship between obesity and cardiovascular disease risk factors was assessed in 3622 males and 5025 females aged 20-70 years. Body mass index, waist circumference, waist-to-height and waist-to-hip ratios were calculated. Obese men had a higher risk of hypertension, high total cholesterol (TC), high triglycerides (TG), high low-density lipoprotein cholesterol (LDL-C) and low high-density lipoprotein cholesterol (HDL-C) levels than non-obese men. Centrally obese men were more susceptible to high TG, hypertension and high TC. Obese women had a higher chance of being hypertensive and having high total TC, high TG, high LDL-C and low HDL-C levels than non-obese females. Centrally obese women had higher odds for high TG and low HDL-C. There is a need for education about lifestyle change in the country.

Overweight and Obesity and Their Associated Factors in Adolescents in Tehran, Iran, 2004–2005


Abstract

OVERVIEW: Obesity is a significant health crisis around the world. Of great concern are the data pointing to the recent increase in the prevalence of obesity irregardless of age group and country. Overweight and obesity in adolescence are markers of overweight and obesity in adults, respectively. Very little data are currently available on the prevalence of childhood obesity in Iran, and more research on the risk factors is required before preventive public health programs can be formulated and put into practice.
OBJECTIVE: The objective of this study was to quantify the prevalence of overweight and obesity and their associated factors in adolescent children living in Tehran.

MATERIALS AND METHODS: During a multistage stratified cluster sampling, 2900 students (1200 males and 1700 females) aged 11–17 years were selected from 20 secondary schools in the school year of 2004–2005. A questionnaire was filled, and weight and height were measured.

DISCUSSIONS AND CONCLUSIONS: The body mass index (BMI) was calculated and adjusted for age and sex. Prevalences of overweight and obesity were 17.9 and 7.1%, respectively. BMI increased with age, and it was higher in those who had lower levels of physical activity. Age at menarche was negatively associated with BMI. There was no relationship between macro- and micronutrient intake and overweight and obesity. This study highlights the high prevalence of overweight and obesity in adolescent children in Tehran.


Waist-To-Hip Ratio is a Better Screening Measure for Cardiovascular Risk Factors than other Anthropometric Indicators in Tehranian Adult Men.

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Abstract

BACKGROUND: It is essential to identify the best anthropometric index in any population to predict chronic disease risk.

OBJECTIVE: To compare the ability of waist circumference (WC), body mass index (BMI), waist-to-hip ratio (WHpR) and waist-to-height ratio (WHtR) to predict cardiovascular risk factors in an urban adult population of Tehranian men.

DESIGN: Population-based cross-sectional study.

SUBJECTS: A representative sample of 4,449 men aged 18-74 y, participants of the Tehran Lipid and Glucose Study.

METHODS: Demographic data were collected; anthropometric indices and blood pressure were measured according to standard protocol. In the 18-34
y age category, cutoff points for BMI, WHpR, WHtR and WC were 24 kg/m(2), 0.86, 0.47 and 81 cm, respectively. In the 35-54 y age category these cut points were 26 kg/m(2), 0.91, 0.52 and 89 cm, and in the 55-74 y age category 26 kg/m(2), 0.95, 0.54 and 91 cm, respectively. Hypertension was defined based on JNC VI. Biochemical analysis was conducted on fasting blood samples. Diabetes was defined as fasting plasma glucose ≥126 mg/dl or 2hPG ≥200 mg/dl and dyslipidemia based on ATP III. The presence of ‘at least one risk factor’ from the three major cardiovascular risk factors (hypertension, dyslipidemia and diabetes) was also evaluated.

RESULTS: Mean age of men was 41.8+/−15.4 y. Mean BMI, WHpR, WC and WHtR for subjects were 25.6+/−4.2 kg/m(2), 0.91+/−0.07, 87.7+/−11.7 cm and 0.51+/−0.02, respectively. Dyslipidemia and ‘at least one risk factor’ are more prevalent risk categories. Although all anthropometric indicators had a significant association to cardiovascular risk factors, WHpR had the highest correlation coefficients compared to other anthropometric measures. For all risk factors in all age categories, the highest odds ratios were pertained to WHpR. Of the four individual indicators, WHpR had the highest sensitivity, specificity and accuracy to predict cardiovascular risk factors. Cutoff points for WHpR were seen to have a higher percentage of correct prediction than BMI, WC and WHtR in all age categories.

CONCLUSION: It is concluded that WHpR is a better predictor for cardiovascular risk factors than BMI, WC and WHtR in Tehranian adult men.


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Abstract

Overweight and obesity are among the most prevalent nutritional problems in developed and developing countries. In this descriptive study, we attempted to determine the prevalence of overweight and obesity in Iranian adolescent girls attending high school in Tabriz. A sample of 1,650 (final study group, 1,518) high-school girls aged 14 to 20 years was selected by stepwise random sampling from five districts of Tabriz. Overweight and
obesity were defined according to body mass index (BMI) percentiles from the First National Health and Nutrition Examination Survey (NHANES I) and the International Obesity Task Force (IOTF) BMI cutoffs. According to the NHANES I criteria, 14.6% of the study subjects were overweight or obese. Overweight and obesity was seen in 11.1% and 3.6% of the students, respectively. By the IOTF cutoffs, 14% of the subjects were overweight or obese. Overweight and obesity were seen in 10.1% and 3.9% of the students, respectively. Of the study subjects, 8% had a BMI below the 15th percentile of NHANES I, an indicator of underweight. The prevalence of overweight and obesity in Tabriz high-school girls is higher than in many, but not all, parts of Iran, but lower than in some neighboring countries such as Saudi Arabia. In this age group, in addition to overweight and obesity, underweight (BMI < or = 15th percentile) is also present.


Detection of Cardiovascular Risk Factors by Anthropometric Measures in Tehranian Adults: Receiver Operating Characteristic (ROC) Curve Analysis.

Mirmiran P, Esmaillzadeh A, Azizi F.

1Endocrine Research Center, Shaheed Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

OBJECTIVE: To determine optimal cutoff points of anthropometric measures as cardiovascular indicators in an Iranian adult population.

DESIGN: Population-based cross-sectional study.

SETTING: Tehran, the capital of Iran.

SUBJECTS: A total of 10,522 subjects (4,449 men and 6,073 women) aged 18-74 y.

METHODS: Demographic data were collected and anthropometric indices were measured. Blood pressure was evaluated and hypertension was defined based on JNC VI. Biochemical measurements were done. Diabetes was considered as FBS> or =126 mg/dl (> or =7.0 mmol/l) and dyslipidemia was defined according to ATP II. Risk factors were considered as: hypertension, diabetes, dyslipidemia, 'hypertension or diabetes', 'hypertension and diabetes', 'hypertension or dyslipidemia', 'hypertension and dyslipidemia', 'diabetes or dyslipidemia', 'diabetes and dyslipidemia',
'at least one risk factor' and 'at least two risk factors'. ROC curve analysis was performed to determine optimal cutoff values—where the sensitivity approximates specificity.

RESULTS: Younger men (the age category of 18-34 y) had higher WC than women. Men had higher waist-to-hip ratio (WHpR) and lower waist-to-height ratio (WHtR) than women in all age categories. Dyslipidemia, 'hypertension or dyslipidemia', 'diabetes or dyslipidemia' and 'at least one risk factor' were more prevalent risk categories in both genders. Range of areas under ROC curves for BMI and WC was 0.55-0.94 and 0.56-0.93 for men and 0.41-0.94 and 0.53-0.92 for women in various age groups, respectively. Range of areas for WHpR and WHtR in men was between 0.58-0.87 and 0.56-0.94, respectively, and for women varied between 0.53-0.91 and 0.53-0.90 in various age groups, respectively. Cutoff points of BMI for various risk factors were between 24 and 29 kg/m(2) in men and 25-31 kg/m(2) in women. Range of WHpR was between 0.86 and 0.97 in men and between 0.78 and 0.92 in women. Cutoff points for WC and WHtR were between 80 and 93 cm and 0.47 and 0.56 for men and between 79 and 96 cm and 0.50 and 0.63 for women in different age groups to detect various risk factors, respectively. In general, values were lowest for the most prevalent risk factors and highest for less prevalent conditions.

CONCLUSION: The results suggested cutoff points of anthropometric measures as indicators of cardiovascular risk factors. It seems that these cut-points are higher for Iranians than for other Asian populations.


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Abstract

OBJECTIVE: Overweight has become a public health problem in most developing countries. Evidence suggests that adolescence is a critical period in determining adulthood obesity and its complications. The present study
was carried out to assess the prevalence of overweight and obesity among secondary school students.

**DESIGN AND SETTING:** This descriptive study was conducted in Tehran city, 2000-2001. Body weight and height were measured and body mass index (BMI) values were calculated. Underweight, overweight and obesity were defined as <5th, > or = 85th and > or = 95th percentile, respectively, of age- and sex-specific BMI values from the National Center for Health Statistics/Centers for Disease Control and Prevention (2000).

**SUBJECTS:** Using a multistage sampling method, 2321 students (1068 males and 1253 females) aged 11-16 years were assessed in Tehran, the capital city of Iran.

**RESULTS:** The overall prevalences of overweight and obesity were 21.1 and 7.8%, respectively. The prevalence of overweight among girl students (i.e. 23.1%; 95% confidence interval (CI) 20.8-25.4) was significantly higher than that among boys (i.e. 18.8%; 95% CI 16.5-21.1, P=0.01) even after adjustment for age (odds ratio 1.26, 95% CI 1.03-1.55, P=0.02). No significant risk of obesity associated with age was found in girls or boys. In both sexes, median values of age-specific BMI in this study were statistically higher than corresponding values collected in Tehrani adolescents 10 years ago (P=0.03). Similarly, a significant difference was seen between girl students in this study and the reference population (P=0.03).

**CONCLUSION:** According to this study, overweight, especially in girls, should be considered an epidemic health problem among adolescent students in Tehran.
Leptin and its Association with Polycystic Ovary Syndrome: A Twin Study.

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Abstract

Polycystic ovary syndrome (PCOS) is a common endocrinopathy with symptoms such as obesity, insulin resistance and hyperandrogenemia. PCOS might be the result of a genetic disorder. Genetic discrepancy in the production of leptin, a product of the obesity gene, may lead to various endocrinopathies such as PCOS. The objective of this study was first, to ascertain the incidence of PCOS, using the gold standard; second, to ascertain the genetic property of leptin; and third, to evaluate the association between leptin concentration and PCOS. A total of 154 Tehran-resident female-female twins were studied. They included 48 pairs of monozygotic (MZ) and 29 pairs of dizygotic (DZ) twins, aged 15-45 years. Clinical, ultrasound and biochemical findings were used to diagnose PCOS. The incidence of PCOS using biochemical and clinical features was 16.2%. The correlation coefficient between serum leptin levels of MZ twins was higher than that of the DZ twins. The serum level of leptin was similar between subjects with or without PCOS, irrespective of their zygosity. It was concluded that the incidence of PCOS is high among twins, and that leptin is likely to be genetically determined, although the effect of environmental factors cannot be denied. This study did not find any association between the diagnosis of PCOS and leptin level. However, the link between the two may lie with other entities such as eating disorders and/or obesity.

B Mohammadpour-Ahranjani, A Rashidi, M Karandish, MR Eshraghian and N Kalantari

Abstract

Objective: Overweight has become a public health problem in most developing countries. Evidence suggests that adolescence is a critical period in determining adulthood obesity and its complications. The present study was carried out to assess the prevalence of overweight and obesity among secondary school students.

Design and setting: This descriptive study was conducted in Tehran city, 2000–2001. Body weight and height were measured and body mass index (BMI) values were calculated. Underweight, overweight and obesity were defined as <5th, ≥85th and ≥95th percentile, respectively, of age- and sex-specific BMI values from the National Center for Health Statistics/Centers for Disease Control and Prevention (2000).

Subjects: Using a multistage sampling method, 2321 students (1068 males and 1253 females) aged 11–16 years were assessed in Tehran, the capital city of Iran.

Results: The overall prevalences of overweight and obesity were 21.1 and 7.8%, respectively. The prevalence of overweight among girl students (i.e. 23.1%; 95% confidence interval (CI) 20.8–25.4) was significantly higher than that among boys (i.e. 18.8%; 95% CI 16.5–21.1, P = 0.01) even after adjustment for age (odds ratio 1.26, 95% CI 1.03–1.55, P = 0.02). No
significant risk of obesity associated with age was found in girls or boys. In both sexes, median values of age-specific BMI in this study were statistically higher than corresponding values collected in Tehrani adolescents 10 years ago (P = 0.03). Similarly, a significant difference was seen between girl students in this study and the reference population (P = 0.03).

**Conclusion:** According to this study, overweight, especially in girls, should be considered an epidemic health problem among adolescent students in Tehran.


**Prevalence of Overweight and Obesity and Their Relation to Hypertension in Adult Male University Students in Kerman, Iran**

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**Abstract**

**AIM:** This study examined cardiovascular risk factors among adult male university students in Kerman, Iran.

**MATERIALS AND METHODS:** Study populations of male university students, enrolled for physical education classes during the winter of 2001, at the Shahid Bahonar University of Kerman, were examined and evaluated. The partial correlation coefficient was used to quantify the association between body mass index and waist-to-hip circumference ratio with systolic blood pressure and diastolic blood pressure. Linear regression analysis was used to assess the influence of body mass index and waist-to-hip circumference ratio on the variance of systolic blood pressure and diastolic blood pressure.

**RESULTS:** The prevalence of overweight and obesity was 13.6% and 2.2%, respectively. 45.5% of the subjects had normal weight and 38.4% were underweight. 11.4% of the participants had waist-to-hip circumference ratio (WHR) ≥ 92. We found a positive correlation between body mass index and waist-to-hip circumference ratio. Stepwise linear regression analysis controlled for age revealed that both body mass index and waist-to-hip circumference ratio were independently correlated with both systolic and diastolic blood pressures.
CONCLUSION: The present results suggest that of the university students studied, those with either higher body mass index or central adiposity distribution are potential candidates at increased risk of hypertension and cardiovascular disease.


Obesity and Associated Modifiable Environmental Factors in Iranian Adolescents: Isfahan Healthy Heart Program - Heart Health Promotion from Childhood.


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Abstract

OBJECTIVE: To evaluate the prevalence of overweight and obesity among Iranian adolescents and their relationship with modifiable environmental factors.

METHODS: The subjects of the present study were 1000 girls and 1000 boys, aged between 11 and 18 years selected by multistage random sampling, their parents (n = 2000) and their school staff (n = 500 subjects) in urban and rural areas of two provinces in Iran. Data concerning body mass index (BMI), nutrition and the physical activity of the subjects were analyzed by SPSSV10/Win software.

RESULTS: The prevalence of 85th percentile <= body mass index (BMI) < 95th percentile and BMI > 95th percentile in girls was significantly higher than boys (10.7 +/- 1.1 and 2.9 +/- 0.1% vs 7.4 +/- 0.9 and 1.9 +/- 0.1%, respectively; P < 0.05). The mean BMI value was significantly different between urban and rural areas (25.4 +/- 5.2 vs 23.2 +/- 7.1 kg/m2, respectively; P < 0.05). A BMI > 85th percentile was more prevalent in families with an average income than in high-income families (9.3 +/- 1.7 vs 7.2 +/- 1.4%, respectively; P < 0.05) and in those with lower-educated mothers (9.2 +/- 2.1 vs 11.5 +/- 2.4 years of mothers education, respectively). The mean total energy intake was not different between overweight or obese and normal-weight subjects (1825 +/- 90 vs 1815 +/- 85 kCal, respectively; P > 0.05), but the percentage of energy derived from carbo-hydrates was significantly higher in the former group compared with
the latter (69.4 vs 63.2%, respectively; *P* < 0.05). Regular extracurricular sports activities were significantly lower and the time spent watching television was significantly higher in overweight or obese than non-obese subjects (time spent watching television: 300 +/- 20 vs 240 +/- 30 min/day, *P* < 0.05). A significant linear association was shown between the frequency of consumption of rice, bread, pasta, fast foods and fat/salty snacks and BMI (beta = 0.05-0.06; *P* < 0.05). A significant correlation was shown between BMI percentiles and serum triglyceride, high-density lipoprotein-cholesterol and systolic blood pressure (Pearson's r = 0.38, -0.32 and 0.47, respectively).

**CONCLUSIONS:** Enhanced efforts to prevent and control overweight from childhood is a critical national priority, even in developing countries. To be successful, social, cultural and economic influences should be considered.


**Gender Differences in Dietary Intakes, Anthropometrical Measurements and Biochemical Indices in an Urban Adult Population: the Tehran Lipid and Glucose Study.**

Mirmiran P, Mohammadi F, Sarbazi N, Allahverdian S, Azizi F.

Endocrine Research Center, Shaheed Beheshti University of Medical Sciences, Tehran, I.R. Iran.

**Abstract**

**BACKGROUND AND AIM:** In order to investigate gender differences in health indices, dietary intakes and obesity in urban Iranian adults, we considered a sub-sample of the adult population of the Tehran Lipid and Glucose Study.

**METHODS AND RESULTS:** The randomly selected sub-sample consisted of 483 subjects aged 25-50 years (229 men and 254 women) and 153 aged more than 50 years (81 men and 72 women). Their anthropometrical variables were recorded, and their body mass index (BMI) and waist/hip ratio were calculated. Dietary intake was assessed by means of two-day dietary recall and the completion of dietary habit questionnaires during face-to-face interviews. Underreporting was defined as a ratio of energy intake (EI)/basal metabolic rate (BMR) < 1.27. The mean BMI of the women in both age groups was significantly higher than that of the men (*p* < 0.05). Central obesity was more frequent in the women and among older subjects. The women had higher plasma concentrations of high-density
lipoprotein cholesterol, but lower levels of total and low-density lipoprotein cholesterol. Underreporting of EI was more frequent in the women than the men: 34.0% vs 15.4% in the younger group, and 40.3% vs 17.3% in the older group (p < 0.01). There were major gender differences in the mean daily intakes of energy, protein, carbohydrate, fat, fibre, cholesterol, iron, calcium and phosphorus. A higher proportion of women met the cholesterol intake guidelines. Data from the dietary habit questionnaires showed that more men than women usually sprinkle salt on their food.

CONCLUSIONS: The results of this study partially support the hypothesis of gender differences in dietary intakes, and the prevalence of obesity and some health-related indices, and suggest the need for gender-specific, targeted nutrition messages and behavioural interventions in developing prevention strategies for cardiovascular risk factors.


Sizes and Obesity Pattern of South Iranian Adolescent Females.

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Abstract

BACKGROUND: Sizes (height and weight) and obesity (a scaled weight-by-height index) charts of a representative sample of 1,743 healthy adolescent females of Shiraz (Southern Iran) aged 11-17 years are presented.

METHODS: An adjusted weight-for-height was used to define a possible obesity index. Polynomial modelling was used by applying the HRY (Healy, Rasbash, Yang) nonparametric method to estimate age-related smoothed centiles of sizes and obesity.

RESULTS: A ponderal index in the form of weight/height(3) represented obesity better than any other index which is logically related to weight/volume and enjoys biological justification. No more than cubic polynomials were needed to fit height-for-age, weight-for-age, obesity-for-age and weight-for-height smoothly. The 10th, 75th and 97th centiles of height and weight of our subjects lie on the 3rd, median and 90th centiles of the NCHS standard, respectively. Obesity pattern increases with age, giving an appropriate index to study obesity of female adolescents.
However, weight-for-height chart independent of age range of subjects may serve as an alternative.

**CONCLUSION:** It is concluded that the ponderal index is an appropriate index to study obesity of adolescent females, and is a simple one that is biologically plausible. However, other indices such as weight-for-height may be considered as an alternative. A local standard for assessing sizes and obesity of adolescent females is recommended for clinical as well as community health purposes in Iran.

JQUMS 2003, 7(2): 27-35

Heathy Heard Program : Obesity in Center of Iran

A Akhavan Tabib *, B Sabet, HR Toluei, A Baghaei, R Kelishadie and GH Sadri

Abstract

**BACKGROUND:** Obesity is one of the important hygienic problems of both industrial and developing countries.

**OBJECTIVE:** To determine the prevalence of obesity in two groups of men and women.

**METHODS:** Through a cross-sectional study 12600 people from Isfahan, Najaf-Abad and Arak provinces were studied in Isfahan Healthy Heart Program (in 2000 – 2002). Two equal ratios of both sexes were selected using random - clustering sampling. A questionnaire consisting demographic formation and also clinical information such as Weight, height, waistand hip circumference was filled out for each person.

**FINDINGS:** In this study 23/44 ± 1/9% of all studied women and 9/28 ± 1/7% of all studied men had BMI > 30 and 33/33 ± 2/4% of women and 30/28 ± 20% of men had BMI >25. On the other hand 39/05 ± 2/61% of all women and 55/02 ± 2/73% of all men had normal BMI. This ratio was 43/25 ± 3/5% and 34/9 ± 1/7% for rural and urban women respectively. Also the highest rate of waist and hip circumferences was seen in men aged > 66 years (94/2 ± 11/2% and 99/8 ± 8/9% respectively). While in women the highest rate of hip circumference is 104/22% ± 10/9% in age group 35-44 years and the highest rate of waist circumference is 98/00% ± 13% that was seen in 45-54 and 55- 64 years.
CONCLUSION: Every program of nutrition and life style for all age groups should be done similarly in both sexes. The lack of difference of BMI in rural and urban areas was because of the fact that they did not live differently and just in Arak which mostly had a traditional context, a small difference was seen.


An Accelerated Nutrition Transition in Iran.

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Abstract

OBJECTIVE: To describe the emergence of the nutrition transition, and associated morbidity shifts, in the Islamic Republic of Iran.

DESIGN: Review and analysis of secondary data relating to the socio-political and nutritional context, demographic trends, food utilisation and consumption patterns, obesity, and diet-related morbidity.

RESULTS AND CONCLUSIONS: The nutrition transition in Iran is occurring rapidly, secondary to the rapid change in fertility and mortality patterns and to urbanisation. The transition is occurring against the backdrop of lack of sustained economic growth. There is considerable imbalance in food consumption with low nutrient density characterising diets at all income levels, over-consumption evident among more than a third of households, and food insecurity among 20% of the population. Obesity is an emerging problem, particularly in urban areas and for women, and both diabetes and other risk factors for heart disease are becoming significant problems.
Familial Clustering of Obesity and the Role of Nutrition: Tehran Lipid and Glucose Study.

Mirmiran P, Mirbolooki M, Azizi F.

Endocrine Research Center, Shaheed Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

OBJECTIVE: To clarify the hypothesis that parent’s dietary intakes are associated with their offspring's body mass index.

DESIGN: Observational analytical cross-sectional survey among inhabitants of district 13 in the east of Tehran.

SUBJECTS: A total of 117 healthy families comprising 474 subjects including 240 offspring (3-25 y old).

MEASUREMENTS: Weight and height were measured by a standard protocol and body mass index (kg/m(2)) was calculated. Dietary intakes were assessed by means of a 2 day dietary recall questionnaire.

RESULTS: The prevalence of overweight was 11.8% in offspring of normal-weight parents, 19.0% in offspring of overweight fathers and normal-weight mothers, 25.4% in offspring of overweight mothers and normal-weight fathers and 40.8% in offspring with both parents overweight. The offspring's overweight was significantly and independently associated with high-energy intake of both parents (odds ratio; 95% CI 2.7; 1.6-4.5). Adjusted for the sex of parents, the chances of offspring being overweight were higher in overweight (3.8; 1.5-9.2) and high-energy-intake mothers (2.6; 1.2-5.6) and high-energy-intake fathers (2.0; 1.1-3.9) as compared with children of normal-weight parents. High fat intake of husbands was an independent risk factor increasing the chances of their wives being overweight (2.1; 1.5-3.6) and vice versa (1.8; 1.2-2.8).

CONCLUSION: The observed familial obesity pattern was shown to be associated with the familial dietary intakes. Hence, familial intervention seems essential to stop the accelerated rise in the prevalence of overweight and obesity in our community.
Obesity in Iranian Children.

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Abstract

We surveyed 4315 2-5 year olds in Iran. Prevalence of obesity (BMI >95th centile, Iranian reference data) was compared with the recent "IOTF" approach. Prevalence was significantly higher than expected, and increased with age, but contradictory trends were obtained from the two approaches. Monitoring of childhood obesity using the BMI in developing countries is indicated, but differences associated with obesity definition should be considered.

Prevalence of Obesity and Overweight in Primary School Girls in Tehran, Iran

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OBJECTIVE(S): The rising trends of obesity in children are reflected in increased adult obesity and related morbidity. So we studied the prevalence of obesity in children and the related factors in Tehran.

MATERIAL & METHODS: This was a cross-sectional study of 1800 female pupils. Weight and height were measured and BMI (Body Mass Index) was calculated. SPSS-IO was used for statistical analysis.

RESULTS: Prevalence of obesity and overweight were 7.7 percent (95%CI= 6.25% - 9.3%) and 13.3 percent (95%CI= 11.76% - 14.95%), respectively. There was a significant correlation between obesity and age (P=0.01), type of school (P=0.002), appearance (P<0.001) and self-image (P<0.001).

CONCLUSION: The findings necessitate interventional programs for identification and treatment of obese children.

An Accelerated Nutrition Transition in Iran.

Ghassemi H, Harrison G, Mohammad K.

National Study on Food and Nutrition Security in Iran, Shahrak Ghods, Tehran. gailh@ucla.edu

Abstract

OBJECTIVE: To describe the emergence of the nutrition transition, and associated morbidity shifts, in the Islamic Republic of Iran.

DESIGN: Review and analysis of secondary data relating to the socio-political and nutritional context, demographic trends, food utilisation and consumption patterns, obesity, and diet-related morbidity.

RESULTS AND CONCLUSIONS: The nutrition transition in Iran is occurring rapidly, secondary to the rapid change in fertility and mortality patterns and to urbanisation. The transition is occurring against the backdrop of lack of sustained economic growth. There is considerable imbalance in food consumption with low nutrient density characterising diets at all income levels, over-consumption evident among more than a third of households, and food insecurity among 20% of the population. Obesity is an emerging problem, particularly in urban areas and for women, and both diabetes and other risk factors for heart disease are becoming significant problems.


Pattern of Dietary Behaviour and Obesity In Ahwaz, Islamic Republic Of Iran.

Soori H.

Department of Community Medicine, School of Medicine, Ahwaz University of Medical Sciences, Ahwaz, Islamic Republic of Iran.

Abstract

To study behavioural factors associated with diet and to investigate body mass index distribution, a cross-sectional survey was carried out in Ahwaz. A composite dietary behaviour score obtained from self-reported responses to a 24-item food-frequency questionnaire was used to categorize eating habits as more/less healthy. Responders were 1600 heads of households
from 150,000 randomly selected residences. Less healthy diets were shown to be associated with age and economic status, and greater obesity with women and age (reversed after ages > 65 years). Interventions targeted at less healthy eaters need to be evidence-based, and further research into factors determining access to healthy diets in developing communities is required.


**Dietary Factors and Body Mass Index in a Group of Iranian Adolescents: Tehran Lipid and Glucose Study--2.**

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Endocrine Research Centre, Shaheed Beheshti University of Medical Sciences, Tehran, I.R. Iran.

**Abstract**

**OBJECTIVE:** To study the prevalence of overweight and obesity in an adolescent population in Tehran and to determine possible association with energy and nutrient intake and distribution of energy over the day.

**METHOD:** A cross-sectional study on 177 boys and 244 girls between 10-19 years old was performed. Overweight and obesity were defined by using recommended body mass index (BMI) cut-off values for adolescents. Total energy intake, percent of energy derived from protein, carbohydrate and fat and percent of energy supplied by each meal and snack were assessed by means of two 24-hour dietary recalls.

**RESULTS:** Prevalence of overweight and obesity was 10.7 and 5.1 in boys and 18.4 and 2.8 in girls, respectively. The composition of diet was not different between overweight/obese and normal weight subjects. BMI was related with breakfast energy percentage in girls \( r = 0.18, p < 0.01 \), with total energy intake in boys \( r = -0.18, p < 0.01 \), and with lunch energy percentage in both sexes. In boys \( r = 0.16, p < 0.05 \) and in girls \( r = 0.22, p < 0.01 \).

**CONCLUSION:** High prevalence of overweight and obesity among adolescents was seen. In boys some relationship between total energy intake, distribution of energy over the day and BMI was seen. In girls BMI was only related with distribution of energy over the day.
BMI Trajectory Groups in Veterans of the Iraq and Afghanistan Wars

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Abstract

OBJECTIVE: The study sought to determine BMI trajectories in Iraq/Afghanistan veterans over 6 years and to examine sociodemographic factors associated with BMI trajectory membership.

METHODS: Our study sample included 16,656 veterans post-deployment and entering the Veteran Healthcare Administration (VHA) healthcare system. We used national VHA administrative sociodemographic data, tracked veteran BMI for 6 years, and used trajectory modeling to identify BMI trajectories and sociodemographic characteristics associated with trajectory membership.

RESULTS: Five trajectory groups determined in the full sample were primarily differentiated by their post-deployment initial BMI: "healthy" (14.1%), "overweight" (36.3%), "borderline obese" (27.9%), "obese" (15.7%), and "severely obese" (6.0). Being female, younger, and white were associated with lower initial BMI trajectory group membership (p's < .05). Greater observed BMI increase was associated with higher initial BMI across groups (0.6, 0.8, 1.5, 1.9, 2.7). Gender specific trajectory models found that male Veterans with higher education and white female Veterans were associated with the lowest initial BMI group (p's < .05).

CONCLUSIONS: Higher post-deployment BMI was associated with greater BMI gain over time for both male and female veterans. Older age is associated with higher BMI regardless of gender. Education level and racial status are differentially related to BMI trajectory by gender.
Assessment Of Rates Of Overweight And Obesity And Symptoms Of Posttraumatic Stress Disorder And Depression In A Sample Of Operation Enduring Freedom/Operation Iraqi Freedom Veterans.

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Abstract

OBJECTIVE: We examined rates of overweight and obesity in a sample of Operation Enduring Freedom/Operation Iraqi Freedom Veterans setting up routine care within 1 Veterans Affairs medical center and examined associations between weight and measures of symptoms of posttraumatic stress disorder (PTSD) and depression.

METHODS: Retrospective chart reviews were conducted to collect data on weight and symptoms of PTSD and depression.

RESULTS: Mean body mass index (=27 kg/m², SD = 4.47) was within the overweight range. Veterans had rates of overweight that were higher than those of national samples of individuals in the same age group, but had lower rates of obesity. Measures of symptoms of PTSD and depression were not associated with weight.

CONCLUSIONS: A high proportion of individuals in this group of Operation Enduring Freedom/Operation Iraqi Freedom Veterans is overweight with rates consistent with the larger active duty population. Overweight was not associated with psychological distress. These data raise concerns for long-term problems with weight in this group of Veterans.
Abstract

PURPOSE: The current wars in Iraq and Afghanistan have led to an increasing number of female veterans seeking medical and mental healthcare in the Department of Veterans Affairs (VA) healthcare system. To better understand gender differences in healthcare needs among recently returned veterans, we examined the prevalence of positive screenings for depression, posttraumatic stress disorder (PTSD), military sexual trauma (MST), obesity, and chronic pain among female and male veterans of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) receiving care at the VA Connecticut Healthcare System.

METHODS: We performed a retrospective, cross-sectional data analysis of OEF/OIF veterans at VA Connecticut who received services in either Primary Care or the Women’s Health Clinic between 2001 and 2006.

RESULTS: In this study, 1129 electronic medical records (1032 men, 197 women) were examined. Female veterans were more likely to screen positive for MST (14% vs. 1%, p < 0.001) and depression (48% vs. 39%, p = 0.01) and less likely to screen positive for PTSD (21% vs. 33%, p = 0.002). There was no significant gender difference in clinically significant pain scores. Men were more likely than women to have body mass index (BMI) >30 kg/m(2) (21% vs. 13%, p = 0.008).

CONCLUSIONS: These results suggest that important gender differences exist in the prevalence of positive screenings for MST, depression, obesity, and PTSD. As the VA continues to review and improve its services for women veterans, clinicians, researchers, and senior leaders should consider innovative ways to ensure that female veterans receive the health services they need within the VA system.
Cut-Off Values for Waist Circumference in Rural Iraqi Adults for the Diagnosis of Metabolic Syndrome.

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Abstract

BACKGROUND: The determination of cutoff points for healthy waist circumference (WC) is of paramount importance for prevention, optimum management, and prognostication of obesity, the metabolic syndrome (MetS), type 2 diabetes mellitus, and coronary heart disease. The aim of this project was to establish the cutoff level for WC in rural Basrah in Iraq, one of the eastern Mediterranean and Middle East (Arab) populations.

METHODS: This was a community-based, cross-sectional survey for establishing the normal value for WC among a rural district population in Basrah (Abu-Al-khasib), Iraq. A stratified sampling procedure was used for sample selection.

RESULTS: The cutoff level yielding maximum sensitivity and specificity for predicting the presence of multiple risk factors was 97 cm in men and 99 cm in women. Sensitivity and specificity using these cutoff values were 70% and 50%, respectively, in men and 70% and 45%, respectively, in women.

CONCLUSION: We propose the optimal cutoff point for WC for the diagnosis of MetS in the Iraqi adult rural population as 99 cm in women and 97 cm in men.

Prevalence of and Factors Associated with Overweight and Obesity among a Group of Iraqi Women.

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Abstract

We studied the prevalence and factors associated with overweight and obesity among 200 non-pregnant Iraqi women (> 18 years) attending 2 outpatient clinics in Baghdad. The women were interviewed using a
questionnaire and had their body mass index (BMI) and waist-to-hip ratio (WHR) calculated. Only 24% of the women were normal weight: 39%, 25% and 12% were overweight (BMI 25-29.9 kg/m2), obese (> or =30 kg/m2) and morbidly obese (> or = 40 kg/m2) respectively. While the mean WHR was normal, the mean waist circumference was higher than normal. Factors significantly associated with overweight and obesity were older age, history of previous laparotomy and type of clothing worn (gown) inside the home.


Cut-Off Values for Anthropometric Variables that Confer Increased Risk of Type 2 Diabetes Mellitus and Hypertension in Iraq.

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Abstract

BACKGROUND: Body mass index (BMI) is often used to reflect total body fat amount (general obesity), whereas waist circumference (WC), waist-to-hip ratio (WHpR) or waist-to-height ratio (WHtR) is used as a surrogate of body fat centralization (central obesity). The purpose of the present study was to identify cut-offs for BMI and upper-body adiposity (WC, WHpR, and WHtR) that, associated with increased risk of type 2 DM and hypertension in Iraqi adults, would be consistent with overweight and central adiposity.

METHODS: This was a community-based cross-sectional survey for establishing cut-off values for BMI and upper-body adiposity (WC, WHpR or WHtR) associated with increased risk of type 2 DM and hypertension from one district in Southern Iraq, Basrah (Abu-Al-khasib). The total number of persons involved was 12,986 (6693 men and 6293 women), aged 45.6 +/- 15.7 years.

RESULTS: The cut-off point in men associated with increased risk of type 2 DM and hypertension were BMI 25.4 and 24.9, WC 90 and 95 cm, WHpR 0.92 for both and WHtR 0.52 and 0.55, respectively. For women, the cut-off point associated with increased risk of type 2 DM and hypertension were BMI 26.1 and 26.5, WC 91 and 95 cm, WHpR 0.91 for both, and for WHtR 0.56 and 0.59, respectively. The best index for association with type 2 DM was WHpR with cut-off point of 0.92 for men and 0.91 for women. For
hypertension, the best index is WHtR (with cut-off point of 0.55 for men and 0.59 for women), whereas the least reliable index was the BMI for both type 2 DM and hypertension.

**CONCLUSIONS:** Our finding showed that, in Iraqi adults, WHpR has the strongest association with type 2 DM and WHtR for hypertension.


**Childhood Obesity in Iraq: Prevalence and Possible Risk Factors.**

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**Abstract**

**BACKGROUND:** Childhood obesity is increasing in prevalence in developing countries. We conducted this study to assess the prevalence of overweight and obesity in primary school children age 7 to 13 years in central Iraq and to identify possible risk factors.

**METHODS:** The study was conducted in Babil governorate from October through March 2002. Eight thousand three hundred pupils (4100 girls and 4200 boys) randomly chosen primary schools were included in the study. BMI was measured and compared to standard tables. Information on possible risk factors was collected by questionnaire.

**RESULTS:** The prevalence of overweight and obesity was 6% and 1.3%, respectively. Significant associations were found between overweight and age, residency (urban-rural), birth rank, breast-feeding and certain dietary and lifestyle practices.

**CONCLUSION:** The prevalence of obesity and overweight is relatively high in children in central Iraq. Modern dietary habits are an important influence in the development of childhood obesity that should be watched carefully and controlled.
Metabolic Abnormalities Associated with Obesity in Children and Adolescents in Jordan.

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Abstract

Abstract Objective. To estimate the prevalence of overweight and obesity among Jordanian children and adolescents and to determine their association with metabolic abnormalities. Methods. In a national population-based household survey, a systematic sample of households was selected. All members aged ≥7 years in the selected households were invited to participate in the study. Of the respondents, 1,034 subjects were 18 years old or younger. Anthropometric and biochemical measurements were obtained. Overweight and obesity were defined according to age and sex specific cut-off points of BMI defined by the International Obesity Task Force criteria proposed by Cole et al. The metabolic abnormalities were defined for subjects, based on their age, according to the definition of Cook et al. and International Diabetes Federation (IDF) criteria. Results. The overall prevalence of overweight and obesity among children were 6.0% and 5.5%, respectively. Among adolescents, the overall prevalence rates of overweight and obesity were 13.7% and 10.0%, respectively. After adjusting for gender and age, overweight was significantly associated with increased odds of having high triglycerides (Odds ratio [OR] = 1.7), low HDL-cholesterol (OR = 1.9), and at least one metabolic abnormality (OR = 2.2). Obesity was significantly associated with increased odds of individual metabolic abnormalities and their clustering. Conclusions. A relatively high proportion of Jordanian children and adolescents had overweight or obesity. Overweight and obesity in children and adolescents were associated with increased odds of metabolic abnormalities and their clustering. Programs addressing eating behavior and physical activity of children and adolescents to maintain a healthy weight are needed in Jordan.
Health-Related Quality of Life of Adolescents with Overweight or Obesity in the North of Jordan.

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Abstract

Previous studies showed that overweight and obesity in children Background and adolescents are associated with impaired health-related quality of life (QOL). The objective of this study was to describe health-related QOL among This is a Jordanian adolescents who were overweight or obese. Methods cross-sectional study conducted among Jordanian students aged between 13 and 18 years in three educational directorates in Irbid City in the north of Jordan. Using simple random sampling, two male schools and two female schools were selected from the list of each directorate to represent all schools in north of Jordan. In each selected school, all adolescents aged 13-18 years were visited in their classes and were invited to participate in the study. Of the total number of 1561 subjects, 1433 (91.8%) agreed to participate in the study. The short-form 15-item Pediatric Quality of Life Inventory version 4.00 was used to measure health-related QOL among participants. Body mass index (BMI) was calculated and interpreted according to the BMI-for-age growth charts of the Center for Disease Control and Prevention guidelines. Results included 707 boys and 726 girls; 17.6% of participants were overweight and 7.8% were obese. For boys and girls, adolescents who were overweight or obese had significantly lower average scores for psychosocial health summary scale and physical functioning scale. Female gender, age of 16-18 years, fathers’ education of high school or less and unemployed fathers (for social functioning and physical functioning) were significantly associated with decreased average scores of all scales and subscales of Pediatric Quality of Life Inventory. Compared with healthy adolescents,
adolescents who were overweight. Conclusions or obese reported significantly lower health-related QOL in all domains. Girls reported greater effect of overweight and obesity on their health-related QOL.

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**Metabolic Abnormalities Associated with Obesity in Children and Adolescents in Jordan.**

Khader YS, Batieha A, Jaddou H, Batieha Z, El-Khateeb M, Ajlouni K.

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**Abstract**

Abstract Objective. To estimate the prevalence of overweight and obesity among Jordanian children and adolescents and to determine their association with metabolic abnormalities. Methods. In a national population-based household survey, a systematic sample of households was selected. All members aged ≥7 years in the selected households were invited to participate in the study. Of the respondents, 1,034 subjects were 18 years old or younger. Anthropometric and biochemical measurements were obtained. Overweight and obesity were defined according to age and sex specific cut-off points of BMI defined by the International Obesity Task Force criteria proposed by Cole et al. The metabolic abnormalities were defined for subjects, based on their age, according to the definition of Cook et al. and International Diabetes Federation (IDF) criteria. Results. The overall prevalence of overweight and obesity among children were 6.0% and 5.5%, respectively. Among adolescents, the overall prevalence rates of overweight and obesity were 13.7% and 10.0%, respectively. After adjusting for gender and age, overweight was significantly associated with increased odds of having high triglycerides (Odds ratio [OR] = 1.7), low HDL-cholesterol (OR = 1.9), and at least one metabolic abnormality (OR = 2.2). Obesity was significantly associated with increased odds of individual metabolic abnormalities and their clustering. Conclusions. A relatively high proportion of Jordanian children and adolescents had overweight or obesity. Overweight and obesity in children and adolescents were associated with increased odds of metabolic abnormalities and their clustering. Programs addressing eating behavior and physical activity of children and adolescents to maintain a healthy weight are needed in Jordan.
Factor Analysis of Cardiometabolic Risk Factors Clustering in Children and Adolescents.

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Abstract

BACKGROUND: Research on the clustering and relative importance of the metabolic syndrome components in children and adolescents is scarce. This study was conducted to explore the factor structure of the central metabolic syndrome variables in Jordanian children and adolescents using exploratory factor analysis.

METHODS: This study included 665 children and adolescents who were identified in a national population-based household survey in Jordan. Their anthropometric and laboratory measurements were obtained. Factor analysis was performed on standardized variables to produce the minimum number of factors that retains as much of the total variance in the original data as possible.

RESULTS: Factor analysis showed that one common factor is not sufficient to underlie metabolic syndrome. Four factors were extracted in the exploratory factor analysis-adiposity factor, blood pressure factor, lipids factor, and blood glucose factor. The cumulative percent of variance accounted for by the four factors together was 78.7% in male children, 86.9% in female children, 82.5% in male adolescents, and 83.4% in female adolescents. The adiposity factor accounted for the largest proportion of the total variance in the four groups.

CONCLUSIONS: The factor analysis of cardiovascular risk clustering in Jordanian children and adolescents suggests that multiple factors account for the clustering of the metabolic syndrome components. Obesity accounts for the maximum variance in clustering and appears to be a more powerful correlate of cardiovascular risk in children and adolescents.

**Obesity and Body Size Preferences of Jordanian Women.**

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**Abstract**

The nutrition transition is associated with increased obesity rates and increased desire to be thin. This study evaluates the relationship between actual body size and desired body size among a representative sample of 800 Jordanian women. Using Stunkard's body silhouettes, women were asked to identify their current and ideal body sizes, healthy body size, and their perception of the body size preferred by men. Body mass index (BMI) calculations indicate that 53.8% of the women were overweight or obese. Their mean current body size was 5, which is consistent with the mean BMI of 26 in the sample. Although 66% of the women were dissatisfied with their body size, the desired weight loss was not extreme. Pearson correlation was positive (.858, p < .0001) between measured BMI and body silhouettes chosen as an indicator of current body size. Jordanian women seemed pulled between the traditional and Westernized body preferences. Possible cultural explanations are explored.


**Overweight and Obesity and Their Correlates among Jordanian Adolescents.**

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**Abstract**

**PURPOSE:** To provide current estimates of the prevalence of overweight and obesity among Jordanian adolescents 14 to 17 years of age living in Irbid Governorate, and to determine the factors that are associated with overweight and obesity.

**DESIGN:** Descriptive correlational cross-sectional design was used.
METHODS: Body mass index, perceived stress, dietary habits, physical activity, and demographics of 824 Jordanian adolescents living in Irbid were measured through a multistage cluster sampling method.

FINDINGS: The overall prevalence of overweight and obesity was 19.1% and 6.3%, respectively. The prevalence of overweight and obesity among boys was 17.2% and 5.7%, respectively, and among girls was 21.0% and 7.0%, respectively. Both overweight and obesity rates were higher among girls. Physical activity, mother's educational level, and number of family members were negatively correlated with overweight and obesity. On the other hand, eating breakfast regularly, mother's weight, consumption of fried food, and perceived stress level were positively correlated with overweight and obesity.

CONCLUSIONS: Overweight and obesity are becoming a health problem among both boys and girls in Jordan.

CLINICAL RELEVANCE: Detecting the prevalence and the associated factors of overweight and obesity among adolescents is the first step toward proposing intervention strategies.


Predictors of Obesity in School-Aged Jordanian Adolescents.

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Abstract

This cross-sectional study aimed to estimate the frequency of overweight and obesity in adolescents as defined by the International Obesity Task Force, and to estimate the effect of sociodemographic and health behaviours (eating habits and physical activity) that predict obesity. A stratified (by gender) random sample of 518 adolescents, aged 15 or 16 years was obtained from eight public schools in Amman. In this sample 17.5% were overweight and 9.6% were obese. The predictors of obesity and overweight (excess weight) were: (i) fathers attained primary and secondary education; (ii) total monthly family income \( \geq 300 \) (JD); (iii) working mothers; (iv) family size \( < 6 \); and (v) having obese parents. Eating a low quality diet (chips, candy) was a significant dietary predictor of excess weight. The family variables found to be important predictors along
with a low quality diet suggest that family interventions would be necessary in the control of adolescent excess weight.


Prevalence of Overweight and Obesity among Adolescents in Irbid Governorate, Jordan.

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Abstract
Overweight and obesity is an escalating health problem in both developed and developing countries. This descriptive cross-sectional study aimed to determine the prevalence of overweight and obesity among adolescents aged 13-16 years in Irbid governorate, Jordan, and to compare the prevalence by sex, residential area and socioeconomic status. In a cluster random sample of 1355 school students the prevalence of overweight and obesity (body mass index ≥ or = 85th percentile) was 24.4% (15.7% overweight and 8.7% obese) and was significantly higher among female students, students who lived in urban areas and those with working parents. This high prevalence of overweight is a serious concern for public health in Jordan.


Prevalence of Elevated Hepatic Transaminases among Jordanian Patients with Type 2 Diabetes Mellitus.

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Abstract
BACKGROUND AND OBJECTIVES: Since the extent of elevation of liver transaminases in type 2 diabetics in Jordan and most of the Middle East is unknown, we estimated the prevalence of elevated liver transaminase levels among patients with type 2 diabetes and determined associated risk factors.
**METHODS:** This study was performed on 1014 consecutive type 2 diabetic outpatients who attended the National Center for Diabetes, Endocrinology and Genetics in Amman, Jordan. The patients' age ranged between 26-85 years with a mean age of 56.8 (+9.8). Three-hundred and fifty three (54.5%) were males with a median age of 58 years (ranging between 26-82 years), and four hundred and sixty one (45.5%) were females with a median age of 57 years (ranging between 28-85 years). Body mass index, waist circumference, lipid profile, and hepatic transaminase levels were recorded. Ultrasoundography was performed in those with elevated alanine transaminase levels.

**RESULTS:** Overall, the prevalence of elevated alanine transaminase (ALT) level was 10.4% (n=105) with the gender-wise prevalence being 12.8% (n=71) in men and 7.4% (n=34) in women. The prevalence of elevated aspartate transaminase (AST) levels was 5.4% (n=56) with the gender-wise prevalence being 5.6% (n=31) in men and 5.4% (n=25) in women. Only 4.5% (n=44) showed elevated levels of both ALT and AST. Male gender (OR=2.35, CI:1.5-3.8) and high waist circumference (OR=1.9, CI:1.2-3.2) were associated with increased risk of elevated ALT levels. Younger patients had a higher tendency to have elevated ALT compared to those over 65 years (OR=12.4 for patients aged 25-45 years, and OR=5.8 for those who were 45-65 years old). Non-insulin use was associated with a high odds ratio for elevated ALT levels (OR=1.7, CI: 1.1-2.9).

**CONCLUSIONS:** Elevated ALT and AST levels are found in 10.4% and 5.4% of our type 2 diabetic patients respectively. Male gender, younger age, higher waist circumference; as an indicator of central obesity, as well as non-insulin use are independent predictors of elevated liver transaminase levels.
Factors Associated with Sexual Dysfunction in Jordanian Women and Their Sexual Attitudes.

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Abstract

BACKGROUND: Female sexual dysfunction (FSD) is defined as disorders of libido, arousal, and orgasm, as well as sexual pain, that leads to personal distress or interpersonal difficulties. Social aspects of FSD have been understudied. The aim of this study was to explore the social aspects of FSD and sexual attitudes of Jordanian women.

SUBJECTS AND METHODS: Six hundred thirteen married females were studied between October 2006 and August 2007 at the National Center for Diabetes, Endocrinology and Genetics (NCDEG), Amman, Jordan. Females were interviewed using a special questionnaire that was suitable to our culture and added to the Arabic translation of the Female Sexual Function Index (FSFI) Questionnaire.

RESULTS: Older age was associated with a decreased total FSD index and its domain scores. Women with obesity were more likely to have impaired arousability and impaired capability of reaching orgasm. About 58.5% of women reported that they prepared themselves if they had sexual desire and 68.2% reported wearing special attire for this purpose. Only 37.2% of women could ask their husband for a special excitement.

CONCLUSIONS: FSD is prevalent in Jordan. Its social aspects are understudied and need more research in the future.

Overweight and Obesity among School Children in Jordan: Prevalence and Associated Factors.

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Abstract

OBJECTIVES: To estimate the prevalence of overweight and obesity and determine their associated factors among school children aged 6-12 years in the north of Jordan.

METHODS: A cross-sectional study was conducted among school children in the north of Jordan in the period between March 2006 and May 2006. A total of 2,131 children (1,052 boys and 1,079 girls) were selected at random using multistage cluster sampling method. The first part of the questionnaire was completed by pupils in schools and the second part was completed by their parents at home. The researchers measured height, weight, waist circumference, hip circumference, and mid upper arm circumference of each student in the class. Overweight and obesity were defined according to the international cut-off points of body mass index for boys and girls between 2 and 18 years of age.

RESULTS: Of the total 2,131 children, 19.4% were overweight (18.8% of boys and 19.9% of girls) and 5.6% were obese (5.6% of boys and 5.5% of girls). Watching television >2 h/day, daily pocket money >20 piasters (1 piaster = 1.42 cents), having overweight or obese mother/father were significantly associated with increased odds of both overweight and obesity. Age > or = 10 years, female gender, and family size of < or =4 were significantly associated with being overweight and total monthly family income >300 Jordanian Dinars (JDs), (1 JD = $1.42) was associated with obesity.

CONCLUSIONS: While the prevalence of overweight was high among Jordanian children compared with that in the neighboring countries, the prevalence of obesity was lower.
Factors Contributing to Adolescent Obesity.
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Abstract
Obesity in children is a significant public health concern. The prevalence of overweight and obesity in Jordanian children, and adolescents has increased in the last decade. The consequences of obesity to health in childhood and adulthood have both medical, and economic cost to individuals and society. This paper reviews the factors that contribute to adolescent obesity and emphasizes behavioral and environmental factors. An individual's behaviors such as increased consumption of high caloric foods, increased sedentary activity while decreasing physical activity has been identified as key issues in the development of obesity. Additionally, the current environment in homes, schools, and neighborhoods tend to discourage a healthy lifestyle. A comprehensive approach that involves the whole community is the best strategy for preventing adolescent obesity. Nurses are in a unique position to provide leadership in developing programs for healthier lifestyle choices for adolescents’ and adoption of these goals into their daily lives.

The Association between Periodontal Disease and Obesity among Adults in Jordan.
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Abstract
AIM: To determine the relationship between periodontitis and overweight/obesity among Jordanians.
MATERIAL AND METHODS: A systematic random sample of 340 persons aged between 18 and 70 years was selected from those who accompanied patients during their visit to the outpatient clinics in the medical centre of Jordan University of Science and Technology in north of Jordan. All participants underwent periodontal examination, had anthropometric measurements, and completed the questionnaire. Periodontitis was defined as presence of four or more teeth with one or more sites with probing pocket depth >or=4 mm and clinical attachment loss >or=3 mm.

RESULTS: Only 14% of normal weight participants had periodontal disease whereas 29.6% of overweight and 51.9% of obese participants had periodontal disease. Periodontitis was more prevalent among subjects with high waist circumference (WC) and among subjects with high waist-to-hip ratio. After adjusting for important variables, only body mass index (BMI)-defined obesity [odds ratio (OR)=2.9, 95% confidence interval (CI): 1.3, 6.1], high WC (OR=2.1, 95%CI: 1.2, 3.7), and high fat per cent (OR=1.8, 95% CI: 1.03, 3.3) remained significantly associated with increased odds of periodontitis.

CONCLUSION: BMI-defined obesity, high WC, and high fat per cent were significantly associated with increased odds of having periodontitis.

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Prevalence of and Factors Associated with Overweight and Obesity among Jordan University Students.

Suleiman, A. A.; Alboqai, O. K.; Yasein, N.; El-Qudah, J. M.; Bataineh, M. F.; Obeidat, B. A.

Abstract

To determine the prevalence of overweight and obesity among Jordan University students and to investigate some factors that might be associated with overweight and obesity. A cross-sectional survey was conducted at Jordan University, Amman, Jordan from March to September, 2005 using a multistage stratified sampling technique to recruit the participants. A total of 1219 students aged 17-28 years completed the study procedure with a response rate of 81.3%. A self-administered questionnaire was used for data collection. The questionnaire included questions on biological and non-biological factors influencing the development of
overweight and obesity. Also, height and weight were self reported to calculate the Body Mass Index (BMI) and to categorize it into normal, overweight and obese according to WHO (1997) classification. The overall prevalence rates of overweight and obesity among university students were 28.5 and 10.2%, respectively. Biological factors significantly associated with overweight and obesity were increasing age, being female and parental obesity (p<0.05). Also, non-biological factors including, physical inactivity, non-healthy diet, lower family monthly income and being non-smoker were significantly associated with overweight and obesity (p<0.05). Obesity is a problem among Jordan University students. Factors behind overweight and obesity among Jordan University students were increasing age, being female, parental obesity, physical inactivity, non-healthy diet, lower family monthly income and being non-smoker.


Prevalence of Overweight and Obesity in Urban and Semi-Urban Jordanian Children Aged 3-6 Years.

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Abstract

OBJECTIVES: To show the prevalence of overweight and obesity among the Jordanian urban and semi-urban children; to compare their body mass index (BMI) with the international standards of BMI.

METHODS: We measured 1695 healthy children (842 boys and 853 girls) between 3 and 6 years for height, weight and mid upper arm circumference. BMI was calculated and transformed into percentiles. Children were divided into boys and girls.

RESULTS: The mean and SD values of BMI observed in our study were 16.69 +/- 4.9 kg/m(2) for boys and 16.82 +/- 4.77 kg/m(2) for girls aged 3-6 years. The prevalence of obesity and overweight among boys was 20.8% and 3.8% respectively and among girls was 19.1% and 7.2% respectively. In total, 48.0% of boys and 38.1% of girls were of healthy weight.

CONCLUSIONS: The mean BMI observed in our study's children aged 3-6 years was higher than the expected 50th percentile of the (World Health Organization/Centers for Disease Control and Prevention) reference values for a similar age range but, it was equivalent to the 75th percentile values.
Obesity was more frequent than overweight among boys and girls aged 3-6 years.


Obesity in Jordan: Prevalence, Associated Factors, Comorbidities, and Change in Prevalence over Ten Years.


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Abstract

OBJECTIVES: To determine the prevalence of obesity in northern Jordan, identify its associated factors, assess its association with selected comorbidities, and determine how the prevalence of obesity has changed in Jordan over 10 years.

METHODS: A total of 1121 participants aged 25 years and above were randomly selected. Sociodemographic characteristics as well as information on selected metabolic disorders and their potential risk factors were obtained. Anthropometric and biochemical characteristics were measured. Obesity was defined based on body mass index (BMI), waist circumference, and waist-to-hip ratio.

RESULTS: The age-standardized prevalence of obesity in northern Jordan was 28.1% (95% CI: 23.4, 32.8) for men and 53.1% (95% CI: 49.3, 57.0) for women. Irrespective of age or measure used, women always had a considerably higher prevalence of obesity than men. The prevalence of obesity varied greatly with age, generally increasing, irrespective of the measurement used. There has been a significant increase in the prevalence of obesity over a period of ten years for both men and women aged 60 years and above only. When important variables were taken into account in logistic regression analyses, obesity was significantly associated with increased odds of having all studied metabolic abnormalities. Female gender, increase in age, being married, former smoker or nonsmoker, and fewer than 12 years of education were significantly associated with increased odds of BMI-defined obesity and high waist circumference.

CONCLUSIONS: This study demonstrated alarming rates of obesity and of its associated comorbidities among Jordanians, especially among women.

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Abstract

INTRODUCTION: Chronic diseases are the leading cause of morbidity and mortality in Jordan. The Jordanian Ministry of Health, in collaboration with the Centers for Disease Control and Prevention, established a behavioral risk factor surveillance system to monitor the behavioral risk factors associated with chronic diseases.

METHODS: We used a multistage sampling design to select households from which we then randomly selected and interviewed one adult aged 18 years or older. A random subsample of the adults interviewed were then invited to visit the local health clinic, where we obtained medical measurements, including blood lipids (low-density lipoprotein, high-density lipoprotein, and triglycerides) and fasting blood glucose.

RESULTS: Approximately 9% of the participants in the subsample who underwent medical testing reported having been diagnosed with diabetes previously, compared with 16.9% diagnosed in our laboratory testing. About 12.3% of the participants were glucose intolerant, and about 35% were obese. Obesity was significantly associated with diabetes, high blood pressure, high cholesterol, and asthma. Compared with adults of normal weight, obese adults had an adjusted odds ratio of 3.27 (95% CI, 1.58-6.76) for diabetes, 3.69 (95% CI, 2.13-6.39) for high blood pressure, 3.45 (95% CI, 1.68-7.10) for high cholesterol, and 5.12 (95% CI, 1.53-17.19) for asthma.

DISCUSSION: Obesity, poor diet, and physical inactivity create a major chronic disease burden in Jordan that is likely to increase substantially in the next few years. Our findings argue for establishment of a more preventive orientation in health care and public health systems in Jordan.
The Impact of Body Mass Index and Western Advertising and Media on Eating Style, Body Image and Nutrition Transition among Jordanian Women.

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Abstract

OBJECTIVES: To identify the impact of body mass index (BMI) and Western advertising and media on the stage of the nutrition transition among Jordanian women, and to evaluate their impact on eating styles and body image.

DESIGN: A randomised cross-sectional survey that included a variety of culturally measured Likert-type scales and body size images. In addition, BMI was calculated based on measured height and weight.

SETTING: In the homes of the participants. The data were collected by female interviewers who worked for the Jordan Department of Statistics.

SUBJECTS: The sample was based on a random and representative selection of 800 mostly urban Jordanian women. A pre-test sample of 100 women was also used to validate the instruments.

RESULTS: Women tended to agree that they ate based on emotional cues. They had high levels of disordered eating attitudes and behaviors and 42.1% were considered restrained eaters. However, these women also had higher than expected body esteem levels and desired a healthy body size. As expected, being obese was associated with a desire to lose weight, being a restrained and emotional eater, and having more disordered eating attitudes and behaviors. Similarly, Western advertising and media were associated with restrained and emotional eating, desired weight loss, and disordered eating attitudes and behaviors.

CONCLUSIONS: There is a need to develop health education materials that explain the influence of obesity on health and the negative psychological and physical consequences of restrained and emotional eating, building on the current cultural preferences of healthy body size. Further implications and suggestions for future research are discussed.
High Prevalence of the Metabolic Syndrome among Northern Jordanians.

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Department of Public Health and Community Medicine, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan.

Abstract

BACKGROUND: The prevalence of the metabolic syndrome is rapidly increasing with a considerable ethnic variation within and across populations. This study was conducted to estimate the prevalence of the metabolic syndrome and its individual components using Adult Treatment Panel III (ATP III) criteria among Northern Jordanians.

METHODS: Data were analyzed from a cross-sectional study that included a random sample of 1121 northern Jordanians aged 25 years and above. The metabolic syndrome was defined by ATP III criteria.

RESULTS: The age-adjusted prevalence of the metabolic syndrome was 36.3% (95% CI 33.6-39.0%) (28.7% among men and 40.9% among women). The prevalence increased significantly with age in men and women. The prevalence of the metabolic syndrome was significantly higher in women than in men in age groups of 40-49 and 60 years and above. Low HDL cholesterol was the most common abnormality in men (62.7%), and abdominal obesity was the most common abnormality in women (69.1%).

CONCLUSIONS: Prevalence of the metabolic syndrome in North Jordan is considerably higher than in developed countries and other Arab populations. An integrated approach is needed for the prevention and treatment of the metabolic syndrome.

**Assessing Risk Factors for Chronic Disease--Jordan, 2004.**

Centers for Disease Control and Prevention (CDC).

**Abstract**

In 2003, chronic diseases were the leading cause of mortality in Jordan; 38.2% of deaths were attributed to cardiovascular disease and 14.3% to cancer (Jordan Ministry of Health [MOH], unpublished data, 2004). In 2002, MOH, with assistance from CDC and the World Health Organization (WHO), established a behavioral risk factor surveillance program to monitor risk factors associated with chronic diseases. This report summarizes the findings of the second Behavioral Risk Factor Survey, which was conducted in Jordan in 2004. The findings indicated that the prevalence of obesity had increased by 52.3% in Jordan since 2002. In addition, cancer screening rates among women and seatbelt use rates overall were low compared with U.S. rates. Development and implementation of a national plan to prevent and control chronic diseases is needed.


**Estimated Risk of Coronary Heart Disease in Obese Adult Males in Northern Jordan.**

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**Abstract**

**OBJECTIVE:** To examine the relationship between obesity, lipid profile and blood pressure, and to quantify the risk of coronary heart disease (CHD) for the next 10 years, using the Framingham risk scoring scheme among Jordanian adult males.

**METHODS:** We conducted this study in Al-Sarieh, Jordan during the period March to May 2001. A total of 306 apparently healthy adult males, aged 30-50 years completed all the study procedures. We selected the participants using a multi-stage cluster sampling design. Dietary history and smoking habits were obtained using a pre-tested questionnaire and interview. Blood samples were obtained and examined for lipid profiles. We measured the blood pressures, as well as the weight and height to calculate the body
mass index (BMI). The sample was categorized into 3 groups using the World Health Organization classifications for BMI. The risk of CHD was calculated using a scoring scale according to Framingham scheme. Analyses of data were carried out using the Chi-square test, and the Analysis of Variance.

RESULTS: The mean age of the subjects was 39 years with a mean BMI of 28.2 kg/m2. The percentage of current smokers was 44.1%. The mean of serum total cholesterol, triglycerides, low density lipoprotein cholesterol and systolic blood pressure, increased significantly with increasing BMI categories, whereas the mean of high density lipoprotein cholesterol decreased with increasing BMI categories. Prevalence of medium and high risk of CHD significantly increased as BMI categories increases.

CONCLUSION: The prevalence of estimated CHD risk for the next 10 years in moderate and high CHD categories increases as the BMI categories increases among Jordanian adult men in Al-Sarieh area.


Metformin in the Treatment of Clomiphene Citrate-Resistant Women with High BMI and Primary Infertility: Clinical Results and Reproductive Outcome.

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Abstract

The objective of this study was to evaluate the clinical and reproductive outcome in clomiphene-citrate (CC)-resistant women with high body mass index (BMI) and primary infertility. This was a case series based at the King Hussein Medical center, Amman, Jordan. Nineteen CC-resistant women with polycystic ovary syndrome (PCOS) who had high BMI and primary infertility were studied. All women received metformin monotherapy; 850 mg twice daily for a period of 6 months. If pregnancy occurred, metformin was continued for the first 12 weeks of pregnancy. The main outcome measures were a reduction in the BMI, resumption of regular menses, ovulation and pregnancy rates. Resumption of regular cycles was observed in 13 of 19 (68.4%) women. Ovulation and pregnancy were achieved in 9 (47.4%) and 6 (31.6%) of the 19 women, respectively. A significant
reduction in the body weight after treatment reflected by a significant reduction in the BMI was noted. Metformin monotherapy is effective in CC-resistant women with morbid obesity and primary infertility and should be considered as first-line treatment in these patients.


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Abstract

OBJECTIVE: To compare the lifestyle related risk factors for breast cancer such as physical activity, cigarette smoking, the use of contraceptive pills and increased body weight between non-familial and familial breast cancer females in Jordan.

METHODS: This study was carried out in the Kingdom of Jordan during the period 2000 through to 2002. A questionnaire was used to collect information from 99 females who were histologically and pathologically diagnosed for breast cancer. Data of the questionnaire was entered and analyzed using statistical package for social sciences.

RESULTS: This study showed no significant difference between familial, non-familial breast cancer females and controls in the following risk factors: physical activity, contraceptive methods, and smoking. On the other hand, a statistically significant difference in weight was found between the familial breast cancer females, the total breast cancer females and the controls. In addition, the highest percentage of overweight and obese was found among postmenopausal breast cancer females.

CONCLUSION: Postmenopausal obesity is a significant risk factor among Jordanian breast cancer females.

Centers for Disease Control and Prevention (CDC).

Abstract

In Jordan, the average life expectancy in 2002 was 72 years, and chronic diseases are becoming increasingly prevalent. Because personal behavior can influence the occurrence and progression of many chronic diseases, the Jordan Ministry of Health (JMoH) established surveillance for behavioral risk factors, particularly those related to cardiovascular diseases and diabetes. This report summarizes the key findings of the 2002 Behavioral Risk Factor Survey, the first reporting segment in Jordan's surveillance program for chronic diseases. The findings indicate that smoking, physical inactivity, and obesity contribute substantially to the burden of chronic disease in Jordan and underscores the need for effective public health interventions.

Assessment of Cardiovascular Risk Factors among Residents of a City in Jordan.

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Abstract

Cardiovascular diseases are a leading cause of morbidity and mortality in many countries. The purpose of this study was to assess cardiovascular risk factors in a stratified randomly selected sample of a city near Amman, Jordan. A stratified sample of two hundred and nine randomly selected households were selected for this study. Adults from each of the households who agreed to participate in this study were asked about their cardiovascular risk factors including cigarette smoking, high blood pressure, cholesterol, diabetes, obesity, and sedentary lifestyle. The sample consisted of 84 males and 125 females ranging in age from 17 to 93 years with a mean age of 37 years. Findings identified significant cardiovascular risk factors included cigarette smoking, obesity, hypertension, stress, and
diabetes. Cigarette smoking was much more common in men than women. Implications for nurses are discussed with suggestions for future research.


**Growth Status of Jordanian Schoolchildren in Military-Funded Schools.**

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National Center for Diabetes, Endocrine and Genetics, Amman, Jordan.

**Abstract**

**OBJECTIVE:** To study the growth status of Jordanian boys and girls in comparison with the Centers for Disease Control (CDC) growth charts.

**DESIGN:** Cross-sectional study.

**SUBJECTS AND DATA COLLECTION:** A total of 5826 boys and 1414 girls, aged 6.5-17.5 y, were included in the study. Height and weight were measured. Body mass index (BMI) was calculated as weight (kg) divided by the square of the height (m). Socioeconomic data were collected using a structured questionnaire.

**RESULTS:** The height-for-age values fluctuated between the 5th and 10th percentiles of the CDC for both sexes, and then after the age of 8.5 and 14.5 y for boys and girls, respectively, values were just above the 10th percentile. The body weight-for-age values were just above the 25th percentile for boys and fluctuated between the 25th and 50th percentiles for girls; then after the age of 14.5 and 12.5 y for boy and girls, respectively, values fluctuated between the 25th and 50th percentiles for boys and just above the 50th percentile for girls of the CDC values. BMI values for boys were just above the 50th percentile of the CDC and for girls values fluctuated between the 50th and 75th percentiles until the age of 13.5, then values matched the 75th percentile of the CDC.

**CONCLUSION:** The height of Jordanian children ranges from the 5th to the 10th percentile of the CDC reference values during schools years. Girls have a tendency toward obesity after puberty.
Revision of Failed Bariatric Procedures to Roux-en-Y Gastric Bypass (RYGB).

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Abstract

Bariatric surgery for morbid obesity has been established as an effective treatment method and has been shown to be associated with resolution of co-morbidities. Despite its success, some patients may require revision because of weight regain or mechanical complications. From September 2005 to December 2009, 42 patients underwent revisional Roux-en-Y gastric bypass (RYGB). All procedures were performed by one surgeon. Demographics, indications for revision, complications, and weight loss were reviewed. Thirty-seven patients were treated with laparoscopic (n = 36) or open (n = 1) RYGB after failed laparoscopic adjustable gastric banding. Four patient were treated with laparoscopic (n = 3) or open (n=1) RYGB after failed vertical banded gastroplasty, and one patient underwent open redo RYGB due to large gastric pouch. Conversion rate from laparoscopy to open surgery was 2.5% (one patient). Mean operative time was 145.83 ± 35.19 min, and hospital stay was 3.36 ± 1.20 days. There was no mortality. Early and late complications occurred in six patients (14.2%). The mean follow-up was 15.83 ± 13.43 months. Mean preoperative body mass index was 45.15 ± 7.95 that decreased to 35.23 ± 6.7, and mean percentage excess weight loss was 41.19± 20.22 after RYGB within our follow-up period. RYGB as a revisional bariatric procedure is effective to treat complications of restrictive procedures and to further reduce weight in morbidly obese patients.
Impact of Using National V. International Definitions of Underweight, Overweight and Obesity: An Example from Kuwait.

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Abstract

OBJECTIVE: To compare the classification of overweight, obesity and underweight using international v. national approaches in Kuwaiti adolescents.

DESIGN: Assessment of underweight, overweight and obesity using a national approach (based on Kuwaiti reference data for BMI-for-age) was compared with assessments obtained using three international approaches: the Cole et al. and International Obesity Task Force (IOTF) definitions of thinness and of overweight and obesity (Cole-IOTF); WHO 2007; and US Centers for Disease Control and Prevention (CDC) 2000 reference data and definitions. The degree of agreement between the different methods was assessed using the weighted κ statistic (κw).

SETTING: Two randomly selected public intermediate schools in Kuwait City.

SUBJECTS: A total of 499 10-14-year-old Kuwaiti adolescents.

RESULTS: Prevalence of overweight and obesity using Kuwaiti reference data (36·7 %; 95 % CI 32·4, 41·1) was significantly lower than that obtained using international approaches - Cole-IOTF (44·7 %; 95 % CI 40·3, 49·2), CDC 2000 (44·9 %; 95 % CI 40·5, 49·4) and WHO 2007 (50·5 %; 95 % CI 46·0, 55·0) (P < 0·01). All three international approaches showed almost perfect agreement: IOTF v. WHO (κw = 0·82; 95 % CI 0·79, 0·85) and IOTF v. CDC (κw = 0·90; 95 % CI 0·87, 0·92). However, Kuwaiti reference data showed the lowest agreement with the three international approaches, the poorest being with WHO 2007 (κw = 0·54; 95 % CI 0·49, 0·59).

CONCLUSIONS: Caution should be exercised when using recently collected national reference data and definitions while assessing underweight, overweight and obesity for clinical and public health applications.
Kuwaiti Mothers' Perception of their Preschool Children's Weight Status.

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Abstract:

OBJECTIVES: To examine the accuracy of mothers' perceptions of their children's weight status, factors associated with their perceptions, and their plans for controlling their children's weights.

METHOD: Four hundred eighty-two overweight Kuwaiti preschool children and their mothers were selected from a sample of 2329 from the Kuwait Nutrition Surveillance System from September 2003 to June 2004. Heights and weights were measured for the children and their mothers to identify their weight status. Mothers were interviewed using a questionnaire to assess their perceptions and plans for their children's weights.

RESULTS: Mothers of overweight children (97%), male children (88.4%), and children without a family history of obesity (89%) showed significantly incorrect perception of their children's weight. Interestingly, the age of the child, the mother's education level, the mother's working status, and the mother's body mass index did not significantly contribute to correct perception of weight status. However, two-thirds of mothers had a plan to control their children's weight. The child's age, the body mass index of mother and child, the family history of obesity, and a correct perception of a child's weight by the mother were significantly associated with a plan for weight control.

CONCLUSION: A majority of Kuwaiti mothers were unable to correctly perceive their children's weight status, especially for their male, overweight children. Two-thirds of the mothers had a plan to control their weight if the children become obese. The child's age, the child and mother's body weight, and the mother's correct perception mainly affected the selection of the plan.
Factors Associated with Overweight and Obesity among Kuwaiti Men.

Naser Al-Isa A, Campbell J, Desapriya E.

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Abstract

Obesity is a global epidemic and has become a critical issue in Gulf countries such as Kuwait. The objective of this study is to assess the factors that are associated with overweight and obesity among Kuwaiti adult men. Weights and heights of a random sample of 464 men and their companions were collected to obtain body mass index (BMI). The overall levels of overweight and obesity were 48.5% and 19.8%, respectively. Logistic regression analysis of significantly associated factors revealed that factors contributing to risk of overweight and obesity included increasing age, having an obese mother or brother(s) and/or other obese relatives, having a lower grade point average, not being physically active, and being in poor health. Having a higher income and feeling tired were risk factors for obesity only. Family history is an important predictor of overweight and obesity in Kuwaiti men; however, this study identified several modifiable factors. It is recommended that factors that contribute to the development of overweight and obesity in Kuwait be targeted with behavioral change and/or health education interventions.

Age- and Gender-Specific Smoothed Waist Circumference Percentiles for Kuwaiti Adolescents.

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Abstract

OBJECTIVE: To ascertain abdominal obesity prevalence (waist circumference, WC) in adolescents and to develop smoothed WC percentile charts for Kuwaiti adolescents for public health use.
SUBJECTS AND METHODS: A cross-sectional study of 4,219 healthy Kuwaiti male and female secondary school students between the ages of 11-19 years was examined. Adolescents were drawn from all geographical regions of the country, as part of the Kuwait Nutrition Surveillance Program (KNSP). The KNSP consists of yearly data collections of variables, including weights, heights, and WCs and several sociodemographic variables. LMS regression was used to develop smoothed WC percentile curves. The final percentile curves presented are the result of smoothing three age-specific curves, termed lambda (L), mu (M), and sigma (S) for each gender.

RESULTS: Between 5.9 and 12.8% of females and 8.0-30.3% males had WC values $\geq$ 90th percentile. Moreover, the mean WC of males was consistently higher than those of females at each age and the percent of adolescents who exceed the 90th percentile increased with age in males, but not in females.

CONCLUSION: Mean WC was higher in males than in females at every age. In most cases, two to three times greater percentages of males, compared to females, equaled or exceeded the 90th percentile, a value frequently associated with higher cardiovascular risk. These results indicate the urgent need to reduce abdominal obesity, an important indicator of the metabolic syndrome, in Kuwaiti adolescents.


Higher Levels of Alanine Aminotransferase within the Reference Range Predict Unhealthy Metabolic Phenotypes of Obesity in Normoglycemic First-Degree Relatives of Patients with Type 2 Diabetes Mellitus.

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Abstract

Obesity is a heterogeneous disorder with metabolically healthy and unhealthy phenotypes and varying degrees of cardiometabolic complications. To evaluate whether alanine aminotransferase (ALT) could be used for identification of obese phenotypes, the authors measured ALT, adiponectin, leptin, leptin receptor, free leptin index, high-sensitivity C-reactive protein, fasting insulin, glucose, and full lipid profile in 486 (176
men and 310 women) normoglycemic first-degree relatives of patients with type 2 diabetes mellitus with negative medication history and hepatitis screen. Patients were classified into obesity phenotypes on the basis of the degree of adiposity and the International Diabetes Federation criteria for the metabolic syndrome. One hundred and thirty-seven (28%) patients were positive for the metabolic syndrome, 32 (7%) had normal weight but metabolically unhealthy phenotype, and 201 (41%) were obese but metabolically healthy. ALT showed significant positive correlations with body mass index, waist circumference, beta-cell function, insulin, homeostasis model assessment for insulin resistance, high-sensitivity C-reactive protein, total cholesterol, and triglycerides and increased with increasing number of metabolic syndrome components. Binary logistic regression analyses showed that higher ALT levels within the normal range were significantly associated with the metabolic syndrome. ALT could be used for identification of the metabolically obese phenotype. Lowering the ALT upper normal reference limit will facilitate earlier detection of risky phenotypes of obesity.


**Social and Health Factors Associated with Physical Activity among Kuwaiti College Students.**

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**Abstract**

Our aim was to explore the social and health factors that are associated with the level of physical activity among Kuwaiti college students. A random sample of 787 students (48% males and 52% females) was chosen and weight and height were measured to obtain body mass index (BMI, kg/m(2)). Associated social and health factors were obtained using a questionnaire. Those reporting being physically inactive numbered 354 and the remaining 433 were active. Obesity among males was 13% and was 10.5% among females. The social and health factors that were found to be significantly associated with physical activity among the students were gender (P < .001), marital status (P < .05), BMI category (obese or nonobese) (P < .05), last dental and health checkup (P < .01), desiring a higher degree (P < .001), and countries preferred for visiting (P < .01). Males significantly exceeded females in the practice of physical activity. In
conclusion, behavioural modifications, intervention studies, and health education touting the benefits of being physically active should be instituted to increase the practice of sports and other physical activities in order to control and decrease obesity-related morbidity and mortality.


Associated Cutaneous Diseases in Obese Adult Patients: A Prospective Study from a Skin Referral Care Center.

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Abstract

OBJECTIVE: The aim of the present study was to determine the spectrum of skin diseases seen among adult obese patients referred to Farwaniya Hospital.

MATERIALS AND METHODS: A total of 437 overweight/obese subjects (200 men and 237 women) aged 18-74 years were enrolled in the study, which was conducted from October 2008 to November 2009. Demographic details such as age, sex, occupation, personal and family history of diabetes mellitus, hypertension, and obesity were recorded. A thorough examination was performed by an experienced dermatologist (N.A.M.). Blood investigations such as complete blood count, fasting and postprandial blood sugar levels, liver function tests, kidney function tests, lipid profile, and thyroid function tests were done for all patients in addition to hormonal assay and abdominal sonar to exclude polycystic ovary disease for indicated patients.

RESULTS: Common skin diseases found among these patients were plantar hyperkeratosis: n = 197; acanthosis nigricans: n = 144; skin tags: n = 131; striae cutis distensae: n = 102; intertrigo: n = 97; acne vulgaris: n = 94. Diabetes mellitus was diagnosed in 87 patients, polycystic ovary syndrome/hyperandrogenism in 74 female patients, and hyperlipidemia in 209 patients.

CONCLUSION: This study shows that certain dermatoses such as plantar hyperkeratosis, acanthosis nigricans, skin tags, striae cutis distensae, and intertrigo are more common among obese persons. Some, such as plantar hyperkeratosis, could serve as markers of obesity and its severity, while the
presence of acanthosis nigricans and skin tags may point to underlying internal disease such as diabetes and polycystic ovary syndrome.


**Impact of Obesity on Nuclear Medicine Imaging.**

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**Abstract**

Obesity, with its alarming increase among adults and children, represents a significant health problem with serious medical, social, psychologic, and economic reverberations. The burden of this problem significantly affects the medical care system, including medical imaging. The effect of obesity on nuclear medicine imaging spans many aspects, from preimaging patient preparation to radiotracer administration, image acquisition, and image interpretation. The acquired images may be suboptimal because of artifacts due to soft-tissue attenuation and incomplete whole-body coverage, and quantification may be suboptimal, especially for PET. Other difficulties include mechanical problems such as the weight limit of the imaging table and the bore size of the PET or SPECT/CT scanner and the need to alter the timing, duration, or protocol of many imaging procedures. These issues are discussed in this review, which clarifies the impact of this epidemic health problem on nuclear medicine services and proposes possible solutions to overcome obesity-related difficulties encountered in nuclear medicine practice.
Factors Associated with Overweight and Obesity among KuwaiƟ Elementary Male School Children Aged 6-10 Years.

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Abstract

Background. Childhood obesity is becoming a global epidemic which may result in increased morbidity and mortality during young adulthood. Objectives. To identify factors associated with overweight and that of obesity among KuwaiƟ elementary male school children aged 6-10 years. Methods. Weights and heights of 662 students at a randomly selected school were collected to obtain body mass index (BMI). Results. The prevalence of overweight and obesity among the students were 20.2% and 16.8%, respectively. There were a variety of factors associated with overweight and obesity; however, having one or more obese brother, an unemployed father, or a high (>11) number of persons living at home was significantly associated with higher risk of overweight and obesity. Increased age and school level as well as having a chronic disease were associated with the risk of overweight. Conclusion. Health education programs for families should be implemented to help control overweight and obesity in KuwaiƟ children.

Comparison of Obesity and Its Relationship to Some Metabolic Risk Factors of Atherosclerosis in Arabs and South Asians in Kuwait.

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Abstract

OBJECTIVE: The aims of the study were to compare obesity and its association with risk factors of atherosclerosis in Arabs and South Asians in Kuwait and to define which of the anthropometric parameters is best suited for clinical purposes in general.
SUBJECTS AND METHODS: Two hundred eighty adults, patients of Al-Rashid Hospital, a private general hospital in Kuwait, were enrolled in the study. Of the 280 patients, 144 were Arab and 136 were South Asian. Basic anthropometric parameters for obesity, fasting blood glucose, total cholesterol, low-density lipoprotein and high-density lipoprotein cholesterol and triglycerides (TG) were determined. The relationship between anthropometric variables and relevant metabolic variables, as well as a comparison between the different groups, was estimated using standard statistical methods.

RESULTS: Arabs were not only more obese (in males, p < 0.001 for body mass index (BMI), waist circumference (WC) and hip circumference (HC) and p = 0.001 for waist-to-hip ratio (WHR); in females, p < 0.001 for BMI, p = 0.004 for WC and p = 0.041 for HC), but also developed obesity at a younger age than did South Asians, even though, in South Asians, all anthropometric parameters were positively correlated with age (p = 0.004 for BMI, p = 0.001 for HC and p < 0.001 for WC and WHR). South Asians, however, were more prone to develop adverse effects in both lipid and glucose metabolism than Arabs were. In South Asian males, ethnicity was an independent predictor of triglycerides, according to the multiple linear regression analysis. The WHR appeared to be the most suitable predictor of dyslipidemia and impaired glucose metabolism.

CONCLUSION: The degree of adiposity was different between Arabs and South Asians in Kuwait. Abdominal obesity had a different impact on cardiovascular risk factors in these two ethnic groups in Kuwait.


Prevalence of Overweight, Obesity, and Metabolic Syndrome among Adult Kuwaitis: Results from Community-Based National Survey.

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Abstract

BACKGROUND: Although, metabolic syndrome and obesity are cardiovascular risk factors, little systematically collected community-based data are available from the Arabian Gulf region.
METHODS: We report a nationwide cross-sectional study from Kuwait. A random sample was selected. Demographic and clinical data were collected. Blood tests including fasting blood glucose, high-density lipoprotein cholesterol, and triglycerides were collected. Metabolic syndrome was defined according to International Diabetes Federation criteria. Overweight and obesity were defined as body mass index \( \geq 25 \), and body mass index \( \geq 30 \), respectively.

RESULTS: Prevalence of overweight, obesity, and metabolic syndrome in adult Kuwaiti population were 80.4%, 47.5%, and 36.2%, respectively. Overweight and obesity rates were higher in women 81.9% and 53% compared to men 78% and 39.2%, respectively \( (P = .02, P > .001) \). MetS was equally distributed between men and women at 36.2% and 36.1%.

CONCLUSIONS: Prevalence of overweight, obesity, and metabolic syndrome is alarmingly high in Kuwait. This requires urgent and active community-based public health intervention.


Reduction of Circular Stapler-Related Wound Infection in Patients Undergoing Laparoscopic Roux-En-Y Gastric Bypass, Cleveland Clinic Technique.

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Abstract

BACKGROUND: Circular-stapled anastomosis with trans-oral anvil insertion for the creation of the gastrojejunostomy in laparoscopic Roux-en-Y gastric bypass (LRYGBP) is associated with frequent infections at the abdominal wall site where the circular stapler is inserted.

METHODS: Patients who underwent routine LRYGBP over a 1.5-year period at The Cleveland Clinic Foundation without any concomitant procedures were included. After our initial experience with circular-stapled anastomosis-related wound infections, we implemented measures to reduce the infection rate. Prevention measures included chlorhexidine "swish and swallow," a plastic barrier device over the stapler, wound irrigation, loose skin approximation, and placement of loose packing. We
compared wound infection rates in patients before ("no prevention") and after ("prevention") implementing these measures.

RESULTS: Ninety-one patients with mean age of 42 years and average body mass index of 48 kg/m(2) underwent laparoscopic Roux-en-Y gastric bypass. The infection rate was 30% among the "no prevention" (n = 10) group and 1% in the "prevention" (n = 81) group (p < 0.05).

CONCLUSIONS: Trocar site infection related to the circular-stapled anastomosis technique can be significantly reduced with simple prevention measures.


'Can Breastfeeding and its Duration Determine the Overweight Status of Kuwaiti Children at the Age Of 3-6 Years?'.

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Abstract

The objective of this study was to determine whether breastfeeding and its duration are associated with a reduced risk of overweight and obesity among 2291 Kuwaiti pre-school children. No significant association of breastfeeding or its duration was found with either overweight or with obesity after adjusting for the effects of confounders. Girls were at 32% higher risk of becoming obese than were boys. Children of 4 and 5 years were nearly three times at higher risk of overweight or obese than a child of less than 4 years. Children with higher birth weight had double the risk of obesity than a child of normal birth weight. Maternal obesity was a strong predictor of obesity in their children. A child with an obese mother was nearly twice at higher risk of being overweight and thrice at higher risk of being obese compared with a child born to a mother of normal weight.
Which Obesity Index Best Explains The Link between Adipokines, Coronary Heart Disease Risk and Metabolic Abnormalities in Type 2 Diabetes Mellitus?

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Abstract

OBJECTIVE: The aim of this study was to determine, which of: body mass index (BMI), waist-to-hip ratio (WHR), waist-to-height ratio (WHtR) and waist circumference (WC) correlates best with adipokines and is, therefore, the most suitable for the assessment of insulin resistance (IR), metabolic syndrome (MS), type 2 diabetes mellitus (T2DM) and coronary heart disease (CHD) risk.

SUBJECTS AND METHODS: We studied 248 T2DM patients classified by gender, IR, MS and CHD. Fasting adiponectin, leptin, resistin, high-sensitivity C-reactive protein (CRP), insulin, glucose, IR (HOMA), and lipid profile were measured. Univariate and multivariate regression analyses were used to find the associations of these variables with each other and with IR, MS and CHD. Receiver operating characteristic (ROC) analyses were used to find the best markers of IR, MS and CHD.

RESULTS: There were gender differences in the correlations and associations of BMI, WHR, WHtR and WC with IR, MS and CHD; e.g. in males, WHR showed significant correlation with only resistin (r = 0.30) and leptin (r = 0.39) whereas in females, it showed significant correlations with only adiponectin (r = -0.33). In males and females WHR showed the weakest correlations with CRP and the adipokines and BMI showed the highest correlations. ROC analysis showed that the BMI had the highest diagnostic values for detection of IR, MS and CHD; WHR had the worst diagnostic value.

CONCLUSION: Anthropometric indices show differences in performance and associations with adipokines, CRP, IR, MS and CHD. In patients with T2DM, BMI should be the preferred marker for risk assessment on account of its association with adipokines and diagnostic performance characteristics.
Breastfeeding and Obesity among Kuwaiti Preschool Children.

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Abstract

OBJECTIVES: To determine if breastfeeding and its duration are associated with a reduced risk of obesity among Kuwaiti preschool children.

SUBJECTS AND METHODS: The sample consisted of 2,291 (1,092 males and 1,199 females) preschool children (3-6 years of age) and their mothers. The data were collected from September 2003 to June 2004. Height and weight measurements were used for defining weight status while other data were collected by questionnaire.

RESULTS: There was no significant association of breastfeeding or its duration with either overweight or obesity among preschool children after adjusting for effects of the confounders. The child's gender, age and birth weight were the significant factors influencing current weight. Girls were at 32% higher risk of becoming obese than boys. Children aged 4-5 years were at nearly 3 times higher risk of overweight and obesity than children of less than 4 years. Children with higher birth weight (>or=4 kg) had double the risk of obesity than those of normal birth weight (>or=2.5 to <4.0 kg). Maternal obesity was a strong predictor of obesity in the children. A child with an obese mother had nearly 2 times higher risk of being overweight (BMI between the 85th the 95th percentiles) and 3 times of being obese (BMI >or=95th percentile) compared to a child born to a mother with a normal body weight.

CONCLUSION: Breastfeeding and its duration are not associated with obesity status. However, there is a positive association between child and maternal obesity.
Prevalence of Obesity among Adolescents (10 To 14 Years) In Kuwait.

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Abstract

The purpose of this cross-sectional study was to find out the prevalence of obesity and overweight among intermediate school adolescents aged 10 to 14 years. The study comprised a multistage stratified random sample that included 5402 children (2657 males and 2745 females). They represent 12.7% of the total number of children between 10 and 14 years during the educational year 2005-2006. The weights and heights of adolescents were measured, from which the body mass index (BMI) was calculated, which is the weight in kilograms divided by the height in meters squared (kg/m^2). BMI values higher than 95 percentile were accepted as being obese and those in between 85 and 94 percentile were accepted as overweight. Dietary intake was assessed by the investigators using food exchange lists designed by American Diabetic Association and physical fitness was measured by modified Harvard step test. Data regarding monthly income of the chosen sample were collected from parents of those children. The overall prevalence of overweight and obesity in adolescent Kuwaiti children aged 10 to 14 years was 30.7% and 14.6%, respectively. The overall prevalence of overweight and obesity among males was 29.3% and 14.9%, respectively (P < .001) and the prevalence of overweight and obesity among females was 32.1% and 14.2%, respectively (P < .001). High daily caloric intake by the obese and overweight children and physical inactivity was reported among the majority of them. Health education programs should be conducted to control this syndrome in order to prevent future risk of obesity-related disease, and physical activity programs should be incorporated in the schools. Any management plan for overweight and obese children should include 3 major components: diets, exercise, and family-based behavior and they should not be placed on restrictive diets because adequate calories are needed for proper growth.
Serum Leptin and its Relationship with Metabolic Variables in Arabs with Type 2 Diabetes Mellitus.

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Abstract

BACKGROUND AND OBJECTIVES: Most studies on serum leptin in type 2 diabetes mellitus have focused on white populations. We studied serum leptin concentrations and parameters related to glycemic control and the association between leptin levels and anthropometric and metabolic factors in Arab patients with type 2 diabetes and in Arab control subjects.

SUBJECTS AND METHODS: Ninety-two patients (65 females and 27 males) with type 2 diabetes and 69 matched normal control subjects (48 females and 21 males) were included. Anthropometric measures (including body mass index [BMI] and waist:hip ratio) were assessed in all subjects. After an overnight fast, blood was collected for serum leptin assay. Other metabolic parameters including glucose, insulin, C-peptide, intact proinsulin, insulin resistance index (HOMA-IR), insulin-like growth factor 1 (IGF-1), lipids and hemoglobin A1c (HbA1c) were determined.

RESULTS: Fasting serum leptin levels, IGF-1 and high-density lipoprotein (HDL) cholesterol were similar in patients with type 2 diabetes and control subjects. When obese subjects (BMI > or =30 kg/m2) were analyzed separately, serum levels of leptin were significantly lower in patients compared to controls. In contrast, patients had higher fasting glucose, insulin, C-peptide, intact proinsulin, insulin resistance, total cholesterol, triglycerides, HbA1c, and a larger waist circumference and waist-to-hip ratio than controls. Serum leptin correlated positively with BMI, negatively with waist-to-hip ratio, and demonstrated no relationship to other parameters.

CONCLUSION: Patients with type 2 diabetes in an Arab ethnic population showed evidence of an unfavorable metabolic profile despite having leptin levels similar to controls. Obesity influences serum leptin levels more significantly in type 2 diabetes, in which leptin levels tends to be low.
Body Mass Index of Kuwaiti Adolescents Aged 10-14 Years: Reference Percentiles and Curves.

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Abstract:

The aim of this population-based study was to develop body mass index (BMI) reference standards for Kuwaiti adolescents for use in Kuwait and other Gulf countries. All available intermediate school students aged 10-14 years (32,624 males and 30,209 females) were measured for weight and height. Polynomial regression smoothing techniques were used to obtain the best-fitting curves for BMI percentiles. The BMI of boys at lower centiles and ages was almost always higher than girls. At higher centiles, the BMI of girls was almost always higher than boys. The data were compared with the United States National Center for Health Statistics standards and data from Saudi Arabian and Iranian adolescents.

Pulmonary Ventilatory Functions and Obesity in Kuwait.

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Abstract

OBJECTIVE: To study the relationship between obesity and pulmonary ventilatory functions in Kuwaiti adults.

SUBJECTS AND METHODS: A total of 200 male and 180 female Kuwaiti adults aged 20-65 years were investigated in six medical centers from April 2004 to March 2006. Parameters measured included forced expiratory volume in 1 s (FEV(1)), forced vital capacity (FVC), FEV(1) as a percentage of FVC (FEV%); body mass index (BMI in kg/m(2)) and waist-to-hip ratio (W/H).

RESULTS: For the whole group, males or females, BMI (kg x m(2)) and W/H were poor individual predictors of pulmonary ventilatory functions. However, central adiposity (W/H) was associated with restrictive respiratory impairment (10.6-13.9% decrease in FEV(1) and 10-12.3%
decrease in FVC), independent of sex, age or height. In obese females and males (BMI >30), increasing severity of obesity was significantly (p < 0.05, R(2) >0.6) [corrected] associated with increasing restrictive respiratory impairment (8.7-14.4% decrease in FEV(1) and 8-11.7% decrease in FVC), with no evidence of obstructive disease (FEV(1)/FVC >0.8).

CONCLUSION: In adult Kuwaiti males and females, increase in body fat at BMI >30 or W/H >1 was associated with a restrictive effect on pulmonary ventilation.


Beneficial Effects of Ketogenic Diet in Obese Diabetic Subjects.

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Abstract

OBJECTIVE: Obesity is closely linked to the incidence of type II diabetes. It is found that effective management of body weight and changes to nutritional habits especially with regard to the carbohydrate content and glycemic index of the diet have beneficial effects in obese subjects with glucose intolerance. Previously we have shown that ketogenic diet is quite effective in reducing body weight. Furthermore, it favorably alters the cardiac risk factors even in hyperlipidemic obese subjects. In this study the effect of ketogenic diet in obese subjects with high blood glucose level is compared to those with normal blood glucose level for a period of 56 weeks.

MATERIALS AND METHODS: A total of 64 healthy obese subjects with body mass index (BMI) greater than 30, having high blood glucose level and those subjects with normal blood glucose level were selected in this study. The body weight, body mass index, blood glucose level, total cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides, urea and creatinine were determined before and at 8, 16, 24, 48, and 56 weeks after the administration of the ketogenic diet.

RESULTS: The body weight, body mass index, the level of blood glucose, total cholesterol, LDL-cholesterol, triglycerides, and urea showed a significant decrease from week 1 to week 56 (P < 0.0001), whereas the level
of HDL-cholesterol increased significantly (P < 0.0001). Interestingly these changes were more significant in subjects with high blood glucose level as compared to those with normal blood glucose level. The changes in the level of creatinine were not statistically significant.

**CONCLUSION:** This study shows the beneficial effects of ketogenic diet in obese diabetic subjects following its long-term administration. Furthermore, it demonstrates that in addition to its therapeutic value, low carbohydrate diet is safe to use for a longer period of time in obese diabetic subjects.


**Maternal-Foetal Status of Copper, Iron, Molybdenum, Selenium and Zinc in Obese Gestational Diabetic Pregnancies.**

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**Abstract**

Obesity is well known to be a contributory risk factor for several disease states, including diabetes mellitus. Paucity of data on maternal-foetal status of essential trace elements in obese diabetic pregnancies prompted us to undertake this study. Maternal venous and umbilical arterial and venous blood samples were collected from obese gestational diabetic patients (Body Mass Index (BMI) >30) and control obese pregnant women (BMI>30) at time of spontaneous delivery or caesarean sections and concentrations of essential trace elements such as Cu, Fe, Mo, Se and Zn were determined in various samples by atomic absorption spectrophotometry. Activities of antioxidant enzymes, superoxide dismutase (SOD), glutathione peroxidase (GPX) and total antioxidant (TAO) in maternal and umbilical blood were assessed using appropriate reagent kits. Maternal-foetal disposition and exchange parameters of elements studied were assessed using established criteria. Concentrations of Cu, Fe, Mo, Se and Zn in serum of control obese pregnant women (n=10) averaged 2404, 2663, 11.0, 89.0 and 666 microg/l respectively, while in the obese diabetic group (n=11), the corresponding values averaged 2441, 2580, 13.3, 85.1 and 610 microg/l respectively. Activities of antioxidant enzymes such as SOD, GPX and TAO were not significantly different in maternal veins of control and diabetic groups.
Varying differences were noted in the case of antioxidant enzyme activities in umbilical blood samples of control and study groups. We conclude that obesity is not associated with significant alterations in antioxidant enzyme status in gestational diabetes and only with relatively minor alterations in status of some essential trace elements.

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Metabolic Syndrome among Adults Attending Obesity Clinics in Kuwait.

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Abstract

OBJECTIVE: Was to determine the main characteristics of adults attending obesity clinics in Kuwait and the prevalence of the metabolic syndrome (MS) among them

METHODS: The study design is cross sectional one using data collected from 617 adults aged 15 years and over attending two obesity clinics in primary health care centers during April - May 2007 in Kuwait. The metabolic variables analyzed were fasting blood glucose (FBS), high density lipoprotein cholesterol (HDL), and triglycerides (TG). In addition, measurements of obesity such as body mass index (BMI), and waist circumference (WC) as well as blood pressure were taken. Six hundred seventeen apparently healthy men and women were recruited for participation in this study. Weight, height, waist girth, and blood pressure were recorded using standard procedures. Blood samples were taken after an overnight fasting and analyzed.

RESULTS: The study revealed that the majority of adults attending the selected clinics were suffering from obesity (74.2%). Abnormal physical and biochemical measurement were encountered among 86.5% of the participants for WC, 34.0% for diabetes, 63.5% for HDL, 25.6 for TG and 45.9% for high blood pressure. The prevalence of the metabolic syndrome was 46.8%. Comparing the main characteristics of the MS and non-MS subjects showed significant differences in almost all the variables except for nationality and smoking. Female gender, increased age, obesity and sedentary life style were significantly associated with MS.

CONCLUSION: Metabolic syndrome is present in 46.8% patients aged 15 years and over. Low HDL, hypertriglyceridemia, obesity, increased waist
circumference, and high blood pressure were the most prevalent associated factors in this study.


Slippage after Adjustable Gastric Banding According to the Pars Flaccida and the Perigastric Approach.

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Abstract

OBJECTIVE: To evaluate laparoscopic adjustable gastric banding and the 'pars flaccida' techniques for treating morbidly obese patients.

SUBJECTS AND METHODS: Between May 1999 and July 2002, 64 patients underwent laparoscopic adjustable gastric banding. The 'perigastric' technique was performed in the first 31 patients. From September 2000 the band was positioned according to the 'pars flaccida' technique in the remaining 33 patients. The patients were divided into three groups: group 1 - 'perigastric' technique using Lap-Band size 9.75 and 10 cm (31 patients); group 2 - 'pars flaccida' technique using Lap-Band size 10 cm (12 patients), and group 3 - 'pars flaccida' technique using the Swedish band (21 patients). There were 58 females and 6 males with a mean age of 36.6 years (range 17-56). The preoperative mean body mass index was 46.2 kg/m(2).

RESULTS: Band slippage occurred in 10/31 patients (32.2%) of group 1, 3/12 patients (25%) of group 2 and none in group 3 patients (p < 0.01).

CONCLUSION: The 'pars flaccida' technique significantly reduces the incidence of postoperative slippage after gastric banding. This complication is further reduced in the Swedish band group. Furthermore, we do not recommend using the 10-cm Lap-Band in the 'pars flaccida' technique.
Weight Loss Attempts among Kuwaiti Adults Attending the Central Medical Nutrition Clinic.

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Abstract

OBJECTIVES: To investigate the reasons for attempting to lose weight and identify weight loss perception and characteristics.

METHODS: A cross-sectional survey of a sample of 526 Kuwaiti adults was carried out at the Central Medical Nutrition Clinic, Kuwait, from August to December 2003. Heights and weights were measured and body mass index (BMI) was calculated and classified according to WHO grades of obesity. A structured questionnaire used for collecting data was analyzed using SPSS version 12.0.

RESULTS: Of the 526 subjects, the most commonly cited reasons for attempting to lose weight were to avoid health problems (n = 248, 47.1%) followed by improving personal appearance (n = 141, 26.8%). The weight loss perceptions of 263 (50%) of the subjects were within the accepted range (2-5 kg/month); 321 (61.0%) had previously attempted to lose weight, among them 147 (45.8%) followed the advice of doctors and dieticians. The major reason mentioned for stopping the previous dietary regime was inability to resist sweets and traditional foods (n = 99, 31.0%) followed by dissatisfaction with the dietary outcome (n = 79, 24.8%).

CONCLUSION: The study confirms an awareness of the health risks of obesity, but an inability among the dieters to maintain a weight loss program. Hence, behavioral management techniques may be necessary to develop nutritional education approaches and effective weight management strategies.
Maternal-Fetal Status of Copper, Iron, Molybdenum, Selenium, and Zinc in Obese Pregnant Women in Late Gestation.

Al-Saleh E, Nandakumaran M, Al-Harmi J, Sadan T, Al-Enezi H.
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Abstract

Obesity is well known to be a contributory risk factor for several disease states, including diabetes mellitus. Further, obese women are more prone to have babies born with congenital abnormalities. Paucity of data on maternal-fetal disposition of essential trace elements in obese pregnancies prompted us to undertake this study. Maternal venous and umbilical arterial and venous samples were collected from obese patients (body mass index >30) and control pregnant women (body mass index <25) at time of spontaneous delivery or cesarean sections and concentrations of essential trace elements such as Cu, Fe, Mo, Se, and Zn determined in various samples by atomic absorption spectrophotometry. Activities of antioxidant enzymes, superoxide dismutase, glutathione peroxidase, and total antioxidant activity in maternal and umbilical blood were assessed using appropriate reagent kits. Maternal-fetal disposition and exchange parameters of elements studied were assessed using established criteria. Concentrations of Cu, Fe, Mo, Se, and Zn in the serum of control pregnant women at time of delivery averaged 2232.6, 2398.1, 10.9, 108.9, and 661.9 microg/L respectively, whereas in the obese group, the values of the above elements averaged 2150.3, 2446.8, 12.6, 96.8, and 838.9 microg/L respectively. Umbilical vein/maternal vein ratios of Cu, Fe, Mo, Se, and Zn in the control group averaged 0.29, 1.93, 1.06, 0.76, and 1.12, respectively, whereas in the obese group, their fetal-maternal ratios averaged 0.32, 2.23, 1.06, 0.78, and 1.53, respectively. The Cu : Zn ratio in the maternal vein of the obese group (3.60 +/- 0.20) was significantly lower (Student's t-test; p < 0.05) than that of the controls (2.50 +/- 0.19); however, Cu : Fe ratio (1.04 +/- 0.08 vs 1.02 +/- 0.09) was not significantly different (Student's t-test; p > 0.05) in the two groups. Varying differences were noted in the case of antioxidant enzyme activities between the control and study groups. We conclude that obesity is associated with alterations in maternal-fetal disposition of some essential trace elements and antioxidant enzyme status and that these alterations could pose a potential health risk for the mother as well as the fetus.
Perceived Effectiveness and Side Effects of Intermaxillary Fixation for Diet Control.

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Abstract

Weight loss is one of the major side effects associated with intermaxillary fixation (IMF) following orthognathic surgery or jaw fractures. The aim of this study was to retrospectively interview patients treated with intermaxillary fixation for diet control (IMFDC) to collect base-line information regarding: (1) perceived effectiveness, patients' compliance and patients' satisfaction with the treatment; (2) the frequency of side effects associated with IMFDC. The results show that IMFDC significantly reduced weight by a mean of 6.8 kg during treatment, and a mean of 4.1 kg at a minimum of 1 month following IMFDC removal (P<0.0001). Only 32.5% of the patients complied with the planned period of IMFDC treatment while 70% were satisfied with the treatment results. The most common side effects were speech problems and oral-facial pain with a prevalence of 52.5 and 32.5%, respectively. IMFDC treatment is not effective for long-term weight reduction and may only be used for a very short period of time to initiate weight loss. Exercise and/or special diet programs are healthier and better means to treat obesity and maintain weight loss.

Long Term Effects of Ketogenic Diet in Obese Subjects with High Cholesterol Level.

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Abstract

OBJECTIVE: Various studies have convincingly shown the beneficial effect of ketogenic diet (in which the daily consumption of carbohydrate is less than 20 grams, regardless of fat, protein and caloric intake) in reducing
weight in obese subjects. However, its long term effect on obese subjects with high total cholesterol (as compared to obese subjects with normal cholesterol level is lacking. It is believed that ketogenic diet may have adverse effect on the lipid profile. Therefore, in this study the effect of ketogenic diet in obese subjects with high cholesterol level above 6 mmol/L is compared to those with normocholesterolemia for a period of 56 weeks.

**MATERIALS AND METHODS:** In this study, 66 healthy obese subjects with body mass index (BMI) greater than 30, having high cholesterol level (Group I; n = 35) and those subjects with normal cholesterol level (Group II; n = 31) were selected. The body weight, body mass index, total cholesterol, LDL-cholesterol, HDL-cholesterol, urea, creatinine, glucose and triglycerides were determined before and after the administration of the ketogenic diet. Changes in these parameters were monitored at 8, 16, 24, 32, 40, 48 and 56 weeks of the treatment.

**RESULTS:** The body weight and body mass index of both groups decreased significantly (P < 0.0001). The level of total cholesterol, LDL cholesterol, triglycerides and blood glucose level decreased significantly (P < 0.0001), whereas HDL cholesterol increased significantly (P < 0.0001) after the treatment in both groups.

**CONCLUSION:** This study shows the beneficial effects of ketogenic diet following its long term administration in obese subjects with a high level of total cholesterol. Moreover, this study demonstrates that low carbohydrate diet is safe to use for a longer period of time in obese subjects with a high total cholesterol level and those with normocholesterolemia.


**Very Early Onset of Wernicke's Encephalopathy after Gastric Bypass.**

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**Abstract**

Postoperative complications resulting from bariatric surgery can lead to severe vitamin-deficiency states, such as Wernicke's encephalopathy (WE). We present a 29-year-old woman with BMI 41.7 with no history of alcoholism who developed acute WE after a gastric bypass for morbid obesity. After persistent vomiting for 2 weeks postoperatively, symptoms
began with headache, vertigo, diplopia, nystagmus, tingling and weakness in both upper and lower extremities, urinary incontinence, and memory loss to recent events. All investigations, including upper GI endoscopy, Gastrografin meal and even MRI, were normal. A dramatic improvement occurred in 24 hrs after starting 100 mg thiamine infusion daily. We recommend that patients undergoing bariatric surgery should be started on thiamine supplementation once oral intake begins, because this case showed that postoperative acute WE can develop before 6 weeks, unlike other reports.


Body Mass Index of Kuwaiti Children Aged 3-9 Years: Reference Percentiles and Curves.

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Abstract

AIM: The suitability of using the standards for body mass index (BMI), produced in the U.S. by the National Center for Health Statistics, for assessing overweight and obesity among children in Kuwait and other Arabian Gulf countries has not been examined. These standards were obtained from better-nourished and genetically different populations to those found in Kuwait and in other Gulf region countries. The purpose of this study was to develop BMI reference percentiles and curves appropriate for children aged 3-9 in these countries.

METHOD: Attempts were made to include all healthy Kuwaiti kindergarten and elementary education children in this study The total sample was 113,013, comprising 55,053 males and 57,960 females. The children were measured for weight and height from which the BMI was calculated. Appropriate polynomial regression smoothing techniques were used to obtain the best-fitting percentile curves.

RESULTS: At percentiles < or =25th, the BMI of boys exceeded that of girls. At the 50th percentile, boys' BMI was mostly higher than or equal to that of the girls except at age nine where it was lower At the 75th percentile, the BMI of both genders was similar, with exceptions at age six and nine years. At the 85th and 95th percentiles, girls' BMI was consistently higher than
males. At the lowest percentile, the BMI of US children was higher than Kuwaiti, Saudi (starting at six) and Iranian children. The BMI of Kuwaiti children at higher percentiles was higher than that of Saudi, Iranian (except at age < four years) and US children.

CONCLUSION: BMI curves for Kuwaiti children follow almost the same pattern as their US counterparts but with noticeable variations especially at the lower and higher percentiles. This study may reflect that western standards may not be directly applicable to assess the level of BMI in Kuwait and possibly in the neighbouring Gulf countries, since they may overestimate the levels of overweight, obesity and underweight.


Prevalence and Factors Associated with Obesity and Treatment of Blood Pressure among Kuwaiti Hypertensive Patients in a Primary Health Care Clinic

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ABSTRACT

OBJECTIVES: To determine the prevalence of obesity among adult hypertensive patients and to investigate associated factors and the differences in drug doses at the Daiya primary care clinic in Kuwait.

DESIGN: Cross-sectional study.

METHOD: Two hundred hypertensive Kuwaiti patients on antihypertensive medication and attending the Daiya clinic during a period of six months between January and June 2004 were included in the study.

RESULTS: A high prevalence of obesity (68%) was seen among hypertensive patients. The multiple logistic regression analysis showed that the significant associated factors were non-compliance with diet (p = 0.006) and age (< 65, p = 0.002). Factors such as intake of evening snacks and family history of obesity were not found to be significantly associated. Obese patients needed more than one drug to control their blood pressure.

CONCLUSION: There is a high prevalence of obesity among hypertensive patients. Hence, intensive programs are recommended to control their obesity.
Prevalence of Obesity in Kuwait and its Relation to Sociocultural Variables.

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Abstract

This study ascertains the prevalence of obesity and its relationship with some sociocultural characteristics in Kuwaiti society. The sample involved 212 men and 212 women, most of whom are overweight and obese. Grades 1 (body mass index [BMI] > 25-30 kg m(-2)), 2 (BMI > 30-40) and 3 (BMI > 40) of obesity characterize 71.2% of the sample. Most individuals are in grade 2 obesity, 37.2%. Grade 1 obesity is seen in 31.4% of the sample. Obesity increases with age, especially in women. The heaviest women are aged 60 years or older (mean BMI of 33.8), about the same mean as in the 50-59-year-old age group. The highest frequency of grades 1 and 2 obesity occur in women 30-39 years old. Fifty per cent of the underweight women are 20-29 years old or are over 60 years old. Most women of normal weight are 20-29 years old. For the men, 60% of the underweight sample are 50-60 years old. Male respondents between 30 and 39 years old are the heaviest; 42.7% of the sample are within grade 1 obesity and 40.7% of the sample within grade 2 obesity. The smallest percentage of men in grades 1 and 2 obesity are those 50-59 years old. An association was found between some sociocultural variables and obesity. Data show an increasing prevalence of obesity in Kuwait compared with some previous studies.
Plasma Leptin Concentration in Patients with Type 2 Diabetes: Relationship to Cardiovascular Disease Risk Factors and Insulin Resistance.

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Abstract

AIMS: The aim of this study was to evaluate the relationship of obesity, leptin, insulin resistance and C-reactive protein (CRP) with coronary heart disease (CHD) risk factors in patients with Type 2 diabetes mellitus (DM) with CHD compared with those with Type 2 DM without CHD.

METHODS: Leptin, CRP (high sensitivity assay), fasting plasma insulin, glucose, HbA1c and full lipid profile were determined in 58 Type 2 diabetic patients with CHD and 87 Type 2 DM patients without CHD.

RESULTS: were compared between those with and without CHD. Univariate correlation as well as logistic regression analyses were used to relate these markers with traditional CHD risk factors.

RESULTS: Leptin showed significant correlations with BMI (r = 0.59; P < or = 0.0001), waist circumference (r = 0.45; P < 0.0001), CRP (r = 0.36; P < 0.0001), and fasting insulin (r = 0.53; P < 0.0001) as well as with systolic (r = 0.23; P = 0.007) and diastolic (r = 0.23; P = 0.007) blood pressure. However, when those with and without CHD were compared only age (P < 0.0001), duration of diabetes (P < 0.001) and degree of microalbuminuria (P = 0.02) were significantly higher in patients with CHD. Leptin (P = 0.49), CRP (P = 0.19) and lipid parameters were not significantly different between the two groups.

CONCLUSION: Our study confirms a relationship between leptin and CRP with CHD risk factors. The lack of significant difference when patients with and without CHD are compared may be due to the potential confounding effects of treatment with aspirin and statins.
The Effect of Obesity on the Outcome of Infertility Management in Women with Polycystic Ovary Syndrome.

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Abstract

INTRODUCTION: Obesity has become a worldwide epidemic with ever increasing incidence and public health problems in both developing and developed countries.

OBJECTIVE: The objective of the study is to investigate the incidence of obesity among patients with polycystic ovarian syndrome attending infertility clinic and the effect on treatment outcome.

METHODOLOGY: Two hundred and seventy women with polycystic ovarian syndrome attending the infertility clinic were evaluated clinically, biochemically, and laparoscopically. They were stratified according to their body mass index (BMI) as follows: normal weight: 18-24; overweight: 25-29, obese:30-34, and grossly obese: > or = 35. Therapy included induction of ovulation with clomiphene citrate and gonadotrophins. The patients were followed up through during induction of ovulation and pregnancy.

RESULTS: There were ethnic differences in mean BMI. Significantly more obese women had oligomenorrhoea (p<0.01) and anovulation (p<0.01) than women with normal weight. Obesity adversely affected the outcome of ovulation induction with clomiphene citrate and gonadotrophins; 79% of women with BMI 18-24 ovulated at 6 months compared to 15.3% in those with BMI 30-34 (p<0.001) and 11.8% in women with BMI > or = 35 (p<0.001). The pregnancy rate and outcome were also adversely affected by obesity.

CONCLUSION: Obesity has a negative impact on the outcome of treatment of infertility. Weight reduction programme should be an essential component of infertility management.
Obesity and Personality Types of High School Boys in Kuwait.
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Abstract

OBJECTIVES: The aim of this study is to estimate the prevalence of obesity among first grade high school male students in Kuwait and to investigate the relationship between body mass index (BMI) and personality types.

METHODS: First grade high school male students of an urban, a semi-urban, and a rural governorate in Kuwait was the target population. The systematic random sampling technique was used. Pre-tested self-administered questionnaire was used for data collection. Height and weight measures were performed. Personality testing was done using the Eyzenck Personality Questionnaire (EPQ).

RESULTS: In a sample of 504 participants, 44.4% were overweight and obese. High neuroticism score, large number of siblings in the family, lack of exercising, and very low family monthly income significantly predicted overweight and obesity on multivariate analysis.

CONCLUSION: The prevalence of overweight and obesity is quite alarming. The fact that obesity is a mass phenomenon is highlighted by the lack of association of an increased BMI with most demographic and socioeconomic variables. An urgent action must be taken in order to control the increased obesity epidemic.

Obesity Indices And Major Components Of Metabolic Syndrome In Young Adult Arab Subjects.
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Abstract

BACKGROUND: The major components of metabolic syndrome are atherogenic dyslipidaemia (AD) and insulin resistance (IR), and both predict risk for atherosclerotic cardiovascular disease even in healthy individuals.
**AIMS:** To assess if, in a group of healthy young adult Arab subjects, a simple classification in high and normal scores on waist-hip ratio (WHR), body mass index (BMI) and waist circumference (WC) scales could predict atherogenic parameters for metabolic syndrome (AD, IR).

**SUBJECTS AND METHODS:** The subjects \([n = 177 (72 M, 105 F), \text{aged } 29.7 \pm 8.4 \text{ (SD) years}]\), underwent physical evaluation, BP measurement and anthropometry [height (m), weight (kg), waist (WC) and hip circumference (HC, cm)]. The cut-off points for normal/high scores on the indices were: (1) BMI: 30 kg/m\(^2\) (M and F); (2) WHR: 0.80 F, 0.95 M, and (3) WC: 90 cm F, 100 cm M). The biochemical indices measured on fasting serum were: (1) AD: total cholesterol (TC), triglycerides (TG), HDL, LDL, apo B, HDL/TC ratio, and (2) IR: insulin, urate, insulin/glucose ratio (IGR).

**RESULTS AND DISCUSSION:** In the whole group of subjects, and in women separately considered, those with high indices (BMI, WHR, WC) had significantly increased levels of glucose, LDL, apo B, urate, mean BP, TG, insulin and IGR and lower values for HDL/TC ratio (all \(p < 0.05\)). In men, only urate, insulin and IGR levels were increased \((p < 0.01)\) in the high-score groups. None of the indices showed any special superiority in describing the risk of AD or IR.

**CONCLUSION:** In women, BMI, WHR and WC appeared equally good in identifying individuals at high risk of AD and IR while in men, these indices satisfactorily described the risk of IR but not of AD. It is important to re-emphasise the need to indicate gender distinctions in using anthropometry for CHD risk assessment.


**Factors Associated With Overweight And Obesity Among Kuwaiti Kindergarten Female Teachers.**

Al-Isa AN.

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**Abstract**

Levels of overweight and obesity among Kuwaiti women are high, and the objective of this study was to explore factors that may be responsible. A sample of 461 Kuwaiti kindergarten female teachers was studied; weight and height were measured, and the classification of overweight or obese taken as having a Body Mass Index of 25-30 or >30, respectively. This
revealed that 41.2 and 19.7% of the teachers were overweight or obese, respectively. Factors found to be significantly associated with overweight and obesity among the teachers included age, marital status, parents living at home, subjects' parental obesity, number of obese relatives, exercise, last dental check-up and dental status.


Body Mass Index, Overweight and Obesity among Kuwaiti Intermediate School Adolescents Aged 10–14 Years

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Abstract

OBJECTIVES: The purpose of this cross-sectional study was to assess the levels of overweight and obesity among Kuwaiti intermediate school adolescents aged 10–14 y. The study comprised a multistage stratified random sample of 14659 adolescents (7205 males and 7454 females), which constitutes approximately 17% of the target population of this school level.

METHODS: Weights and heights of the adolescents were measured, from which the body mass index (BMI), which is the weight in kilograms divided by the height in meters squared (kg/m²), was calculated. Overweight and obesity were defined as BMI >85th and >95th centiles, respectively, of the National Center for Health Statistics (NCHS) reference data.

RESULTS: The overall prevalence of overweight and obesity among males were 30.0 and 14.7%, respectively (P<0.001). The overall prevalence of overweight and obesity among females were 31.8 and 13.1%, respectively (P<0.001 and P<0.01). There was no consistent rise or decline in overweight and obesity in both genders with respect to age. However, the overall prevalence of overweight was lower in males than in females but obesity was higher in males than in females.

CONCLUSION: When compared to the NCHS reference population, the BMI of Kuwaiti adolescents exceeded that of the Americans in each centile category ≥50th centile. Health education programmes should be instituted to control this syndrome in order to prevent future risk of obesity-related diseases.
Pattern and Determinants of Dyslipidaemia In Type 2 Diabetes Mellitus Patients in Kuwait.

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Abstract

We conducted a clinical study to assess the pattern of dyslipidaemia in type 2 diabetic patients and to examine the demographic and clinical factors associated with dyslipidaemia. The study population comprised 206 consecutive type 2 diabetic patients attending the out-patient clinic at a major hospital in Kuwait. Clinical history and physical examination were done and fasting blood samples were taken to determine HbA1c and lipid levels. American Diabetes Association criteria were applied to define clinical targets for lipid levels and coronary heart disease risk categories. Stepwise multiple linear regression was conducted to identify the demographic and clinical factors associated with lipid levels outside of the clinical target. The large majority of the patients were either over-weight (32%) or obese (57%); the mean BMI was 32.6 kg/m². Serum total cholesterol, LDL-cholesterol, and triglycerides were above optimal levels in 67%, 86%, and 25% of patients, respectively. For HDL-cholesterol, 63% of men and 71% of women had values below the corresponding optimal level. Only 14 patients (6.8%) had all three lipid values within the respective target level. The percentages of patients with one, two, or all three lipid values outside of target were 31%, 46%, and 16%, respectively. The most frequent (41%) pattern of dyslipidaemia was a combination of LDL-cholesterol level above target with HDL-cholesterol level below target; the second most common pattern was an isolated increase in LDL-cholesterol, observed in 21% of the patients. In the stepwise regression analyses, glycaemic control was strongly associated with dyslipidaemia (i.e. high total- and LDL-cholesterol and triglycerides); female gender were associated with low HDL-cholesterol. Kuwaiti type 2 DM patients have a high prevalence of dyslipidaemia and obesity. Weight reduction, increased physical activity, improved glycaemic control, and increased HDL-cholesterol levels, along with reduced LDL-cholesterol, should be important goals of therapy in these patients to reduce the risk of coronary heart disease.
Body Mass Index, Overweight and Obesity among Kuwaiti Intermediate School Adolescents Aged 10-14 Years.

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Abstract

OBJECTIVES: The purpose of this cross-sectional study was to assess the levels of overweight and obesity among Kuwaiti intermediate school adolescents aged 10-14 y. The study comprised a multistage stratified random sample of 14659 adolescents (7205 males and 7454 females), which constitutes approximately 17% of the target population of this school level.

METHODS: Weights and heights of the adolescents were measured, from which the body mass index (BMI), which is the weight in kilograms divided by the height in meters squared (kg/m²), was calculated. Overweight and obesity were defined as BMI >85th and >95th centiles, respectively, of the National Center for Health Statistics (NCHS) reference data.

RESULTS: The overall prevalence of overweight and obesity among males were 30.0 and 14.7%, respectively (P<0.001). The overall prevalence of overweight and obesity among females were 31.8 and 13.1%, respectively (P<0.001 and P<0.01). There was no consistent rise or decline in overweight and obesity in both genders with respect to age. However, the overall prevalence of overweight was lower in males than in females but obesity was higher in males than in females.

CONCLUSION: When compared to the NCHS reference population, the BMI of Kuwaiti adolescents exceeded that of the Americans in each centile category > or = 50th centile. Health education programmes should be instituted to control this syndrome in order to prevent future risk of obesity-related diseases.
Prevalence of Metabolic Syndrome among Hypertensive Patients Attending a Primary Care Clinic in Kuwait.

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Abstract

OBJECTIVE: To determine the prevalence of metabolic syndrome among hypertensive patients using the criteria of the National Cholesterol Education Program's Adult Treatment Panel III in a primary care health center in Kuwait.

SUBJECTS AND METHODS: A population of 250 Kuwaiti hypertensive patients (129 males and 121 females) over the age of 40 were screened for metabolic syndrome by determining body mass index (BMI), waist circumference, levels of fasting plasma glucose and fasting plasma lipids (serum triglycerides, total cholesterol and high-density lipoprotein cholesterol). The study was carried out in the Mishref Family Practice Health Center, Kuwait, from January to July 2001.

RESULTS: The total number of patients who met the criteria for metabolic syndrome was 85 (34%), 55% of them were males and 45% females. Prevalence of the syndrome was 28.2% among 40- to 55-year-olds and 41.9% in those above the age of 55 years. Among the 250 hypertensive patients, type II diabetes mellitus was found in 52.8% (54% males and 46% females), impaired fasting glucose in 8% (70% males and 30% females), high plasma triglycerides in 44.8% (53% males and 47% females) and low high-density lipoprotein cholesterol in 63.2% (54% males and 46% females). Obesity measured as BMI = 30 kg/m(2) was noted in 46% (43% males and 57% females) and increased waist circumference in 58% (44% males and 56% females).
Overweight and Obesity among Kuwait Oil Company Employees: A Cross-Sectional Study.

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Abstract

BACKGROUND: Overweight and obesity are considered major risk factors for many diseases, and their prevalence is known to be high in Kuwait from previous studies.

AIM: To assess the prevalence of overweight and obesity and related risk factors among Kuwait Oil Company (KOC) employees.

METHOD: A cross-sectional study of full-time KOC employees was carried out using a structured questionnaire that was completed during periodic medical examinations. The questionnaire included demographic details, frequency and duration of physical activity, history of chronic diseases and medication. All participants were counselled and examined. Blood pressure, body mass index and fasting glucose were recorded.

RESULTS: Some 3282 out of 3900 employees completed the study; 85% of participants were male, 62% were field workers and 38% were office workers. The overall prevalence of overweight and obesity among KOC employees was 75%. Males showed a higher level of overweight and obesity (79%) than females (56%). Field workers had a higher level of overweight and obesity (78%) and higher inactivity (65%) than office workers (72% and 56%, respectively).

CONCLUSION: Overweight and obesity, together with inactivity, are highly prevalent among KOC employees, and more so among field workers than office workers. Encouraging an active lifestyle, healthy eating habits and weight control programmes are all possible interventions to reduce the prevalence of overweight and obesity.
Are Kuwaitis Getting Fatter?

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Abstract

The purpose of the study is to compare temporal changes in BMI, overweight (BMI > 25 Kg/m2) and obesity (BMI > 30 Kg/m2) of two independent cross-sectional samples of Kuwaitis studied in 1980-81 and 1993-94. The earlier sample of 2067 (896 men and 1171 women) and the latter sample of 3435 (1730 men and 1705 women) adult Kuwaitis (aged > or = 18 years), were drawn from primary health care (PHC) clinics and studied for nutritional assessment and for prevalence of obesity in 1980-81 and 1993-94, respectively. Weight was measured in kilograms and height in meters to obtain the body mass index (BMI), which is the weight in kilograms divided by the height in meters squared (Kg/m2). BMI > 25 and > 30 Kg/m2 were classified as overweight and obesity, respectively. The results of the study show that mean BMI (Kg/m2) increased significantly (p < 0.001) by 10.0 and 6.2% (2.5 and 1.7 Kg/m2) among men and women, respectively. Prevalence of overweight and obesity (BMI > 25 and > 30 Kg/m2) increased by 20.6 and 15.4% and by 13.7 and 8.4% among men and women, respectively. After controlling for sociodemographic differences between the two study periods, mean BMI was 2.0 and 1.6 Kg/m2 higher in 1993-94 than in 1980-81 among men and women, respectively. Prevalence of overweight and obesity (BMI > 25 and > 30 Kg/m2) also increased among both genders between the two periods (OR = 2.1, 95% CI 1.7-2.7 and OR = 1.9, 95% CI 1.5-2.4, for men and OR = 2.2, 95% CI 1.6-3.0 and OR = 1.4, 95% CI 2.2 CI 1.0-1.9, for women). It can be concluded that the BMI, prevalence of overweight and obesity increased among Kuwaitis between 1980-81 and 1993-94, probably due to the effects of modernization, affluence, increased food consumption and the concomitant changes to sedentary lifestyles. The rate of temporal changes in BMI and obesity were higher, by comparison, in Kuwait than in selected other countries.
Juvenile Hypertension: Prevalence and Influence of Obesity


Juvenile Hypertension in Kuwait: Prevalence and Influence of Obesity

Sorkhou Iman, MD; Al-Namash Hind, MD; Amir Ali, MD; Mohamed Farida, MD; Alaa Bayoomi, MD; Al-Batish Mohamed, MD

Abstract

The purpose of this study was to evaluate the prevalence of hypertension among school children in Kuwait, and its correlation with obesity. A cross-sectional population survey was conducted in four out of five health districts in Kuwait from September 2001 to May 2002. School children (2910) ranging in age from 5-13 years were screened for hypertension by measuring blood pressure, weight and height using standardized techniques. The blood pressure was measured three times on three different occasions with a month apart. Hypertension was defined if the systolic or diastolic blood pressure was >95 percentile for age and height as suggested by the Task Force Report on high blood pressure in children and adolescents in September 1996. Hypertension was divided into three subsets, isolated systolic hypertension (ISHPN), isolated diastolic hypertension (IDHPN) and combined systolic and diastolic hypertension (SDHPN). Obesity was defined according to the updated International obesity task force recommendations if body mass index (BMI) was >95 percentile for age. Among the 2910 subjects, 48.5% were males and 51.5% were females, 60.9% of the subjects were of 5-9 age group and 39.1% were of >9-13 age group. Hypertension was more prevalent in >9-13 age group P<0.001. Both ISHPN and IDHPN were more prevalent in >9-13 age group showing highly significant p-value for both types of hypertension P<0.00. The prevalence of hypertension was 6.8% (51% in males and 49% in females). Obesity was found in 61.1% of hypertensive subjects. The prevalence of hypertension among obese subjects was 30.4%. In conclusion, hypertension is a relatively common and often overloaded problem in children in Kuwait. Obesity is the most commonly observed association in children with hypertension.
Obesity is an Independent Risk Factor for Plasma Lipid Peroxidation And Depletion of Erythrocyte Cytoprotective Enzymes in Humans.

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Abstract

OBJECTIVE: Obesity, defined as a body mass index (BMI) greater than 30 kg/m(2), is now recognised as a risk factor for diabetes mellitus, hyperlipidaemia, colon cancer, sudden death and other cardiovascular diseases. In this study, it is hypothesized that obesity is an independent risk factor for lipid peroxidation and decreased activities of cytoprotective enzymes in humans.

SUBJECTS: Fifty normal healthy subjects with healthy BMI (19-25 kg/m(2)) and 250 subjects with different grades of obesity (30-50 kg/m(2)) with no history of smoking or biochemical evidence of diabetes mellitus, hypertension, hyperlipidaemia, renal or liver disease or cancer.

MEASUREMENTS: To test this hypothesis, we assessed lipid peroxidation and cytoprotection by measuring the concentrations of plasma malondialdehyde (P-MDA) and the activities of erythrocyte copper zinc-superoxide dismutase (CuZn-SOD) and glutathione peroxidase (GPX).

RESULTS: The concentration of P-MDA was significantly lower (P<0.001) in subjects with healthy BMI (2.53+/-.04 micro mol/l) than in those with BMI above 40 kg/m(2) (4.75+0.05 micro mol/l). Furthermore, there was a significantly positive association (r=0.342, P=0.013) between BMI and P-MDA. On the other hand, subjects with healthy BMI had significantly higher (P<0.001) erythrocyte CUZn-SOD (1464+/-.23 units/g Hb) and GPX (98.4+/-.3.3 units/g Hb) than those with BMI above 40 kg/m(2) (1005+/-.26 units/g Hb) and (84.3+/-.6.7 units/g Hb) respectively. Furthermore, erythrocyte CuZn-SOD and GPX activities were negatively associated with BMI (r=-0.566, P=0.005 and r=-0.436, P=0.018) respectively.

CONCLUSION: It is concluded from these results that obesity in the absence of smoking, diabetes mellitus, hyperlipidaemia, renal or liver disease causes lipid peroxidation and decreased activities of cytoprotective enzymes, and should therefore receive the same attention as obesity with complications.
Obesity, Metabolic Syndrome, and the Mediterranean Diet in a Sample of Lebanese University Students

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Abstract

Metabolic syndrome is a condition characterized by the clustering of central obesity, hyperglycemia, hypertension, and dyslipidemia. Each abnormality promotes atherosclerosis independently, but when clustered together, these metabolic disorders are increasingly atherogenic and enhance the risk of cardiovascular morbidity and mortality. The prevalence of metabolic syndrome is on the rise, especially in young people, and its onset may be early in life. Therefore, universities are unique settings for early monitoring and intervention of metabolic risk factors. A pilot study was conducted among 100 Lebanese university students (62 male students and 38 female students) aged 18 to 27 years studying at Notre Dame University, Lebanon, to assess the prevalence of obesity and metabolic syndrome and to examine students' eating habits in relation to the consumption of the Mediterranean diet. Parameters measured were weight, height, waist circumference, percentage body fat, blood pressure, and fasting blood glucose level. Metabolic syndrome was evaluated based on the third report of the National Cholesterol Education Program Adult Treatment Panel. Measurements of blood lipid levels, including triglyceride, total cholesterol, high-density lipoprotein, and low-density lipoprotein, were made for half of the students. Dietary intake was assessed by using a food frequency questionnaire tailored to Lebanese food. Study results indicated that 49% of male students were overweight and 7% were obese compared with 21% overweight and 3% obese female students. Only 4% of students, all men, had the full metabolic syndrome components. However, many students had 1 or more elements of it. Overall, a total of 56% of the students exhibited 1 or more components of metabolic syndrome: 22% of students had 1 component, 30% had 2 components of the syndrome and 4% had 3 components of metabolic syndrome. In comparison to the traditional Mediterranean Diet Pyramid, those students who had metabolic syndrome had higher consumption of red meat and sweets and a lower consumption of legumes.
This considerable prevalence of obesity and metabolic syndrome among students is of concern and may warrant early screening for these disorders. Students' eating habits showed deviation from the traditional Mediterranean Diet Pyramid, so promotional campaigns focusing on the traditional Mediterranean diet may be helpful and necessary.


Dietary Patterns and their Association with Obesity and Sociodemographic Factors in a National Sample of Lebanese Adults.

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Abstract

OBJECTIVE: To identify and characterize dietary patterns in Lebanon and assess their association with sociodemographic factors, BMI and waist circumference (WC).

DESIGN: A cross-sectional population-based survey. In a face-to-face interview, participants completed a brief sociodemographic and semiquantitative FFQ. In addition, anthropometric measurements were obtained following standard techniques. Dietary patterns were identified by factor analysis. Multivariate linear regression was used to assess determinants of the various patterns and their association with BMI and WC.

SETTING: National Nutrition and Non-Communicable Disease Risk Factor Survey (2009), Lebanon.

SUBJECTS: A nationally representative sample of 2048 Lebanese adults aged 20-55 years.

RESULTS: Four dietary patterns were identified: 'Western', 'Traditional Lebanese', 'Prudent' and 'Fish and alcohol'. Factor scores of the identified patterns increased with age, except for the Western pattern in which a negative association was noted. Women had higher scores for the prudent pattern. Adults with higher levels of education had significantly higher scores for the prudent pattern. The frequency of breakfast consumption was significantly associated with scores of both traditional Lebanese and
prudent patterns. Multivariate-adjusted analysis revealed a positive association between scores of the Western pattern and the BMI and WC of study participants.

CONCLUSIONS: The findings show the presence of four distinct dietary patterns in the Lebanese population, which were associated with age, sex, education and meal pattern. Only the Western pattern was associated with higher BMI.


Public Schools Adolescents’ Obesity and Growth Curves in Lebanon.

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Abstract

OBJECTIVE: Our objective was to draw growth curves and assess obesity prevalence in adolescents of public schools, and to explore selected food consumption frequency and physical activity.

METHODS: A cross-sectional study was conducted in Lebanese public schools. From the list of schools provided by the Ministry of Education, a random sample of 20 schools was chosen, distributed in all Lebanese regions. Participants were 2547 adolescents, aged between 11 to 18 years. Anthropometric measures of height and weight were taken, growth curves were drawn. Obesity and at risk of obesity prevalences were also calculated. Selected food intake frequency, physical activity and sedentary behavior were also analyzed.

RESULTS: Growth curves were drawn for boys and girls. Overall, 6.6% of adolescents were obese, while 20.5% were at risk of obesity. There were significant differences in obesity prevalence estimates between age groups in girls: increased age was associated with higher obesity (3.8% in those < or =13 years of age versus 10.6% in those > 17 y; p = 0.02); this trend was not found in boys (6.5% in those < or = 13 y and 7.2% in those > 17 y; p = 0.78). As expected, a significant increase in the risk of being overweight was found with increased frequency of eating fried potatoes, chocolate and eating out. In contrast, eating fruits and having physical activity were associated with a lower risk of being overweight.
CONCLUSION: In Lebanese public schools, we found high rates of obesity and associated behaviors. Preventing obesity should focus on promoting healthy lifestyles for adolescents of low socioeconomic status.

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Pattern of Obesity and Associated Diabetes in Lebanese Adolescents: A Pilot Study.
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ABSTRACT

Obesity-associated diabetes in adolescents is increasing throughout the world. In this study, body mass index and capillary blood glucose were measured in a randomly selected sample of adolescents from 3 Lebanese private schools. Obesity was evaluated according to International Obesity Task Force cut-offs. Out of 300 students, 18.7% were at risk of obesity and 3.0% were obese. Random glycaemia level was ≥ 140 mg/dL in 10.3% of students. In those fasting, 10.5% had glucose intolerance and 3.5% had diabetes. Glucose levels were significantly higher in overweight versus normal weight individuals: 86 (SD 13) versus 96 (SD 16) mg/dL. Among the normal weight group 8.6% had abnormal glycaemia while among those who were overweight 37.0% had abnormal glycaemia. Lebanese school students have high rates of overweight and of obesity-associated diabetes and glucose intolerance.
A Mediterranean Diet Pattern with Low Consumption of Liquid Sweets and Refined Cereals is Negatively Associated with Adiposity in Adults from Rural Lebanon.

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Abstract

BACKGROUND: The beneficial impact of the traditional Mediterranean diet pattern on adiposity is still under debate, and this has never been assessed in a developing Mediterranean country.

OBJECTIVES: To assess the relationships between adherence to a traditional Mediterranean diet and adiposity indexes, that is, body mass index (BMI) and waist circumference (WC), in a sample from rural Lebanon.

DESIGN: A sample of 798 adults, aged 40-60 years, was selected in continental rural areas of Lebanon for a cross-sectional study. The questionnaire included socio-demographic, anthropometric and dietary sections. The daily consumption frequencies of selected food groups, categorized as positive or negative components, were calculated based on a food frequency questionnaire. Adherence to the Mediterranean diet was assessed using six a priori scores; including the widely used Mediterranean diet score (MDS). Associations between diet scores and BMI and WC were assessed.

RESULTS: Overall, the diet of the study sample only partially matched the traditional Mediterranean diet. A total of 17.0% of men and 33.7% women were obese. The MDS was negatively associated (P<0.05) with WC, but not BMI, in men and women. The constructed composite Mediterranean score combining positive components of the diet (whole cereals, vegetables, legumes and fruit, olive oil and fish) and negative components adapted to this sample (refined cereals and pastries, and liquid sweets) was consistently and negatively associated with both BMI and WC for men and women in multivariate models. A 2-point increase in that score was associated with a decrease in BMI of 0.51 and 0.78 kg m(-2) and a decrease in WC of 2.77 and 4.76 cm in men and women, respectively.

CONCLUSION: The results demonstrate that a Mediterranean diet is negatively associated with obesity and visceral adiposity in a rural population of a developing Mediterranean country.
Bone Mineral Content and Density in Obese, Overweight, and Normal-Weighted Sedentary Adolescent Girls.

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Abstract

PURPOSE: The aim of this study was to compare the whole body (WB) bone mineral content (BMC) and bone mineral density (BMD) in obese, overweight, and normal-weighted adolescent sedentary girls.

METHODS: This study included 17 obese, 27 overweight, and 21 normal-weighted adolescent (aged, 12-20) sedentary (practicing less than 2 hours of physical activity/week) girls. The three groups (obese, overweight, and normal) were matched for age and maturation index (years since menarche). BMC, bone mineral area (BMA), BMD, and body composition were assessed by dual-energy X-ray absorptiometry. Bone mineral apparent density (BMAD) was calculated for the WB.

RESULTS: Obese girls had higher BMC values than overweight and normal-weighted girls (p < .05 and p < .001, respectively). Overweight girls had higher BMC values than normal-weighted girls (p < .05). BMD values were not different among the three groups. However, obese and overweight girls had lower BMAD and higher BMC/height values in comparison with normal-weighted girls (p < .05). Finally, after adjustment for lean mass, BMC, BMA, BMD, and BMAD were not different among the three groups.

CONCLUSION: In this population, overweight and obesity are associated with higher BMC, BMC/height, and lower BMAD of the WB. This study suggests that BMD, BMC, BMA, and BMAD of the WB are not significantly different among the three groups (obese, overweight, and normal) after adjustment for lean mass. Therefore, our results suggest that the skeleton of the overweight and the obese girls adapts to the increased lean mass.
Metabolic Syndrome and Insulin Resistance in Obese Prepubertal Children in Lebanon: A Primary Health Concern.

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Abstract

BACKGROUND: Ethnic-based associations between obesity and the metabolic syndrome (MS) have been suggested. The prevalence of MS in obese children was found to range between 13.9 and 48.8%, depending on the country of origin. This study was conducted to investigate the relationship between obesity and various components of MS in prepubertal children in Lebanon.

METHODS: Eighty-seven obese children (Tanner stage 1), 25 overweight and 28 normal-weight controls were recruited from private and public schools. Anthropometric, biochemical and blood pressure measurements were performed.

RESULTS: According to the modified Adult Treatment Panel III definition, the MS was identified in 26.4 and 4% of obese and overweight children, respectively, with a higher prevalence among girls than boys. The most common abnormalities among subjects with MS were elevated waist circumference (WC) (100.0%), high triglyceride (91.7%) and low high-density lipoprotein cholesterol (66.7%) levels. Insulin resistance was identified in 70% of obese children and 75% of those having the MS. Body mass index, WC and homeostasis model assessment of insulin resistance were significant determinants of the MS in this age group.

CONCLUSION: MS was found in 26.4% of obese Lebanese children, thus underscoring the importance of early screening of obesity and its associated metabolic abnormalities and of developing successful multicomponent interventions addressing pediatric obesity and MS.
Activity, Inactivity and Quality Of Life among Lebanese Adolescents.

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Abstract

BACKGROUND: The aim of the present study was to investigate recent overweight and obesity prevalence rates for Lebanese adolescents, and to examine differences in physical activity, screen time (sum of time spent in front of TV, computer, and videogames), and health-related quality of life (HRQOL) for the first time among normal, overweight, and obese adolescents.

METHODS: One thousand Lebanese adolescents (14-18 years old) from nine schools participated in the study. Height, weight, physical activity, screen time, and HRQOL variables were assessed using validated self-report questionnaires.

RESULTS: A total of 7.8% of boys and 1.75% of girls were obese, and 22.5% of boys and 12.47% of girls were overweight. Normal-weight boys reported higher physical activity scores at health clubs than obese boys. Normal-weight girls reported higher leisure time and total physical activity scores than obese girls. In the normal-weight group, boys reported higher total screen time than girls. Normal-weight boys reported higher physical functioning scores than their obese peers. Normal-weight girls reported higher physical functioning and average HRQOL scores than obese girls. Normal-weight and overweight boys reported higher average HRQOL scores than girls.

CONCLUSION: The present study is the first to provide data on physical activity, screen time, and HRQOL among Lebanese adolescents. Despite the need for further research, all those concerned with the pediatric population are urged to develop and implement effective strategies to increase physical activity and improve HRQOL among adolescents based on the present findings.
Body Mass Index and Body Fat in Lebanese Female Adolescents.

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Abstract

OBJECTIVE: The aim of this study is to investigate the relation between body mass index (BMI) and body fat (BF) among Lebanese female adolescents.

METHODS: 51 Lebanese females aged 12 to 18 years participated in this study. BMI was calculated as weight/height. Adiposity was measured by dual energy X-ray absorptiometry (DEXA).

RESULTS: Correlation coefficient of percent body fat (%BF) with BMI is 0.82. Correlation coefficient of fat mass (BF) with BMI is 0.93. The two linear regression formulas are: %BF = 6.89 + (1.1 *BMI) and BF = - 0.425 + (129 *BMI).

CONCLUSION: Correlations of BMI with DEXA measurements were higher with BF than %BF. For a given BMI, Lebanese girls have a higher than expected %BF. Based on the current findings, there may be a need to develop new cutoff points. From a public health perspective, this may considerably increase the prevalence of obesity among Lebanese female adolescents.
Effect of Pretransplantation Body Mass Index on Allograft Function and Patient Survival after Renal Transplantation.


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Abstract

We evaluated the effects of pretransplantation recipient body mass index (BMI) on allograft survival and on kidney function. Kidney transplant recipients were grouped according to their pretransplantation BMIs: Group I (BMI<18.5 kg/m²; n=10); Group II (BMI 18.5-24.9 kg/m²; n=62); Group III (BMI 25.0-29.9 kg/m²; n=47); and Group IV (BMI>30.0 kg/m²; n=16). Excellent 1-year patient and graft survival rates were observed in all groups. Increased BMI was associated with increased hypertension and longer hospital stays. The incidence of acute rejection episodes, slow graft function, and delayed graft function, as well as the need for antithymocyte globulin Fresenius (ATG-F) rescue therapy were comparable between the 4 patient groups. The 1-year glomerular filtration rate was markedly different between the 4 patient groups. The 1-year posttransplantation glucose level was higher among obese patients compared with the other groups. A multivariate regression analysis confirmed the association of a higher 1-year GFR with obesity (BMI>30.0 kg/m²). Overweight and obese recipients showed excellent long-term patient and graft survival rates. Accordingly, denying patients renal transplantation because of obesity may not be justified.
Eating Habits And Obesity Among Lebanese University Students.

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Abstract

BACKGROUND: In the past year Lebanon has been experiencing a nutritional transition in food choices from the typical Mediterranean diet to the fast food pattern. As a consequence, the dietary habits of young adults have been affected; thus, overweight and obesity are increasingly being observed among the young. The purpose of this study is to assess the prevalence of overweight and obesity on a sample of students from the Lebanese American University (in Beirut) and to examine their eating habits.

METHODS: A cross-sectional survey of 220 students (43.6% male and 56.4% female), aged 20 +/- 1.9 years, were chosen randomly from the Lebanese American University (LAU) campus during the fall 2006 semester. Students were asked to fill out a self-reported questionnaire that included questions on their eating, drinking and smoking habits. Also, their weight, height, percentage body fat and body mass index were measured. Body mass index (BMI) was used to assess students' weight status. Statistical analyses were performed using the Statistical Package for Social Sciences software (version 13.0) to determine overweight and obesity among students and to categorize eating habits.

RESULTS: This study showed that the majority of the students (64.7%) were of normal weight (49% male students compared to 76.8% female students). The prevalence of overweight and obesity was more common among male students compared to females (37.5% and 12.5% vs. 13.6% and 3.2%, respectively). In contrast, 6.4% female students were underweight as compared to 1% males. Eating habits of the students showed that the majority (61.4%) reported taking meals regularly. Female students showed healthier eating habits compared to male students in terms of daily breakfast intake and meal frequency. 53.3% of female students reported eating breakfast daily or three to four times per week compared to 52.1% of male students. There was a significant gender difference in the frequency
of meal intake ($P = 0.001$). Intake of colored vegetables and fruits was common among students. A total of 30.5% reported daily intake of colored vegetables with no gender differences (31.5% females vs. 29.2% males). Alcohol intake and smoking were not common among students.

**CONCLUSION:** In spite of the overall low prevalence of overweight and obesity in the studied sample, results indicate that university students would possibly benefit from a nutrition and health promotion program to reduce the tendency of overweight and obesity, especially among male students, and to improve students’ eating habits.


**Obesity in the Lebanese Elderly: Prevalence, Relative Risks and Anthropometrical Measurements.**

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**Abstract**

**OBJECTIVE:** To measure the prevalence of obesity in the Lebanese elderly population and to compare it to another sample studied 10 years ago; to investigate the best anthropometrical measurement related to obesity relative risks in this age group.

**DESIGN:** Cross-sectional study about aging and obesity in the Lebanese society.

**SUBJECTS:** 237 Lebanese elderly (60-85 yr.) selected randomly from an urban and a rural community.

**MEASUREMENTS:** Height, weight, waist and hips circumferences.

**RESULTS:** 47% of the studied sample is obese and obesity is related to gender, educational level and age. Body mass index (BMI) is a good indicator for diabetes 2. Central obesity did not correlate with obesity relative risks.

**CONCLUSION:** Obesity is more prevalent in 2005 than it was in 1995. Prevention programs should be installed in schools and work places in Lebanon to fight against the epidemic of obesity.
The Impact of Obesity On Surgical Outcome after Pancreaticoduodenectomy.


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Abstract

CONTEXT: The effect of obesity on surgical outcome is becoming an increasingly relevant issue given the growing rate of obesity worldwide.

OBJECTIVE: To investigate the specific impact of obesity on pancreaticoduodenectomy.

DESIGN: A retrospective comparative study of a prospectively maintained database was carried out to investigate the specific impact of obesity on the technical aspects and postoperative outcome of pancreaticoduodenectomy.

PATIENTS: Between 1999 and 2006, 92 consecutive patients underwent pancreaticoduodenectomy using a standardized technique. The study population was subdivided according to the presence or absence of obesity.

RESULTS: Nineteen (20.7%) patients were obese and 73 (79.3%) patients were non-obese. The two groups were comparable in terms of demographics, American Society of Anesthesiology (ASA) score as well as nature and type of pancreatico-digestive anastomosis. The rate of clinically relevant pancreatic fistula (36.8% vs. 15.1%; P=0.050) and hospital stay (23.1+/−13.9 vs. 17.0+/−8.0 days; P=0.015) were significantly increased in obese vs. non-obese patients, respectively. Pancreatic fistula was responsible for one-half of the deaths (2/4) and two ruptured pseudoaneurysms. The incidence of the other procedure-related and general postoperative complications were not significantly different between the two groups. Intrapancreatic fat was increased in 10 obese patients (52.6%) and correlated positively both with BMI (P=0.001) and with the occurrence of pancreatic fistula (P=0.003).

CONCLUSION: Obese patients are at increased risk for developing pancreatic fistula after pancreaticoduodenectomy. Special surgical caution as well as vigilant postoperative monitoring are therefore recommended in obese patients.
Variation of Postprandial PYY 3-36 Response Following Ingestion of Differing Macronutrient Meals in Obese Females.

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Abstract

AIM: This study investigated the effect of macronutrient composition of meals on postprandial peptide YY(3-36) (PYY(3-36)) response in obese hyperinsulinemic females.

METHODS: Eight obese females consumed three iso-energetic meals of different macronutrient composition, high carbohydrate (HC; 60% CHO, 20% protein, 20% fat), high fat (HF; 30% CHO, 20% protein, 50% fat) and high protein (HP; 30% CHO, 50% protein, 20% fat), on three separate occasions, 1 month apart. PYY(3-36), insulin and glucose were measured before and 15, 30, 60, 120 and 180 min following each meal.

RESULTS: PYY(3-36) levels increased significantly following the three meals, with the HC meal resulting in a sustained postprandial increase in PYY(3-36) level throughout the experimental period. Comparing the three meals, the HF meal induced a significantly higher increase in postprandial PYY(3-36) levels, at 15 and 30 min as compared to the HP meal (p < 0.05), whereas the postprandial increase following the HP meal became significantly higher than that following the HF meal at 120 min. Postprandial increase in PYY(3-36) was highest in the first hour following the HF meal, while that following the HP meal was delayed by 1 h.

CONCLUSION: Increasing both protein and fat content of a meal may induce an immediate and prolonged increase in PYY(3-36), resulting in increased satiety and its maintenance for a longer period of time.
Ten Years Experience with Laparoscopic Adjustable Gastric Banding.

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Abstract

BACKGROUND: Gastric banding is a safe and efficient bariatric procedure. We report here the results of 591 consecutive gastric bandings in terms of excess weight loss with up to 10 years follow-up and the complications.

METHODS: Between June 1996 and September 2006, 591 patients underwent laparoscopic adjustable gastric banding (LAGB) by the same surgeon (JB). Of these patients, 69.2% were women. Mean age was 33.6 years +/- 10.7 and mean BMI was 41.95 kg/m2 +/- 8.7. Patients were reviewed monthly for the first 6 months, every 2 months for the next 6 months, and yearly thereafter. Excess weight loss was calculated at 6 months and 1, 2, 4, 6, 8, and 10 years.

RESULTS: Six hundred eleven bands were implanted in 591 patients. Fifty-one patients (8.6%) had band removal due to a complication. Mean follow-up was 35 +/- 2 months. Percentage of excess weight loss was 45.8% +/- 27.4 at 6 months, 66.7% +/- 30.3 at 1 year, 72.6% +/- 28.8 at 2 years, 75.9% +/- 27.4 at 4 years, 82.8% +/- 32.6 at 6 years, 82.3% +/- 25.1 at 8 years, and 82.7% +/- 4.2 at 10 years. Complications encountered were band failure (9.3%), slippage (5.3%), erosion (4.6%), infection (2.4%), high band position (1.9%), and others (2.8%). Complication rate was 23.3% overall but dropped to 2.5% when calculated on the second half of the patients.

CONCLUSION: LAGB is a safe and efficient bariatric procedure. With experience, the complication rate drops to a very low level. Close follow-up can further increase its efficacy.
**Vascular Complications of Diabetes in Lebanon: Experience at the American University of Beirut**

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**Abstract**

**AIM:** To examine the metabolic control and presence of complications among a cohort of diabetic patients in Lebanon. Method A total of 313 diabetic patients presenting for their usual care were screened in a cross-sectional manner for metabolic control and presence of complications at the American University of Beirut.

RESULTS: Only 235 subjects completed their data of whom 220 (93%) had type 2 diabetes with mean duration of disease of 8.2 (±6.6) years. Only 30% had haemoglobin A1c < 7%, and 35.5% had low-density lipoprotein Cholesterol < 2.6 mmol/L. About 50.5% were obese, 34.9% current smokers, and 40.7% had blood pressure ≥ 140/90 mmHg. Microvascular complications were present as 46.3, 39.9 and 33% for albuminuria, neuropathy, and retinopathy, respectively. Macrovascular complications were as follows: 19.3, 18.3 and 4.1% for coronary artery disease, peripheral vascular disease and cerebrovascular disease, respectively.

CONCLUSIONS: This study highlights the poor control and high prevalence of vascular complications among adult type 2 diabetic patients in Lebanon.
Mini-Gastric Bypass by Mini-Laparotomy: A Cost-Effective Alternative in the Laparoscopic Era.

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Abstract

BACKGROUND: Laparoscopic mini-gastric bypass (MGB) is being increasingly performed worldwide. Results of MGB by mini-laparotomy (minilap MGB) are hereby reported.

METHODS: 126 patients undergoing minilap MGB from October 2004 to October 2006, were reviewed at an academic institution.

RESULTS: Mean age was 35 +/- 11.4 years (range 15-72), preoperative BMI was 44 +/- 6.9 kg/m2 (range 35-61.8) and 80 (63.4%) were women. Comorbidities were present in 42 (33.3%). Operative time was 144 +/- 15.8 minutes (range 120-160) and length of hospital stay was 3.32 +/- 0.62 days (range 2-18). There was no hospital mortality, and the in-hospital complication rate was 4.7%. No anastomotic leakage occurred, and the incidence of wound sepsis was 2.3%. The mean total cost of the procedure was 3408 +/- 547 USD (range 2967-6876). Five patients (3.9%) developed incisional hernias and 3 (2.3%) marginal ulcers. BMI at 6 months was 33.0 +/- 3.1 kg/m2 (range 26.8-43.5, P < 0.001) compared with preoperative value. At 1 year, mean excess weight loss was 68.4% and comorbidities resolved in 85%.

CONCLUSION: Minilap MGB is a simple, safe, effective and low-cost gastric bypass. It represents an attractive cost-effective alternative to laparoscopic MGB.
Noninvasive Bilevel Positive Airway Pressure for Preoxygenation of the Critically Ill Morbidly Obese Patient.

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Abstract

PURPOSE: We describe the use of noninvasive bilevel positive airway pressure (BiPAP) in a critically ill, hypoxemic and morbidly obese patient for preoxygenation prior to rapid sequence induction of anesthesia.

CLINICAL FEATURES: A critically ill morbidly obese patient (body mass index: 49 kg.m(-2)) was scheduled for urgent laparoscopic cholecystectomy. Preoxygenation with 5 L.min(-1) oxygen flow resulted in a moderate increase in oxygen saturation (SpO2) from 79% to 90%. Prior to rapid sequence induction of anesthesia, a trial of noninvasive BiPAP with oxygen delivery at 5 L.min(-1) increased his SpO2 to 95% initially, with full saturation of 99% achieved when oxygen flow was increased to 10 L.min(-1). Bilevel positive airway pressure with an inspiratory and expiratory pressures of 17 cm H2O and 7 cm H2O, respectively, was applied using a full face mask to achieve a tidal volume of 8 mL.kg(-1). Rapid sequence induction proceeded uneventfully.

CONCLUSIONS: Prior to rapid sequence induction of anesthesia in patients with respiratory compromise secondary to factors which reduce FRC, noninvasive BiPAP in combination with supplemental oxygen may be indicated whenever traditional preoxygenation does not provide adequate oxyhemoglobin saturation. Improved oxygenation is most likely attributable to improved ventilation and alveolar recruitment.
Supplementation of Pre-Oxygenation in Morbidly Obese Patients Using Nasopharyngeal Oxygen Insufflation.

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Abstract

During apnoea following induction of anaesthesia, morbidly obese patients may suffer a rapid decrease in oxygen saturation. This study compares pre-oxygenation alone with pre-oxygenation followed by nasopharyngeal oxygen insufflation on the onset of desaturation occurring during the subsequent apnoea. A randomised controlled trial was performed in 34 morbidly obese patients undergoing gastric bypass or gastric band surgery. Seventeen patients received nasopharyngeal oxygen supplementation following pre-oxygenation (Study group, body mass index = 41.8 (6.9) kg.m(-2)), and the other 17 patients received pre-oxygenation alone (Control group, body mass index = 42.7 (5.4) kg.m(-2)). Time from the onset of apnoea until S(p)o(2) fell to 95% was compared between the two groups with a cut-off of 4 min. In the control group, the S(p)o(2) fell from 100% to 95% during the subsequent apnoea in 145 (27) s, with a significantly negative correlation (r(2) = 0.66, p < 0.05) between the time to desaturation to 95% and the body mass index. In the study group, the S(p)o(2) was maintained in 16 of 17 patients at 100% for 4 min when apnoea was terminated. In conclusion, nasopharyngeal oxygen insufflation following pre-oxygenation in morbidly obese patients delays the onset of oxyhaemoglobin desaturation during the subsequent apnoea.
Morbidity and Associated Factors in Rural and Urban Populations of South Lebanon: A Cross-Sectional Community-Based Study Of Self-Reported Health In 2000.

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Abstract

OBJECTIVE: To assess self-reported morbidity and its determining factors in South Lebanon, with an emphasis on the influence of the habitat location (urban vs. rural) and gender.

METHODS: Cross-sectional survey in 2000 among 524 South Lebanon residents >/=14 years sampled from a random sample of households using a multi-level cluster sampling technique. Data on self-reported morbidity, lifestyle and socioeconomic status were collected through interviews, using a standardized questionnaire. To evaluate deprivation, a new index was created; the modified 'Living Conditions Index'. Stepwise logistic regression analysis was performed to test the effect of habitat and gender on self-reported morbidity.

RESULTS: People in one-fifth of the households lived in precarious conditions. Illiteracy was significantly higher in rural than urban settings. Urban residents reported obesity, varicose veins, anxiety/depression and visual disorders more often. Illiteracy, headaches, lumbar pain, varicose veins and anxiety/depression were more frequently reported by women, whereas ulcers, hearing disorders, cardio-vascular diseases and their risk factors were more frequently reported by men. Precarious living conditions were associated with headaches, lumbar pains and insomnia. Individuals covered by a health insurance sought care more often than the uninsured.

CONCLUSION: Habitat location had only a minor influence on self-reported morbidity; women perceived their health as poorer than men and a number of disease conditions were influenced by deprivation. Our study confirms that the epidemiological transition phenomenon had occurred in South Lebanon in 2000. Our community-based data can serve as a baseline for monitoring changes in health in South Lebanon in the future and especially those because of the war that emerged in July 2006.
Growth Charts and Obesity Prevalence among Lebanese Private Schools Adolescents.

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Abstract

INTRODUCTION: The objectives of this study were to establish weight, height and body mass index curves and to calculate the prevalence of obesity by sex and age groups in Lebanese adolescents of private schools.

MATERIAL AND METHODS: Body weight, height and body mass index (BMI) were measured among 12299 adolescents aged 10 to 18 years from Lebanese private schools. Adolescents' growth charts were established. Obesity and at risk of obesity individuals were identified according to International Obesity Taskforce thresholds, and our numbers were compared to those of other countries.

RESULTS: Curves of weight, height and BMI were drawn. In boys, 10.1% were obese and 28.8% at risk of obesity. In girls, 4.2% were obese and 19.0% were at risk of obesity.

CONCLUSION: Lebanese private schools adolescents, particularly boys, present high prevalence of obesity and risk of obesity. Pediatricians should identify early adolescents at greater risk, in order to achieve a more favorable prognosis.
Effect of Vital Capacity Manoeuvres on Arterial Oxygenation in Morbidly Obese Patients Undergoing Open Bariatric Surgery.


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Abstract

BACKGROUND: Arterial oxygenation may be compromised in morbidly obese patients undergoing bariatric surgery. The aim of this study was to evaluate the effect of a vital capacity manoeuvre (VCM), followed by ventilation with positive end-expiratory pressure (PEEP), on arterial oxygenation in morbidly obese patients undergoing open bariatric surgery.

METHODS: Fifty-two morbidly obese patients (body mass index >40 kg m-2) undergoing open bariatric surgery were enrolled in this prospective and randomized study. Anaesthesia and surgical techniques were standardized. Patients were ventilated with a tidal volume of 10 mL kg-1 of ideal body weight, a mixture of oxygen and nitrous oxide (FiO2 = 40%) and respiratory rate was adjusted to maintain end-tidal carbon dioxide at a level of 30-35 mmHg. After abdominal opening, patients in Group 1 had a PEEP of 8 cm H2O applied and patients in Group 2 had a VCM followed by PEEP of 8 cm H2O. This manoeuvre was defined as lung inflation by a positive inspiratory pressure of 40 cm H2O maintained for 15 s. PEEP was maintained until extubation in the two groups. Haemodynamics, ventilatory and arterial oxygenation parameters were measured at the following times: T0 = before application of VCM and/or PEEP, T1 = 5 min after VCM and/or PEEP and T2 = before abdominal closure.

RESULTS: Patients in the two groups were comparable regarding patient characteristics, surgical, haemodynamic and ventilatory parameters. In Group 1, arterial oxygen partial pressure (PaO2) and arterial haemoglobin oxygen saturation (SaO2) were significantly increased and alveolar-arterial oxygen pressure gradient (A-aDO2) decreased at T2 when compared with T0 and T1. In Group 2, PaO2 and SaO2 were significantly increased and A-aDO2 decreased at T1 and T2 when compared with T0. Arterial oxygenation parameters at T1 and T2 were significantly improved in Group 2 when compared with Group 1.
CONCLUSION: The addition of VCM to PEEP improves intraoperative arterial oxygenation in morbidly obese patients undergoing open bariatric surgery.


Adolescent Obesity and Physical Activity.

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Abstract

BACKGROUND: Obesity has become a public health problem worldwide. Our objective was to calculate the prevalence of overweight and obesity.

METHODS: It is a cross sectional study of adolescents in private Lebanese schools, aged 10-18 years. Gender, birth date and measures of weight and height were recorded.

RESULTS: In 12,299 adolescents, we found high prevalence of obesity (7.5%) and at risk of obesity (24.4%). In girls, risk of obesity and obesity prevalence decrease with increasing age (P < 10(-4)) as compared with that in boys.

CONCLUSION: Early recognition of obesity should become routine in pediatric ambulatory care settings.
Obesity and Related Diseases in a Lebanese Medical Center.

[Article in French]
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Abstract

INTRODUCTION: Obesity is actually a pandemic disease by itself, especially by its numerous associated complications. Obesity is considered among the most important cause of morbidity and mortality throughout the world. Its prevalence is variable between countries, but could be estimated to be around 20%. Few data concerning obesity is available in Lebanon. The objective of this study is to assess the prevalence of obesity in Lebanese patients consulting a primary care medical center in Beirut, as well as to study the links between obesity and other associated diseases.

METHOD: Three hundred and thirteen patients, aged 13 years and above, consulting for the first time between 2000 and 2001 (one-year period), have been included in the study. Obesity is defined by a body mass index (BMI) > or =30 kg/m(2), and overweight is defined by a BMI between 25 and 29.9 kg/m(2).

RESULTS: Among the 313 patients included, 22.1% were overweight, and 18% obese. The percentage of obesity is significantly higher in patients aged 40 years and above. No difference between men and women was observed. Obesity was significantly related to high blood pressure, diabetes, hypertriglyceridemia, low HDL and ischemic coronaropathy.

CONCLUSION: Obesity and its associated diseases are frequently encountered problems in Lebanon, as it is in the rest of the world. Wider national studies are needed to define more accurately the magnitude of the problem, in order to apply efficient prevention strategies.
High Plasma Leptin is Not Associated with Higher Bone Mineral Density in Insulin-Resistant Premenopausal Obese Women.

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Abstract

Obesity's protective effect on bone density may be mediated through increased muscle mass, fat mass, increased estrogen, and possibly insulin and leptin levels. To determine the impact of leptin and insulin on bone metabolism, we studied 48 obese normally cycling premenopausal women (age, 31 +/- 10 yr; body mass index, 35.7 +/- 5 kg/m2): 28 insulin resistant (IR) and 20 insulin sensitive (IS) by McAuley index. Anthropometric, body composition, and bone mineral density (BMD) measurements were made, and serum leptin, insulin, free testosterone, IGF-I, bone remodeling markers, and calcitropic hormones were measured. Anthropometric, lifestyle, and biochemical markers were similar in the two groups. Despite higher circulating insulin and leptin levels, IR subjects had similar mean values of serum osteocalcin but higher C-telopeptide (P = 0.052). They had similar BMD at all skeletal sites compared with IS subjects. In the IR group, fat mass but not lean mass, serum leptin, insulin, testosterone, and IGF-I levels correlated positively with hip and/or total-body bone density with R varying between 0.38 and 0.65; no correlations were observed at the spine. Conversely, in the IS group, lean mass, but not fat mass, and only IGF-I correlated with hip BMD/total-body bone mineral content. In conclusion, there is a dichotomy in the impact of body composition parameters and insulin and leptin levels on bone parameters in obese individuals. The interaction between the fat-related endocrine system and bone seems to be complex and may be modulated by local resistance to the putative protective effect of insulin and leptin on bone.


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Abstract

OBJECTIVE: To estimate, for the first time, overweight prevalence and associated characteristics in a representative sample of prepubertal children in Beirut, Lebanon's capital.

DESIGN: A cross-sectional study with a home interview including measurements of weight and height and a structured questionnaire.

SUBJECTS: A total of 234 children aged 6-8 years in Beirut: 131 boys, 103 girls.

METHODS: Prevalence of overweight and obesity was based on the international cut-off points for body mass index (BMI) by age and gender proposed by the International Obesity Task Force. The characteristics of overweight examined were: age, gender, household and family size, single-vs. two-parent family, parents' level of education and profession, physical activity and dietary intake of children.

RESULTS: Prevalence of overweight and obesity was 26% and 7% respectively in boys, 25% and 6% in girls. Overweight was significantly associated with low physical activity (P < 0.05) and mother's BMI (P < 0.05).

CONCLUSIONS: This study identified a high proportion of overweight in 6-to 8-year-old children in Beirut. Reduced physical activity was the most significant factor associated with childhood overweight. Further studies in different regions in Lebanon are necessary to identify national characteristics; prevention efforts will be designed accordingly.
Modifications in Cataract Surgery for the Morbidly Obese Patient.

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Abstract

We describe a standing phacoemulsification technique (SPT) with the patient in reverse Trendelenburg position (RTP) as a means of performing surgery in morbidly obese patients. These patients have elevated vitreous pressure, leading to a high rate of posterior capsule rupture and vitreous loss. The SPT with RTP normalizes vitreous pressure, facilitating cataract surgery.

Prevalence of Reproductive Tract Infections, Genital Prolapse, and Obesity in a Rural Community In Lebanon.

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Abstract

OBJECTIVE: To determine the prevalence of reproduction-related illnesses in a rural community in Lebanon.

METHODS: Data were collected through interviews with women in their homes, physical examinations and history taking by physicians in a clinic in the community, and laboratory tests. A total of 557 ever-married women aged 15-60 years were selected randomly.

FINDINGS: Just over half of the sample (268, 50.6%) had five or more children, and (320, 78.9%) of women aged < 45 years were using contraception. The prevalence of reproductive tract infections was very low: six (1.2%) women had sexually transmitted diseases and 47 (9.3%) had endogenous reproductive tract infections. None had chlamydial infection or a positive serological finding of syphilis. None had invasive cervical cancer, and only one had cervical dysplasia. In contrast, genital prolapse and
gynaecological morbidity were elevated. Half of the women studied (251, 49.6%) had genital prolapse, and 153 (30.2%) were obese.

CONCLUSION: The prevalence of reproductive tract infections in this conservative rural community in east Lebanon was low. Possible explanations include the conservative nature of the community, the high rate of utilization of health care services, and the liberal use of antibiotics without a prescription. More importantly, the study showed an unexpectedly high prevalence of genital prolapse and obesity--a finding that has clear implications for primary health care priorities in such rural communities.


Prevalence and Covariates of Obesity in Lebanon: Findings from the First Epidemiological Study.

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Abstract

OBJECTIVE: To estimate the prevalence of overweight and obesity and examine associated covariates in the Lebanese population.

RESEARCH METHODS AND PROCEDURES: A cross-sectional survey of a representative sample of 2104 individuals, 3 years of age and older. Anthropometric measurements and dietary assessments were conducted following standard methods and techniques. Overweight and obesity (classes I to III) were defined according to internationally standardized criteria for classification of BMI.

RESULTS: For children 3 to 19 years of age, prevalence rates of overweight and obesity were higher overall for boys than girls (22.5% vs. 16.1% and 7.5% vs. 3.2%, respectively). For adult men and women (age > or = 20 years), the prevalence of overweight was 57.7% and 49.4%, respectively. In contrast, obesity (BMI > or = 30 kg/m(2)) was higher overall among women (18.8%) than men (14.3%), a trend that became more evident with increasing obesity class. BMI, percentage of body fat, and waist circumference increased to middle age and declined thereafter. Whereas lack of exercise associated significantly with obesity among children,
obesity in older adults was more prevalent among the least educated, nonsmokers, and those reporting a family history of obesity.

**DISCUSSION:** The results from this national population-based study in Lebanon show high prevalence rates of overweight and obesity comparable with those observed in developed countries such as the United States. While further studies are needed to examine the underlying social and cultural factors associated with lifestyle and nutritional habits, now is the time to institute multicomponent interventions promoting physical activity and weight control nationwide.
Libya Has the Highest Prevalence of Diabetes Mellitus Type 2 in North Africa and in the Arab World (General?)

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Abstract

BACKGROUND: The prevalence and incidence of type 2 diabetes are increasing around the world. Diabetes affects >230 million people worldwide and is expected to affect 350 million by 2025.

Diabetes mellitus is a chronic disease that requires long-term medical attention. Type 2 diabetes was once called adult-onset diabetes. Now, because of the epidemic of obesity and inactivity, type 2 diabetes is occurring at younger ages. About 90% of patients who develop type 2 diabetes are obese. Patients with type 2 diabetes often do not need treatment if they lose weight or stop eating.

This is the first study looking at the prevalence of type 2 diabetes in Libya and at its possible causes. No data is available yet in the prevalence of diabetes and its relation to obesity and changes in lifestyle.

Aim: Assess the prevalence and possible causes of diabetes in Libya.

Provide an accurate data about people with diabetes to help in supplying adequate amount of antidiabetic medication. Introduce national program to delay and perhaps prevent type 2 diabetes.

Methods: In this study, questioners are distributed asking about diabetes, obesity, family history and eating habit. The plan is to study 4000 individuals at the city of Tripoli, age between 18 and 65 years, 60% females. Then prevalence of diabetes and the causes are calculated.

Results: Early results showed that 73% of the individuals are diabetic or at high risk to have diabetes. About 70% of those individuals are obese (BMI >30%), and about 95% are obese and have family history of diabetes.

Conclusions: Type 2 diabetes affected >70% in Libya which is the highest prevalence in North Africa and among Arabic nations. The most possible cause is eating habit.
Abstract

BACKGROUND: metabolic syndrome is a cluster of three out of five conditions that are due to hyperinsulinemia: abdominal obesity, atherogenic dyslipidemia (high triglycerides and/or low HDL), elevated blood pressure, and elevated plasma glucose. The syndrome is highly prevalent in patients with type-2 diabetes mellitus and often precedes the onset of hyperglycemia. It has been shown that metabolic syndrome is an independent clinical indicator of macroand microvascular complications in diabetics.

AIM AND OBJECTIVES: the aim of this pilot study was to estimate the frequency and characteristics of metabolic syndrome among type-2 diabetic patients in Benghazi.

PATIENTS AND METHODS: This cross-sectional study involved 99 randomly selected adult patients with type-2 diabetes mellitus. The patients were interviewed and examined, and their lipid profiles were checked 9-12 hours after overnight fasting. Metabolic syndrome was defined according to the criteria of the National Cholesterol Education Program (NCEP) Adult Treatment Panel III (ATP III) and of the International Diabetes Federation (IDF).

RESULTS: About 92% of the patients had the metabolic syndrome according to ATP III criteria and 80.8% according to IDF criteria. Females were more affected, males with metabolic syndrome were significantly older, and females were significantly more obese. No significant difference was observed between males and females regarding waist circumference, HDL level and triglyceride level. The commonest and most important component of metabolic syndrome in the study group was low HDL.

CONCLUSION: Metabolic syndrome is common among Libyans with type-2 diabetes mellitus, and it is significantly more common in females than males. The most significant predictor of metabolic syndrome in type-2 diabetic patients in Benghazi is low HDL.
Prevalence of Overweight among Moroccan Children and Adolescents with Juvenile Idiopathic Arthritis.

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Abstract

OBJECTIVE: We aimed to estimate the prevalence of overweight among Moroccan children and adolescents with juvenile idiopathic arthritis (JIA).

METHODS: Fifty-eight patients with JIA according to the International League of Association of Rheumatology (ILAR) criteria were included consecutively in this study. The median age of patients was 11±3.3 years (range 2-16). Overweight and obesity were defined by using the Body Mass Index (matched on age and sex and in reference to the French curves. Following data were collected: age, gender, age at onset, disease duration, subtype of JIA, functional disability (determined using the Moroccan version of Childhood Health Assessment Questionnaire [CHAQ]), disease activity (assessed using a 0-10 visual analogical scale, the number of tender and swollen joints and the erythrocyte sedimentation rate); medical treatment and socioeconomic status of patients.

RESULTS: Twenty-four patients (41.4%) were overweight, 13 (22.4%) were obese and 21 (36.2%) have normal. Patients with normal weight, obese and overweight represented successively 16.7%, 33.3% and 50% of systemic forms, 33.3%, 8.3% and 58.3% of seronegative polyarticular forms, 40%, 40% and 20% of seropositive polyarticular forms, 36.4%, 27.3% and 36.4% of persistent oligoarticular forms, 75%, 25% and 0% of extensive oligoarticular forms and 57.1%, 0% and 42.9% of forms with arthritis and enthesitis. In our data, there was no psoriatic arthritis. Overweight and obesity were more prevalent in older patients (P=0.01), with significant functional impairment (P=0.04) and with active disease (increased VAS) (P=0.005). There were no relationships with the subtype of JIA or with corticosteroid treatment (P=0.451).

CONCLUSION: Approximatively more than 60% of our patients were overweight. Severe functional limitation and active disease are the most correlated parameters with overweight. Better management of the activity
and functional status of the disease seems to be of interest to prevent overweight in children with JIA. More studies with a larger number of patients seem to be necessary in order to confirm our results.

**East Mediterr Health J. 2011 Jan;17(1):56-61.**

**Prevalence of Metabolic Syndrome in Chronic Haemodialysis Patients in Morocco**


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**Abstract**

We determined the prevalence of metabolic syndrome in 25 chronic haemodialysis patients in the haemodialysis centre of the Mohammed V military teaching hospital in Rabat. The mean age of the patient as was 46.5 (SD 14.8) years and mean haemodialysis duration 62.9 (SD 38.4) months. We evaluated the 5 parameters of metabolic syndrome: waist circumference, hypertriglyceridaemia, high-density lipoprotein (HDL) cholesterol, blood pressure and blood glucose. In all, 11 (44%) patients had metabolic syndrome: 7 women and 4 men. Low HDL cholesterol was found in 100% of the patients, hypertriglyceridaemia in 90.9% and hypertension in 63.6%. There were significant differences between patients with and without metabolic syndrome with regard to levels of hypertriglyceridaemia and HDL cholesterol, and waist circumference. Factors significantly associated with the presence of metabolic syndrome were abdominal obesity, and systolic hypertension and hypertriglyceridaemia.
Prevalence of Obesity and Associated Sociodemographic and Lifestyle Factors in Morocco.

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Abstract

OBJECTIVE: In Morocco, the association between obesity/overweight and socio-demographic and lifestyle factors is poorly understood. The present study aimed to investigate this association in a representative sample of the Moroccan population aged 18 years and above.

DESIGN: This is a cross-sectional study using a questionnaire including demographic, socio-economic and physical activity items. Height and weight were measured and BMI was computed. The association between obesity (BMI ≥ 30.0 kg/m²) or overweight (25.0 ≤ BMI < 29.9 kg/m²) and the other variables was analysed using multiple binomial logistic regression, separately in men and women.

SETTING: The whole Moroccan territory.

SUBJECTS: A total of 2891 subjects took part in the survey (1430 men and 1461 women).

RESULTS: The prevalence of obesity was 20.9 % in women and 6.0 % in men (P < 0.0001). The prevalence of overweight was 32.9 % in women v. 26.8 % in men (P < 0.0001). In women, the risk of obesity and overweight increased with age, with the highest risk being in individuals aged 45-54 years (OR = 3.02, 95 % CI 2.06, 4.44) compared to individuals <35 years old. Married women were more prone to obesity and overweight (OR = 2.42, 95 % CI 1.50, 3.91) than single women. In men, the risk of obesity and overweight increased with average family income (OR = 2.62, 95 % CI 1.40, 4.87 for family income ≥5000 MAD/month compared to <2000 MAD/month) and in married persons (OR = 3.75, 95 % CI 1.78, 7.81) compared to single individuals.

CONCLUSIONS: These results contribute to target groups in whom prevention programmes could be implemented.
Cultural Constructions of "Obesity": Understanding Body Size, Social Class and Gender in Morocco.

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Abstract

This article presents data from an in-depth qualitative study of overweight and diabetic women in Morocco, a North African country experiencing a rapid increase in obesity according to national statistics. This case study explores the heterogeneous relationship among health, culture and religion in Morocco by highlighting the relationship between the intricacies of women's everyday lives and their body sizes. My findings suggest that although the Body Mass Index (BMI) of adult women has been documented to have increased in Morocco along with other macroeconomic changes (i.e., increases in urbanization, etc.), "obesity" has yet to be universally medicalized in the Moroccan context. As such women do not generally utilize a medicalized concept of obesity in reference to their larger body sizes. Rather, cultural constructions of "obesity" are understood through cultural understandings of a larger body size, religious beliefs about health and illness, and the nature of women's religious participation. This stands in contrast to dominant accounts about the region that promote an overall veneration of a larger body size for women.
Association of the ENPP1 K121Q Polymorphism with Type 2 Diabetes and Obesity in the Moroccan Population.


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Abstract

AIM: The ectonucleotide pyrophosphatase/phosphodiesterase 1 enzyme (ENPP1), which downregulates insulin signaling by inhibiting insulin-receptor tyrosine kinase activity, is encoded by the ENPP1 gene. A common functional ENPP1 K121Q polymorphism has been suggested to contribute to insulin resistance, obesity and type 2 diabetes (T2D) in various ethnic groups. For this reason, we assessed the association between the ENPP1 K121Q polymorphism in T2D and obesity phenotypes in the Moroccan population.

METHODS: Using LightCycler(R) technology, we genotyped the ENPP1 K121Q polymorphism in 503 subjects with T2D and 412 normoglycaemic individuals.

RESULTS: There was no evidence of an association between ENPP1 K121Q and T2D in either an additive (P=0.99) or recessive mode of inheritance (P=0.47). However, the Q121 variant was significantly more frequent in obese than in non-obese subjects after adjusting for age, gender and T2D status. We observed genetic heterogeneity between obese and non-obese T2D patients (P=0.02). The K121Q polymorphism was associated with T2D in the presence of obesity in both additive (1.55 [95% CI 1.16-2.07]; P=0.003) and recessive (2.31 [95% CI 1.34-3.97]; P=0.002) modes of inheritance.

CONCLUSION: Although there was no evidence of an association between the ENPP1 K121Q variant and the general phenotype of T2D, we did find an association with adult obesity and T2D. The Q121 allele frequency in Morocco is 37.3%, placing it between European Caucasians (15%) and Black Africans (79%). This study is the first to report an association between K121Q and metabolic diseases in the Moroccan population.
Absence of a Relationship between Obesity and Asthma in Prepubertal Moroccan Children.  
[Article in French]  
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Abstract

Obesity and asthma are both public health problems that have been increasing for several years. This increase suggests that there may be a connection between these two pathologies. The aim of this study was to examine the relationship between obesity and asthma by measuring the prevalence of obesity in asthmatic children compared with a control population, by analysing the impact of obesity on the severity of the asthma, and by examining the relationship between obesity and atopy. The study was based on 100 children aged from 4 to 16 years in whom the diagnosis of asthma was confirmed; obesity being defined as a body mass index greater than the 97th percentile. The prevalence of obesity in these patients was 14%. Obesity was not a factor in the severity of the asthma as 14.5% of the severe asthmatics were obese compared with 18.75% of the mild and moderate asthmatics. 13% of the atopic subjects were obese compared with 13% of the non-atopics. Obesity does not constitute, therefore, a risk factor for asthma and does not contribute to the severity of the disease. In addition there is no relationship between obesity and atopy.

Prevalence of Parameter Indicators of Obesity and Its Relationship with Metabolic Syndrome in Urban Moroccan Women.

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Abstract

This study aimed to examine the relationship between metabolic syndrome (MS) and different types of obesity in urban Moroccan women. On 213 women aged 25-55 years, Triglycerides (TG), total cholesterol, high-density
lipoprotein cholesterol (HDL-c), lower-density lipoprotein cholesterol (LDL-c), and fasting blood glucose levels were assessed. Body mass index (BMI), waist to hip ratio (WHR), Waist circumference (WC), and blood pressure (BP) were also measured. Globally 36.6% of women were overweight (25 < or = BMI < 30 m2), 23.9% obese (BMI > 30 m2), 19.7% had WHR > 0.85 and 28.8% had WC > or = 88 cm. Indicators of obesity increased with age and the prevalence of co-morbid factors increased with obesity. The women with android obesity (WHR > 0.85) and central obesity (WC > or = 88 cm) had greater risk compared to those with overweight and general obesity. The prevalence of MS was 17.8% and increased (31.49%) with high BMI and high WHR (50%). MS and its co-morbidity factors are prevalent among Moroccan women aged 35 years and over. The exaggerated influence of obesity in this prevalence suggests that the prevention of obesity could prevent MS and its complications.


Adiposity in Women and Children from Transition Countries Predicts Decreased Iron Absorption, Iron Deficiency and A Reduced Response to Iron Fortification.


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Abstract

BACKGROUND: Overweight is increasing in transition countries, while iron deficiency remains common. In industrialized countries, greater adiposity increases risk of iron deficiency. Higher hepcidin levels in obesity may reduce dietary iron absorption. Therefore, we investigated the association between body mass index (BMI) and iron absorption, iron status and the response to iron fortification in populations from three transition countries (Thailand, Morocco and India).

METHODS: In Thai women (n=92), we examined the relationship between BMI and iron absorption from a reference meal containing approximately 4 mg of isotopically labeled fortification iron. We analyzed data from baseline (n=1688) and intervention (n=727) studies in children in Morocco and India to look for associations between BMI Z-scores and baseline hemoglobin,
serum ferritin and transferrin receptor, whole blood zinc protoporphyrin and body iron stores, and changes in these measures after provision of iron.

**RESULTS:** In the Thai women, 20% were iron deficient and 22% were overweight. Independent of iron status, a higher BMI Z-score was associated with decreased iron absorption (P=0.030). In the Indian and Moroccan children, 42% were iron deficient and 6.3% were overweight. A higher BMI Z-score predicted poorer iron status at baseline (P<0.001) and less improvement in iron status during the interventions (P<0.001).

**CONCLUSIONS:** Adiposity in young women predicts lower iron absorption, and pediatric adiposity predicts iron deficiency and a reduced response to iron fortification. These data suggest the current surge in overweight in transition countries may impair efforts to control iron deficiency in these target groups. Interactions of the 'double burden' of malnutrition during the nutrition transition may have adverse consequences.


**Obesity and Household Roles: Gender and Social Class in Morocco.**

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**Abstract**

Often referred to as the developing world's new burden of disease, obesity constitutes a major and growing health epidemic in Morocco, in particular for women (22% of women versus 8% of men). Through an analysis of qualitative data, I demonstrate how gender roles influence obesity risk in the Moroccan context. Current social and economic theories, including the nutrition transition theory, are inadequate in explaining the persistent gender differentials in health status across time and place. I suggest that Moroccan women's higher prevalence of obesity is predominantly the outcome of different risks acquired from their distinct roles. In the Moroccan context, we can gain insight into how men and women divide household labour and how the overall non-egalitarian nature of social roles may deleteriously affect women's health. I hypothesise that marital status, age and socioeconomic status determine Moroccan women's household roles and help to explain why women are more likely to be obese than men. The main findings support this hypothesis and demonstrate the interactive relationship between culture and structure in influencing obesity risk.
Risk factors for knee osteoarthritis in Morocco. A case control study.


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Abstract

Osteoarthritis (OA) of the knee is the most common form of arthritis. A positive association between obesity and several occupational factors and knee OA has been observed in previous studies in populations of different ethnicity. The aim of this study was to examine the relation between knee OA and body weight and occupational factors in a Moroccan sample of patients with knee OA. Our cases were consecutive patients diagnosed in our department with knee OA utilizing radiography in a 1-year period. No cases displayed established causes of secondary OA. Controls were selected randomly from the general population and were individually matched to each case for age and sex. Interviews were obtained from 95 cases and controls. Detailed information on general health status, height, weight, smoking habits, specific physical loads from occupation and housework, and sports activities was collected. The risk of knee OA increased with higher body mass index, odds ratio (OR) = 3.12 (95% confidence interval [CI] = 1.67-5.81; p < 0.0001). Sitting more than 3 h/day and climbing stairs more than 50 steps/day were associated with decreased risk of knee OA, OR = 0.29 (95% CI = 0.15-0.56; p = 0.02) and 0.48 (95% CI = 0.26-0.91; p < 0.0001), respectively. Overweight is a risk factor for knee OA, whereas sitting and climbing stairs are inversely associated with knee OA.


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Abstract

In order to study the prevalence of obesity and overweight and to understand how the human body is perceived among Moroccan mountain populations, we carried out a survey that covered a sample of 436 Amazigh individuals aged 20 years and more from the High Moroccan Atlas. Through this survey, we noticed that obesity is still low among men (2.4%), whereas the prevalence of obesity among women is alarming and reaches 13.3%. The prevalence of overweight is also high, especially among women, with 32.8% vs. 21.8% among men. Obesity prevalence, especially overweight, is higher than that recorded in the national rural level. The high prevalence of overweight that can develop to obesity should be taken into account mainly when dealing with women that still value overweight. In fact, women in our sample underestimate their overweight more than men and wish to have a heavier body.

High Blood Pressure in Urban Moroccan Sahraoui Women.

Rguibi M, Belahsen R.

Training and Research Unit on Food Sciences, Laboratory of Physiology Applied to Nutrition and Feeding, Chouaib Doukkali University, School of Sciences, El Jadida, Morocco.

Abstract

OBJECTIVE: To examine the associated risk factors of hypertension and the relationship between blood pressure and three anthropometric measurements for obesity (body mass index, waist circumference and waist-hip ratio) in women of the Sahraoui ethnic group.

METHODS: Data were collected from a randomized sample (n = 239) of adult women aged 20 years and older, nonpregnant, who visited the public
health centers during the immunization campaign of Laayoune city in South Morocco. Only individuals identified as of Sahraoui origin were eligible for this investigation. Body weight, height, blood pressure, fasting plasma glucose, triglycerides and physical activity were measured.

RESULTS: The results show that high blood pressure (> 130/85 mmHg) was detected in 29.8%. All hypertensive women were at high risk of hyperglycemia (22.1% were hyperglycemic, among which 11.8% were diabetic), hypertriglyceridemia (27.8%), hypercholesterolemia (19.2%) and metabolic syndrome (44.1%). Bivariate correlation showed that age and obesity (body mass index, waist-hip ratio and waist circumference) were positively associated with blood pressure whereas education level and time spent in walking activity were negatively associated with blood pressure. Logistic regression analyses also show that education level and waist-hip ratio were independently associated with hypertension.

CONCLUSION: These results indicate a high prevalence of hypertension among Sahraoui women, and that waist-hip ratio may be the best predictor for high blood pressure in the adult Moroccan Sahraoui ethnic group. A hypertension control program can detect nondiagnosed hypertensive individuals and thereby significantly reduce the cases of stroke, cardiac failure, renal failure and peripheral vascular disease.


Prevalence of Obesity in Morocco.

Rguibi M, Belahsen R.

Training and Research Unit on Food Science, Laboratory of Physiology Applied to Nutrition and Feeding, School of Sciences, Chouaib Doukkali University, El Jadida, Morocco.

Abstract

Data on measured heights and weights indicate that the prevalence of obesity has increased among Moroccan population over the past 15 years. In 1984/1985, 4.1% of the adult population was obese, and the prevalence increased to 10.3% in 1998/1999. In the most recent survey in the year 2000, 13.3% of individuals aged 20 years and more were obese (22% among women and 8% among men). Excessive weight is more prevalent in urban than in rural areas, varies by geographical residence, positively associated with age and negatively with education level. The increasing prevalence of obesity poses challenges for researchers and policy makers.
Body Size Preferences and Sociocultural Influences on Attitudes Towards Obesity among Moroccan Sahraoui Women.

Rguibi M, Belahsen R.
Training and Research Unit on Food Sciences, Laboratory of Physiology Applied to Nutrition and Feeding, Chouaib Doukkali University, School of Sciences, El Jadida 24000, Morocco.

Abstract

The purpose of this investigation was to study body size preferences and to examine the influence of sociocultural factors on obesity among 249 Moroccan Sahraoui women. Participants rated their ideal body size and the size they thought to be "healthy," using a figural scale consisting of nine images ranging from thin to obese. They also noted which particular sociocultural influences affected their body size ratings. The results indicated that women's rating of ideal body size (4.88) was significantly larger than their rating of healthy body size (4.33). The desire to lose weight was very low even among the majority of obese women, and educational level did not affect desire to lose weight. Women not satisfied with their body size were more likely to report trying to gain weight rather than to lose it. The major factors reported to influence body size ideal were mothers, men, and traditional clothing. It is an enormous challenge for the health institutions of Morocco to prevent obesity and its complications. Prevention programs should include teenagers and key family members.

Fattening Practices among Moroccan Saharawi Women.

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Abstract

To study obesity in Moroccan Saharawi culture, 249 women were questioned about their desired body size and diet practices. The majority of women (90.4%) reported wanting to gain weight currently or at some time
in the past. To gain weight, women used a fattening period (tablakah) of at least 40 days of overeating with a reduction of physical activity and special traditional meals. Appetite enhancers (therapeutic drugs or fenugreek) and traditional suppositories were also used. Some women used corticosteroids to gain weight rapidly. The study highlights the need for health education about the dangers of obesity and steroid use in this culture.

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**Obesity and Related Metabolic Disorders Are Prevalent in Moroccan Women of Child-Bearing Age**

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**Abstract**

Obesity is associated with hypertension and a cluster of metabolic disturbances that mediates the development and progression of chronic disease. The aim of this paper was to study the body mass index (BMI) and waist circumference (WC) distribution of Moroccan women of child-bearing age and to examine their relationship with obesity-related conditions. We examined data from a cross-sectional survey conducted in 1995 on 1212 women 15-49 years old, sampled from urban and rural areas of El Jadida, a province of Morocco. Systolic (SBP) and diastolic (DBP) blood pressure, weight, height and waist circumference (WC) were measured and BMI was calculated as weight (kg)/height (m)². Fasting plasma cholesterol (TC), triglycerides (TG), insulin and glucose were collected in a sub-sample of 534 women. Age, socioeconomic status (SES), fasting plasma insulin, and blood pressure were each associated with obesity (BMI > 30) or central obesity (WC > 88 cm). Several risk factors for the metabolic syndrome (high glucose, insulin, TG, CHOL, BP and WC) were prevalent in association with high BMI and WC. Among obese women, more than 70% had the metabolic syndrome, compared to approximately 45% of overweight women and 30% of normal weight women (P < 0.0001). Prevalence of the metabolic syndrome increased with SES (P = 0.01) and was higher in urban compared to rural area of residence (P = 0.006). The development of viable strategies
for prevention of insulin resistance and obesity is a pressing priority. (Int J Diabetes Metab 13: 159-166, 2005)

**Eur J Clin Nutr.** 2005 Dec;59(12):1379-86.

**Lipoprotein Profile and Prevalence of Cardiovascular Risk Factors in Urban Moroccan Women.**

El ayachi M, Mziwira M, Vincent S, Defoort C, Portugal H, Lairol D, Belahsen R.

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**Abstract**

**OBJECTIVE:** The study aimed to characterize the lipid and apolipoprotein profile and the prevalence of cardiovascular risk factors in a population of urban adult women of Morocco.

**DESIGN:** A total of 213 women 25-55 y old were sampled from an agricultural province of Morocco: El Jadida. The following parameters of lipid and apolipoprotein profile were measured: plasma triglycerides (TG), plasma cholesterol (TC), triglyceride-rich lipoprotein triglycerides (TRL-TG), TRL-cholesterol (TRL-C), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and apolipoproteins A1, B, B48, CIII and E. Waist circumference (WC), body mass index (BMI) and blood pressure (BP) were also determined.

**RESULTS:** The women studied showed the following pattern: elevated TC, LDL-C levels and TC/HDL-C in 10, 19.4 and in 43.8%, respectively; low HDL-C levels in 45.3% (<0.9 mmol/l) or in 95% (when the cutoff <1.3 mmol/l is used), elevated TG levels in 11.8%. Elevated TRL-C (>0.6 mmol/l) and TRL-TG (>0.8 mmol/l) were observed in 13.4%. Obesity and hypertension were highly prevalent in 23.9 and 16.5%, respectively. Plasma triglyceride concentrations were closely correlated with plasma concentrations of TRL-TG (R = 0.86, P < 0.0001), apoB (R = 0.50, P = 0.0001) and apoCIII (R = 0.52, P = 0.0001) and moderately correlated with HDL-C levels (R = -0.3, P = 0.0001) and BMI (R = 0.4, P = 0.0001). The association between BMI and systolic blood pressure was statistically significant (R = 0.3, P = 0.0001). Obesity, BP, TRL-C, TRL-TG, TG, apoB and apoCIII increased with age.

**CONCLUSION:** There is a high prevalence of some risk factors for cardiovascular disease including altered lipid and lipoprotein profiles in the
Moroccan urban women studied, some of these risk factors are associated with age.


**Gender-Specific Leptinemia and Its Relationship with Some Components of the Metabolic Syndrome in Moroccans.**

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**Abstract**

The levels of the liporegulatory hormone leptin are increased in obesity, which contributes to the metabolic syndrome; the latter is associated with elevated cardiovascular risk and morbidity. Leptin may play a role in the metabolic syndrome since correlations have been observed between serum leptin levels and several components of the metabolic syndrome. The association of leptinemia and hypertension or diabetes is inconsistent. Leptin levels are higher in females versus males and obese versus lean individuals. We investigated if correlations exist between leptin levels and several indices of the metabolic syndrome in obese and lean Moroccan subjects with (63 males, 129 females) and without (123 males, 234 females) diabetes and/or hypertension. Plasma glucose and insulin and systolic and diastolic blood pressures were higher in obese versus lean individuals. Obesity had no effect on lipid profile, plasma IGF-1, or C-peptide levels. Leptin levels were higher in females versus males and in obese versus lean individuals. The levels correlated significantly with body mass index. Serum leptin concentration did not correlate with either systolic or diastolic blood pressure, although there was a trend for higher blood pressure with increased leptin levels in females. There was no significant difference in leptin levels between NIDDM patients and healthy controls. However, in hypertensive patients, leptin levels were significantly higher in both lean males and females with diabetes as compared to those without diabetes. Similarly, the higher leptin levels paralleled elevated insulin levels in obese nondiabetic males and females, and in male and female diabetics with hypertension. Correlations were observed between leptin levels and C-peptide (an estimate of endogenous insulin secretion), but not with serum IGF-1. The calculated values of HOMA-IR, a marker of insulin resistance, were somewhat higher, parallel with elevated leptin levels, in obese male and female individuals compared to their lean counterparts. There was no
relationship between leptin levels and serum lipids. There was a trend for increased serum uric acid levels with higher leptin concentrations. Thus, leptinemia is related to some components of metabolic syndrome, and in turn, it may contribute to the syndrome. This study is novel in that relationships were determined between leptin levels and various indices of metabolic syndrome in a large population of the same ethnic/regional background.

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Women’s Roles and Women’s Bodies: Social Class, Culture and Obesity in Morocco.

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Abstract

Introduction: This study examines the gendered nature of obesity and the mechanisms that contribute to its growing prevalence in the North African country of Morocco. Often referred to as the developing world's new burden of disease, obesity constitutes a major and growing health epidemic globally. In Morocco, it has been identified as a growing disease afflicting 13.3% of Moroccan adults.

Methods: Both secondary quantitative data and primary qualitative data have been analyzed. The qualitative methodology consisted of in-depth interviews and participant observation of the daily lives of women and men within the household. The quantitative analysis included the examination of national survey data on cardiovascular risk and the role SES plays in the growing prevalence of obesity. Logistic regression analysis was employed.

Results: Women are significantly more likely to be obese (BMI > 30) than men, controlling for all socio-demographic variables (21.8% vs. 8.1%). Middle-class women are most likely to be obese, whereas social class is not a significant predictor of obesity risk for men. Educational level is also a significant indicator of obesity risk. An inaccurate etiology of obesity, unequal intrahousehold resource allocation, overweight body image ideals, a lack of physical activity, consumption of diets high in sugar, refined grains and fat, and son preference were observed among Moroccan men and women at the household level.

Conclusions: In the Moroccan context, social structure and culture interact to determine men's and women's roles. Accordingly, the particular roles
men and women assume influence their health status. This can be observed through the high prevalence of obesity among women, relative to men, in Morocco. This research reinforces the importance of social and cultural factors in determining gender differences in health, such as the influence of body image, household roles, gender bias and incongruent SES levels in promoting behaviors associated with obesity.


Metabolic Syndrome among Moroccan Sahraoui Adult Women.

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Training and Research Unit on Food Sciences, Laboratory of Physiology Applied to Nutrition and Feeding, Chouaib Doukkali University, School of Sciences, El Jadida 24000, Morocco.

Abstract

Factors related to metabolic syndrome were investigated in a sample of 249 Moroccan Sahraoui women, ages 15 years and older. Body weight, height, waist and hip circumference, total cholesterol, triglycerides, fasting blood glucose, and blood pressure were measured. The results indicate that central obesity was the most common comorbid factor (75%) followed by hypertension (28.6%), hypertriglyceridemia (22.4%), hyperglycemia (11.9%), and hypercholesterolemia (11.6%). The overall prevalence of metabolic syndrome was 16.3%, and it was more prevalent in obese, older, married, and women without education than nonobese, younger, single, and educated women. Also, the prevalence of all metabolic syndrome components decreased with physical activity. The results suggest that prevention of obesity, particularly central obesity, could be the most direct route to prevention of this syndrome and its complications.
Overweight and Obesity among Urban Sahraoui Women of South Morocco.

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Abstract

OBJECTIVES: To estimate the prevalence of obesity in Moroccan Sahraoui women; to describe their distribution of body fat; and to examine the influence of age, calorie intake, physical activity, marital status, education level, and desire to lose weight on obesity.

DESIGN: Randomized samples of adult women who visited the public health centers during a immunization campaign period.

PARTICIPANTS: Data were obtained on 249 non-pregnant urban women aged 15 and older, who live in the city of Laayoune in South Morocco. Only subjects identified as Sahraoui origin were eligible for this investigation.

MAIN OUTCOME MEASURE: The following data were collected: body weight, height, circumference of waist and hip, calorie intake, physical activity, marital status, education level, and desire to lose weight.

RESULTS: The overall prevalence of overweight and obesity was 30% and 49%, respectively, and was found to be very high in younger age groups. The prevalence of abdominal obesity was also high and increased with age. Sixty-eight percent of women had a waist-to-hip ratio (WHR) > 0.85 and 76% had a waist circumference (WC) > or = 88. The calorie intake, the time spent in a walking activity, and the time spent in traditional sedentary occupation were associated with obesity. The prevalence of obesity was higher among married women compare to unmarried women and was not influenced by education level. A very small percentage of the female population expressed a desire to lose weight.

CONCLUSION: High prevalence of obesity, even in young adult women, needs immediate attention in terms of prevention and health education among the urban Sahraoui women.
Anthropometry of Women of Childbearing Age in Morocco: Body Composition and Prevalence of Overweight and Obesity.
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Abstract

OBJECTIVE: To determine the prevalence of obesity and body fat distribution of Moroccan women of childbearing age, using a panel of anthropometric measurements.

DESIGN AND SETTING: A cross-sectional survey conducted in 1995 in an agricultural community, El Jadida province of Morocco. Weight, height, waist and hip circumferences and triceps, biceps, subscapular and supra-iliac skinfold thicknesses were measured. Body mass index (BMI), waist/hip ratio (WHR), sum of all and sum of trunk skinfold thicknesses were determined.

SUBJECTS: In total, 1269 women aged 15-49 years from urban and rural areas were surveyed.

RESULTS: The means of all anthropometric measurements including body fat were higher in urban than in rural women and increased with age. Trunk fat contributed 50% of total fat. Globally, 4.7% of women were underweight (BMI<18.5 kg m(-2)), 35.2% were overweight or obese (BMI> or =25 kg m(-2)), 10.1% were obese (BMI> or =30 kg m(-2)) and 16.8% had central obesity (WHR>0.85). The prevalence of overweight and obesity was higher in the urban than in the rural area. Underweight prevalence decreased with age, whereas that of overweight and obesity increased. All anthropometric parameters adjusted for age increased with the increase of BMI and WHR.

CONCLUSIONS: Although undernutrition is still prevalent, there is an alarming prevalence of overweight and obesity in Moroccan women of childbearing age. The results indicate a shift in this country from the problem of dietary deficiency to the problem of dietary excess, and alert one to the necessity of establishing an intervention to prevent obesity-related diseases. It is necessary to address which of the anthropometric variables studied here is the best predictor of obesity-related diseases in this population.

Nutrition Transition in Morocco.

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Abstract

OBJECTIVE: To analyse the nutritional transition in Morocco.

DESIGN: Examination of Moroccan national survey data.

RESULTS: Morocco is undergoing a demographic, epidemiological and social transition. The urban population increased from 29% in 1960 to 53% in 1997. Per capita gross domestic product increased steadily from 1972 to 1999. Life expectancy at birth increased to 70 years in 1999 from 47 years in 1962. Both infant and juvenile mortalities have decreased, from 92/1000 and 69/1000 in 1982-87 to 46/1000 and 37/1000 in 1992-97, respectively. In parallel, the diet changed considerably: the intake of animal products increased while that of cereals and sugar remained relatively high, reflecting the specificity of Moroccan dietary habits. The rise in the consumption of meats and vegetables was accompanied by a steady consumption of bread, used to eat the sauce in which the meat and vegetables are cooked. Sugar is mainly used in tea, the very sweet, national drink consumed throughout the day. Under-nourishment persists among children under five (23% stunting and 10% underweight in 1997) while overweight is rising (9% in 1997 compared with 3% in 1987 for children under three). Among adults, overweight (body mass index (BMI) > 25 kg m(-2)) increased from 26% in 1984 to 36% in 1998. It is higher among women (32% in 1984 and 45% in 1998) than among males (19% in 1984 and 25% in 1998). It is also higher among urban populations (30% in 1984 and 40% in 1998) than rural populations (20% in 1984 and 29% in 1998). Obesity (BMI > 30kg m(-2)) increased from 4% in 1984 to 10% in 1998. Overweight seems to be positively associated with economic status but negatively with education level.

CONCLUSION: Overweight and obesity constitute major health problems in Morocco.
Diet Culture and Obesity in Northern Africa.


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Abstract

The etiology of obesity in North Africa is not well understood and few studies shed any light on its development among women. This study compiles what is known about the prevalence of obesity and its determinants in Morocco and Tunisia. Results from the authors' two surveys on nutrition-related disease among reproductive-age women (sample size: 2800) and their children (1200 children under 5 y and 500 adolescents) were combined with data from four national income and expenditure surveys (dating from 1980) to assess obesity trends and development in Morocco and Tunisia. Overall levels of obesity, identified by body mass index (BMI) $\geq 30$ kg/m$^2$, were 12.2% in Morocco and 14.4% in Tunisia. Obesity is significantly higher among women than among men in both countries (22.7% vs. 6.7% in Tunisia and 18% vs. 5.7% in Morocco) and prevalence among women has tripled over the past 20 y. Half of all women are overweight or obese (BMI > 25) with 50.9% in Tunisia and 51.3% in Morocco. Overweight increases with age and seems to take hold in adolescence, particularly among girls. In Tunisia, 9.1% of adolescent girls are at risk for being overweight (BMI/age $\geq 85$th percentile). Prevalence of overweight and obesity are greater for women in urban areas and with lower education levels. Obese women in both countries take in significantly more calories and macronutrients than normal-weight women. The percentage contribution to calories from fat, protein and carbohydrates seems to be within normal limits, whereas fat intake is high (31%) in Tunisia and carbohydrate intake (65-67%) is high in Morocco. These are alarming trends for public health professionals and policy makers in countries still grappling with the public health effects of malnutrition and micronutrient deficiencies. Health institutions in these countries have an enormous challenge to change cultural norms that do not recognize obesity, to prevent significant damage to the public's health from obesity.
Mood Dysfunction and Health-Related Quality of Life Among Type 2 Diabetic Patients in Oman: Preliminary Study

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Abstract

AIM: A temporal relationship exists between the presence of affective disturbance, poor glycaemic control and complications in people with type-2 diabetes. The objective of this study is to compare the performance of patients diagnosed with type-2 diabetes and normoactive group on indices of mood functioning and indices of health-related quality of life.

MATERIALS AND METHODS: In 2006-2007, for a six-month period, diabetics from Oman were screened for the presence of propensity towards psychiatric distress using Self-Reporting Questionnaire during their routine consultation at the diabetic clinic at a tertiary care hospital in an urban area of Oman. Those who fulfilled presently operationalised criteria for subclinical propensity towards affective disorders were further screened for affective functioning (Hospital Anxiety and Depression Scale) and indices of
general well-being or health-related quality of life (Nottingham Health Profile). The age- and sex-matched controls group (n=40) underwent the same procedure.

RESULTS: Both measurement scales used in the present study indicated that the diabetic group had significantly poorer quality of life and higher distress level than the non-diabetic group, with the exception of emotional reaction for which the non-diabetics showed poorer health than the diabetics. Additionally, no difference between groups was found when compared for social isolation.

CONCLUSIONS: In agreement with previous studies from different populations, people with diabetes in Oman appear to have marked affective functioning and impairment based on the indices of quality of life. The present finding is discussed within a sociocultural context that has a direct bearing on the situation in Oman.


Clinically-Defined Maturity Onset Diabetes of the Young in Omanis: Absence of the Common Caucasian Gene Mutations.

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Abstract

OBJECTIVES: We are seeing a progressive increase in the number of young patients with clinically defined maturity onset diabetes of the young (MODY) having a family history suggestive of a monogenic cause of their disease and no evidence of autoimmune type 1 diabetes mellitus (T1DM). The aim of this study was to determine whether or not mutations in the 3 commonest forms of MODY, hepatic nuclear factor 4α (HNF4α), HNF1α and glucokinase (GK), are a cause of diabetes in young Omanis.

METHODS: The study was performed at Sultan Qaboos University Hospital (SQUH), Oman. Twenty young diabetics with a family history suggestive of monogenic inheritance were identified in less than 18 months; the median age of onset of diabetes was 25 years and the median body mass index (BMI) 29 at presentation. Screening for the presence of autoimmune
antibodies against pancreatic beta cells islet cell antibody (ICA) and glutamic acid decarboxylase (GAD) was negative. Fourteen of them consented to genetic screening and their blood was sent to Prof. A. Hattersley's Unit at the Peninsular Medical School, Exeter, UK. There, their DNA was screened for known mutations by sequencing exon 1-10 of the GCK and exon 2-10 of the HNF1α and HNF4α genes, the three commonest forms of MODY in Europe.

RESULTS: Surprisingly, none of the patients had any of the tested MODY mutations.

CONCLUSION: In this small sample of patients with clinically defined MODY, mutations of the three most commonly affected genes occurring in Caucasians were not observed. Either these patients have novel MODY mutations or have inherited a high proportion of the type 2 diabetes mellitus (T2DM) susceptibility genes compounded by excessive insulin resistance due to obesity.


Implications of the Use of the New WHO Growth Charts on the Interpretation of Malnutrition and Obesity In Infants and Young Children in Oman.

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Abstract

We examined the difference in the prevalence estimates of the outcome indicators for the new World Health Organization (WHO) child growth standard reference (WHO 2006) and the National Center for Health Statistics (NCHS)/WHO reference using the National Protein-Energy Malnutrition Survey dataset. Based on the NCHS/WHO reference, overall prevalence estimates of underweight, wasting, stunting and overweight were 17.8%, 7.4%, 10.9% and 1.3% compared to 11.3%, 7.6%, 13.0% and 1.9% respectively calculated according to the WHO 2006 reference: stunting and overweight showed statistically significantly higher estimates, whereas underweight was statistically significantly lower. The differences were not consistent across age groups.
Epidemiological Transition of Some Diseases in Oman: A Situational Analysis.

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Abstract

During the past 35 years Oman has undergone a rapid socioeconomic and epidemiological transition leading to a steep reduction in child and adult mortality and morbidity due to the decline of various communicable diseases, including vaccine-preventable diseases. Good governance and planning, together with leadership and commitment by the government, has been a critical factor in this reduction. However, with increasing prosperity, lifestyle-related noncommunicable diseases have emerged as new health challenges to the country, with cardiovascular diseases, diabetes and obesity in the lead among other chronic conditions. Appropriate prevention strategies for reducing the burden of noncommunicable diseases are discussed.

Prevalence and Heritability of Clusters For Diagnostic Components of Metabolic Syndrome: The Oman Family Study.


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Abstract

BACKGROUND: Prevalence and heritability of metabolic syndrome (MetS) vary between populations according to the currently used criteria. We examined combinations for joint probabilities and heritabilities of MetS criteria from the National Cholesterol Education Program Adult Treatment Panel III (NCEP), World Health Organization (WHO), and International Diabetes Federation (IDF) in a sample of Omani families.
METHODS: We included 1277 subjects from 5 pedigrees. The likelihood ratio of diagnostic cluster dependence over clustering by chance was LDep = P(dependent)/P(independent). Heritabilities were adjusted by sex and age.

RESULTS: The highest LDep were central obesity (CO) + high glucose level (HGl) + triglycerides (IDF, 3.08; NCEP, 4.38; WHO, 3.17; P < 0.001). Triglycerides combined with any other component were the most common cluster. The lowest LDep for IDF were high blood pressure (HBP) + CO + low HDL-C (1.21, P < 0.025); for NCEP were HBP + HGl + low HDL-C (1.21, P < 0.07). These components were gathered almost by chance alone. In contrast, the lowest LDep for WHO were HGl + CO + low HDL-C (2.01, P < 0.001). The WHO criteria yielded the highest heritability for a MetS diagnosis (h(2) = 0.9), followed by NCEP (0.48) and IDF (0.38). The rationale of the MetS diagnostics is based on insulin resistance. This base would be lost if we continue lowering cut-off points for diagnosis for increasing the sensitivity. The WHO showed the highest values for LDep for all components because they used the highest cut-off points.


**Body Mass Index, Waist Circumference and Waist-To-Hip Ratio Cut-Off Points for Categorization Of Obesity among Omani Arabs.**

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**Abstract**

**BACKGROUND:** There are no data on optimal cut-off points to classify obesity among Omani Arabs. The existing cut-off points were obtained from studies of European populations.

**OBJECTIVE:** To determine gender-specific optimal cut-off points for body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR) associated with elevated prevalent cardiovascular disease (CVD) risk among Omani Arabs.

**DESIGN:** A community-based cross-sectional study.

**SETTING:** The survey was conducted in the city of Nizwa in Oman in 2001.
SUBJECTS AND METHODS: The study contained a probabilistic random sample of 1421 adults aged > or =20 years. Prevalent CVD risk was defined as the presence of at least two of the following three risk factors: hyperglycaemia, hypertension and dyslipidaemia. Logistic regression and receiver-operating characteristic (ROC) curve analyses were used to determine optimal cut-off points for BMI, WC and WHR in relation to the area under the curve (AUC), sensitivity and specificity.

RESULTS: Over 87% of Omanis had at least one CVD risk factor (38% had hyperglycaemia, 19% hypertension and 34.5% had high total cholesterol). All three indices including BMI (AUC = 0.766), WC (AUC = 0.772) and WHR (AUC = 0.767) predicted prevalent CVD risk factors equally well. The optimal cut-off points for men and women respectively were 23.2 and 26.8 kg m-2 for BMI, 80.0 and 84.5 cm for WC, and 0.91 and 0.91 for WHR.

CONCLUSIONS: To identify Omani subjects of Arab ethnicity at high risk of CVD, cut-off points lower than currently recommended for BMI, WC and WHR are needed for men while higher cut-off points are suggested for women.


Correlation between Serum Leptin Levels, Body Mass Index and Obesity in Omanis.

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Abstract

OBJECTIVE: To ascertain the relationship between serum leptin levels and related variables (weight, Body Mass Index (BMI) and fat percentage) in a group of Omani obese and non-obese healthy subjects.

METHODS: Leptin levels were assessed in serum samples from 35 obese Omanis and 20 non-obese healthy subjects.

RESULTS: There was a significant difference (p< 0.001) in serum leptin between the obese group (34.78 + 13.96 ng/ml) and the control non-obese subjects (10.6 ± 4.2 ng/ml). Leptin levels were higher in females compared to males. There was a significantly positive correlation between leptin levels in obese subjects with weight (p=0.002), body fat percentage (p=0.0001) and BMI (p=0.001).
CONCLUSIONS: We concluded that serum leptin levels are higher in the Omani obese group and correlate positively with body fatness and obesity.

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Al-Moosa S, Allin S, Jemiai N, Al-Lawati J, Mossialos E.
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Abstract

BACKGROUND: The prevalence of type 2 diabetes in Oman is high and appears to be rising. Rising rates of diabetes and associated risk factors have been observed in populations undergoing epidemiological transition and urbanization. A previous study in Oman indicated that urban-dwellers were not significantly more likely to have diabetes. This study was undertaken to determine if a more accurate urban and rural categorization would reveal different findings.

METHODS: This study included 7179 individuals aged 20 years or above who participated in a cross-sectional interviewer-administered survey in Oman including blood and anthropomorphic tests. Multiple logistic regression analyses were conducted to analyze the factors associated with diabetes, first in the whole population and then stratified according to region.

RESULTS: The prevalence of diabetes (fasting blood glucose \( \geq 7 \) mmol/l) in the capital region of Muscat was 17.7% compared to 10.5% in rural areas. The prevalence of self-reported diabetes was 4.3%. Urban residence was significantly associated with diabetes (adjusted odds ratio (OR) = 1.7, 95% confidence interval (CI): 1.4-2.1), as was age (OR = 1.2, 95% CI: 1.1- 1.2), obesity (abnormal waist circumference) (OR = 1.8, 95% CI: 1.5-2.1), and systolic blood pressure (SBP) 120-139 (OR = 1.4, 95% CI:1.04-1.8), SBP 140-159 (OR = 1.9, 95% CI: 1.4-2.6), SBP \( \geq 160 \) (OR = 1.7, 95% CI: 1.2-2.5). Stratified analyses revealed higher education was associated with reduced likelihood of diabetes in rural areas (OR = 0.6, 95% CI: 0.4-0.9).
CONCLUSION: A high prevalence of diabetes, obesity, hypertension and high cholesterol exist in the Omani population, particularly among urban-dwellers and older individuals. It is vital to continue monitoring chronic disease in Oman and to direct public health policy towards preventing an epidemic.


Fetal Macrosomia. Risk Factor and Outcome.

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Abstract

OBJECTIVE: To determine the risk factors predisposing to fetal macrosomia and assess the maternal and perinatal outcome in these patients.

METHODS: This was a retrospective analysis of all macrosomic deliveries in the Department of Obstetrics and Gynecology, Sultan Qaboos University Hospital, Sultanate of Oman, during a 3-year period from January 2001 -- December 2003. The maternal and neonatal records of infants with birth weight of > or =4000 g (n=275) were reviewed. Outcome variables included demographic profile, antenatal risk factors, mode of delivery and maternal and perinatal complications.

RESULTS: A total of 7367 deliveries occurred during the study period. The rate of macrosomic deliveries was 3.75% and the rate of deliveries > or =4500 g was 0.48%. The mean birth weight of the study group was 4230 +/- 220 g. Obesity, diabetes, prolonged gestation and postpartum hemorrhage were significantly higher in the study group. The cesarean section rate was 25.8% for the study group compared to the general incidence of 13.1% during the study period (p<0.0001). The incidence of shoulder dystocia was 7.6% compared to the general incidence of 0.48% during the study period (p<0.0001). There were 7 cases of Erb's palsy, all except one recovered without sequelae by 3 months of age.

CONCLUSION: Gestational diabetes, maternal obesity, increasing age and parity were the main risk factors for fetal macrosomia. The incidence of shoulder dystocia, birth injuries and neonatal morbidity increased in this group.
Prevalence and 10-Year Secular Trend of Obesity in Oman.

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Abstract

OBJECTIVE: To determine the prevalence of overweight and obesity by age, gender and region and to assess the difference between rural and urban populations and determine the trends of the past decade.

METHODS: Analysis of nationally represented samples from 2 cross-sectional surveys conducted in 1991 and 2000, containing 5,086 and 6,400 Omani citizens aged ≥20 years. Body mass index (BMI) (weight in kg) divided by height (in meters squared) was calculated using measured height and weight data. Overweight was defined as BMI 25-29.9 kg/m² and obesity as BMI ≥ 30 kg/m².

RESULTS: In the year 2000, the age adjusted prevalence of obesity reached 16.7% in men, compared to 10.5% in 1991 (p<0.001). In women, the prevalence was 23.8% in 2000, compared to 25.1% in 1991 (p=0.231). Similarly, the prevalence of overweight increased among men, from 28.8-32.1% (p=0.011) and decreased among women, from 29.5-27.3% (p=0.053). When obesity and overweight were combined, there was a significant increase in men (9.5%; p for the change <0.001) and decrease in women (3.5%; p for the change <0.003). Obesity and overweight combined was markedly more common in the Southern part of Oman (70%) compared to Northern areas (32-57%). People living in urban areas were more obese (21.1%) than those living in the rural communities (13.1%) (p<0.001).

CONCLUSION: The prevalence of obesity is high in Oman and has increased predominantly among men. Primary prevention programs are needed to counteract this condition and its cardiovascular and metabolic complications.
The Relation of Smoking to Body Mass Index and Central Obesity among Omani Male Adults.

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Abstract

OBJECTIVE: Despite the prevalence that smoking has declined in many countries, there is a large increase in the number of young adults starting to smoke and in per capita cigarette consumption. In some studies smoking was associated with a lower body mass index (BMI) and increased waist hip ratio (WHR). Our aim is to study the association of smoking with BMI and WHR among male adults aged 20 years and above in a community based survey as a part of the National Health Survey, 2000.

METHODS: A cross sectional survey representing all parts of Oman was designed in the year 2000. A part of the survey was door to door interviews including demographic data and inquiry regarding current and former smoking for male adults aged 20 years and above. In addition, taking the weight, hip and waist measurements, blood pressure and fasting blood glucose for them.

RESULTS: The crude prevalence of current smoking was 13.3% among adult males and 4.6% of them were former smokers. The mean BMI was not significantly lower among smokers than never or former smokers. There was no significant difference also regarding WHR. Adjusting BMI by 10 different multiple linear regression models for other co-variates; age, educational level, marital status, having hypertension and total fasting glucose intolerance revealed significant association in 3 of them of BMI with smoking status. Non-significant association was revealed for WHR.

CONCLUSION: Current smokers were of low BMI compared to non smokers and ex smokers, and currently light smokers were also of low BMI compared to ex smokers. There was no association of central obesity to smoking status. The association between smoking status and relative weight is modified by social factors as education.
Prevalence and Correlates of Obesity and Central Obesity among Omani Adults.

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Abstract

OBJECTIVE: Overweight, particularly obesity is a major risk factor for several important diseases, especially hypertension, coronary heart diseases and diabetes mellitus. Our aim is to determine the prevalence of obesity and central obesity among Omani adults aged > or =20 years, and to identify the socio-demographic and health variables that correlate to obesity and central obesity in a community based survey (National Health Survey, 2000).

METHODS: A community based cross-sectional survey representing all parts of Oman was designed in the year 2000. A part of the survey was a door to door interviews including demographic data, weight, height, hip and waist measurements, blood pressure and fasting blood glucose and serum cholesterol for adults aged > or =20 years.

RESULTS: The crude prevalence of overweight and obesity (body mass index >25 kg/m2) was 47.9% for the whole sample, and 46.2% for males, 49.5% for females. The crude prevalence of central obesity (abnormal weight hips ratio) was 49.3% for the whole sample, 31.5% for males, and 64.6% for females. Obesity and central obesity were less prevalent among younger age groups and highly educated subjects. Both obesity and central obesity increased the odds of having diabetes, hypertension and hypercholesterolemia.

CONCLUSION: The prevalence of obesity and central obesity is quietly high in Oman. Launching nutritional programs and promotional life style modification programs are recommended.
Prevalence of The Metabolic Syndrome among Omani Adults.

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Abstract

OBJECTIVE: To estimate the prevalence of the metabolic syndrome by age and sex in the Omani population as defined by the third report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III [ATP III]) of North America.

RESEARCH DESIGN AND METHODS: We analyzed data from a cross-sectional survey conducted in 2001 containing a probability random sample of 1,419 Omani adults aged > or =20 years living in the city of Nizwa. The metabolic syndrome, defined by the ATP III, was defined as having three or more of the following abnormalities: waist circumference >102 cm in men and >88 cm in women, serum triglycerides > or =150 mg/dl (1.69 mmol/l), HDL cholesterol <40 mg/dl (1.04 mmol/l) in men and <50 mg/dl (1.29 mmol/l) in women, systolic blood pressure > or =130 mmHg and/or diastolic > or =85 mmHg or on treatment for hypertension, and fasting serum glucose > or =110 mg/dl (6.1 mmol/l) or on treatment for diabetes.

RESULTS: The age-adjusted prevalence of the metabolic syndrome was 21.0%. The crude prevalence was slightly lower (17.0%). The age-adjusted prevalence was 19.5% among men and 23.0% among women (P = 0.236). Low HDL cholesterol was the most common component (75.4%) of the metabolic syndrome among the study population followed by abdominal obesity (24.6%). Abdominal obesity was markedly higher in women (44.3%) than in men (4.7%).

CONCLUSIONS: The prevalence of the metabolic syndrome in Oman is similar to that in developed countries. Future prevention and control strategies should not overlook the importance of noncommunicable disease risk factors in rapidly developing countries.
Increasing Prevalence of Diabetes Mellitus in Oman.

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Abstract

AIMS: To determine the prevalence of diabetes mellitus and impaired fasting glucose by age, gender, and by region and compare results with the 1991 survey; and estimate previously undiagnosed diabetes mellitus in the Omani population.

METHODS: Cross-sectional survey containing a probability random sample of 5838 Omani adults aged ≥ 20 years. Diabetes and impaired fasting glucose (IFG) were assessed by fasting venous plasma glucose using 1999 World Health Organization's diagnostic criteria (normoglycaemia < 6.1 mmol/l, IFG ≥ 6.1 but < 7 mmol/l, and diabetes ≥ 7 mmol/l). The 1991 survey was reanalysed using the same diagnostic criteria, and results were compared.

RESULTS: In 2000, the age-adjusted prevalence of diabetes among Omanis aged 30-64 years reached 16.1% (95% confidence interval (CI) 14.7-17.4) compared with 12.2% (95% CI 11.0-13.4) in 1991. IFG was found among 7.1% (95% CI 6.2-8.1) of males and 5.1% (95% CI 4.4-6.0) of females. Generally, diabetes was more common in urban than rural regions. Only one-third of diabetic subjects knew that they had diabetes. Nearly half of the study population had a body mass index > 25 kg/m2.

CONCLUSIONS: The prevalence of diabetes is high in Oman and has increased over the past decade. The high rate of abnormal fasting glucose together with high rates of overweight and obesity in the population make it likely that diabetes will continue to be a major health problem in Oman. Primary prevention programs are urgently needed to counteract major risk factors that promote the development of diabetes.
Leptin Deficiency and Leptin Gene Mutations in Obese Children from Pakistan.

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Abstract

Abstract Background: Congenital leptin deficiency is a rare human genetic condition clinically characterized by hyperphagia and acute weight gain usually during the first postnatal year. The worldwide data on this disorder includes only 14 cases and four pathogenic mutations have been reported in the leptin gene. Study objective: The objectives of this study were to measure serum leptin levels in obese children and to detect leptin gene mutations in those found to be leptin deficient. Patients and results: A total of 25 obese children were recruited for the study. Leptin deficiency was detected in nine of them. Leptin gene sequencing identified mutations in homozygous state in all the leptin deficient children. Two cases carried novel mutations (c.481_482delCT and c.104_106delTCA) and each of the remaining seven the previously reported frameshift mutation (c.398delG). Conclusion: The results suggest that leptin deficiency caused by mutations in the leptin gene may frequently be seen in obese Pakistani children from Central Punjab.
diabetes. Central obesity was measured at the waist circumference. Distinct ethnic subgroups Muhajir, Punjabi, Sindhi, Pashtun, and Baluchi were defined by mother tongue.

**RESULTS:** The age-standardized prevalence of diabetes varied among ethnic subgroups ($P = 0.002$), being highest among the Muhajirs (men 5.7%, women 7.9%), then Punjabis (men 4.6%, women 7.2%), Sindhis (men 5.1%, women 4.8%), Pashtuns (men 3.0%, women 3.8%), and lowest among the Baluchis (men 2.9%, women 2.6%). While diabetes was more prevalent in urban vs. rural dwellers [odds ratio (OR) 1.50, 95% confidence interval (CI) 1.24, 1.82], this difference was no longer significant after adjusting for central obesity (OR 1.15, 95% CI 0.95, 1.42). However, the ethnic differences persisted after adjusting for major sociodemographic risk factors (unadjusted OR for Pashtun vs. Punjabi 0.59, 95% CI 0.42, 0.84, adjusted OR 0.54, 95% CI 0.37, 0.78). Ethnic variation was also observed in central obesity, which varied with gender, and did not necessarily track with ethnic differences in diabetes.

**CONCLUSIONS:** Unmeasured environmental or genetic factors account for ethnic variations in diabetes and central obesity, and deserve further study.


**Is there any Association of Serum High-Sensitivity C-Reactive Protein with Various Risk Factors for Metabolic Syndrome in A Healthy Adult Population of Karachi, Pakistan?**

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**Abstract**

**BACKGROUND:** The aim of this study was to discover the association of serum high-sensitivity C-reactive protein (hsCRP) with various risk factors for metabolic syndrome in an urban population of Karachi, Pakistan.

**METHOD:** In this cross-sectional study, 337 healthy adults (108 males and 229 females, mean age 40.7±14.2 years) participated. The subjects were randomly selected in Lyari Town in Karachi using a geographical imaging system (GIS). Their demographic, anthropometric [body mass index (BMI), hip and waist circumferences, waist-to-hip circumference ratio (W-HR), and
biochemical (fasting blood glucose, fasting insulin, fasting lipid profile, and hsCRP) parameters were recorded. Insulin resistance was calculated by the homeostasis model assessment (HOMA-IR). Metabolic syndrome was diagnosed according to the International Diabetes Federation (IDF) criteria. Correlation of CRP and fasting insulin levels with various parameters of metabolic syndrome were calculated using Pearson correlation.

RESULTS: Median CRP levels were found to be higher in females 0.81 (0.20-1.38) compared with males 0.77 (0.19-1.35). Metabolic syndrome was diagnosed in 108 (31.12%) subjects. No significant difference between CRP levels in the metabolic syndrome-positive and metabolic syndrome-negative groups was observed. Similarly, no correlation was observed between hsCRP and fasting insulin levels, insulin resistance, and other parameters of MS.

CONCLUSION: There is lack of correlation between hsCRP levels and various risk factors for metabolic syndrome in our urban population. Further large-scale prospective studies are needed to confirm these findings.


Underestimation of Weight and Its Associated Factors among Overweight and Obese Adults in Pakistan: A Cross Sectional Study.

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Abstract

BACKGROUND: Weight loss is known to decrease the health risks associated with being overweight and obese. Awareness of overweight status is an important determinant of weight loss attempts and may have more of an impact on one's decision to lose weight than objective weight status. We therefore investigated the perception of weight among adults attending primary care clinics in Karachi, Pakistan, and compared it to their weight categories based on BMI (Body Mass Index), focusing on the underestimation of weight in overweight and obese individuals. We also explored the factors associated with underestimation of weight in these individuals.
METHODS: This was a cross sectional study conducted on 493 adults presenting to the three primary care clinics affiliated with a tertiary care hospital in Karachi, Pakistan. We conducted face to face interviews to gather data on a pre-coded questionnaire. The questionnaire included detail on demographics, presence of comorbid conditions, and questions regarding weight assessment. We measured height and weight of the participants and calculated the BMI. The BMI was categorized into normal weight, overweight and obese based on the revised definitions for Asian populations. Perception about weight was determined by asking the study participants the following question: Do you consider yourself to be a) thin b) just right c) overweight d) obese. We compared the responses with the categorized BMI. To identify factors associated with underestimation of weight, we used simple and multiple logistic regression to calculate crude odds Ratios (OR) and adjusted Odds Ratios (AOR) with 95% Confidence Intervals.

RESULTS: Overall 45.8% (n = 226) of the study participants were obese and 18% (n = 89) were overweight. There was poor agreement between self perception and actual BMI (Kappa = 0.24, SE = 0.027, p < 0.001). Among obese participants a large proportion (73%) did not perceive themselves as obese, although half (n = 102) of them thought they may be overweight. Among the overweight participants, half (n = 41) of them didn't recognize themselves as overweight. Factors associated with misperception of weight in overweight and obese participants were age ≥ 40 years (AOR = 3.4; 95% CI: 1.8-6.4), male gender (AOR = 2.97; 95% CI: 1.6-5.5), being happy with ones' weight (AOR = 6.4; 95% CI: 3.4-12.1), and not knowing one's ideal weight (AOR = 2.45, 95% CI: 1.10-5.47).

CONCLUSION: In this cross sectional survey, we observed marked discordance between the actual and perceived weight. Underestimation of individual weight was more common in older participants (≥ 40 years), men, participants happy with their weight and participants not aware of their ideal weight. Accurate perception of one's actual weight is critical for individuals to be receptive to public health messages about weight maintenance or weight loss goals. Therefore educating people about their correct weight, healthy weights and prevention of weight gain are important steps towards addressing the issue of obesity in Pakistan.
Surgical Treatment of the Cardiometabolic Syndrome and Obesity.

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Abstract

Prevalence of overweight and obesity has reached a pandemic proportion worldwide and is increasingly contributing to premature morbidity and mortality. Lifestyle changes including behavioral modification, exercise, different dietary plans, and medications have very poor outcome on long-term weight loss. Bariatric surgery has shown to be very effective for morbidly obese patients. Surgery in these patients not only decreases their body weight but also may improve comorbid conditions associated with obesity. These patients on average lose 61% of excess body weight depending on the procedure performed. Diabetes, hyperlipidemia, and hypertension are normalized in these patients by 77%, 70%, and 62%, respectively. Patients need to be selected carefully for surgical treatment of obesity and have to be monitored closely over the long term for nutritional deficiencies and other complications.
Prevalence of Physical Inactivity and Barriers to Physical Activity among Obese Attendants at a Community Health-Care Center in Karachi, Pakistan.

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Abstract

BACKGROUND: Overweight and obesity are significant public health problems worldwide with serious health consequences. With increasing urbanization and modernization there has been an increase in prevalence of obesity that is attributed to reduced levels of physical activity (PA). However, little is known about the prevalence of physical inactivity and factors that prohibit physical activity among Pakistani population. This cross-sectional study is aimed at estimating the prevalence of physical inactivity, and determining associated barriers in obese attendants accompanying patients coming to a Community Health Center in Karachi, Pakistan.

FINDINGS: PA was assessed by using international physical activity questionnaire (IPAQ). Barriers to PA were also assessed in inactive obese attendants. A pre-tested questionnaire was used to collect data from a total of 350 obese attendants. Among 350 study participants 254 (72.6%) were found to be physically inactive (95% CI: 68.0%, 77.2%). Multivariable logistic regression analysis indicated that age greater than 33 years, BMI greater than 33 kg/m2 and family history of obesity were independently and significantly associated with physical inactivity. Moreover, there was a significant interaction between family structure and gender; females living in extended families were about twice more likely to be inactive, whereas males from extended families were six times more likely to be inactive relative to females from nuclear families. Lack of information, motivation and skills, spouse & family support, accessibility to places for physical activity, cost effective facilities and time were found to be important barriers to PA.
CONCLUSIONS: Considering the public health implications of physical inactivity it is essential to promote PA in context of an individual's health and environment. Findings highlight considerable barriers to PA among obese individuals that need to be addressed during counseling sessions with physicians.


Hyperinsulinemia and Waist Circumference in Childhood Metabolic Syndrome.

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Abstract

OBJECTIVE: To determine the characteristics of obese children presenting at a tertiary care hospital and the frequency of metabolic syndrome (MS) in them using two paediatric definitions.

STUDY DESIGN: Cross-sectional study.


METHODOLOGY: A total of 262 obese children aged 4-16 years, with BMI greater than 95th percentile were included. Children having obesity due to syndromes, medications causing weight gain, chronic illness and developmental disability were excluded. Blood pressure, waist circumference, fasting triglycerides, HDL, insulin and glucose levels were obtained. Obesity was defined as BMI > 95th percentile for age and gender according to the UK growth reference charts. The prevalence of metabolic syndrome was estimated using to the De Ferrantis and Lambert definitions.

RESULTS: The frequency of MS varied between 16% and 52% depending on whether insulin levels were included in the definition. There was a significant positive correlation(r) when the metabolic parameters were correlated with waist circumference and insulin levels, except HDL which was negatively correlated. All the metabolic parameters like waist circumference, triglycerides, high density lipoprotein cholesterol and systolic blood pressure increased considerably across the insulin quartile (p < 0.05). The most noteworthy anthropometric and metabolic abnormality were the waist circumference (46.5%) and insulin levels (58%) respectively.
CONCLUSION: There was a marked difference in the frequency of metabolic syndrome according to the definition used. The waist circumference and hyperinsulinemia are significant correlates of MS in obese children. There is a need for establishing normal insulin ranges according to age, gender and pubertal status. The clinical examination and investigations ought to include waist circumference and insulin levels together as a part of the definition of MS, for early detection and intervention of childhood obesity.


Underestimation of Weight and Its Associated Factors among Overweight and Obese Adults in Pakistan: A Cross Sectional Study.

Bhanji S, Khuwaja AK, Siddiqui F, Azam I, Kazmi K.

Abstract

BACKGROUND: Weight loss is known to decrease the health risks associated with being overweight and obese. Awareness of overweight status is an important determinant of weight loss attempts and may have more of an impact on one's decision to lose weight than objective weight status. We therefore investigated the perception of weight among adults attending primary care clinics in Karachi, Pakistan, and compared it to their weight categories based on BMI (Body Mass Index), focusing on the underestimation of weight in overweight and obese individuals. We also explored the factors associated with underestimation of weight in these individuals.

METHODS: This was a cross sectional study conducted on 493 adults presenting to the three primary care clinics affiliated with a tertiary care hospital in Karachi, Pakistan. We conducted face to face interviews to gather data on a pre-coded questionnaire. The questionnaire included detail on demographics, presence of comorbid conditions, and questions regarding weight assessment. We measured height and weight of the participants and calculated the BMI. The BMI was categorized into normal weight, overweight and obese based on the revised definitions for Asian populations. Perception about weight was determined by asking the study participants the following question: Do you consider yourself to be a)thin b)just right c)overweight d)obese. We compared the responses with the categorized BMI. To identify factors associated with underestimation of
weight, we used simple and multiple logistic regression to calculate crude odds Ratios (OR) and adjusted Odds Ratios (AOR) with 95% Confidence Intervals.

RESULTS: Overall 45.8% (n= 226) of the study participants were obese and 18% (n= 89) were overweight. There was poor agreement between self perception and actual BMI (Kappa= 0.24, SE= 0.027, p < 0.001). Among obese participants a large proportion (73%) did not perceive themselves as obese, although half (n=102) of them thought they may be overweight. Among the overweight participants, half (n=41) of them didn't recognize themselves as overweight. Factors associated with misperception of weight in overweight and obese participants were age >= 40 years (AOR= 3.4; 95% CI: 1.8-6.4), male gender (AOR= 2.97; 95% CI: 1.6-5.5), being happy with ones' weight (AOR= 6.4; 95% CI: 3.4-12.1), and not knowing one's ideal weight (AOR= 2.45, 95% CI: 1.10-5.47).

CONCLUSION: In this cross sectional survey, we observed marked discordance between the actual and perceived weight. Underestimation of individual weight was more common in older participants (>= 40 years), men, participants happy with their weight and participants not aware of their ideal weight. Accurate perception of one's actual weight is critical for individuals to be receptive to public health messages about weight maintenance or weight loss goals. Therefore educating people about their correct weight, healthy weights and prevention of weight gain are important steps towards addressing the issue of obesity in Pakistan.


Obesity and the risk of hyperuricemia in Gadap Town, Karachi

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3University College of Pharmacy, Punjab University, Lahore, Pakistan.

Abstract

Obesity is a known risk factor for hyperuricemia. However, the effect of the interaction between obesity and hyperuricemia is not well understood. Previous study has shown a relationship between hyperuricemia and
obesity, but the evidence from prospective studies of an association between obesity and uric acid risk is limited. We prospectively evaluated the association between obesity and the incidence of uric acid in obese individuals. In a population-based cohort, obesity and weight gain was found to be strongly associated with hyperuricemia. Additionally, all patients who developed hyperuricemia were obese at baseline. Obesity is a risk factor for hyperuricemia and may be useful for prediction of incident gout in individuals.


The Association of Sugar-Sweetened Beverage Consumption and Inadequate Physical Activity with Overweight and Obesity in School-Going Children and Adolescents in Pakistan.

Rizwan A, Akhter J, Jafar TH.

Abstract

Obesity in children tracks into adulthood and is associated with premature cardiovascular disease, type II diabetes and premature death. 1 Although the prevalence of childhood obesity is escalating in developing countries including Pakistan, 2 the factors fuelling this trend have not been well studied. We conducted a survey on 339 randomly selected children and adolescents aged 11–17 years from four private schools in Karachi, Pakistan to determine the factors associated with overweight and obesity.

Approval to conduct the survey was obtained from the Ethics Review Committee of the Aga Khan University. From each school, a list of all the children in the specified classes was obtained. A random selection of children ...
Continuation of Metformin Reduces Early Pregnancy Loss in Obese Pakistani Women with Polycystic Ovarian Syndrome.

Nawaz FH, Rizvi J.

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Abstract

BACKGROUND: Polycystic ovarian syndrome (PCOS) is the most common cause of anovulatory infertility worldwide. In addition to a poor conception rate, pregnancy loss rates are significantly higher (30-50%) during the first trimester in women with PCOS. Insulin resistance (IR) in this syndrome is not only implicated toward early pregnancy loss (EPL) but also pathognomonic for various obstetrical complications during pregnancy. We evaluated the role of Metformin in the reduction of EPL in women with PCOS who conceived spontaneously or after induction ovulation with or without Metformin.

OBJECTIVE: The primary objective was to evaluate the effectiveness of Metformin in the reduction of EPL in women with PCOS. Secondary outcomes like gestational diabetes, pregnancy-induced hypertension and intrauterine growth restriction were also analyzed at the end of the study.

MATERIAL AND METHODS: This case-control study was conducted from March 2005 to March 2008 in the infertility and antenatal clinics of the Department of Obstetrics and Gynecology of Aga Khan University Hospital, Karachi, Pakistan. A total of 197 infertile women with PCOS were included. 'Cases' were women with PCOS who conceived while taking Metformin and it whom it was continued throughout pregnancy. 'Controls' were women in whom Metformin was either stopped in first trimester after confirmation of pregnancy (by serum betaHCG or by ultrasound) or they conceived spontaneously without the use of Metformin.

RESULTS: All 197 women in this study had a confirmed diagnosis of PCOS (Rotterdam criteria). These women were followed till the final outcome of pregnancy was achieved. Both groups were compared for risk of EPL. It was found that continuation of Metformin during pregnancy reduces EPL, i.e. 8.8% vs. 29.4% in cases and controls, respectively (p < 0.001). In the subset of women with a prior history of miscarriage, the pregnancy loss rate was 12.5% in the Metformin versus 49.4% in control group (p = 0.002).
CONCLUSION: Metformin continuation during pregnancy significantly reduces EPL in women with PCOS. IR may play a significant role in EPL.

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Predictors of Obesity among Post Graduate Trainee Doctors Working in a Tertiary Care Hospital of Public Sector in Karachi, Pakistan.

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Department of Community Health Sciences, Aga Khan University, Karachi, Pakistan.

Abstract

OBJECTIVES: To identify the predictors of obesity among post graduate trainee doctors working in a tertiary care hospital of public sector at Karachi, Pakistan.

METHODS: A cross sectional analytical study was conducted at one of the tertiary care hospitals of public sector in Karachi. Information was collected from 117 post graduate trainee doctors via pre-tested self administered questionnaire and standard tools were used for height and weight measurement. Obesity was defined as body mass index (BMI) ≥ 23 by using South Asian cut-off points. SPSS version 16 was used for data analysis, and logistic regression technique was applied to come up with predictors of obesity.

RESULTS: Frequency of overweight and obesity among doctors was 31.6% and 28.2% respectively. Nearly, 18% were using tobacco and family history of obesity was present in 44%. Approximately 64% doctors were taking lunch outside home, 76% were taking tea at least once a day, 59% were taking snacks between meals and 50% were physically inactive. Predictors of obesity among doctors include; taking lunch outside home OR = 7.11 (2.28-22.09), snacks between meals OR = 5.36 (1.51-19.03), tea OR = 7.85 (1.63-37.63), physical activity OR = 0.18 (0.05-0.57), increase duration of training OR = 1.7 (1.15-2.49), family history of obesity OR = 3.35 (1.11-10.08) and male gender OR = 3.83 (1.07-13.72).
CONCLUSION: Frequency of overweight and obesity was high among post graduate trainee doctors. Taking lunch outside home, snacks and tea intake between meals, increase duration of training, family history of obesity, male gender and lack of physical activity were found to be predictors of obesity among doctors.


Prevalence of Hypertension among Obese and Non-Obese Patients with Coronary Artery Disease.

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Abstract

BACKGROUND: Globally, obesity is now recognized as an epidemic. The degree of obesity is proportional to the rate of development of cardiovascular diseases, hence, resulting in a dramatic increase in morbidity and mortality. Apart from obesity, hypertension is another well recognized risk factor contributing to coronary artery disease (CAD). The precise prevalence of obesity-related hypertension varies with age, race and gender; and is yet unknown in our population. The objective of this study was to determine the prevalence of hypertension in obese and non-obese patients with diagnosed CAD.

METHODS: This hospital based descriptive study was conducted in Cardiology Department of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar from 15th March 2007 to 30th May 2008. A total of 200 patients with diagnosed CAD were enrolled, 100 were found obese and 100 non-obese.

RESULTS: Among these, a total of 111 (55.5%) were found to be hypertensive, 66 (59.46%) of these were obese and 45 (40.54%) non-obese (p=0.003).

CONCLUSION: Obese patients with CAD had significantly more frequent hypertension.
Atherosclerosis in Relation to Fat Penniculus (Obesity) between Xiphoid and Umbilicus.

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Abstract

BACKGROUND: It has been shown that possible influence of body weight is more evident for coronary than aortic atherosclerosis; and more in men than women. Coronary heart disease due to obesity in males becomes significant when body mass index (BMI) exceeds 30 (30% overweight) and does not affect the life expectancy particularly in women. This study was conducted to assess the relation of thickness of fat penniculus (obesity) between xiphoid and umbilicus to different atherosclerotic lesions; and to collect basic data about age and sex distribution of this relation

METHODS: It was prospective descriptive study and conducted at mortuary of King Edward Medical University, and Department of Pathology, Allama Iqbal Medical College. Lahore. A total of 130 human autopsies were carried out in one-and-a-half year of study duration. The ages of the deceased ranged between 8 and 85 years. Heart aorta and its major branches were included in this study. In addition, fat penniculus between xiphoid and umbilicus was measured and atherosclerosis lesions were categorized and correlated with this parameter. Haematoxylin and Eosin, and different special stains were done in Pathology Department of Allama Iqbal Medical College, Lahore to assess severity of atherosclerosis lesions.

RESULTS: The fatty streaks were present in predominantly more cases with Fat Penniculus < 20 mm than in cases with Fat Penniculus < 10 mm and < 30 mm. The fibrolipid plaques, complicated and calcified lesions were present in a dominant number of cases with Fat Penniculus < 30 mm on percentage basis.

CONCLUSION: Raised lesions were seen more frequently in cases with Fat Penniculus 20 mm to < 30 mm than in cases with Fat Penniculus < 10 mm and < 20 mm thickness.
Plasma Homocysteine and DNA Damage Profiles in Normal and Obese Subjects in the Pakistani Population.

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Abstract

Dependence of plasma total homocysteine (tHcy) and DNA damage profiles on melanodialdehyde (MDA), oxidative stress, liver function tests (LFT), and lipids was studied in non-obese and obese subjects in the Pakistani population. Development of obesity is influenced by both genetic, biochemical and environmental factors. Plasma homocysteine (Hcy) and DNA damage profiles play a pivotal role in its progression. We studied 160 obesity patients and 160 lean subjects. Leukocytes were evaluated for DNA damage by comet assay and blood plasma for biochemical properties using commercial kits. Plasma Hcy level and DNA damage were strongly correlated with triglycerides (P < 0.000), LDL-cholesterol (P < 0.001), systolic blood pressure (P < 0.001), cholesterol (P < 0.004), MDA (P < 0.004) and total oxygen stress (P < 0.004) in obese individuals. Both Hcy and DNA damage were negatively associated with total anti-oxidant response and globulin. Both Hcy profile and DNA damage may have a role in the endothelium damage even in the normal range and are related to triglycerides, ALT, MDA, TOS, HDL- and LDL-cholesterol in the Pakistani population.

Continuation of Metformin Reduces Early Pregnancy Loss in Obese Pakistani Women with Polycystic Ovarian Syndrome.

Nawaz FH, Rizvi J.
Department Obstetrics and Gynecology, Aga Khan University Hospital, Karachi, Pakistan. fauzia.nawaz@aku.edu

Abstract

BACKGROUND: Polycystic ovarian syndrome (PCOS) is the most common cause of anovulatory infertility worldwide. In addition to a poor conception rate, pregnancy loss rates are significantly higher (30-50%) during the first trimester in women with PCOS. Insulin resistance (IR) in this syndrome is
not only implicated toward early pregnancy loss (EPL) but also pathognomic for various obstetrical complications during pregnancy. We evaluated the role of Metformin in the reduction of EPL in women with PCOS who conceived spontaneously or after induction ovulation with or without Metformin.

**OBJECTIVE:** The primary objective was to evaluate the effectiveness of Metformin in the reduction of EPL in women with PCOS. Secondary outcomes like gestational diabetes, pregnancy-induced hypertension and intrauterine growth restriction were also analyzed at the end of the study.

**MATERIAL AND METHODS:** This case-control study was conducted from March 2005 to March 2008 in the infertility and antenatal clinics of the Department of Obstetrics and Gynecology of Aga Khan University Hospital, Karachi, Pakistan. A total of 197 infertile women with PCOS were included. 'Cases' were women with PCOS who conceived while taking Metformin and it whom it was continued throughout pregnancy. 'Controls' were women in whom Metformin was either stopped in first trimester after confirmation of pregnancy (by serum betaHCG or by ultrasound) or they conceived spontaneously without the use of Metformin.

**RESULTS:** All 197 women in this study had a confirmed diagnosis of PCOS (Rotterdam criteria). These women were followed till the final outcome of pregnancy was achieved. Both groups were compared for risk of EPL. It was found that continuation of Metformin during pregnancy reduces EPL, i.e. 8.8 vs. 29.4% in cases and controls, respectively (p < 0.001). In the subset of women with a prior history of miscarriage, the pregnancy loss rate was 12.5% in the Metformin versus 49.4% in control group (p = 0.002).

**CONCLUSION:** Metformin continuation during pregnancy significantly reduces EPL in women with PCOS. IR may play a significant role in EPL.
Frequency of Metabolic Syndrome in Patients with Type-2 Diabetes.

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Abstract

BACKGROUND: Diabetes, Hypertension, Obesity and Ischaemic Heart Disease have become a problem of public health magnitude with substantial economic burden both in the developed as well as the developing countries. Obesity is quite frequent in Type 2 diabetics and also plays a central role in causing Metabolic Syndrome (MetS). Metabolic Syndrome significantly increases the incidence of cardiovascular complications. This study was done to determine the frequency of MetS in our Type 2 diabetic patients as most of the components of MetS can be modified and identifying/managing these at an early stage might be of considerable help in reducing cardiovascular complications.

METHODS: This cross-sectional study was done in Medical 'B' and Medical 'A' wards of Ayub Teaching Hospital, Abbottabad from Nov, 08 to April, 09. Type 2 Diabetic patients aged above 40 years who gave informed consent were included in the study. Data was collected through a structured proforma. Frequency of Metabolic Syndrome was estimated according to the IDF consensus worldwide definition of the MetS.

RESULTS: Of the 100 patients enrolled in this study 56 were females and 44 were males with a mean age of 59.9 years. Out of these 100 participants seventy six (76%) were diagnosed to have metabolic syndrome. Of the 56 females, forty eight (85.71%) were having metabolic syndrome while twenty eight (63.63%) of the 44 male participants were having the syndrome. The difference was statistically significant (p < 0.05).

CONCLUSION: Frequency of MetS was found to be significantly high in this study with female preponderance. All the components, except Hypertension were more frequent in females. Diabetic patients with metabolic syndrome need more aggressive approach in management so as to decrease the incidence of cardiovascular complications.
Gender Differences of Body Mass Index in Adults of Pakistan: A Case Study of Multan City

Muhammad Aslam, Aamir Saeed, G.R. Pasha, Saima Altaf

Abstract

Obesity is an epidemic health problem worldwide that can result in many serious and sometimes, fatal diseases. It is very important to study such prevalence in developing countries, like Pakistan where people cannot afford the medical tolls, additionally, added to their non-meeting budgets, due to problems of obesity. The present study addresses the same issue by taking into account of 2000 adults from Multan city as case study of Pakistan. Although many of similar studies have also been carried out in the region but the present study evaluates the obesity prevalence according to recommendations of World Health Organization that in Asia Pacific Region, a person is considered to be overweight if BMI > 23 rather BMI > 25 and to be obese if BMI > 25 rather than if BMI > 30. According to this new definition, we report that more than 46% people are overweight (18.95%) and obese (27.85%). The percentage of normal people is just 28.65 while 24.55% are underweight. We report the mean MBI to be 22.87±0.086 (S.E), males have 13 kg more weight as compared to that of females have and males are more than 5 inches taller as compared to females, on the average. It is noted that mean BMI of males (23.51±0.11) and mean BMI of females (22.05±0.133) are different significantly. We find that 55.12% among males and 36.15% among females are either overweight or obese. The percentile plot of the data also displays the similar picture. We further report that married people are three times obese as compared to unmarried ones.


Obesity, Hyperlipidemia, and Hyperuraecemia in Young and Old Hypertensive Patients.

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Abstract

BACKGROUND: There is strong correlation among hypertension, obesity, hyperlipidemia and hyperuricemia which are important risk factor for the
cardiovascular disease. Objective of this study was to assess and compare the prevalence of obesity, hyperlipidemia and hyperuricemia among young and old hypertensive patients in the local setting.

**METHODS:** This cross-sectional study was conducted at medical Out-patient Department at Shahina Jamil Teaching Hospital, Abbottabad, from September 2007 to February 2008. Eighty-six patients seen in the medical outpatient department were enrolled in the study. Patients with age 15 years or above and diagnosed as case of systemic hypertension were included. Patients with endocrine disease, pregnancy, coarctation of aorta, and renal disease leading to hypertension were excluded from the study.

**RESULTS:** Total eighty-six patients with mean age of 53.7 +/- 12.9 years were included in the study. Patients were divided into younger age group (age < 46 years) and older age group (age > or = 46 years). Mean Body Mass Index (BMI) was 29.7 +/- 5.2 in the younger age group and 26.9 +/- 4.7 in the older age group, mean serum cholesterol level was 192.2 +/- 14.2 mg/dL in younger age group and 190.9 +/- 18.3 mg/dL in the older age group, mean serum triglyceride level was 170.5 +/- 13.7 mg/dL in younger age group and 166.6 +/- 21.4 mg/dL in the older age group and mean serum uric acid levels were 5.6 +/- 0.7 mg/dL in younger age group and 5.7 +/- 1.2 mg/dL in the older age group. Overweight and obese patients were 70.9% with its higher prevalence in younger (86.2%) as compared to older patients (63.2%). Hypercholesterolemia was found in 27.9% of the patients, with a frequency of 24.1% in younger patients and 29.8% in the older patients. Hypertriglyceridemia was seen in 66.3% of the patients, with a frequency of 69.0% in younger patients and 64.9% in the older patients. Hyperuricemia was present in 37.2% of the hypertensive patients with a frequency of 34.5% in the younger patients and 38.6% in the older patients.

**CONCLUSION:** Hypercholesterolemia, hypertriglyceridemia, and hyperuricemia are not associated with the age of the hypertensive patients. Increased BMI is more frequent in the young as compared to the old hypertensive patients.
Association of Lipoprotein-Alpha with Obesity in Children and Adolescents in District Swat.

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Abstract

BACKGROUND: Studies have demonstrated that atherosclerosis has its silent beginning during childhood. Coronary artery disease, particularly when it presents early in adult life has been observed to have a familial tendency. Lipoprotein-alpha [Lp-alpha], has a strong genetic association and raised levels when combined with obesity increase the risk of premature coronary heart disease. Thus in adults, has emerged the possibility of preventing or delaying the coronary artery disease when appropriate measures are applied early in life. In our study, we assessed the prevalence of overweight and obesity and its association with Lp-alpha in the child population of district Swat.

METHODS: The study was carried out in Saidu Teaching Hospital and Biochemistry Department, Saidu Medical College, Swat, from May to July 2007. Both boys and girls between 10-20 years of age were included. The prevalence of obesity was detected in 200 subjects by using body mass index. One hundred subjects were selected to compare the anthropometric and cardiovascular parameters of obese subjects with control group. Lp-alpha was measured in children of both the groups.

RESULTS: The prevalence of obesity in adolescent boys was 6.7% and that in adolescent girls was 10%. The prevalence was higher in female subjects, compared to male subjects. Obese subjects had significantly higher weight, body mass index, blood pressure values and Lp-alpha levels as compared to control group.

CONCLUSION: Lipoprotein-alpha level is higher in obese children and adolescents than in non-obese.
Influence of Sibutramine, Orlistat and Ispaghula in Reducing Body Weight and Total Body Fat Content in Obese Individuals.

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Abstract

BACKGROUND: The correlations between combined body fat parameters and risk factors of obesity explained a portion of the variation in the weight, BMI and waist circumference, the average number of categorical metabolic risk factors increases progressively with increasing total body fat content. There is currently no data available in which influence of drugs can be assessed on total body fat content. This was a non-randomized, prospective, open-label, parallel group study was conducted to compare the effectiveness of sibutramine, orlistat and ispaghula in reducing body weight and percentage of total body fat content in obese individuals.

METHODS: A nonrandomized, open label, prospective, intention to treat clinical trial was conducted from July 2008 to March 2009 in JPMC, Karachi, Pakistan. The study was based on three arms A (ispaghula), B (orlistat) and C (sibutramine) comprising 40 patients in each. The selection criteria has included patients from either sex with age 18 years or more with BMI > or =30 as obese with or without associated risk factors and BMI > or = 27 < 30 as over weight only if any significant risk factor is present. Compliance on diet chart and instruction for life style modification were assessed monthly.

RESULTS: The comparison of mean difference in percentage of total body fat content between the groups and within the groups at day 150 is (p-value) 0.029 and difference in body weight is (p-value) 0.042 which is statistically significant.

CONCLUSION: Sibutramine is more effective than ispaghula and orlistat in reducing body weight and percentage of total body fat content in obese patients.
Supplementation of Whole Grain on Body Weight and Lipid Profile in Obese Females of Various Ethnic Groups in Balochistan, Pakistan

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Abstract

The effects of supplemented whole grain consumption for 4 weeks on Body Mass Index (BMI), total Cholesterol (CHO), Triglyceride (TG), High Density Lipoprotein Cholesterol (HDL) and Low Density Lipoprotein Cholesterol (LDL) in obese female subjects of 4 major ethnic groups in Quetta, i.e., Pathan (P), Baloch (B), Hazara (H) and Punjabi (PU) were studied. Two groups each of 32 obese female subjects and comprising 8 subjects from each ethnic group were chosen from the volunteers on the selection criteria according to World Health Organization (1998). The subjects of the group taken as control used the conventionally available carbohydrates in meals and another batch referred as treated subjects consumed 50g cereals in breakfast and whole grain chapattis in lunch and dinner for 4 weeks. Twelve hours fasting blood sample was taken from control and whole grain treated obese subjects a day after the completion of experiment duration. Lower BMI had been observed in the subjects of all the ethnic groups compared to their respective control, however, significantly (p<0.01) only in PU group. Significantly lower concentration of total cholesterol in fiber consuming subjects of B (p<0.01) and PU (p<0.05) ethnic groups was demonstrated compare to their respective controls. Similarly Triglycerides (TG) concentrations were lesser in all ethnic groups but not significant statistically. Trend of greater concentration of HDL cholesterol and lower LDL cholesterol in the fiber taking subjects in all the ethnic groups was only significant (p<0.05) compare to their controls in P and PU groups, respectively.
Effect of Walnut on Lipid Profile in Obese Female in Different Ethnic Groups of Quetta, Pakistan

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Abstract

Four week controlled study was designed to observe the effect of 40 g of walnut in daily breakfast on Body Mass Index (BMI), total Cholesterol (CHO), Triglyceride (TG) High Density Lipoprotein (HDL) cholesterol and Low Density Lipoprotein (LDL) cholesterol in obese female subjects of various ethnicities, i.e. Baloch (B), Pathan (P), Hazara (H) and Punjabi (PU) residing in Quetta region of Balochistan. A batch of 32 obese female subjects, 8 from each ethnic group as a control and another batch of 32 obese females 8 from each ethnic group as treated were selected. Twelve hour fasting blood samples a day after stoppage of walnut were taken from obese control and obese treated subjects. Daily walnut consumption demonstrated considerable drop in body weight in all ethnic groups residing in Quetta locality. Marked and statically significant reduction in total cholesterol was noticed in all ethnic groups i.e. 3.6% (p<0.05), 5.4% (p<0.001), 5.8% (p<0.01) and 7% (p<0.001) in B, P, H and PU groups respectively. Baloch subjects showed significant reduction of 7.8% in TG (p<0.001), similarly significant lowered TG was also observed in PU group. A significant increase (p<0.001), (p<0.05) in HDL cholesterol had been observed in B and P group respectively in walnut consuming subjects. In walnut consuming female subjects significant reduction (p<0.05), (p<0.01), (p<0.01) in LDL cholesterol levels was noted in B, P and PU subjects respectively. The positive influence of walnut on lipid profile suggests that walnut rich diet may have beneficial effects beyond changes in plasma lipid level.
Abstract

OBJECTIVE: To compare body mass index (BMI), waist circumference (WC), and body fat percentage (%BF), as index of overweight and obesity in young adults. We also intended to find an association between lifestyle behaviours and obesity.

METHODS: A cross-sectional study was conducted at Fatima Jinnah Dental College, Karachi, during 2007 to 2008, with 192 first year dental students, (18-21 years) of high socioeconomic class. All were questioned regarding lifestyle behaviours. Overweight and obesity were estimated by measuring %BF, BMI, and WC. For %BF, skinfold thickness was measured using skinfold calipers. BMI > or = 23.0-24.9 kg/m2 was taken as overweight and > or = 25.0 kg/m2 as obese (Asians criteria proposed by Western Pacific Regional Office of World Health Organization). WC using Asian cutoff values for overweight and obesity were: males > or = 78 cm and > or = 90 cm; females > or = 72 cm and > or = 80 cm, respectively. Body fat percentage used to define overweight and obesity was: males 22.1-27.0 and > 27.1; females 27.1-32.0 and > 32.1, respectively. Pearson's correlation was done between the BMI, WC and %BF with statistical significance taken at P < 0.01.

RESULTS: BMI (Expressed as mean +/- SD) in males and females was 23.82 +/- 3.88 and 20.98 +/- 4.12 respectively. WC was 83.63 +/- 10.20 cm in males and 70.22 +/- 9.36 cm in females. %BF was 22.32 +/- 6.27 in males and 28.73 +/- 6.65 in females, with an overall 60.8% females and 44.4% males found to be overweight or obese. Obesity was underpredicted by BMI when compared to skinfold calipers method. The obese were seen to skip breakfast more often [odds ratio (OR): 2.39], take frequent snacks (OR: 1.58), watch television more (OR: 1.58), and were physically less active than their non-obese counterparts.

CONCLUSION: Body fat percentage using skinfold caliper is a reliable index of obesity. Lack of sleep and skipping of breakfast, are prominent promoters of obesity, in addition to other lifestyle behaviours.
Warraich HJ, Javed F, Faraz-Ul-Haq M, Khawaja FB, Saleem S.

Abstract

BACKGROUND: Obesity is an emerging problem in Pakistan. The authors sought to determine prevalence of obesity and malnutrition in school-going children, from grades 6(th) to 8(th) of different schools of Karachi and assess associations that affect the weight of the children.

METHODOLOGY/PRINCIPAL FINDINGS: A cross sectional study design with children studying in grades 6(th) to 8(th) grade, in different schools of Karachi. We visited 10 schools of which 4 consented; two subsidized government schools and two private schools. A questionnaire was developed in consultation with a qualified nutritionist. Height and weight were measured on calibrated scales. A modified BMI criterion for Asian populations was used. Data was collected from 284 students. Of our sample, 52% were found to be underweight whereas 34% of all the children were normal. Of the population, 6% was obese and 8% overweight. Of all obese children, 70% belonged to the higher socio-economic status (SES) group, while of the underweight children, 63.3% were in the lower SES. Amongst obese children in our study, 65% ate meat every day, compared to 33% of normal kids.

CONCLUSION: Obesity and undernutrition co-exist in Pakistani school-children. Our study shows that socio-economic factors are important since obesity and overweight increase with SES. Higher SES groups should be targeted for overweight while underweight is a problem of lower SES. Meat intake and lack of physical activity are some of the other factors that have been highlighted in our study.
Relation of Hypertension with Body Mass Index and Age in Male and Female Population of Peshawar, Pakistan.

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Abstract

BACKGROUND: Hypertension, a condition developed as a result of high blood pressure is strongly correlated with body mass index (BMI). Obesity was noted to be a single best predictor of hypertension incidence, and was regarded as a major controllable contributor to hypertension. Overweight and obesity is conveniently determined from BMI. Present study was conducted in Khyber Medical College (KMC) Peshawar to investigate the relation of hypertension with BMI and age. The objective of the present investigation is to establish a relationship between hypertension and BMI in male and female population of Peshawar with consideration of age.

METHODS: This study was conducted at KMC, Peshawar during 2008-2009. A total of 1006 adult male and female volunteers were the subject of present research and were categorised in terms of their ages. BMI was determined from weight and height; the subjects were grouped as normal, overweight and obese. Hypertension was determined from the measure of blood pressure.

RESULTS: The results show a consistence relation between BMI and hypertension within age groups in both male and females. The figures exhibited a relation of age with BMI and hypertension in both males and females subjects.

CONCLUSION: The results showed a higher trend of hypertension with increasing BMI. In young females it was noted that with a shift from normal BMI the incidence of hypertension was very high.
Relationship of Body Mass Index and Dyslipidemia in Different Age Groups of Male and Female Population of Peshawar.

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Abstract

BACKGROUND: BMI is linearly related to the total cholesterol, LDL cholesterol and triglyceride concentrations and is, however, inversely related with HDL cholesterol. Dyslipidaemia has been recognized to be strongly associated with overweight and obesity and its comorbid conditions. Overweight and obesity is conveniently determined from body mass index (BMI). Present study was conducted in Khyber Medical College, Peshawar to investigate the importance of age in relation to BMI with dyslipidaemia.

METHODS: The study was conducted in Khyber Medical College Peshawar during a span of period covering from 2008 to 2009. A total of 500 volunteer male and female subjects were included, which were grouped according to age. Lipid profile was obtained against BMI of the subjects, categorized as normal, overweight and obese in different age groups.

RESULTS: The prevalence of dyslipidaemia was both age and gender dependent. Dyslipidaemia show an increasing trend with age in both male and female subjects. In females, dyslipidaemia shows a gradual increase with age for all BMI categories. However, in males, the trend is different. It has been observed that the percentage of females having dyslipidaemia was less as compared to males in the age between 20 and 59 years. On the other hand, dyslipidaemia shows a dramatic increase in females above the age of 59 years.

CONCLUSION: There is increase in dyslipidaemia trend in our subjects with increase in BMI and age.
Prevalence of Overweight and Obesity among Children and Adolescents of Affluent Schools in Karachi.

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Abstract

OBJECTIVE: To estimate the prevalence of overweight and obesity among children and adolescents of affluent schools of Karachi.

METHOD: This descriptive study is part of an ongoing nationwide project funded by Higher Education Commission (HEC) Pakistan, to develop growth centile charts of our children. This survey of three affluent schools of Karachi was done over a period of three months (from Sept to end Nov, 2007) including 398 children. Socio-economic group was decided based on monthly income and items such as computer, fridge, television, car etc. Students from Class 1-10 representing age group 6 to 17 years were included; children were divided into groups A, B, and C representing age of 6-9, 10-13, and 14-17 years respectively. The children included were healthy with no history of chronic infection and immunization up-to-date as per the Expanded Program of Immunization (EPI) schedule of the country. Body weight was measured in minimum clothing to the nearest 0.1 kg using a weight scale with calibration done after every 25 readings. Body height was measured in the erect position without shoes to the nearest 0.1 cm using wall mounted stadiometers. A twenty four hour diet chart was obtained using specially designed questionnaires. The reference definitions used were those given by the Center for Disease Control (CDC) according to which children having their BMI plotted above 95th centile are obese and BMI between 85th-95th centiles were "at risk for overweight."

RESULTS: Data of 398 students belonging to affluent schools is presented. Out of these 398, 24 (6%) were above the 95th centile (obese) while 77 (19.35%) were between 85th-95th centiles on NCHS charts (at risk for overweight). The children in group A (6-9 years) showed daily caloric intake of 2220+/-816 kcal/day, group B showed caloric intake of 2133+/-942 kcal/day and group C a caloric intake of 1976+/-873 kcal/day. Apart from the overall data, children above 95th centile and between 85th to 95th centile showed a daily caloric intake of 1861+/-849 and 2056+/-895 kcal per day, respectively. Approximately 85% of the students when asked about their daily schedule were leading a predominantly sedentary life style, due
to tuitions, television viewing or internet surfing or indoor games like play stations (not requiring physical activity).

**CONCLUSION:** Even with our small sample size the percentage of obese and overweight children were 6% and 19% of the population studied. This study suggests that overweight and obesity among these children maybe due to their sedentary lifestyle and/or lack of intake of proper food (imbalance in the intake of daily calories, carbohydrate, fat and protein).

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**Effect of Physical Activity and Obesity on Type 2 Diabetes in a Middle-Aged Population**

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Academic Editor: Ike S. Okosun

**Abstract**

**Background:** The physical activity has been associated with a reduced risk of type 2 diabetes. The aim of this study was to examine the effect of physical activities such as occupational, household and daily lifestyle activities and obesity on the prevalence of type 2 diabetes in middle-aged population.

**Methods:** All people \( n = 2053 \), aged 45–64 years were selected for this study from the large sample of population-based cross-sectional data collected in the 1990–1994 by National Health Survey of Pakistan. The participants completed in-person interviews at baseline; the overall response rate was 92.6%. The Cox proportional hazards model was used to estimate the risk of developing the type 2 diabetes.

**Results:** Stair climbing was found to be inversely associated with the risk of diabetes and cycling was also associated with a reduced risk of type 2 diabetes (RR=0.82; 95% CI 0.68–1.00, \( P = .048 \)). The relationship between physical activity and reduced risk of diabetes adjusted for age and body mass index was statistically significant only in women (\( P < .01 \)).

**Conclusions:** This study provides an incentive that physical activity in leisure-time exercise or daily activity reduces the risk of type 2 diabetes in a high-risk population.
Study of Obese Persons Profile At D.I. Khan, Nwfp, Pakistan

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Abstract

BACKGROUND: Obesity is considered as the most pressing but neglected public health problem. Rates of obesity are rising alarmingly in many parts of the world. The purpose of this study was to examine different factors as risk factors for obesity.

MATERIAL & METHODS: This cross-sectional study was conducted at DHQ Teaching hospital, D.I.Khan, in July 2006. Obese persons attending the hospital were chosen using standard definition of obesity based on body mass index. 330 obese persons were interviewed with a structured questionnaire. The information was analyzed by descriptive statistical analysis.

RESULTS: The age range was 35-45. Female gender was predominant 221 (67%). 257 (68%) belonged to urban community. 60% admitted that they had family tendency for obesity. 108 (33%) obese people used to take oil-rich foods while 66 (20%) were fond of sweets. 33 (10%) were using high-fiber diet in abundance. 82 (25%) were addicted to carbonated beverages. Food intake frequency was more than three times in 99 (30%) cases. 112 (34%) had habit of eating in between meals. 6 (2%) used to enjoy fast food. 257 (78%) told that there was no exertion in daily life. 49 (15%) were doing exercise to reduce their weight but regularity of exercise was only in 33 (10%). 108 (33%) were spending more than 4 hours daily in watching television. Income status was high in 66 (20%) as more than 30,000 rupees per month. 16 (5%) had a stress full life. 5 patients were using anti-psychiatric medications on prescription.
Body Mass Status of School Children of Dera Ismail Khan, Pakistan.

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Abstract

BACKGROUND: Childhood obesity is a global epidemic involving both developed and developing countries. It is a state of over-nutrition with long-term complications such as dyslipidemia, hypertension, and coronary artery disease and type-2 diabetes. Underweight is the result of under nutrition leading to reduction in growth and development of every body organ especially the Central Nervous System. Long-term under-nutrition causes failure in linear growth (height) of the child. Growth is further retarded by the repeated attacks of respiratory infections, diarrhea and anemia as a result of reduced immunity.

METHODS: This study was carried, out eight primary schools of Dera Ismail Khan (Private, semi government organizations, and welfare foundations) having mixed population with some of the wards belonging to high socioeconomic group. Thorough clinical examination excluded those suffering from chronic heath problems. Height and weight of each one was taken body mass index of determined according to 'Quatelet's' index. Body mass index number was plotted on the CDC S age and gender specific growth charts 2-20 years for BMI-for age percentile and body mass status (underweight, normal weight, overweight/ at the risk of overweight and obese/overweight.

RESULTS: Total 1338 school going children (6-11 years) were examined with 865 (67.75%) boys and 471 (35.25%) as girls. 13.39%, 72.15%, 8.83% and 5.61% as underweight, normal weight, overweight and obese respectively. Percentage of underweight was higher in girls (25%) than boys (13.22). Percentage of obesity was higher (5.17%) in boys than girls (1.39%).

CONCLUSION: Awareness about balanced diet, improvement in the level of education and socioeconomic conditions, easy access to health facilities and prevention of the gender discrimination, are the remedial measures to be taken to redress the situation.
Desensitization of Pre and Post Synaptic 5-HT-1A Receptor Responses Following Long Term Consumption of Sugar Rich Diet: Implications for Sugar-Induced Obesity.

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Abstract

The present study concerns the effectiveness of a selective 5-hydroxytryptamine (5-HT)-1A receptor agonist 8-hydroxy-2-(di-n-propylamino) tetralin (8-OH-DPAT) in long term sugar diet treated rats. Male albino wistar rats were divided into control and test groups. Test animals were given sugar (5 g/10 ml water) orally for three weeks. Food intakes and body weight of all rats were measured weekly. After three weeks control and test animals were further divided into two groups i.e. saline injected and drug injected. 8-OH-DPAT at a dose of 0.25mg/Kg was injected to a group of normal diet treated and another group of sugar diet treated rats. Other two groups were injected with saline. 5-HT syndrome and food intakes at 2h and 4h were monitored. Then animals were decapitated to collect brain samples for the estimation of 5-HT and 5-hydroxyindole acetic acid (5-HIAA) levels by HPLC-EC method. We observed that weekly cumulative food intakes increased and body weights decreased in sugar diet treated rats. 8-OH-DPAT produced hyperactivity syndrome in both control and sugar treated rats. But these values were smaller in sugar diet than normal diet treated rats. Hyperphagic effects of 8-OH-DPAT were greater in normal diet than sugar diet treated rats. 5-HT and 5-HIAA levels were not altered. The results suggesting a desensitization of pre as well as postsynaptic 5-HT-1A receptors in rats treated with sugar diet are discussed in the context of a role of sugar diet in the precipitation of obesity and other neuropsychiatric illnesses.
Prevalence of Metabolic Syndrome in Pakistan.

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Abstract

Over the past two decades, there has been a striking increase in the number of people with metabolic syndrome. The prevalence of metabolic syndrome varies due to lack of an internationally agreed upon definition. Considering the increased cardiovascular risk among Asian people, a lower cutoff for waist circumference is defined. Obesity in terms of waist circumference is found to be 46-68% of the Pakistani population, with a strong association found between arm fat and insulin insensitivity. In studying dyslipidemia, hypertriglyceridemia is found in 27-54% of the population, whereas 68-81% have low levels of high-density lipoprotein (HDL). Fifty percent were found to be at high risk of metabolic syndrome and as being hypertensive. With the high prevalence of all of these metabolic risk factors, the prevalence of metabolic syndrome in Pakistan according to different definitions is reported to be from 18% to 46%, comparable to the data from other South Asian countries. Thus, metabolic syndrome should be considered as a prime target for preventive medicine. The primary management goals for metabolic syndrome are to reduce the risks of cardiovascular disease and diabetes. Lifestyle-related risk factors are associated with the metabolic syndrome and diabetes. Unless preventive programs are properly designed and implemented, we will continue to treat the majority of the cases after they have already developed the complications. A prospective primary prevention study is underway in Pakistan that will help to create a base for public awareness strategies and nationwide surveillance and prevention programs against noncommunicable diseases.
Metabolic Risk Factors, Insulin-Resistance and Lifestyle In Children of Type 2 Diabetes Patients in Karachi, Pakistan.

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Abstract

AIMS: To assess metabolic risk factors, insulin-resistance and lifestyle in children aged 8-20 years of patients with type 2 diabetes and to compare these with children aged 8-20 years of non-diabetic subjects.

METHODS: Case-control study. Data were collected from 37 children/adolescents of type 2 diabetes patients and 37 controls from parents without diabetes. Variables included physical activity, diet, socioeconomic class, family history, ethnic background, anthropometric measures, blood pressure and fasting glucose and insulin.

RESULTS: Groups were comparable for age and gender. Differences between cases and controls were found for BMI (22.6 vs. 19.1kg/m(2), p=0.004), waist circumference (70.1 vs. 62.1cm, p=0.014), systolic blood pressure (104.5+/-15.1 vs. 97.9+/-13.4mmHg, p=0.05), diastolic blood pressure (66.2+/-10.9 vs. 60.7+/-10.1mmHg, p=0.025). Vegetable intake (3% of cases having two and 19% one full serving a day vs., respectively, 14% and 32% amongst controls, p=0.01) was less favourable in cases, and physical activity tended to be (5h vs. 9h/week, p=0.065).

CONCLUSIONS: Children of type 2 diabetes patients have higher BMI and blood pressure than controls but also lead a less healthy lifestyle. This suggests that both genetic and lifestyle factors contribute to the increased risk of metabolic syndrome in children and early preventive measures towards changing lifestyle could help in prevention.
Correlation of Gastroesophageal Reflux Disease Symptoms with Body Mass Index.

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Abstract

BACKGROUND/AIM: To find a correlation between symptoms of gastroesophageal reflux disease (GERD) and body mass index (BMI).

MATERIALS AND METHODS: A total of 603 patients who presented at Ghurki Trust Teaching Hospital and Surgimed Hospital Lahore with symptoms of GERD, were included and interviewed according to a validated GERD questionnaire. It included questions regarding GERD symptoms and their severity/frequency. Symptoms were defined: "frequent" if occurred daily; "occasional," if weekly; and "severe," if they were sufficiently intense to change lifestyle. Height and weight were also recorded and their BMI calculated. We used logistic regression analysis was performed to assess the association between the presence of each specific GI symptom and BMI. The odds ratios (OR) for a given specific symptom and 95% confidence intervals (CI) were computed from the coefficients in logistic regression models.

RESULTS: The prevalence of obesity was 25.3%, while 38.1% were overweight. There was an increase in reporting of GI symptoms in obese individuals compared to those with normal BMI who were taken as reference group. Frequent nausea, vomiting, early satiety, epigastric pain, heart burn, regurgitation, postprandial fullness, and dysphagia were present in 10.4, 5.6, 8.9, 17.2, 10.2, 22.1, 23.5, and 21.7%, respectively, of obese subjects compared to 7.9, 1.2, 6.5, 3.5, 4.4, 11.4, 17.1, and 16.6% of normal BMI subjects. BMI showed a positive relationship with frequent vomiting ($P = 0.02$), epigastric pain ($P = 0.03$), regurgitation of food ($P = 0.02$), heart burn ($P = 0.002$), and postprandial fullness (0.01).

CONCLUSION: The majority of GERD symptoms have a greater likelihood of occurring with increasing BMI.
High Prevalence of Obesity, Dyslipidemia and Metabolic Syndrome in a Rural Area in Pakistan

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Summary

AIMS: To determine the prevalence of metabolic syndrome, adiposity and dyslipidemia amongst subjects in a rural area of Pakistan.

METHODS: One thousand six hundred and fifty-eight rural individuals aged 20 years and above were randomly included in the study. Lipid profile, fasting plasma glucose (FPG), BMI, WHR, and body fat percentage (BF%) were recorded. The prevalence of metabolic syndrome was calculated.

RESULTS: High prevalence of obesity, dyslipidemia and metabolic syndrome were recorded. They were all more common in women than men.

CONCLUSIONS: Obesity, dyslipidemia and metabolic syndrome are common. Preventive measures should be applied to reduce the prevalence of these potential cardiovascular risk factors.


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Abstract

BACKGROUND: Polycystic ovarian syndrome (PCOS) is a common endocrine disorder which causes anovulatory infertility. Obesity is one of the factors which directly modifies the clinical, biochemical and metabolic expression of this syndrome. Recently a genetic association of PCOS with intrafamily marriages has been postulated. This study investigates the
association of environmental factors such as BMI and intrafamily marriages with the clinical, biochemical and hormonal features of this syndrome.

**OBJECTIVE:** To determine the relationship of different clinical, biochemical parameters and hormonal assay with the BMI of women who are known to have PCOS, and to compare these demographic features with intrafamily marriages.

**MATERIAL AND METHODS:** From January 2005 until December 2006, patients attending the infertility clinic at Aga Khan University Hospital, Karachi, were evaluated for their clinical features. Couples were divided into 2 groups: group A had a history of first-degree intrafamily marriages, and group B had none. Complete biochemical evaluation was performed by day-2 serum FSH, LH, prolactin, testosterone and fasting serum insulin levels. The results were recorded on a data collection form. Ultrasonic evaluation was performed with transvaginal ultrasound to check the morphological appearance of the ovaries. A modified glucose tolerance test with 75 g glucose was performed and the results were recorded as normal, impaired and abnormal. Insulin resistance was calculated using the HOMA index method.

**RESULTS:** During this period 203 patients were evaluated for demographic and biochemical features of PCOS. The prevalence of obesity was 70% with 59.3% women found to have hyperinsulinemia while 52.3% of patients had insulin resistance according to the HOMA index method. Univariate and multivariate analyses were used to compare the 2 groups. A linear relationship between oligomenorrhea, family history of diabetes, tonic LH, high fasting serum insulin levels, insulin resistance and an abnormal glucose tolerance test was revealed, keeping intrafamily marriage and BMI as dependent variables. In this population 48% of couples were in first-degree intrafamily marriages, suggesting the possibility of a high genetic predisposition for abnormal metabolic features beside ethnic predisposition.

**CONCLUSION:** A linear relationship of high BMI and family marriages has been seen with insulin resistance, oligomenorrhea and impaired glycemic control. The number of obese women and the high rate of intrafamily marriages make our population genetically susceptible to metabolic complications.
Assessment of Frequency and the Risk Factors of Obesity Based on Body Mass Index in 1031 Healthy Adults from North West Frontier Province of Pakistan

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Abstract

BACKGROUND: Obesity is a growing health problem both in the developed and developing world. No study has been reported on the frequency of obesity in North West Frontier Province. In this study we found out the frequency and the risk factors for obesity based on body mass index (BMI) in 1031 adults healthy volunteers.

MATERIAL AND METHODS: This study was carried out at Hayatabad Medical Complex (HMC) and Welfare Clinics in Peshawar City, from November 2005 till April 2006 (6 months). A convenient sample of 1031 healthy volunteers accompanying their patient to the Out Patient Department (OPD), Wards at HMC and at the welfare clinics in the city were recruited. A structured interview questionnaire was administered to all participants and their anthropometric measurements taken in a standardized way.

RESULTS: The mean BMI for the whole sample was 26.9 ± 7.3. The mean BMI was 31.1 ± 10.4 and 25.4 ± 5.2 in females and males respectively. The combined frequency of overweight and obese was 65.8% and 84.6% in males and females respectively (p<0.001). Increasing age (p<0.001) in both sexes, being married (p<0.001) and ownership/use of motorized vehicles (p<0.001) were positively associated with increase in BMI. 77.3% of the graduates and 73.2% of illiterates were obese or overweight (p<0.001). 99.2% of the housewives and 69.7% of jobless people were obese or overweight (p<0.001). A statistically significant association of BMI with awareness was seen among Pakistanis (p=0.002). High Blood pressure was positively associated with higher BMI value (p<0.001).

CONCLUSION: There is a very high frequency of obesity in our community particularly among females as compared to males and there is positive association of obesity with occupation, educational status, presence of vehicles at home, ethnicity, and married marital status. There is no association of obesity with smoking in our study.
Preventing Childhood Obesity: Two Year Follow-Up Results from the Christchurch Obesity Prevention Programme in Schools (Chopps).

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Abstract

OBJECTIVE: To assess the long term effects of an obesity prevention programme in schools.

DESIGN: Longitudinal results after a cluster randomised controlled trial.

SETTING: Schools in southwest England.

PARTICIPANTS: Of the original sample of 644 children aged 7-11, 511 children were tracked and measurements were obtained from 434 children three years after baseline.

INTERVENTION: The intervention was conducted over one school year, with four sessions of focused education promoting a healthy diet and discouraging the consumption of carbonated drinks.

MAIN OUTCOME MEASURES: Anthropometric measures of height, weight, and waist circumference. Body mass index (BMI) converted to z scores (SD scores) and to centile values with growth reference curves. Waist circumference was also converted to z scores (SD scores).

RESULTS: At three years after baseline the age and sex specific BMI z scores (SD scores) had increased in the control group by 0.10 (SD 0.53) but decreased in the intervention group by -0.01 (SD 0.58), with a mean difference of 0.10 (95% confidence interval -0.00 to 0.21, P=0.06). The prevalence of overweight increased in both the intervention and control group at three years and the significant difference between the groups seen at 12 months was no longer evident. The BMI increased in the control group by 2.14 (SD 1.64) and the intervention group by 1.88 (SD 1.71), with mean difference of 0.26 (-0.07 to 0.58, P=0.12). The waist circumference increased in both groups after three years with a mean difference of 0.09 (-0.06 to 0.26, P=0.25).
CONCLUSIONS: These longitudinal results show that after a simple year long intervention the difference in prevalence of overweight in children seen at 12 months was not sustained at three years.


Frequency of The Metabolic Syndrome in Adult Type 2 Diabetics Presenting to Pakistan Institute of Medical Sciences.

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Abstract

OBJECTIVE: To determine the frequency of metabolic syndrome in both genders, in a limited adult type 2 diabetic population presenting to Pakistan Institute of Medical Sciences, Islamabad.

METHODS: This was a cross sectional study conducted in a tertiary care teaching hospital. During the six months of study period, 106 adult type 2 diabetics were examined and evaluated for the presence of metabolic syndrome according to the ATP-III criteria. Asian standards for the waist circumference were used.

RESULTS: Out of 106 patients, 91 (85.8%) had metabolic syndrome of whom 95% were females. Abdominal obesity was present in 91% females and 86% males. Low HDL levels were present in all females and 83% males. Seventy eight percent females and 63% males had elevated levels of triglycerides. Hypertension was present in 68% and 73% females and males respectively.

CONCLUSION: This study showed a very high prevalence of the metabolic syndrome in type 2 diabetic population. Females were more affected than males in all respects.

**Guar Gum: A Miracle Therapy for Hypercholesterolemia, Hyperglycemia and Obesity.**

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**Abstract**

The number of hypercholesterolemic and hyperglycemic people is increasing rapidly in the world. The prevention against these health problems is related to a complex management of conventional and non-conventional risk factors. The inclusion of dietary fiber in the diet is the right approach to reduce these risks. Cholesterol and glucose lowering effects are most often associated with gelling, mucilaginous, and viscous fibers such as guar gum, an edible thickening agent. It has widespread applications in the food industry due to its ability to hydrate without heating. The demand for guar gum is still growing rapidly because in addition to its indispensable role in lowering serum cholesterol and glucose levels, it is also considered helpful in weight loss programs. The main thrust of therapeutic and medicinal properties lies in the soluble dietary fiber content of guar gum to improve the serum biochemical profile of human and non-human primates, reducing total serum cholesterol, triglycerides, increasing the high density lipoprotein cholesterol level, and the management of glycemic indices and obesity. Among the various intervention strategies, diet diversification is the right approach to overcome these problems. Composite flours containing wheat and legumes have proven practical uses and are being utilized in many parts of the world to improve the nutritional and functional properties of flour. The main focus of this manuscript is to review the available information on various aspects of guar gum with special reference to its effectiveness in reducing the cardiovascular disease risk, diabetes and weight loss programs.
Prevalence of Overweight and Obesity and Their Association with Hypertension and Diabetes Mellitus in an Indo-Asian Population.

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Abstract

BACKGROUND: The associations of body mass index (BMI) and chronic disease may differ between Indo-Asian and Western populations. We used Indo-Asian-specific definitions of overweight and obesity to determine the prevalence of these problems in Pakistan and studied the sensitivity and specificity of BMI cutoff values for an association with hypertension and diabetes mellitus.

METHODS: We analyzed data for 8972 people aged 15 years or more from the National Health Survey of Pakistan (1990-1994). People considered overweight or obese were those with a BMI of 23 kg/m2 or greater, and those considered obese as having a BMI of 27 kg/m2 or greater. We built multivariable models and performed logistic regression analysis.

RESULTS: The prevalence of overweight and obesity, weighted to the general Pakistani population, was 25.0% (95% confidence interval [CI] 21.8%-28.2%). The prevalence of obesity was 10.3% (95% CI 7.0%-13.2%). The factors independently and significantly associated with overweight and obesity included greater age, being female, urban residence, being literate, and having a high (v. low) economic status and a high (v. low) intake of meat. With receiver operating characteristic curves, we found that the use of even lower BMI cutoff values (21.2 and 22.1 kg/m2 for men and 21.2 and 22.9 kg/m2 for women) than those recommended for an Indo-Asian population yielded the optimal areas under the curve for an association with hypertension and diabetes, respectively.

INTERPRETATION: A quarter of the population of Pakistan would be classified as overweight or obese with the use of Indo-Asian-specific BMI cutoff values. Optimal identification of those at risk of hypertension and diabetes and healthy targets may require the use of even lower BMI cutoff values than those already proposed for an Indo-Asian population.
Comparison of Adiponectin, Leptin and Blood Lipid Levels in Normal and Obese Postmenopausal Women.

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Abstract

OBJECTIVE: To determine adiponectin, leptin and blood lipid levels in normal and obese postmenopausal women and to compare them.

METHODS: Eighty postmenopausal women were selected which included 40 normal controls and 40 obese women matched for age and height. Adiponectin and leptin levels were determined by ELISA. Triglycerides, cholesterol, LDL cholesterol and HDL cholesterol were determined by standard kit methods using Clinicon 4010.

RESULTS: Serum adiponectin level decreased and leptin level increased significantly ($P < 0.001$) in obese women compared to controls. Similarly triglycerides, cholesterol and LDL cholesterol were increased significantly ($P < 0.001$) in obese subjects compared with controls. No significant change in HDL cholesterol was observed in both groups. Significant correlation of leptin with lipid profile was observed when both groups were combined.

CONCLUSION: Serum adiponectin level decreased and leptin level increased significantly in obese women compared to controls. Significant correlation exists between leptin and lipid profile in combined group.
Anthropometric Indices of Middle Socio-Economic Class School Children in Karachi Compared with NCHS Standards-A Pilot Study.

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Abstract

OBJECTIVE: To measure height and weight of school going children (2-18 years of age) in Karachi. By means of these parameters we were able to document where the Pakistani paediatric population plot on NCHS growth centile charts.

METHODS: A population based cross-sectional study (in government and private schools, Karachi), in which height and weight were taken using standardized techniques. Two thousand two hundred forty five healthy school-going children 2 to 16 years of age (calculated from date of birth); sex, height and weight were documented. After the survey was completed, height and weight of the children were plotted on NCHS centiles curves.

RESULTS: P5, P25 and P50 centiles for height and weight of the Pakistani girls and boys was much below that of NCHS. However, P95 for boys and girls weight and height did not differ markedly in the Pakistani and NCHS centiles.

CONCLUSION: Height and weight of these children is below the NCHS centile for height and weight. Children plotting near the P95 NCHS, indicates that obesity may be a serious concern in our population. However, further studies are required for support. This pilot study indicates the need for development of centile charts for Pakistani paediatric population.
Abstract

OBJECTIVES: To describe the distribution of overweight and body mass index, waist circumference and waist/hip ratio, correlate obesity measures to coronary heart disease risk factors in comparison to Pakistan National Survey (PNS).

METHODS: The Metroville Health Study (MHS) was an urban risk factor reduction intervention study in Metroville Karachi. Baseline data was used which was not a random sample. Demographic data including serum cholesterol, glucose, haemoglobin, and blood pressure were collected.

RESULTS: In MHS high cholesterol was 16% and 24% in men and women respectively, and 25% had hypertension. Self-reported diabetes was 8%, overweight/obesity 34% and 49% for men and women, compared to 16% and 25% for PNS, while high risk waist-hip ratio (WHR) was present in 41% and 72% of men and women respectively. Underweight in Metroville men was 12% and 9% in women, compared to 26% and 27% in PNS. The anthropometry variables were significantly correlated with each other while weight was significantly correlated with TC and waist circumference (WC).

CONCLUSION: Obesity was alarmingly prevalent in urban Metroville in comparison to PNS. Cardiovascular Disease (CVD) risk factors were prevalent in Metroville and TC and WC were significantly correlated with obesity measures. For prevention of increasing CVD in urban communities, targeted programs of intervention are required.
Obesity Related Complications in 100 Obese Subjects and Their Age Matched Controls.

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Abstract

OBJECTIVE: To note obesity related complications in subjects of age range 50-59 years.

METHODS: A case control study was conducted at Medical Unit of District Headquarters Hospital, Rawalpindi for 6 months. Hundred obese subjects in the age range 50-59 years and their age matched non-obese 100 controls were included consecutively from general population. Obese subjects had body mass index (BMI) >30Kg/m². Controls had BMI of 18.5-22.9Kg/m² and normal waist hip ratio. Obesity related complications i.e., hypertension, diabetes mellitus, ischemic heart disease, stroke, hyperlipidemia, gallstones, varicose veins, psychological problems, sleep related problems, and degenerative arthritis, were sought in all subjects. Waist hip ratio was noted as measure of central distribution of body fat in obese subjects.

RESULTS: Of the 200 subjects, 59% (n=118) were female and 41% (n=82) male. Of the obese subjects 74% and 44% of non-obese controls were female. Mean age of obese subjects and their controls was 54.4 +/- 3.22 and 54.57 +/- 3.54 years respectively. Central obesity was noted in 84% of obese subjects. Hyperlipidemia (87%), hypertension (71%), diabetes mellitus (65%), gallstones (57%), ischaemic heart disease (49%), osteoarthritis (46%), and sleep disorders (35%) were significant (p<0.05) obesity related complications.

CONCLUSION: Hyperlipidemia, hypertension, diabetes mellitus, gallstones, ischaemic heart disease, osteoarthritis and sleep disorders are common obesity related complications in subjects of age range 50-59 years.
Obesity: An Independent Risk Factor for Systemic Oxidative Stress.

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Abstract

The role of obesity in diabetes mellitus, hyperlipidemia, colon cancer, sudden death and other cardiovascular diseases has confirmed in many recent research studies. In present study, it is hypothesized that obesity can serve as an independent risk factor for the decreased activities of cytoprotective antioxidants in humans and for the associated systemic oxidative stress. 150 age matched, female subjects with no history of smoking or biochemical evidence of diabetes mellitus, hypertension, hyperlipidemia, renal or liver disease or cancer were included in the study and were divided into different grades of obesity according to their body mass index (BMI). Hemoglobin and erythrocyte glutathione (GSH) concentrations were measured for each subject. The study suggests that increase BMI was found to be associated with a significant decrease in erythrocyte glutathione concentration. From these observations it is concluded that obesity even in the absence of smoking, diabetes mellitus, hyperlipidemia, renal or liver diseases can decrease the activities of body's protective antioxidants, and can enhance the systemic oxidative stress and should therefore receive the same attention as obesity with complications.

Knowledge, Attitude and Practice Regarding Obesity among Patients, at Aga Khan University Hospital, Karachi.

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Abstract

BACKGROUND: Obesity is a major public health problem and responsible for significant morbidity and mortality among our patients. It is important to study the knowledge, attitude and practices with regard to obesity among patients, in order to devise interventional strategies.
METHODS: Patients visiting the out-patient clinics of Aga Khan University Hospital, Karachi, were included in the study. The interview was questionnaire-based and recorded the demographic profile of the patients and questions relevant to the objective of the study. The ethical requirements for the study were met. SPSS computer software was used for data management. A hundred patients were surveyed.

RESULTS: Women (55%) were more than men (45%), under 39 years (73%), married (55%), with graduate or more education (65%), in private service (44%) and housewives (19%). A substantial number of respondents (75%) understood the meaning of obesity and considered it a major health problem (90%). More respondents felt the need to reduce weight (52%), despite the fact that lesser number considered themselves to be overweight or obese (34%). A majority of the respondents did exercise (59%) but a minority did it more than five times a week (17%) and more than 30 minutes on each occasion (31%). A substantial proportion of the respondents stated their preference for oily food (34%), sweets (34%), fried food (40%), red meat (21%), fast food (37%), butter, cheese and cream (31%).

CONCLUSIONS: We have found a significant level of understanding about obesity among our patients. Physical exercise and dietary measures to control body weight are lacking despite the desire to have appropriate body weight. There is a need and we strongly recommend patient education programs to control obesity.


Ethnic Differences and Determinants of Diabetes and Central Obesity among South Asians of Pakistan.


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Abstract

AIMS: To study the within ethnic subgroup variations in diabetes and central obesity among South Asians.

METHODS: Data from 9442 individuals age > or = 15 years from the National Health Survey of Pakistan (NHSP) (1990-1994) were analysed.
Diabetes was defined as non-fasting blood glucose > or =7.8 mmol/l, or known history of diabetes. Central obesity was measured at the waist circumference. Distinct ethnic subgroups Muhajir, Punjabi, Sindhi, Pashtun, and Baluchi were defined by mother tongue.

RESULTS: The age-standardized prevalence of diabetes varied among ethnic subgroups (P = 0.002), being highest among the Muhajirs (men 5.7%, women 7.9%), then Punjabis (men 4.6%, women 7.2%), Sindhis (men 5.1%, women 4.8%), Pashtuns (men 3.0%, women 3.8%), and lowest among the Baluchis (men 2.9%, women 2.6%). While diabetes was more prevalent in urban vs. rural dwellers [odds ratio (OR) 1.50, 95% confidence interval (CI) 1.24, 1.82], this difference was no longer significant after adjusting for central obesity (OR 1.15, 95% CI 0.95, 1.42). However, the ethnic differences persisted after adjusting for major sociodemographic risk factors (unadjusted OR for Pashtun vs. Punjabi 0.59, 95% CI 0.42, 0.84, adjusted OR 0.54, 95% CI 0.37, 0.78). Ethnic variation was also observed in central obesity, which varied with gender, and did not necessarily track with ethnic differences in diabetes.

CONCLUSIONS: Unmeasured environmental or genetic factors account for ethnic variations in diabetes and central obesity, and deserve further study.


Assessing Obesity and Overweight in a High Mountain Pakistani Population.

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Abstract

OBJECTIVES: To estimate the prevalence of obesity and overweight among adults in a high mountain rural population of Pakistan, and to determine the correlates of excess body weight. Design Cross-sectional study.

METHODS: A random sample of 4203 adults (aged 18 years and over) was selected by stratified random sampling from 16 villages in north Pakistan. Trained medical students measured height, weight and blood pressure. Trained interviewers obtained information from participants on sociodemographic variables, use of snuff, daily cigarette consumption, hypertension and family history of hypertension. Body mass index (BMI)
calculated as kg/m(2) was used to define overweight (BMI > or = 25 kg/m(2)) and obesity (BMI > or = 30 kg/m(2)).

RESULTS: Using weight and height data available for 1391 men and 2754 women, mean BMI was 22.4 (95% CI 21.9, 22.9) for men and 22.6 (95% CI 21.9, 23.2) for women. The age-adjusted prevalence of BMI > or = 25 (overweight/obesity) was 13.5% for men and 14.1% for women. Overweight/obesity increased with age and the increase per year was identical for both men and women [adjusted odds ratio (AOR) = 1.01, 95% CI 1.01, 1.03]. Overweight/obese men and women were more likely to be hypertensive (men, AOR = 3.32, 95% CI 2.16, 5.09; women, AOR = 1.70, 95% CI 1.21, 2.39). Overweight/obese women were more likely to work in business or as skilled workers (AOR = 6.24, 95% CI 1.18, 32.83) while overweight/obese men were more likely to work as government employees (AOR = 2.59, 95% CI 1.66, 4.03). Family history of hypertension was a significant correlate of overweight/obesity in men (P value 0.004) and women (P value 0.000). Overweight/obese men and women were less likely to use smokeless tobacco (men, AOR = 0.65, 95% CI 0.43, 0.97; women, AOR = 0.54, 95% CI 0.35, 0.85).

CONCLUSION: The prevalence of risk factors for non-communicable diseases (NCDs) in Pakistan is expected to increase as further epidemiologic, nutritional and demographic changes occur. The assessment of excess body weight, and patterns and determinants of other risk factors for NCDs is important to provide useful guidelines in the planning of interventions to counter a growing problem.


Childhood Obesity and Pakistan.

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Abstract

Obesity and overweight have become a problem of public health magnitude associated with substantial economic burden not only in the developed countries but also in the developing countries. The number of overweight children and adolescents has doubled in the last two decades in the United States and worldwide, including developing countries. No study on
childhood obesity and overweight is available in Pakistan. Obesity in children impacts on their health in both short and long-term and obesity and its preventive strategies are poorly understood. Increasing number of these children and adolescents all over the world demand not only a substantial political will but also an investment for primary and secondary preventive measures and novel approaches in the treatment modalities.

Journal of Medical Sciences, 2004; 4(1):30-35

**Hypertension in Relation to Obesity, Smoking, Stress, Family History, Age and Marital Status among Human Population of Multan, Pakistan**

Kamran Tassaduqe, Muhammad Ali, Abdus Salam, Muhammad Latif, Nazish Afroze, Samra Masood and Soban Umar

**Abstract**

The present study was carried out to assess hypertension in relation to obesity, smoking stress, family history, age and marital status among human population of Multan, Pakistan. The present data was collected randomly from the male population aging from 16 to 85 years. The male population was divided into three age groups i.e old male (age above 50 years), mature male (age 31 to 50 years) and young male (age 16 to 30 years). The study revealed that there was a strong relationship between hypertension and obesity in all age groups. Hypertensive patients had association with age, smoking, stress, family history and marital status. When comparison was made between mild, moderate and severe hypertensive patients, it was found that old married males were suffering from severe hypertension. Family history of hypertension and myocardial infarction also had a strong association with hypertension. The prevalence of hypertension was found to be maximum (17.08%) in males of age group >50 as compared to mature males (14.16%) and young males (13.48%) in observed sample population. The results from the observed population suggested that prevalence of obesity was (11.49%). The obesity was maximum (12.19%) in males of age group >50 as compared to mature males (11.51%) and young males (10.64%). In the normotensive individuals the prevalence of obesity was (8.74%) as compared to (26.99%) in hypertensive individuals.
Obesity in Adolescents of Pakistan


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Abstract

OBJECTIVES: To elucidate the knowledge, attitudes and practices of Karachi’s school going teenagers regarding healthy eating and body weight and to determine the extent of obesity in these individuals by measuring their Body Mass Index (BMI).

SETTING: Tenth grade O’ level students from six schools in Karachi.

METHOD: A cross sectional study design with a convenience sample of students who were provided with a self-administered questionnaire. In order to compute BMI, the height and weight of each student was measured after completion of the questionnaire.

RESULTS: Seventeen percent students were underweight (below the 5th percentile), 65% were normal weight (5th to 85th percentile) and 18% were overweight (above the 85th percentile). Regarding knowledge about health problems arising due to being overweight, 90% knew being overweight was harmful to health. When asked about what one can do to lose weight, 96% listed exercise among their answers. The results also showed that underweight people were more likely to have 1 or more snacks daily, whereas overweight respondents were less likely to snack between meals. (OR 0.2, p-value <0.01).

CONCLUSION: Given the prevalence of overweight individuals, it is important that work be done with regard to tackling this health issue, which is of significant consequence in the long term. Emphasis should be on promoting low intensity long duration physical activity that can be conveniently incorporated into daily life. There is a need for more based studies be conducted in schools and in the general population so as to establish guidelines on nutrition and weight status for the Pakistani people (JPMA 53:315;2003).
The Obesity Pandemic—Implications for Pakistan.

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Abstract

BACKGROUND: Adverse health outcomes are associated with overweight and obesity. In February 2000, the WHO Regional Office for the Western Pacific, the International Association for the Study of Obesity and the International Obesity Task Force published provisional recommendations for adults for the Asia-Pacific region: overweight at Body Mass Index (BMI) \( \geq 23 \) and obesity at BMI \( \geq 25 \).

METHODS: Data from the National Health Survey of Pakistan, 1990-94 were reanalyzed using BMI cut-offs recommended for Asians to reassess prevalence of overweight and obesity in the adult Pakistani population.

RESULTS: Prevalence of obesity (BMI \( \geq 25 \)) in 25-44 year olds in rural areas was 9% for men and 14% for women; in urban areas, prevalence was 22% and 37% for men and women, respectively. For 45-64 year olds, prevalence was 11% for men and 19% for women in rural areas, and 23% and 40% in urban areas for men and women, respectively. Obesity prevalence was directly associated with SES, regardless of residence.

CONCLUSION: In South Asia, including Pakistan, social and environmental changes are occurring rapidly, with increasing urbanization, changing lifestyles, higher energy density of diets, and reduced physical activity. The coexistence of underweight in early life with obesity in adults may presage both a higher prevalence and incidence for noncommunicable diseases (NCDs) such as hypertension and diabetes. Use of BMI \( \geq 23 \) for overweight, and BMI \( \geq 25 \) for obesity, may provide a more accurate determination of the health of Pakistaniis, especially in those with more than one risk factor for NCDs.
Socio-Economic Differences in Height and Body Mass Index of Children and Adults Living In Urban Areas of Karachi, Pakistan.

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Abstract

OBJECTIVE: To study the socio-economic differences in height and body mass index (BMI) in urban areas of Karachi.

DESIGN: A comparative study was undertaken to compare the heights and BMIs of adults and children belonging to three distinctively different income groups living in urban areas of Karachi.

SETTING: Data was collected from families living in small, medium and large houses located in the authorised urban residential areas of Karachi.

SUBJECTS: A total of 600 families, 200 from each income group, were included in the study. Anthropometric measurements of 1296 females and 1197 males of different ages were taken.

METHODS: All the housewives were interviewed to collect socio-demographic information. Height and weight of all the available family members were measured. In order to determine the socio-economic difference in height status, the mean height in cm of adults was compared. For children (2-17 y) means of height-for-age Z-scores determined on the basis of NCHS reference values were compared. For studying the weight status the BMI of all the respondents was calculated and they were grouped into categories of under-, normal or overweight according to the NCHS recommended cut-off points. For adult men and women BMI values <18.5 kg/m(2) indicated underweight and >25 kg/m(2) indicated overweight. Among children, those having BMI values below the 5th percentile of the NHANES III reference values were categorised as underweight and those above the 95th percentile were termed overweight.
RESULTS: Height status improved with income level among adults and children of both sexes. Among males the difference in weight status was significant only among 2 to 18-y-olds (P<0.05 in each case). The rate of overweight among 2 to 18-y-old males was significantly higher (P=0.004) at the middle-income level (15%) as compared to low or high income. The rate of underweight was significantly higher (P=0.025) at the low-income level among 2 to 18-y-old males (31%, 21% and 22% at low-, middle- and high-income levels, respectively). Among females, rates of underweight were not significantly different at any age. Rates of overweight increased significantly (P=0.048) with income level among 41 to 60-y-old women (38%, 53% and 60% at low-, middle- and high-income levels, respectively).

CONCLUSION: Chronic undernutrition as indicated by deficit in height decreased with increasing income level. Socio-economic differences in weight status were not uniform among various age-sex groups. The influence of increasing affluence is likely to be seen both in the form of increased obesity among older females and underweight among children. Differing patterns of association between income and weight status among male and female children need to studied further with more accurate birth records, so as to further clarify the situation. In terms of prevention of nutrition-related disorders both problems of under- and over-nutrition need to be addressed.


Evaluation of Body Mass Index for a Reference Pakistani Man and Woman.

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Abstract

To strengthen the radiation protection infrastructure, a pilot study on physical characteristics for Reference Asian Man was carried out in Pakistan. Physical data on height and weight of Pakistani men and women were collected and compiled for all age groups to establish a Reference Pakistani Man/Woman which contributed toward the Reference Asian Man/Woman. A correlation between Age and Body Mass Index (BMI) of Pakistani MALES (i.e., rm = +0.89) and FEMALES (i.e., rf = +0.71) was observed. Average BMI of Pakistani males and females for the age group of
20-50 y was found to be 21.95 kg m(-2) and 21.20 kg m(-2), respectively. From recent literature and work of others BMI for Reference Asian Male (RAM) and Reference Asian Female (RAF) has been found to be 20.79 kg m(-2) and 20.81 kg m(-2). Results of our study fall within BMI ranges for male/female adults of Asian countries, i.e., 19.14-22.98 kg m(-2) and 19.38-22.71 kg m(-2), respectively. However, no significant sex specific difference has been noted.
Palestine


**Obesity in a Rural and an Urban Palestinian West Bank Population.**


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**Abstract**

**OBJECTIVE:** To compare the prevalence of obesity, household food consumption patterns, physical activity patterns and smoking between a rural and an urban community in the Palestinian West Bank and to describe the associations of the latter factors with body mass index (BMI).

**DESIGN:** A population-based cross-sectional survey in a rural and an urban Palestinian West Bank community.

**SUBJECTS:** A total of 549 women and 387 men aged 30-65 y, excluding pregnant women.

**MEASUREMENTS:** Obesity was defined as BMI \( \geq 30 \) kg/m\(^2\).

**RESULTS:** The prevalence of obesity was 36.8 and 18.1\% in rural women and men, respectively, compared with 49.1 and 30.6\% in urban women and men, respectively. The mean difference (s.e) in BMI levels was 1.6 (0.52) kg/m\(^2\) between urban and rural women and 0.9 (0.46) kg/m\(^2\) in men. At the household level, the mean energy consumption from 25 selected food items was 13.8 MJ (3310 kcal)/consumption unit/day in the rural community compared to 14.5 MJ (3474 kcal)/consumption unit/day in the urban community \( (P=0.021) \). BMI was positively associated with age in both men and women and with urban residence in women. BMI was negatively associated with smoking and physical activity in men and with educational level in women.

**CONCLUSION:** BMI was associated with urban residence in women after adjusting for age, smoking, education, physical activity and nutrition-related variables, suggesting that the differences in the conventional determinants of obesity could not fully explain the difference in the prevalence of obesity between the two communities. Among men, the measured determinants explained the rural-urban differences in BMI.
Obesity and Low Vision as a Result of Excessive Internet Use and Television Viewing.


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Abstract

The technological age has resulted in children spending prolonged hours in front of television (TV) and computer screens (on the Internet). The aim of this prospective cross-sectional study is to determine the effect of this phenomenon on both childhood obesity and low vision in the State of Qatar. A total of 3000 school students aged 6 to 18 years were approached from September 2009 to March 2010 and 2467 (82.2%) students agreed to participate. Face-to-face interviews based on a designed questionnaire were conducted. The highest proportion of obese children were aged between 15-18 years (9.4%; p < 0.001); spent ≥ 3 hours on the Internet (5.6%; p < 0.001), and spent between 5-7 hours or less sleeping (4.1%; p < 0.001). Forty-six (1.9%) children spent ≥ 3 hours/day on the Internet, and were either overweight/obese and had low vision. The study findings confirmed a positive association between obesity and low vision as a result of excessive time spent on the TV view and Internet use.
a health problem. However, there is little information on the determinants and its prevention. The aims of this study was to describe the prevalence of obesity among 6-7 years old school children, investigate contributing factors and identify potential components for an intervention program to prevent obesity amongst children.

**METHODS:** The study consisted of two parts: 1) cross-sectional survey of children in grade 1 from 12 primary schools randomly selected from the state of Qatar and 2) focus groups with a range of stakeholders. Topic guides were used to explore concepts on overweight and obesity, the causes of childhood obesity, and perceptions on potential prevention interventions.

**RESULTS:** There was a relatively high prevalence of overweight and obesity. There were no significant differences between obese and non-obese children in relation to physical activity or sedentary activity levels or dietary patterns, except for higher reported consumption of sweetened beverages by the obese children compared to non-obese children. Participants were aware of the complexity and variety of causes of obesity and identified two important causal influences resulting from rapid societal change and affluence since oil production in the country. In term of interventions, the school setting was usually prioritized and the influence of teachers in intervention delivery emphasized: “children learn from school more than they learn from their mothers”. The importance of education for parents, particularly the mothers was also a consistent theme.

**CONCLUSION:** This is the first study in the state of Qatar that has examined the risk factors for childhood obesity and used qualitative methodology to inform future obesity prevention intervention development. The focus group data provided important contextual information validated some findings from the cross sectional study and informs the development of future obesity prevention interventions appropriate to the local setting.
Abdominoplasty In Obese and in Morbidly Obese Patients.

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Abstract

This study aims to determine if morbid obesity increases morbidity in abdominoplasty. Upon examining 200 patients, 100 morbidly obese and 100 overweight and obese, it was found that there is no difference in the complication rate between the two categories. It was also found that, when compared to global rates of complication, there is no difference in the rate of complication of dermolipectomy as a whole in non-obese patients. However, co-morbid diseases are more correlated to complication. This article concludes with a remark that although morbid obesity should not preclude abdominoplasty, patients benefit from the operation even when it is performed as a functional operation and not as a cosmetic procedure.

High Prevalence of the Risk of Overweight and Overweight among Qatari Children Ages 9 Through 11

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The authors are extremely grateful to schools administration and children who took part in the study. The authors would like to thank students who participated in data collection and data entry.

Abstract

PURPOSE: The purpose of this paper is to estimate the prevalence of the risk of overweight and overweight in Qatari children ages 9 through 11 and to compare the prevalence using CDC and IOTF cut-offs.
DESIGN/METHODOLOGY/APPROACH: A cross-sectional study in a randomly selected sample of 1,213 Qatari children was carried out. Weight and height were measured and BMI was calculated for all children. The risk of overweight and overweight were defined using as references both the CDC BMI percentiles for age and gender and IOTF cut-off values.

FINDINGS: Weight, height, and BMI increased with age and differences were significant (p<0.0001). According to the CDC and IOTF references, the overall prevalence of the risk of overweight affected 15.8 and 21.1 per cent respectively, while overweight was prevalent in 21.8 and 17.7 per cent respectively. Using either reference, the prevalence of the risk of overweight was higher among girls compared with boys (22.4 per cent, 19.4 per cent respectively), while overweight was higher among boys than among girls (20.6 per cent, 15.5 per cent respectively) but the differences were not statistically significant for both.

ORIGINALITY/VALUE: This study focused on children aged 9-11 years, which represents a transition period between childhood and adolescence. Studying overweight in childhood is important since identification of children who may become obese adults can facilitate early intervention and avoidance of the morbidity and mortality associated with adult obesity. Limited studies on the prevalence of overweight have been conducted in Qatar.


Prevalence of Diagnosed and Undiagnosed Diabetes Mellitus and Its Risk Factors in a Population-Based Study of Qatar.

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Abstract

OBJECTIVE: The objective of the study was to determine the prevalence of diagnosed and undiagnosed diabetes, pre-diabetes and to identify the associated risk factors in the sample of adult Qatari population.

DESIGN: This was a cross-sectional study.

SETTING: The survey was carried out in urban and semi-urban primary health care centers.
SUBJECTS AND METHODS: The survey was conducted from January 2007 to July 2008 among Qatari nationals above 20 years of age. Of the 1434 subjects who were approached to participate in the study, 1117 (77.9%) gave their consent. Face to face interviews were conducted using a structured questionnaire followed by laboratory tests. DM was defined according to the WHO expert group. Pre diabetes status was based on the presence of impaired fasting glucose or impaired glucose tolerance.

RESULTS: The overall prevalence of diabetes mellitus among adult Qatari population was high (16.7%) with diagnosed DM (10.7%) and newly diagnosed DM (5.9%). The impaired glucose tolerance (IGT) was diagnosed in 12.5%, while impaired fasting glucose was in 1.3% with a total of (13.8%). The proportion of DM was higher in Qatari women (53.2%) than in Qatari men (46.8%) and it peaked in the age group 40-49 years (31.2%). The age-specific prevalence of total DM and IGT increased with age. Risk factors were significantly higher in diabetic adult Qatari population: central obesity (p<0.001), hypertension (p<0.001), triglyceride (p<0.001), HDL (p=0.003), metabolic syndrome (p<0.001), heart diseases (p<0.001). Smoking habits and family history of DM were the major contributors for diabetes disease. The central obesity was associated with higher prevalence of DM and IFG among Qatari men and women.

CONCLUSION: The present study has found a moderately high prevalence of diabetes mellitus in the adult Qatari population. High proportion of prediabetes in Qatari adults will increase the prevalence of DM in the next few years. Smoking habits and family history of DM were the major contributors for DM. Early diagnosis of DM is of major importance to reduce the risk of these diabetes-related conditions.


Anthropometric Measurements and Dietary Habits of Schoolchildren In Qatar.

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Abstract

INTRODUCTION: Very little is known about the anthropometric measurements and dietary habits of children in the Arabian Gulf in general, and in Qatar in particular.
OBJECTIVES: To conduct anthropometrics measurements on schoolchildren in Qatar and to explore their dietary habits.

METHODS: A cross-sectional study was carried out, targeting 271 (124 male and 147 female) primary school students.

RESULTS: Using the body mass index as the index of adiposity, 54.8% and 23.1% of Grade One male and female children were underweight, 3.2% and 8.8% were overweight, and 1.6% and 5.4% were obese, respectively. Breakfast, lunch, and dinner were eaten by 65%, 86%, and 87% on a daily basis. Anthropometric measurements differed significantly ($P < 0.05$) between genders and the other children of the National Center for Health Statistics population.

CONCLUSION: schoolchildren in Qatar may be considered as having less overweight and obesity occurrence than most children in the Gulf.


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Abstract

OBJECTIVE: To report a causal relationship between myocardial infarction (MI) and obesity in an adolescent in the absence of the well-known risk factors for MI.

CASE PRESENTATION AND INTERVENTION: A morbidly obese 17-year-old male, a nonsmoker, nondiabetic and normotensive patient, who sustained acute inferior MI with no family history of coronary artery disease, presented with central chest pain. ECG showed low voltage, normal sinus rhythm and ST segment elevation in the inferior leads; cardiac enzymes were elevated. Screening for ethanol and cocaine were negative. He was admitted to the coronary-care unit as a case of inferior MI with late presentation. Cardiac catheterization revealed patent epicardial coronary arteries; short- and long-term plans for weight reduction and family counseling were started. The hospital stay was uneventful, and the patient was discharged home on the fourth day.
CONCLUSION: Based on clinical and laboratory findings, we assume that the MI might partly be secondary to coronary artery spasm or invisible premature atherosclerotic plaques. Public education and awareness for this complication in a young obese patient are warranted.

Obes Rev. 2006 May;7(2):139-45.

Prevalence of Overweight, Obesity, and Associated Psychological Problems in Qatari's Female Population.

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Abstract

Dissatisfaction with body weight and the use of unhealthy weight reduction practices have been reported among adolescents. It is important to conduct rigorous studies using large representative samples of female adolescents to assess accurately the frequency of dieting, overweight and eating disorders and accompanying attitudes. The aim of the present study was to examine the severity of dieting and its association with obesity, body satisfaction and psychological problems in female adolescents. A representative sample of 800 girls aged 14-19 years were approached during the period of October to December 2004, and 566 girls gave consent and participated in the study, thus giving a response rate of 70.8%. Self-reports were obtained from 566 teenage girls using the Adolescent Dieting Scale and the Self-Reporting Questionnaire (SRQ-20) for psychopathology. Subjects were classified into three categories: acceptable weight (BMI < 25 kg m(-2)); overweight (BMI 25-29.9 kg m(-2)); and obese (BMI > 30 kg m(-2)). The prevalence of overweight and obesity for female adolescents were 13.4% vs. 1.8%; 39.9% were intermediate dieters, and 8.3% were extreme dieters. Dieting was not associated with age but was significantly associated with body mass index (BMI) (P = 0.045). Extreme dieting was strongly associated with peer perception of respondent's figure (P < 0.001) and self-perception of figure (P = 0.016). Additionally, in adult Qatari population overweight and obesity for males were (34.4% vs. 34.6%) and for females were (33.0% vs. 45.3%). This is significantly higher than adolescent girls. (P < 0.01). The SRQ score was significantly highest in the extreme dieters group (P = 0.005). The extreme dieters get most of their education about dieting from school (14.0%) and TV (43.6%). The present study revealed strong evidence for the association between frequent dieting and overweight.
body image dissatisfaction and psychological problems among adolescent females.


**Prevalence of Obesity, Overweight, and Underweight in Qatari Adolescents.**

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Abstract

**BACKGROUND:** Overweight and obesity have reached epidemic proportions in Arabian oil-rich countries and are threatening to become a global epidemic. Excess weight has a great impact on the health and quality of life of individuals. However, prevalence of underweight in the developing world has shown a decline during the last decade.

**OBJECTIVE:** The aim of this cross-sectional study was to determine the prevalence of underweight, overweight, and obesity, as measured by body-mass index, in a representative sample of adolescents aged 12 to 17 years in the State of Qatar.

**METHODS:** Qatari schoolchildren (n = 3,923) from 30 schools in urban and semiurban districts responded to a sociodemographic questionnaire. Body-mass index was calculated and the prevalence of overweight and obesity was determined on the basis of cutoff points of the International Obesity Task Force (IOTF) values (above the 85th and 95th percentiles, respectively, for overweight and obesity). Underweight was defined on the basis of CDC (Centers for Disease Control and Prevention) less than 5th percentile of BMI for age.

**RESULTS:** The final sample consisted of 1,968 boys and 1,955 girls. The prevalence of underweight, overweight, and obesity was 8.6%, 28.6%, and 7.9%, respectively, among adolescent boys and 5.8%, 18.9%, and 4.7% among girls. The prevalence of underweight was highest at 16 years of age among boys (10.5%) and at 17 years among girls (8.9%). The prevalence of obesity was highest at 12 years of age among boys (11.7%) and at 13 years among girls (6.4%). The 95th percentile curve for boys was above the IOTF...
standard curve; the 95th percentile curve for girls was below the IOTF curve.

**CONCLUSIONS:** Adolescents living in the State of Qatar are at high risk for overweight and obesity. There is a need to establish a national program for the prevention and treatment of obesity and related complications.

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**The Effect of Education and Obesity on Attitudes towards Fads Related To Weight Reduction among Arab Women in Qatar**

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**Abstract:**

A sample of 535 Arab women in Qatar (an Arab Gulf country) was interviewed to obtain their attitudes towards eight fads related to weight reduction, and the effect of educational level and obesity on these attitudes. In general 20 per cent to 54 per cent of women believed in these fads and 50.6 per cent to 45.1 per cent did not know whether or not these fads are correct. The education level of women has a significant effect on the belief of the attitude statements. Highly educated women were more likely to disagree on the attitudes related to weight reduction than low and middle education women. Obese women were more likely to believe in these fads than overweight and non-obese women. Health education programs should focus on correcting several fads related to weight reduction as a part of any program to prevent and control obesity in the Arab community.
Genetics, Obesity, and Environmental Risk Factors Associated with Type 2 Diabetes.

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Abstract

AIM: To determine the association between consanguineous marriages, obesity, and environmental risk factors associated with type 2 diabetes, in the adult Qatari population.

METHODS: The case-control study was carried out among diabetic patients and healthy subjects at the Primary Healthcare Clinics (PHCs) and the survey was conducted from February to November 2003. The study included 338 cases (with diabetes) and 338 controls (without diabetes). Face-to-face interviews were based on a questionnaire that included variables such as age, gender, socioeconomic status, parity, income level, cigarette smoking, physical activity, body mass index (BMI), obesity, and lifestyle. Their health status was assessed by medical conditions, family history, physical examination, blood pressure, blood glucose, blood count, lipid profile, cholesterol total, HDL, LDL, and triglycerides analysis.

RESULTS: The mean age (in years+/−standard deviation) of cases versus controls was 45.5+/−8.9 vs 42.4+/−8.0, P<0.001. The study revealed that there were statistically significant differences between diabetic and control subjects with respect to body mass index, low educational level, consanguineous marriage, and number of children (P<0.001). The obesity was considerably more frequent among diabetes subjects (P<0.001). Self reported family history (in first degree relatives) of diabetes (62.1% vs 44.4%, OR=2.06, 95% confidence interval (CI)=1.49-2.83) P<0.001) was prominent among diabetic subjects. The diabetes was significantly common among the consanguineous marriages of the first degree relatives compared with the control group (33.1% vs. 24.6%, OR=1.59, 95% CI=1.11-2.29, P=0.008). Systolic blood pressure (P=0.023) and glucose fasting (P<0.001) levels were significantly higher in diabetic patients than in control subjects. The logistic regression model showed that smoking (OR=2.42 95%
CI=1.66-3.54, P<0.0001); degree of consanguinity (OR=1.38 95% CI=1.13-1.69, P=0.002), BMI (OR=1.41 95% CI=1.12-1.76, P=0.003), level of education (OR=1.23 95% CI=1.04-1.45, P=0.017), number of children (OR=1.34 95% CI=1.02-1.77, P=0.037), and systolic blood pressure (OR=1.01 95% CI=1.00-1.02, P=0.044) were considered as associated risk factors for diabetes.

CONCLUSION: The present study revealed that obesity, consanguinity, blood pressure, total cholesterol, HDL-cholesterol, and triglycerides were more prevalent in diabetic patients. The characterization of these factors will contribute to defining more effective and specific strategies to screen for and control diabetes and cardiovascular disease in a developing country.


Growth Patterns of Qatari School Children and Adolescents Aged 6-18 Years.

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Abstract

The study was conducted to analyze the patterns of growth in height and weight and the prevalence of over-weight among Qatari school children aged 6-18 years. Weights and heights of a cross-sectional sample of Qatari school children were measured. These children were selected randomly, in equal proportions of age and gender, from different schools from urban and semi-urban districts. Appropriate statistical procedures were performed to produce smooth percentile curves for boys and girls using a two-stage approach. Initial curve smoothing for selected major percentiles was accomplished by various parametric and non-parametric procedures. In the second stage, a normalization procedure was used for creating z-scores that closely matched the smooth percentile curves. The height and weight results were compared with the international reference values of National Center for Health Statistics/Centers for Disease Control and Prevention (NCHS/CDC). The prevalence of over-weight was calculated using the new International Obesity Task Force (IOTF) reference. Of 7442 Qatari children studied, 50.3% were male and 49.7% female. The mean values for height, weight, and body mass index (BMI) increased with the
age for both boys and girls until the age of 18 years, except BMI, which stabilized at the age of 16-18 years at around 22.6 for boys and at 21.6 for girls. The growth patterns of the Qatari children, aged 6-18 years, appeared to be comparable with those of the NCHS/CDC reference. The weight-for-age centile curves of the Qatari boys tended to be superior to those of the NCHS/CDC reference until the age of 15 years, less so those of the Qatari girls. In contrast, the height-for-age centile curves of the Qatari children tended to deviate in a negative sense from the NCHS/CDC reference curves, for boys and girls from age around 11 years and 13 years respectively. The deviation of the smoothed median height-for-age curves from the reference in adolescence could most likely be attributed to a later maturation among the Qatari children. The prevalence of under-weight, over-weight, and obesity for the Qatari children was quite below the CDC and IOTF rates, except for girls aged 6-9 years. More males than females were over-weight or obese according to either the local, the CDC, or the IOTF reference, and the prevalence increased with age. A good percentage of the Qatari children was at risk of being over-weight, which needs more attention because the development of obesity results in different types of diseases associated with changes in body composition.


Intraabdominal Pressure after Full Abdominoplasty in Obese Multiparous Patients.

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Abstract

This study measured intraabdominal pressure in morbidly obese and multiparous patients who underwent abdominoplasty with musculoaponeurotic plication. The purpose of this study was to evaluate any potential adverse effect on pulmonary function by virtue of pulmonary function tests and measurement of peak airway pressure. The study included 43 multiparous, morbidly obese women (mean body mass index, 35.8 kg/m2) with a mean age (+/- 5D) of 38.6 +/- 7 years. All had full abdominoplasty and repair of the musculoaponeurotic system during the period from June of 1999 to May of 2002. Forty-three morbidly obese multiparous patients were seen over a period of 24 months. Their intraabdominal pressure was estimated by measuring the intravesical
pressure before and after repair of severe diastases (divarication) of the rectus abdominis muscles with severely flaccid myofascial component before using a hydrometer connected to a Foley catheter both before and after repair. All patients had pulmonary function checked before and 2 months after the repair. The study confirmed that there are minimal changes on the intraabdominal pressure parameters compared with measurement before and after full abdominoplasty with plication of the rectus muscles, with minimal to negligible changes in the intrathoracic pressure. These changes are clinically and statistically significant (p < 0.0001). The study also recommended the safety of full abdominoplasty and repair of the musculoaponeurotic system in multiparous and morbidly obese patients. Furthermore, no statistically significant difference was found in pulmonary function parameters before and after surgery in patients with a history of bronchial asthma.


The Role of Social Factors and Weight Status in Ideal Body-Shape Preferences as Perceived By Arab Women

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Abstract

This study investigated the social factors associated with body-shape preferences for females and males as perceived by Arab women living in Qatar, and correlated the current weight status of women studied with these preferences. The subjects were 535 non-pregnant Arab women aged 20–67 years, who attended heath centres in Doha City, the capital of the State of Qatar. Illustrations of male and female body shapes ranging from very thin to very obese using the 9-figure Silhouettes scale were shown to women, and they were asked to select their preferred figure. Body mass index (BMI) was used to determine the weight status of women studied. Age, educational level and employment status were found to be significantly associated with ideal body-shape preference for both males and females, whereas marital status and current weight status had no
significant association. In general, the Arab women studied selected a more mid-range of body fatness for males than for females. It is concluded that attention should be given to sociocultural factors, such as body-shape preferences, in any programmes to promote ideal body weight for the public.
SAUDI ARABIA

General Medicine 2011;2(5):Wmc001927

Prospective Incidence Study of Diabetes Mellitus in Morbidly Obese Saudi Patients

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Abstract

OBJECTIVE: The aim of this study is to evaluate the association between obesity and diabetes mellitus in a sample of morbidly obese Saudi patients.

DESIGN: 201 morbidly obese patients undergoing surgery for obesity were preoperatively assessed. Assessment included complete blood picture, liver enzymes, lipid profile, blood sugar and hormones. Blood pressure was measured and liver ultrasound was done.

RESULTS: 198 patients were enrolled in the study, from which 46 persons (23.23%) were diabetics and 22 (11.11%) were hypertensive. The body mass index (BMI) of both diabetic and non diabetic groups was of significance (p-value = 0.108). Obesity has proven to appear more in childhood 141 (71.21%), followed by in adults 30 (15.15%) and then at the age of puberty 17 (8.58%). There was a high significance (p-value = 0.005) in morbidly obese hypertensive patients having diabetes than in morbidly obese patients with normal blood pressure and do not suffer from diabetes.

CONCLUSION: Obesity is becoming a major health problem as it is considered a risk factor in metabolic diseases. It is also becoming more popular in children increasing the incidence of its morbidity disorders due to the longer exposure. Abdominal obesity is a recognized risk factor for both type 2 diabetes mellitus and cardiovascular disease resulted in the metabolic consequences of obesity, such as insulin resistance and impaired glucose tolerance.

In summary, fatty liver is relatively common in overweight and obese volunteers with type 2 diabetes mellitus (DM) and is an aspect of body composition related to severity of insulin resistance, dyslipidemia, and inflammatory markers.
Visceral Obesity and Inflammation Markers in Relation to Serum Prostate Volume Biomarkers among Apparently Healthy Men.

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Abstract

Eur J Clin Invest 2011; 41 (9): 987-994 ABSTRACT: Background Prostate disease incidence is expected to rise among developing nations secondary to increased prevalence of obesity and the elderly. Although many case-control studies have associated obesity to prostate cancer aggressiveness, few have correlated markers of prostate pathology to biomarkers of visceral obesity and insulin resistance, using an apparently healthy cohort. This study aims to fill this gap. Materials and methods The 219 consenting adult Arab men, aged 30-70 years, were included in this cross-sectional study. Demographics were noted and anthropometrics measured. Fasting blood samples were extracted, and glycaemic and lipid profile were determined using routine laboratory methods. Serum adipocytokines and inflammatory markers were measured using multiplex assays. Total prostate-specific antigen (tPSA), free PSA (fPSA), parathyroid-related protein (PTHrP) and endoglin were measured using enzyme-linked immunosorbent assays. Results Serum triglycerides and waist-hip ratio (WHR) were significantly and positively associated with circulating (tPSA) levels in all subjects (P < 0.01). Systolic blood pressure (SBP), adiponectin, active plasminogen activator inhibitor-1 (aPAI-1) and insulin-like growth factor-1 (IGF-1) had significant inverse associations to tPSA. Stepwise linear regression revealed that adiponectin, IGF-1, WHR and PTHrP explained 30% of variance in tPSA levels (P < 0.0001), while SBP, resistin and BMI explained 18.7% of variance in endoglin (P = 0.001). Conclusions The associations of adiponectin and WHR strengthen the link between insulin resistance and visceral adiposity to prostate volume markers among apparently healthy Arab men. Follow-up studies are needed to extend these preliminary findings so that early interventions can be provided to those at increased risk.
Unhealthy Nutritional Habits in University Students are a Risk Factor for Cardiovascular Diseases.

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Abstract

OBJECTIVE: To evaluate the relationship between the nutritional habits of university students with health parameters related to cardiovascular risk.

METHODS: Three hundred and twelve students (180 females and 132 males; mean age 21.1 +/- 2.8 years) attending King Saud University, Riyadh, KSA were randomly selected from the university register and invited to participate in the study during 2008-2009. Students who consented to participate completed a self-reported questionnaire including: nutritional screen, health habits, and lifestyle practice. Daily food consumption was recorded, and nutritional analysis was performed. Blood pressure (BP) was also measured.

RESULTS: A quarter of students was found to be overweight (21%) or obese (6.5%). The percentage of overweight and obese male students was 23% and 7% compared with female students who were 19% overweight and 6% obese. There was a positive correlation between fat consumption and BMI as well as BP in both genders, between economical status and BMI (p=0.05), and between salty food and BP (p=0.05). There was a negative correlation between consumption of fiber, grains, vegetables, fruits, beans, and BMI as well as BP in both genders (p=0.05).

CONCLUSION: Our findings suggest that lifestyle modification is important especially in young age groups. The preventive interventions should focus not only on obesity, but also on related diseases. There is a need for strategies and coordinated efforts to reduce the tendency of overweight and obesity among college students.
Diabetes Mellitus Type 2 and Other Chronic Non-Communicable Diseases in the Central Region, Saudi Arabia (Riyadh Cohort 2): A Decade of an Epidemic.

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Abstract

BACKGROUND: Follow-up epidemiologic studies are needed to assess trends and patterns of disease spread. No follow-up epidemiologic study has been done in the Kingdom of Saudi Arabia to assess the current prevalence of major chronic, noncommunicable diseases, specifically in the urban region, where modifiable risk factors remain rampant. This study aims to fill this gap.

METHODS: A total of 9,149 adult Saudis ages seven to eighty years (5,357 males (58.6%) and 3,792 females (41.4%)) were randomly selected from the Riyadh Cohort Study for inclusion. Diagnosis of type 2 diabetes mellitus (DMT2) and obesity were based on the World Health Organization definitions. Diagnoses of hypertension and coronary artery disease (CAD) were based on the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure and American Heart Association criteria, respectively.

RESULTS: The overall crude prevalence of DMT2 was 23.1% (95% confidence interval (95% CI) 20.47 to 22.15). The age-adjusted prevalence of DMT2 was 31.6%. DMT2 prevalence was significantly higher in males, with an overall age-adjusted prevalence of 34.7% (95% CI 32.6 to 35.4), than in females, who had an overall age-adjusted prevalence of 28.6% (95% CI 26.7 to 29.3) (P < 0.001). The overall crude prevalence of obesity was 31.1% (95% CI 30.1 to 32.0). The age-adjusted prevalence of obesity was 40.0%. The prevalence of obesity was higher in females, with an overall prevalence of 36.5% (95% CI 35.1 to 37.83), than in males (25.1% (95% CI 23.7 to 26.3)) (P < 0.001). The age-adjusted prevalence of hypertension and
CAD were 32.6% (95% CI 31.7 to 33.6) and 6.9% (95% CI 6.4 to 7.4), respectively.

**CONCLUSION:** Comparisons of our findings with earlier data show that the prevalence of DMT2, hypertension and CAD in Riyadh, Saudi Arabia, has alarmingly worsened. Aggressive promotion of public awareness, continued screening and early intervention are pivotal to boosting a positive response.

Was there a Change in The Body Mass Index of Saudi Adolescent Girls in Al-Khobar Between 1997 And 2007?

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Abstract

**BACKGROUND AND OBJECTIVES:** Special concern is focused on the nutritional status of adolescent girls in order to avoid future health problems. The aim of this study was to determine the change in body mass index (BMI) among adolescent Saudi girls living in Al-Khobar between 1997 and 2007.

**MATERIALS AND METHODS:** A cross-sectional sample of adolescent Saudi girls, 15-19-years-old, living in Al-Khobar, Saudi Arabia, was analyzed through two data sets. The first data set (n = 400) was collected in 1997 and the second (n = 321) was collected in 2007. Both data sets used the same sampling method. Anthropometric measurements were made and the BMI was used to determine participants' nutritional status. Statistical analysis was performed.

**RESULTS:** There was an increase in the median weight of Saudi adolescent girls from 1997 to 2007, but the change was not statistically significant. There was a statistically significant change, however, in adolescent girls' height during the 10-year interval. Using BMI to determine the nutritional status of the sample, no statistically significant difference was found. Overweight and obesity remain prevalent in about 30% of the adolescent girls, and about 3.5% of the girls in both sets were underweight.

**CONCLUSIONS:** This study concluded that there was no change in BMI among Saudi adolescent girls living in Al-Khobar during the 10-year span. Underweight is of low prevalence, and overweight and obesity are the
critical nutritional problems that are faced by this population. Further research using time span comparisons is important to assess changes in maladaptive overweight and obesity.


Vitamin D Status In Relation To Obesity, Bone Mineral Density, Bone Turnover Markers And Vitamin D Receptor Genotypes In Healthy Saudi Pre- And Postmenopausal Women.

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Abstract

The various factors that may contribute to vitamin D deficiency or insufficiency were examined among healthy Saudi pre- and postmenopausal women. Vitamin D deficiency was highly prevalent among studied Saudi women with obesity, poor sunlight exposure, poor dietary vitamin D supplementation and age as the main risk factors.

INTRODUCTION: The various factors that may contribute to vitamin D deficiency or insufficiency in relation to bone health among Saudi women are not known. The main objectives of the present study were to determine the factors influencing vitamin D status in relation to serum 25-hydroxyvitamin D (25(OH)D), intact parathyroid hormone (PTH), bone turnover markers (BTMs), bone mineral density (BMD), and vitamin D receptor genotype (VDR) in healthy Saudi pre- and postmenopausal women.

METHODS: A total number of 1,172 healthy Saudi women living in the Jeddah area were randomly selected and studied. Anthropometric parameters, socioeconomic status, sun exposure index together with serum levels of 25(OH)D, calcitriol, intact PTH, Ca, PO4, Mg, creatinine, albumin, and biochemical BTMs were measured. BMD was measured by a dual energy X-ray absorptiometry and VDR genotypes were also determined.

RESULTS: About 80.0% of Saudi women studied exhibited vitamin D deficiency (serum 25(OH)D<50.0 nmol/L) with only 11.8% of all women were considered with adequate vitamin D status (serum 25(OH)D>75 nmol/L). Secondary hyperparathyroidism was evident in 18.5% and 24.6%
in pre- and postmenopausal women with 25(OH)D<50 nmol/L. Serum 25(OH)D was lower (P<0.001) and intact PTH higher (P<0.001) in the upper quintiles of body mass index (BMI) and waist-to-hip ratio (WHR). Multiple linear regression analysis showed that BMI, sun exposure index, poor dietary vitamin D supplementation, WHR, and age were independent positive predictors of serum 25(OH)D values.

CONCLUSIONS: Vitamin D deficiency is highly prevalent among healthy Saudi pre-and postmenopausal women and largely attributed to obesity, poor exposure to sunlight, poor dietary vitamin D supplementation, and age.


Vitamin D, Parathyroid Hormone Levels and Insulin Sensitivity among Obese Young Adult Saudis.

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Abstract

OBJECTIVES: To determine alterations of vitamin D and parathyroid hormone levels and their relationship to insulin resistance among a sample of healthy young adult obese Saudis and to identify factors that might predict these alterations.

METHODS: Age and gender matched obese young (aged 18-25 years) adult Saudis (N = 76) with body mass index of > or = 30 and their lean controls (N = 84) were recruited after fulfilling exclusion and inclusion criteria from attendees of health facility at King Faisal University, Saudi Arabia. Selected participants were invited to a personal interview to gather information regarding socio-demographics. Fasting blood samples were assessed for the following essays: serum calcium, 25 OH vitamin D, inorganic phosphorus, intact parathyroid hormone (iPTH), serum insulin, fasting glucose, renal and liver function tests.

RESULTS: Vitamin D levels were significantly higher in lean controls, and showed significant decline in relation to obesity classes, hypovitaminosis D was found in 30% (38.2% obese vs. 22.7% in lean) and deficiency in 17.5% of subjects; (19% vs. obese 15.8%). iPTH was significantly higher in obese subjects. Secondary hyperparathyroidism was found in 48.1% (60.5% obese vs. 36.9% controls). Regression analysis showed that body mass index,
serum calcium and creatinine levels were the main predictors for vitamin D level. Vitamin D is positively associated with fasting blood sugar (r = -.133, P = 0.09) and beta cell function index (r = .192, P = 0.08), negatively associated with HOMA-IR (r = -.122, P = .34) but without statistical significance after controlling of possible confounders.

CONCLUSION: Vitamin D level among young adult Saudi obese is negatively associated by body mass index and classes of obesity. Negative associations between vitamin D, iPTH levels and HOMA-IR exist but without statistical significance.


Prevalence of Diabetes Mellitus in A Saudi Community.

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Abstract

BACKGROUND AND OBJECTIVES: Quantifying the prevalence of diabetes mellitus is important to allow for rational planning and allocation of resources. Therefore, we designed this study to determine the prevalence of diabetes among Saudi nationals.

DESIGN AND SETTING: A cross-sectional study among patients attending a primary care clinic in June 2009.

PATIENTS AND METHODS: Patients were interviewed with structured questionnaires to determine the presence of diabetes by questioning for history of the disease, and charts were reviewed to document any diabetic therapies that the patients may have undergone in the past or were undergoing at that time.

RESULTS: Of 6024 subjects, diabetes mellitus was present in 1792 (30%) patients. The mean (SD) age of the patients was 55.3 (13.2) years. The prevalence of diabetes was 34.1% in males and 27.6% in females (P<.0001). The mean (SD) age for onset of diabetes in males and females was 57.5 (13.1) and 53.4 (13.1) years, respectively (P<.0001). Females <50 years old had a higher prevalence than males in the corresponding age range-34.1% and 25.1%, respectively (P<.0001). The prevalence of diabetes decreased in patients older than 70 years. The prevalence of body mass index of ≥25 was 72.5%. Among patients with diabetes, the prevalence of body mass index of
≥25 was 85.7% (P<.0001). There was a higher prevalence of obesity (body mass index, ≥25) in females (87.7%) as compared to males (83.1%) (P=.008).

**CONCLUSION:** The prevalence of diabetes is high among the Saudi population and represents a major clinical and public health problem. A national prevention program to prevent diabetes and address the modifiable risk factors at the community level, targeting high-risk groups, should be implemented soon.


**Nutrition, Physical Activity, and Gender Risks for Adolescent Obesity in Southwestern Saudi Arabia**

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**Abstract**

**BACKGROUND/AIM:** The aim of the study was to investigate gender differences in obesity and related behavior among adolescent school boys and girls in southwestern Saudi Arabia.

**PATIENTS AND METHODS:** A cross-sectional study on a stratified sample of 1,249 adolescent boys and 620 adolescent girls, was conducted in southwestern Saudi Arabia. They were interviewed and examined for weight and height using standardized techniques.

**RESULTS:** The prevalence of obesity and overweight in the present study amounted to 23.2% among boys and 29.4% among girls. The following significant risk factors were identified; being a female [adjusted odds ratio (aOR) =1.372, 95% confidence interval (CI) =1.099-1.753] and lack of class physical exercise (aOR =1.452, 95% CI =1.149-2.117).

**CONCLUSION:** Obesity among adolescents is a public health problem in Southwestern Saudi Arabia. The problem is more prevalent among girls. Thus, there is a need for a national programme in the country to prevent and control obesity among adolescents.
Relationship between Obesity and Other Risk Factors and Skin Disease among Adult Saudi Population.

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Abstract

BACKGROUND: Obesity is accused for a wide spectrum of dermatologic diseases; no previous follow-up study has been conducted to investigate these conditions in adult male and female Saudi population.

OBJECTIVES: To describe obesity pattern using BMI and to assess the association between obesity and certain skin diseases among adult Saudi population.

MATERIALS AND METHODS: A retrospective cohort study of 2-year duration was conducted. The study sample was randomly selected from dermatology clinics at Qassim. Male cohorts were 61 obese adults and 48 nonobese adults. Female cohorts were 32 obese adults and 36 nonobese adults. Measurement of BMI, waist-hip ratio, fasting glucose, blood pressure, and dermatological examination was performed.

RESULTS: Skin disease incidence was significantly increased among exposed rather than nonexposed cohorts with a relative risk of 2.3 in male cohort and 2.3 in female cohort. Acanthosis nigricans and striae distensae incidence increased in exposed men and women with highly significant difference from nonexposed groups. Skin tag incidence significantly increased in the exposed male cohorts only but not the female cohort. Hirsutism, dry skin, pruritis, and planter keratosis all showed nonsignificant differences. The most frequently reported infections in obese men were tinea pedis (18%), intertrigo (14.7%), and bacterial folliculitis (13.1%) with significant difference. BMI was the only risk factor that regresses on skin disease occurrence in study groups.

CONCLUSION AND RECOMMENDATIONS: Our study linked incidence of acanthosis nigricans and striae distensae to obesity in both female and male adult population but showed sex difference for other skin diseases, which raised many questions and requires further longer duration follow-up studies.
Cardiovascular Risk Factors among Adolescent Secondary School Boys in Ahad Rufeida, Southwestern Saudi Arabia.

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Abstract

A cross-sectional stratified sample of 1249 adolescent secondary school boys was studied. More than 25% of boys did not practice any physical exercise. More than half of the parents (54.5%) were consanguineous. High prevalence of parental history of hypertension, diabetes and high blood lipids was found. Smoking amounted to 11.8%. The prevalence of obesity was 23.3%. The study showed that 6.8% had a high systolic blood pressure and 13.0% (162) had high diastolic blood pressure. There is a need for a national programme to prevent and control cardiovascular risk factors among adolescents.


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Abstract

BACKGROUND/AIM: Earlier reports from Saudi Arabia have shown high prevalence of Helicobacter pylori infection. However, recent studies have documented a reduction in the infection prevalence. No prior study has assessed the prevalence in morbidly obese Saudi patients. We aimed to study the prevalence of H. pylori infection in a group morbidly obese Saudi patients referred for endoscopy prior to bariatric surgery.

MATERIALS AND METHODS: We retrospectively reviewed the medical records of all patients who were referred for upper endoscopy prior to bariatric surgery from June 2006 to September 2008. All data were recorded including patient's demographics, comorbid conditions, endoscopic and histological findings.
RESULTS: There were 62 patients included, 20 males and 42 females. The mean age was 34 years (range 18-51) with a mean BMI of 55 Kg/m² (range 35-92). H. pylori were present in 53 patients (85.5%) with chronic active gastritis. All patients with positive H. pylori had chronic gastritis of variable severity. Intestinal metaplasia was present in 5%. The prevalence of H. pylori infection was similar in patients with and without co-morbid conditions. Main endoscopic findings were gastritis in 67.7%, hiatus hernia in 13%, and gastric erosions in 13%. No patient had duodenal or gastric ulcer.

CONCLUSIONS: There is a high prevalence of H. pylori infection in morbidly obese Saudi patients undergoing bariatric surgery being referred for upper GI endoscopy. Further prospective studies are needed to evaluate the clinical implication and benefit of eradication treatment of infection in these patients.

Adiposity and Insulin Resistance Correlate with Telomere Length in Middle-Aged Arabs: The Influence of Circulating Adiponectin.


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Abstract

OBJECTIVE: Studies in obesity have implicated adipocytokines in the development of insulin resistance, which in turn may lead to accelerated aging. In this study, we determined associations of chromosomal telomere length (TL) to markers of obesity and insulin resistance in middle-aged adult male and female Arabs with and without diabetes mellitus type 2 (DMT2).

DESIGN AND METHODS: One hundred and ninety-three non-diabetic and DMT2 subjects without complications (97 males and 96 females) participated in this cross-sectional study. Clinical data, as well as fasting blood samples, were collected. Serum glucose and lipid profile were determined using routine laboratory methods. Serum insulin, leptin, adiponectin, resistin, tumor necrosis factor-α, and PAI-1 were quantified using customized multiplex assay kits. High sensitive C-reactive protein
(hsCRP) and angiotensin II (ANG II) were measured using ELISAs. Circulating leukocyte TL was examined by quantitative real-time PCR.

**RESULTS:** Circulating chromosomal leukocyte TL had significant inverse associations with body mass index (BMI), systolic blood pressure, fasting insulin, homeostasis model assessment of insulin resistance (HOMA-IR), low-density lipoprotein (LDL)- and total cholesterol, ANG II and hsCRP levels. Adiponectin, BMI, systolic blood pressure, and LDL cholesterol predicted 47% of the variance in TL (P<0.0001). HOMA-IR was the most significant predictor for TL in males, explaining 35% of the variance (P=0.01). In females, adiponectin accounted for 28% of the variance in TL (P=0.01).

**CONCLUSION:** Obesity and insulin resistance are associated with chromosomal TL among adult Arabs. Evidence of causal relations needs further investigation. The positive association of adiponectin to TL has clinical implications as to the possible protective effects of this hormone from accelerated aging.


**Body Mass Index And Obstetric Outcomes In Pregnant In Saudi Arabia: A Prospective Cohort Study.**

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**Abstract**

**BACKGROUND AND OBJECTIVES:** We examined the effect of body mass index in early pregnancy on pregnancy outcome since no study in Saudi Arabia has addressed this question.

**METHODS:** This prospective cohort study involved women registered for antenatal care during the first month of pregnancy at primary health care centers in Al-Hassa, Saudi Arabia. Data was collected from records and by direct interview.
RESULTS: The study included 787 women. Compared to normal weight women (n=307), overweight (n=187) and obese (n=226) women were at increased risk for pregnancy-induced hypertension (RR=4.9 [95% CI 1.6-11.1] and 6.1 [95% CI 2.1-17.8], respectively), gestational diabetes (RR=4.4 [95% CI 1.2-16.3] and 8.6 [95% CI 2.6-28.8]), preeclamptic toxemia (RR=3.8 [95% CI 1.1-14.6] and 5.9 [95% CI 1.7-20.4]), urinary tract infections (RR=1.4 [95% CI 0.5-3.9] and 3.7 [95% CI 1.7-6.2]), and cesarean delivery (RR=2.0 [95% CI 1.3-3.0] in obese women). Neonates born to obese women had an increased risk for postdate pregnancy (RR=3.7 [95% CI 1.2-11.6]), macrosomia (RR=6.8 [95% CI 1.5-30.7]), low 1-minute Apgar score (RR=1.9 [95% CI 1.1-3.6]), and admission to neonatal care units (RR=2.1 [95% CI 1.2-2.7]). On the other hand, low birth weight was less frequent among obese women (RR=0.5 [95% CI 0.3-0.9]) while the risk was high among underweight women (RR=2.3 [95% CI 1.4-3.8]).

CONCLUSION: Even with adequate prenatal care, overweight and obesity can adversely affect pregnancy outcomes.

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Obesity In Saudi Children: A Dangerous Reality.

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Abstract

Obesity among children is an increasing concern. This cross-sectional study in 2006 determined the prevalence and demographic characteristics of overweight and obesity in children in the Eastern province of Saudi Arabia. A total of 7056 children (aged 2-18 years) were selected from schools and the outpatient department of a hospital. The overall prevalence of overweight was 19.0% and of obesity was 23.3%. More than 50% of children between 14 and 18 years had weight above the 85th percentile. More males than females were obese by ages 14-18 years (35.6% versus 19.2%). Saudi and non-Saudi nationalities had the same distribution of body mass index. Interventions to encourage healthier lifestyles for children are needed at the national level.
Obesity and Eating Habits among College Students in Saudi Arabia: A Cross Sectional Study.

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Abstract

BACKGROUND: During the last few decades, the Kingdom of Saudi Arabia (KSA) experienced rapid socio-cultural changes caused by the accelerating economy in the Arabian Gulf region. That was associated with major changes in the food choices and eating habits which, progressively, became more and more "Westernized". Such "a nutritional transition" has been claimed for the rising rates of overweight and obesity which were recently observed among Saudi population. Therefore, the objectives of the current work were to 1) determine the prevalence of overweight and obesity in a sample of male college students in KSA and 2) determine the relationship between the students' body weight status and composition and their eating habits.

METHODS: A total of 357 male students aged 18-24 years were randomly chosen from College of Health Sciences at Rass, Qassim University, KSA for the present study. A Self-reported questionnaire about the students' eating habits was conducted, and their body mass index (BMI), body fat percent (BF%), and visceral fat level (VFL) were measured. Data were analyzed using SPSS statistical software, and the Chi-square test was conducted for variables.

RESULTS: The current data indicated that 21.8% of the students were overweight and 15.7% were obese. The total body fat exceeded its normal limits in 55.2% of the participants and VFL was high in 21.8% of them. The most common eating habits encountered were eating with family, having two meals per day including breakfast, together with frequent snacks and fried food consumption. Vegetables and fruits, except dates, were not frequently consumed by most students. Statistically, significant direct correlations were found among BMI, BF% and VFL (P < 0.001). Both BMI and VFL had significant inverse correlation with the frequency of eating with family (P = 0.005 and 0.007 respectively). Similar correlations were also found between BMI and snacks consumption rate (P = 0.018), as well as, between VFL and the frequency of eating dates (P = 0.013).
CONCLUSIONS: Our findings suggest the need for strategies and coordinated efforts at all levels to reduce the tendency of overweight, obesity and elevated body fat, and to promote healthy eating habits in our youth.


Bio-Enteric Intragastric Balloon In Obese Patients: A Retrospective Analysis Of King Faisal Specialist Hospital Experience.

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Abstract

BACKGROUND: Bio-enteric intragastric balloon (BIB) insertion is gaining popularity for weight reduction in obese patients. We evaluated the efficacy, tolerability, and safety of BIB in the treatment of obesity.

METHODS: A total of 173 Saudi obese patients [mean+/−SD age 34.5 +/- 11.6 years, 58 (33.5%) were men] who underwent BIB (InaMed Corporation, California, USA) insertion were followed up clinically, biochemically, and endoscopically for 6-12 months. The mean+/−SD baseline body weight, excess weight, and body mass index (BMI) were 123.5 +/- 39.6 and 68.9 +/- 40.0 kg and 46.7 +/- 14.1 kg/m(2), respectively. Associated dietary control, exercise, and medical treatment were used in 67 (38.7%), 60 (34.7%), and 3 (1.7%), respectively.

RESULTS: BIBs were safely and successfully inserted in 15.1 +/- 6.2 min, filled with 626.2 +/- 41.7 ml methylene blue solution, removed after a period of 189.7 +/- 68.3 days, within 14.1 +/- 6.3 min. BIB was not tolerated for 6 months in 33 (19.8%) patients. Body weight and BMI at 6 and 12 months postinsertion were significantly reduced to 112.5 +/- 35.7 kg and 43.1 +/- 13.1 kg/m(2), and 110.7 +/- 34.5 kg and 42.3 +/- 12.6 kg/m(2), respectively (p < 0.01 versus baseline by one-way ANOVA). Furthermore, the mean absolute weight loss and mean percentage excess weight reduction (EWR) at 6 and 12 months post-BIB insertion were 13.5 +/- 13.5 kg and 19.5 +/- 21.8, and 14 +/- 18.5 kg and 18.0 +/- 25.8, respectively. No
mortality or major complications has occurred. EWR of >or=25% occurred in 24.1% and 30.1% of patients at 6 and 12 months postinsertion, respectively.

**CONCLUSION:** BIB is a safe, simple, and potentially efficient procedure that is well-tolerated by the majority of patients.


**Relationship between Resistin and Apai-1 Levels with Insulin Resistance in Saudi Children.**

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**Abstract**

**BACKGROUND:** Association of resistin with insulin resistance (IR) in humans is still controversial and few studies have investigated the association of plasminogen activator inhibitor-1 (PAI-1) with IR in children. The purpose of the present study was therefore to evaluate serum levels of resistin and active PAI-1 (aPAI-1) in Saudi children and their association with the various obesity-related complications.

**METHODS:** In this cross-sectional study, 73 boys and 77 girls with varying body mass index (BMI) were recruited. They were assessed for anthropometric measures and fasting serum levels of glucose, insulin, lipid profile, resistin, angiotensin II (ANG II) and aPAI-1.

**RESULTS:** Resistin was positively correlated with hips (r = 0.33, P < 0.01), waist (r = 0.23, P < 0.05) and BMI (r = 0.33, P < 0.01). The association of resistin with the markers of obesity was also significant in girls but lost significance in boys. aPAI-1 was positively correlated with total cholesterol (r = 0.24; P < 0.01), triglycerides (r = 0.2, P < 0.05), HOMA-IR (r = 0.26, P < 0.01) and insulin (r = 0.26, P < 0.01). The significant association of aPAI-1 with IR was also true in girls but lost significance in boys.

**CONCLUSION:** Resistin is not correlated with IR and further studies are needed to explore the role of resistin especially in childhood obesity. In contrast, increased levels of PAI-1 may contribute to the risk of cardiovascular diseases related to obesity and insulin resistance in children. The observed gender-related differences in the association between resistin, aPAI-1 with obesity markers and IR could be attributed to sexual dimorphism in body fat distribution.
Poor Diet Quality and Food Habits are Related to Impaired Nutritional Status In 13- To 18-Year-Old Adolescents in Jeddah.

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Abstract

In recent decades, diets have changed rapidly in the Kingdom of Saudi Arabia (KSA) because the Western diet is replacing the traditional Arabic diet. This has resulted in an alarming increase in the number of overweight and obese children and adolescents in KSA. It is well documented that lifestyle is strongly associated with the development of obesity. Nevertheless, this remains to be demonstrated in adolescents from a rapidly developing country in the Middle East such as Saudi Arabia. This study tested the hypothesis that the new current dietary habits are related to the increase in overweight and obese Saudi Arabian adolescents. In 2006, a cross-sectional study was conducted among 239 adolescents (13-18 years old) who were selected by cluster sampling from schools in Jeddah, KSA. The nutritional status was assessed by anthropometric and biochemical parameters at the Saudi German Hospitals Group, Jeddah. Dietary habits were evaluated by a 3-day dietary recall (food diary) and a food frequency questionnaire. The mean age of the participants was 15.5 ± 2.5 years. The mean body mass index was 27.43 ± 4.61 kg/m(2). A total of 44.6% of the adolescents were overweight, and 56.6%, 30.5%, and 13.0% of energy was derived from carbohydrates, fats, and proteins, respectively. Compared with the Dietary Reference Intake, carbohydrate and fat intakes were higher, and calcium, iron, and zinc intakes were lower. Higher cholesterol and lower hemoglobin levels were found in 30.5% and 53.6% of the adolescents, respectively. In summary, increased weight status of 13- to 18-year-old Saudi adolescents was related to their inadequate dietary habits. This indicates the importance of rapidly promoting a healthier lifestyle among Saudi Arabian adolescents.
Obesity and Immune Cells in Saudi Females.

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Abstract

For the past two decades or more, obesity has been increasing in industrialized and affluent countries. This increase has been shown in children, adults and the elderly. The latest statistical studies in Saudi Arabia show that obesity is increasing, with obese Saudi women outnumbering obese Saudi males, and that these numbers are continuously rising. Obesity, which leads to many medical risks, affects the immune system in direct and indirect ways. In this study, the effect of obesity on the immune system of 119 Saudi female university students was investigated. Using a blood sample from each subject, the following immune-related parameters were determined: total and differential white blood cell counts (WBCs), total lymphocyte and sub-lymphocyte cell counts. Two measures of body fat were used: the body mass index (BMI) and the waist-to-hip ratio (WHR) to correlate body weight to the other measured parameters. A significant correlation was present between BMI and WHR each with total white blood cells, neutrophils, and CD4 lymphocyte concentrations. Some other parameters were only affected by the increase in the BMI but not the WHR, such as platelets, while others were affected by the WHR only, such as total T-cells. On the other hand, there were no significant correlations between BMI or WHR and basophils, eosinophils, monocytes, CD8, B-cell, and NK-cell counts. The findings indicate that obesity might seriously affect the innate and adaptive immune systems.
Telomere Length in Relation to Insulin Resistance, Inflammation and Obesity among Arab Youth.

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Abstract

AIM: The aim of this study was to determine the associations of telomere length to markers of obesity, insulin resistance and inflammation in Saudi children.

METHODS: A total of 69 boys and 79 girls, aged 5-12 years, participated in this cross-sectional study. Anthropometrics were measured. Serum glucose and lipid profile were measured using routine laboratory methods. Serum insulin, leptin, adiponectin, resistin, tumour necrosis factor-alpha and active plasminogen activator inhibitor 1 were quantified using customized multiplex assay kits. C-reactive protein and angiotensin II were quantified using ELISA. Leucocyte telomere length was examined by quantitative real time PCR utilizing IQ cycler.

RESULTS: Mean telomere length was significantly shorter in obese boys compared with their lean counterparts (p = 0.049), not in girls. It was not associated to insulin resistance, adipocytokines and markers of inflammation. In girls, the significant predictor of telomere length was waist circumference, explaining 24% of variance (p = 0.041) while in boys, systolic blood pressure explained 84% of the variance (p = 0.01).

CONCLUSION: Childhood obesity in boys corresponds to shorter leucocyte telomere length which is not evident in girls. The association of leucocyte telomere length to blood pressure and waist circumference in children suggests clinical implications as to the contribution of these parameters in premature ageing.
Prevalence of Overweight and Obesity in Saudi Children and Adolescents.

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Abstract

BACKGROUND AND OBJECTIVE: There is limited information on overweight and obesity in Saudi children and adolescents. The objective of this study was to establish the national prevalence of overweight and obesity in Saudi children and adolescents.

METHODS: The 2005 Saudi reference data set was used to calculate the body mass index (BMI) for children aged 5 to 18 years. Using the 2007 WHO reference, the prevalence of overweight, obesity and severe obesity were defined as the proportion of children with a BMI standard deviation score more than +1, +2 and +3, respectively. The 2000 CDC reference was also used for comparison.

RESULTS: There were 19,317 healthy children and adolescents from 5 to 18 years of age, 50.8% of whom were boys. The overall prevalence of overweight, obesity and severe obesity in all age groups was 23.1%, 9.3% and 2%, respectively. A significantly lower prevalence of overweight (23.8 vs 20.4; P<.001) and obesity (9.5 vs 5.7; P<.001) was found when the CDC reference was used.

CONCLUSIONS: This report establishes baseline national prevalence rates for overweight, obesity and severe obesity in Saudi children and adolescents, indicating intermediate levels between developing and industrialized countries. Measures should be implemented to prevent further increases in the numbers of overweight school-age children and adolescents and the associated health hazards.
Abstract

BACKGROUND AND OBJECTIVES: Obesity, particularly childhood obesity is common in the Middle East, but no studies have examined the relationship of sagittal abdominal diameter (SAD) or abdominal height to conventional markers of obesity in this region. This is the first study to document the association of SAD with measures of obesity among Arab children and adolescents.

METHODS: Nine hundred sixty-four Saudi children aged 5-17 years (365 prepubertal, including 146 boys and 219 girls; 249 pubertal, including 125 boys and 124 girls; and 350 postpubertal, including 198 boys and 152 girls) were included in this cross-sectional study.

RESULTS: SAD was significantly correlated with indices of obesity regardless of gender, but was strongest among pubertal boys. The cut-off values were as follows: for prepubertal children, 14 cm (equivalent to 50th percentile among girls and 60th percentile among boys); for pubertal children, 15 cm for girls (30th percentile) and 16 cm for boys (50th percentile), and for postpubertal, 21.5 cm for girls (70th percentile) and 22 cm for boys (80th percentile).

CONCLUSION: SAD is a reliable indicator of visceral obesity among Arab children and adolescents in particular. Prospective studies should be done to determine whether such an association translates to a promising risk factor for hard endpoints such as diabetes mellitus and coronary heart disease.
Sugar-Sweetened Carbonated Beverage Consumption Correlates with BMI, Waist Circumference, and Poor Dietary Choices in School Children.

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Abstract

BACKGROUND: The prevalence of obesity and overweight is increasing globally. Frequently coexisting with under-nutrition in developing countries, obesity is a major contributor to chronic disease, and will become a serious healthcare burden especially in countries with a larger percentage of youthful population. 35% of the population of Saudi Arabia are under the age of 16, and adult dietary preferences are often established during early childhood years. Our objective was to examine the dietary habits in relation to body-mass-index (BMI) and waist circumference (W_C), together with exercise and sleep patterns in a cohort of male and female Saudi school children, in order to ascertain whether dietary patterns are associated with obesity phenotypes in this population.

METHODS: 5033 boys and 4400 girls aged 10 to 19 years old participated in a designed Food Frequency Questionnaire. BMI and W_C measurements were obtained and correlated with dietary intake.

RESULTS: The overall prevalence of overweight and obesity was 12.2% and 27.0% respectively, with boys having higher obesity rates than girls (P < or= 0.001). W_C and BMI was positively correlated with sugar-sweetened carbonated beverage (SSCB) intake in boys only. The association between male BMI and SSCB consumption was significant in a multivariate regression model (P < 0.0001). SSCB intake was positively associated with poor dietary choices in both males and females. Fast food meal intake, savory snacks, iced desserts and total sugar consumption correlated with SSCB intake in both boys (r = 0.39, 0.13, 0.10 and 0.52 respectively, P < 0.001) and girls (r = 0.45, 0.23, 0.16 and 0.55 respectively, P < 0.001). Older children reported eating significantly less fruit and vegetables than younger children; and less eggs, fish and cereals. Conversely, consumption of SSCB and sugar-sweetened hot beverages were higher in older versus younger children (P < 0.001). BMI and W_C were negatively correlated with hours of night-time
sleep and exercise in boys, but only with night time sleep in girls, who also showed the lowest frequency of exercise.

**CONCLUSIONS:** A higher intake of SSCB is associated with poor dietary choices. Male SSCB intake correlates with a higher W_C and BMI. Limiting exposure to SSCB could therefore have a large public health impact.


**Obesity among Saudi Female University Students: Dietary Habits and Health Behaviors.**

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**Abstract**

**BACKGROUND:** The remarkable economic growth in Saudi Arabia has affected the population life style negatively. The increasing problem of obesity has been reported from different regions in the kingdom. The rate of overweight and obesity reached 65.4% in the eastern region among females aged 18-74 years old. Although there is considerable amount of data on prevalence of obesity, yet, data on dietary habits and food consumption pattern are limited.

**OBJECTIVES:** The present study is a cross-sectional descriptive study aimed at exploring the BMI distribution among university female students. Food consumption pattern and health related behaviors were also assessed.

**MATERIAL AND METHODS:** 799 students participated in the study; data were collected using self administered questionnaire. Body weight and height were measured to calculate the BMI.

**RESULTS:** Among the study participants, overweight and obesity reached 47.9%. Marriage, presence of obesity among family members, frequency of drinking aerated beverages increased the risk of obesity significantly. Misperception of body image was reported by 17.4% and 54.2% of obese and overweight students respectively. Analysis of dietary habits and life styles indicated the predominance of unhealthy behaviors.

**CONCLUSION AND RECOMMENDATIONS:** The study results mandate the need for a national strategy to adopt healthy dietary habits and life styles.
Sleep Duration and Quality Associated with Obesity among Arab Children.

Bawazeer NM, Al-Daghri NM, Valsamakis G, Al-Rubeaan KA, Sabico SL, Huang TT, Mastorakos GP, Kumar S.

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Abstract

The link between sleep duration and obesity has been well established in adults, but several epidemiological studies revealed inconsistent findings in adolescents and younger children. This study aimed to investigate the relationship between sleep length and obesity in Saudi students. A total of 5,877 Saudi students, boys (55.2%) and girls (44.8%), aged between 10 and 19 years were randomly selected from elementary, intermediate, and secondary schools in different regions of Riyadh. A questionnaire on sleep behaviors was given. Anthropometry included BMI and waist and hip circumferences. Sleeping $\leq 7$ h significantly increased the risk of obesity in both boys and girls (all age categories) (odds ratio = 1.25-1.38, 95% confidence intervals = 1.02-1.89). Overall prevalence of overweight and obese were higher among those sleeping intermittently (18.68%) than those sleeping continuously (14.5%) ($P = 0.024$). Short sleep duration and poor sleep quality are significantly associated with obesity among Arab youth. Further studies need to employ more objective measures of sleep, such as actigraphy, and examine the mechanism of these associations.
Is there a Relationship between Body Mass Index and Serum Vitamin D Levels?


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Abstract

OBJECTIVE: To evaluate the relationship between vitamin D level and body mass index (BMI) among Saudi Arabian citizens.

METHODS: Four hundred healthy individuals aged ≥25 years (200 males and 200 females) were included in this cross-sectional study. Subjects were recruited in the period between 1st February 2008 and 31st May 2008 from the medical staff and employees of King Fahd Hospital of the University, Al-Khobar, Kingdom of Saudi Arabia, and from patients attending the endocrinology, orthopedic, and infertility clinics at the same hospital. Clinical evaluation was carried out, and BMI was calculated. Serum 25 hydroxy vitamin D (25OHD), in addition to serum parathyroid hormone levels and calcium chemistry were measured for all subjects.

RESULTS: The mean age was 46.5 +/- 14.6 years for males, and 42.6 +/- 15.9 years for females (p=0.01). Mean BMI was similar in both genders, and the difference in the level of serum 25OHD just reached statistical significance (p=0.04). Male subjects with vitamin D deficiency were found to be older (p=0.03), and with higher BMI (p=0.01) compared to males with normal 25OHD. Although female subjects with hypovitaminosis D were also older than subjects with normal vitamin D level (p=0.01), BMI was significantly lower in females with vitamin D deficiency (p=0.001).

CONCLUSION: Obese males are at higher risk of having low 25OHD levels, while obesity in females appears to be protective against vitamin D deficiency in the population studied. We believe that obese male and thin female patients should be appropriately investigated, and treated for vitamin D deficiency.
Performance of Body Mass Index in Predicting Diabetes and Hypertension in the Eastern Province of Saudi Arabia.

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Abstract

BACKGROUND AND OBJECTIVES: Body mass index (BMI) is the most widely used measure to define obesity and predict its complications, such as diabetes and hypertension, but its accuracy and usefulness in Saudi subjects is unknown. This study aimed to assess the validity of standard BMI cut-point values in the Saudi population.

SUBJECTS AND METHODS: 197,681 adults participated in a cross-sectional study to detect diabetes and hypertension in the Saudi Eastern province in 2004/2005, with blood pressure, fasting blood sugar, height and weight measurements taken. Sensitivities, specificities, areas under the curves, predictive values, likelihood ratios, false positive, false negatives and total misclassification ratios were calculated for various BMI values determined from receiver operating characteristic (ROC) curves. The significance of the association between risk factors and BMI was assessed using regression analysis.

RESULTS: For the definition of overweight, ROC curve analysis suggested optimal BMI cut-offs of 28.50 to 29.50 in men and 30.50 to 31.50 in women, but the levels of sensitivity and specificity were too low to be of clinical value and the overall misclassification was unacceptably high across all the selected BMI values (>0.80). The relationship between BMI and the presence of diabetes and/or hypertension was not improved when a BMI of 25 was used. Using regression analyses, the odds ratios for hypertension and/or diabetes increased significantly from BMI values as low as 21-23 with no improvement in the diagnostic performance of BMI at these cutoffs.

CONCLUSION: In Saudi population, there is an increased risk of diabetes and hypertension relative to BMI, starting at a BMI as low as 21 but overall there is no cutoff BMI level with high predictive value for the development of these chronic diseases, including the WHO definition of obesity at BMI of 30.
Effect of Body Mass Index on Clinical Manifestations in Patients with Polycystic Ovary Syndrome.

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Abstract

OBJECTIVE: To determine whether there is a correlation between body mass index (BMI) and blood pressure or clinical features such as hirsutism in women with polycystic ovary syndrome (PCOS).

METHOD: In this cross-sectional study, 62 women with PCOS were allocated to one of 3 groups according to a BMI range defining normal weight, overweight, or obesity. Blood pressure, waist-to-hip ratio, Ferriman and Gallwey hirsutism score, and presence of acne were recorded for each participant and the means were compared among groups.

RESULTS: The overall mean age was 35.85±5.03 years; BMI, 31.91±6.40; systolic and diastolic blood pressure, 113.02±16.10 mm Hg and 71.79±10.04 mm Hg; waist-to-hip ratio, 0.82±0.07; and hirsutism score, 3.63±4.35. Acne was present in 24 participants. Of these, 8 (33.3%) were overweight and 13 (54.2%) obese. When groups were compared, a progressive and significant increase in systolic and diastolic blood pressure was observed from the normal weight to the obese group.

CONCLUSION: We observed a significant and progressive correlation between BMI and both blood pressure and clinical features in women with PCOS.
The Prevalence of Metabolic Syndrome and Cardiovascular Risk Factors in a Group of Obese Saudi Children and Adolescents: A Hospital-Based Study.

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Abstract

BACKGROUND AND OBJECTIVES: We assessed the distribution of risk factors associated with the metabolic syndrome in a group of obese Saudi children and adolescents. No previous studies had addressed this issue in the Saudi pediatric population.

SUBJECTS AND METHODS: We retrospectively reviewed the medical records of patients evaluated for obesity between 2004 and 2008 and collected data on age, weight, height, body mass index (BMI), BP, fasting lipid profile, fasting glucose, insulin concentrations, and insulin resistance based on the homeostasis assessment model-insulin resistance (HOMA-IR) score. Obesity was defined as a BMI above the 95th percentile for age and gender and metabolic syndrome was diagnosed according to standard criteria.

RESULTS: We studied 57 obese Saudi children and adolescents with a mean (standard deviation) age of 9.8 (3.5) years. Mean weight and body mass index (BMI) were 63.7 (28.3) kg and 31.6 (8.0) kg/m(2), respectively. Systolic BP was elevated in 24 (42%) of the 57 subjects. Of the 39 children who had a lipid profile in their records, 10 had hypertriglyceridemia, 8 had hypercholesterolemia, 6 had elevated LDL cholesterol levels, and 6 had low HDL cholesterol levels. Impaired fasting glucose was found in 10 of 38 patients in which it was measured, and 9 of 25 patients had fasting hyperinsulinemia. Eleven of 37 patients (29.7%) met the diagnosis of the metabolic syndrome. Diastolic BP correlated positively with BMI (r=0.440, P =.001), and HDL cholesterol correlated negatively with weight and BMI (r=-0.487, P =.002 and r=-0.317, P =.05). HOMA-IR correlated positively with BMI and triglyceride levels and negatively with HDL cholesterol levels.

CONCLUSIONS: Obese Saudi children and adolescents have multiple risk factors associated with metabolic syndrome.
Adipokines and Etiopathology of Metabolic Disorders.

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Abstract

White adipose tissue is an endocrine organ producing numerous proteins known as adipokines, which include leptin, adiponectin, resistin, visfatin, and other factors, which are involved in most metabolic disorders. In obesity, plasma leptin concentrations are high due to leptin resistance that may result from the attenuation of leptin signaling in the hypothalamus. Leptin acts to inhibit appetite, stimulate thermogenesis, enhance fatty acid oxidation, decrease glucose, and reduce body weight, and fat. A reduced adiponectin level has been associated with insulin resistance, dyslipidemia, and atherosclerosis, and its low level is a predictor of later development of type 2 diabetes. Resistin expression is low in adipose tissue and high in bone marrow and lungs, its role in glucose homeostasis remains controversial, it has been associated with insulin resistance and obesity. Visfatin is a secretory protein highly enriched in visceral adipocytes, liver, muscle, and lymphocytes. An increase of visfatin levels in obesity was related to preservation of insulin sensitivity, it enhances glucose uptake by adipocytes and inhibits hepatocyte glucose release, it induces tyrosine phosphorylation, and interacts with insulin receptors. Many studies are still being conducted to highlight the role of adipokines in metabolic disorders.
Prevalence of Metabolic Syndrome among Qassim University Personnel in Saudi Arabia.

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Abstract

OBJECTIVE: to estimate the prevalence of metabolic syndrome among Qassim university personnel in Saudi Arabia using the definition proposed by NCEP ATPIII.

METHODS: a cross sectional study that included all male university staff of different ages and careers. 560 individuals participated in this study with a response rate of 85%. For all participants, the data collected were sociodemographic characteristics, past history or receiving medication for diabetes or hypertension, smoking habits, physical activity, and measurements necessary to identify metabolic syndrome.

RESULTS: Prevalence of metabolic syndrome was 31.4%. The prevalence was found to show a steady increase with increasing age, BMI and serum cholesterol. General obesity measured by BMI was the most common component associated with the syndrome where 75% of participants suffered from overweight and obesity. Participants with high-density lipoprotein below protective level constituted 73.6%, while those with total cholesterol and triglyceride above clinically normal level constituted 60.0% & 46.4% respectively. Elevated fasting plasma glucose and hypertension were the least common. After adjustment, factors found to be associated with metabolic syndrome were being a Saudi national, smoking, not doing regular exercise, being obese having total serum cholesterol above 180 mg/dl, and age groups above 40 years.

CONCLUSION: Almost a third of the university personnel have metabolic syndrome and therefore they are at higher risk for both cardiovascular diseases and diabetes mellitus. Similar studies are required among a wider range of subjects to assess the scope of the problem in Saudi Arabia.

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Abstract

OBJECTIVE: To estimate the prevalence of obesity and its determinants during the first month of gestation in Saudi women.

METHODS: Retrospective chart review of measured BMI in Al-Hassa, the largest province in Saudi Arabia, in 2007. Data were collected from records of 791 (72.6% of 1,089) pregnant women registered for prenatal care.

RESULTS: Height shows a normal Gaussian distribution, whereas weight is skewed positively (skewness of 0.77). The prevalence of underweight, normal weight, overweight, obesity, and extreme obesity (BMI > 40 kg/m(2)) were 8.5, 39.3, 23.6, 23.9, and 4.7%, respectively. Logistic regression revealed that the most important significant independent predictors of obesity are parity of 4 and more (odds ratio (OR) = 5.8) and urban residence (OR = 4.9).

CONCLUSION: Overweight, obesity, and extreme obesity are common (>52%) among pregnant women in Saudi Arabia. Health education to control body weight before pregnancy is warranted.
**OBJECTIVES:** The aim of this study is to determine frequency of obesity and its adverse effects on reproductive outcome in pregnant Saudi females.

**METHODS:** Prospective Cohort study. Eight months (Nov 2008 to June 2009), Maternity and Children Hospital (MCH) Buraida, Saudi Arabia. Sample included a group of 1000 randomly recruited pregnant Saudi females. Patients were admitted through Outpatient and Emergency Departments. Height was recorded once and weight twice; at the beginning (prepregnancy weight) and end of pregnancy. The difference between the two weights was taken as net weight gain in pregnancy. Prepregnancy weight was used to calculate Body mass index (BMI) using formula; Weight in Kg/Height in (m). The sample was divided into 5 groups depending upon their BMI: (< 18.5, 18.5-24.9, 25-29.9, 30-39.9 & > 40), classified as underweight, normal weight, overweight, obese & morbidly obese respectively. The normal weight group was used as control group. Data were collected regarding complications of obesity in pregnancy and labor and recorded on a Performa. Results were calculated by using computer programme SPSS Version 13 for windows. A p-value of < 0.05 is used to calculate statistical significance.

**RESULTS:** The frequency of weight distribution in pregnant Saudi female calculated to be 2% (lean), 31% (normal weight), 33% (overweight), 30% (obese) and 4% (morbidly obese). Compared with normal weight women, both overweight and obese women had a significantly increased risk (p-value < 0.05) for gestational diabetes, preeclampsia, cesarean delivery, and delivery of a macrocosmic infant.

**CONCLUSION:** Overweight & obesity is a growing problem in pregnant Saudi females associated with increased risks of fetomaternal complications like preeclampsia, gestational diabetes, cesarean delivery, and delivery of a macrocosmic infant.
Combined Effects of Obesity and Type 2 Diabetes Contribute to Increased Breast Cancer Risk in Premenopausal Women.

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Abstract

BACKGROUND: Both obesity and type 2 diabetes are among the risk factors for breast cancer development. Combined effect of these metabolic abnormalities on breast cancer risk however, has not been examined in premenopausal women. We tested this association in type 2 diabetic women, categorized as obese, overweight and normal body weight groups based on BMI.

DESIGN AND METHODS: A total of 101 subjects were included in this study. Serum levels of IL-6, TNF-alpha, C reactive protein, leptin, TGF-alpha, adiponectin and insulin were measured by ELISA. Data were logarithmically transformed for variables not normally distributed. Analysis of variance with post-hoc Bonferroni was applied to compare the data between the groups. Simple and partial correlation coefficients between the variables were determined and a stepwise multiple linear regression analysis was performed to determine the relationships between the variables of interest.

RESULTS: Significantly increased levels of IL-6, C reactive protein, leptin and significantly decreased levels of adiponectin were found in obese group, while the levels of TNF-alpha and TGF-alpha were unaltered. A positive correlation between waist circumference and IL-6 was found in obese group. Similarly, C reactive protein, waist and hip circumferences were linearly correlated with BMI in obese group. Stepwise multiple linear regression analysis revealed several significant predictors for breast cancer risk.

CONCLUSION: Obesity and type 2 diabetes, owing to their effects on adipocytokines and inflammatory mediators, contribute to increased breast cancer risk in premenopausal women. This study emphasizes healthy life style and better management of these metabolic disorders to avoid the pathogenesis of breast cancer and of other chronic diseases.
Current Dietetic Practices of Obesity Management in Saudi Arabia and Comparison with Australian Practices and Best Practice Criteria

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Abstract

Aim: To describe the dietetic practices of the treatment of obesity in Saudi Arabia and compare this with best practice criteria and the practice in Australia.

Methods: Anonymous questionnaires were completed by dietitians in Saudi Arabia. The topics included barriers to obesity management, demand and level of service and strategies and approaches used for weight management. Best practice scores were based on those used to assess Australian dietitians.

Results: A total of 253 dietitians participated in the survey. Of these, 175 (69%) were involved in the management of obesity. The best practice score for Australian dietitians was slightly greater than the scores of Saudi dietitians (median 43 vs 39). There was also a significant correlation between the best practice score and years of experience \( r = 0.26, P < 0.001 \). The most common assessment approaches were assessment of body mass index (87%) and exercise habits (81%), while the most common strategies for obesity management were: dietary total fat reduction (92%) and increase incidental daily activity (92%). The major barrier for establishment of a weight management clinic reported by 49% of participants was inadequate resources.

Conclusion: Saudi Arabian dietetic practice for the management of obesity does incorporate most best practice recommendations, but some specific elements are rarely used.
Changes in the Hormone and Lipid Profile of Obese Adolescent Saudi Females with Acne Vulgaris.

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Abstract

Acne vulgaris is a multifactorial disease affecting a majority of the adolescent population. The objective of this study was to test for a correlation between fasting serum lipid profiles and levels of testosterone, insulin, leptin, and interleukin 1-beta (IL-1beta) and the incidence of severe acne vulgaris in obese adolescent females. Four groups of adolescent females were studied: obese with acne, obese without acne, non-obese with acne, and non-obese without acne. Obese females with acne, compared to obese females without acne and non-obese subjects, had significantly higher serum triglycerides, low-density lipoprotein cholesterol and apolipoprotein-B (apo-B) (mean +/- SD: 197 +/- 13.7 vs 171 +/- 11.5, 128 +/- 8.3 vs 116 +/- 7.7, 96 +/- 13.7 vs 85 +/- 10.3 mg/dL, respectively) but significantly lower high-density lipoprotein cholesterol and apo-A1 levels (40 +/- 3.3 vs 33 +/- 3.5 and 126 +/- 12 vs 147 +/- 13 mg/dL). Serum testosterone, insulin and leptin levels were significantly higher in obese subjects with or without acne compared to non-obese females with or without acne (3 +/- 0.5 vs 2.1 +/- 0.47, 15.5 +/- 3.3 vs 11.6 +/- 3, 0.9 +/- 0.2 vs 0.6 +/- 0.15 nmol/mL, respectively). Serum IL-1b was significantly elevated in obese and non-obese subjects with acne compared to subjects without acne; in those without acne, these levels were higher in obese than non-obese subjects (2.4 +/- 0.2, 1.4 +/- 0.1 vs 1.8 +/- 0.12 and 1.3 +/- 0.11 pg/mL, respectively). Our results indicate that there is a relationship between obesity (BMI >27) and acne. By early recognition, the etiology and treatment protocol of acne may prevent unwanted conditions.
Infertility Treatment Outcome in Sub Groups of Obese Population.

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Abstract

BACKGROUND: Obesity is a common disorder with a negative impact on IVF treatment outcome. It is not clear whether morbidly obese women (BMI ≥ 35 kg/m²) respond to treatment differently as compared to obese women (BMI = 30-34.9 kg/m²) in IVF. Our aim was to compare the outcome of IVF or ICSI treatments in obese patients to that in morbidly obese patients.

METHODS: This retrospective cohort study was conducted in a tertiary care centre. Patients inclusion criteria were as follows; BMI ≥ or= 30, age 20-40 years old, first cycle IVF/ICSI treatment with primary infertility and long follicular pituitary down regulation protocol.

RESULTS: A total of 406 obese patients (group A) and 141 morbidly obese patients (group B) satisfied the inclusion criteria. Average BMI was 32.1 +/- 1.38 kg/m² for group A versus 37.7 +/- 2.99 kg/m² for group B. Patient age, cause of infertility, duration of stimulation, fertilization rate, and number of transferred embryos were similar in both groups. Compared to group A, group B had fewer medium size and mature follicles (14 vs. 16), fewer oocytes collected (7 vs. 9) and required higher doses of HMG (46.2 vs. 38.5 amps). There was also a higher cancellation rate in group B (28.3% vs. 19%) and lower clinical pregnancy rate per started cycle (19.9% vs. 28.6%).

CONCLUSION: In a homogenous infertile and obese patient population stratified according to their BMI, morbid obesity is associated with unfavorable IVF/ICSI cycle outcome as evidenced by lower pregnancy rates. It is recommended that morbidly obese patients undergo appropriate counseling before the initiation of this expensive and invasive therapy.
**Inhibition of C-Reactive Protein in Morbidly Obese Patients after Laparoscopic Sleeve Gastrectomy.**

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**Abstract**

**BACKGROUND:** Obesity is considered a low-grade chronic inflammatory condition as reflected by increased C-reactive protein (CRP) levels. Inflammation is emerging as a predictor of cardiovascular disease and it may be a precursor of the metabolic syndrome. Bariatric surgery is commonly performed as a treatment for morbid obesity offering significant reductions in premature myocardial infarction. Laparoscopic sleeve gastrectomy (LSG) is a relatively new bariatric procedure that is currently used as a definitive procedure for weight loss. The aim of this study is to assess the impact of sleeve gastrectomy on CRP levels.

**METHODS:** This study is part of an ongoing, prospective, cohort study to evaluate LSG impact on iron indices. CRP levels were compared preoperatively and 6 months after surgery. Similarly, demographics including body mass index and excess weight were also compared at these same study points. Data were analyzed using Student paired t test and Pearson product moment correlation analysis.

**RESULTS:** Twenty-nine morbidly obese patients were included. There was significant decrease in body mass index (BMI) between the preoperative and 6-month period (50.9 +/- 13.2 and 35.1 +/- 6.85, respectively; P < 0.001). Also CRP levels were statistically significantly lower at 6 months after surgery (preoperative 12.3 +/- 7.53 mg/L and postoperative 5.6 +/- 4.2 mg/L. P < 0.0001). The significant weight loss as reflected by change in BMI was correlated with the difference between preoperative and postoperative CRP levels.

**CONCLUSIONS:** Massive weight loss in morbidly obese patients induced by LSG causes a significant decrease in CRP levels, which could reduce the risk of cardiovascular diseases in these patients.

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Abstract

The aim of this study was to estimate the prevalence of metabolic syndrome in Saudi adult women aged 18 years and above using the criteria of International Diabetes Federation (IDF) and modified National Cholesterol Education Program Adult Treatment Panel III (mNCEP-ATPIII). A cross-sectional survey was performed involving a group of 2577 non-pregnant Saudi women subjects aged 18-59 years residing in a military city in northern Saudi Arabia recruited from a primary care setting. Anthropometric data, together with a brief medical history, were obtained at initial contact, and laboratory investigations were performed on the following day after fasting for 12 h. Data on all variables required to define the metabolic syndrome according to IDF and mNCEP-ATPIII criteria were available for only 1922 subjects who attended the laboratory for investigations (response rate of 74.6%). Non-respondents were excluded from data analysis. Prevalence rates were estimated according to both definitions. Age-adjusted prevalence of metabolic syndrome was found to be 16.1% and 13.6% by IDF and mNCEP-ATPIII definitions, respectively. Abdominal obesity was the most common component in the study population (44.1% by mNCEP-ATPIII and 67.9% by IDF cut-off points). It was followed by low serum high-density lipoprotein cholesterol (36.0%). About two-thirds of the subjects (66.4% by mNCEP-ATPIII and 67.9% by IDF definitions) exhibited at least one criterion for metabolic syndrome by both definitions. Mean values and prevalence of individual components of the syndrome showed a steady rise with increase in age, general and abdominal obesity, and the presence of diabetes. Since the cut-off values for waist circumference by IDF definition were lower, prevalence rates by this definition were higher than those defined by mNCEP-ATPIII. High prevalence rates in this young sample predict a sharp rise in the prevalence rates of this syndrome among Saudi women over the next few years.
Methylene Tetrahydrofolate Reductase and Angiotensin Converting Enzyme Gene Polymorphisms Related to Overweight/Obesity among Saudi Subjects from Qassim Region.

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Abstract

BACKGROUND: This work was planned to check for the association of polymorphisms related to methylenetetrahydrofolate reductase (MTHFR) and angiotensin converting enzyme (ACE) genes with overweight/obesity among Saudi subjects from Qassim region.

METHODS: This work included 130 subjects having overweight or obesity and 111 normal controls. Their age mean +/- SD was 27 +/- 9.8 and 24 +/- 8.8 years respectively. Their DNA was analyzed for polymorphisms of MTHFR; 677C/T and 1298 A/C and ACE; I/D genes using real-time PCR.

RESULTS: Genotype and allele frequencies of studied polymorphisms in cases of overweight/obesity showed no significant statistical difference compared to that of controls. However, on analysis of body mass index (BMI), cases showed slightly higher but statistically nonsignificant mean +/- SD values among those carrying the mutant MTHFR 677 T allele (CT + TT vs. CC, 30.7 +/- 4.5 vs. 29.9 +/- 4.9), 1298 C allele (AC + CC vs. AA, 29.9 +/- 4.1 vs. 29.7 +/- 5.5) and ACE D allele (ID + DD vs. II, 30.0 +/- 5.1 vs. 29.1 +/- 2.8). In addition controls having the DD and ID genotypes showed higher statistically significant values of BMI than those of the II genotype (22.0 +/- 1.9, 21.7 +/- 2.6 and 19.5 +/- 2.3 respectively, p < 0.05).

CONCLUSION: There is no solid association of polymorphisms related to MTHFR and ACE genes with non-complicated overweight or obesity among Saudi subjects from Qassim Region.
Body Mass Index in Saudi Arabian Children and Adolescents: A National Reference and Comparison with International Standards

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Abstract

BACKGROUND AND OBJECTIVES: Because there are no reference standards for body mass index (BMI) in Saudi children, we established BMI reference percentiles for normal Saudi Arabian children and adolescents and compared them with international standards.

SUBJECTS AND METHODS: Data from a stratified multistage probability sample were collected from the 13 health regions in Saudi Arabia, as part of a nationwide health profile survey of Saudi Arabian children and adolescents conducted to establish normal physical growth references. Selected households were visited by a trained team. Weight and length/height were measured and recorded following the WHO recommended procedures using the same equipment, which were subjected to both calibration and intra/interobserver variations.

RESULTS: Survey of 11 874 eligible households yielded 35 275 full-term and healthy children and adolescents who were subjected to anthropometric measurements. Four BMI curves were produced, from birth to 36 months and 2 to 19 years for girls and boys. The 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, and 97th percentiles were produced and compared with the WHO and CDC BMI charts. In the higher percentiles, the Saudi children differed from Western counterparts, indicating that Saudi children have equal or higher BMIs.
CONCLUSION: The BMI curves reflect statistically representative BMI values for Saudi Arabian children and adolescents.

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Obesity and Metabolic syndrome in Saudi Hemodialysis Patients

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Abstract

Overweight & obesity has increased rapidly in an epidemic proportions as two-thirds of adults are obese or overweight. Recent evidence highlights the relationship between metabolic syndrome (MS) and increased risk of cardiovascular (CV) diseases. The overall prevalence of the metabolic syndrome was reported as high up to 70% in hemodialysis population and was especially prevalent among diabetic, female, and white end stage renal disease patients. Aim of the study: To examine the relation between end stage renal disease (ESRD) patients and metabolic syndrome and / or obesity in a sample of Saudi hemodialysis patients and to identify the most common element of the metabolic syndrome among patients receiving dialysis. Patients and methods: 200 hemodialysis patients in Prince Salman Center for Kidney Diseases (PSCKD). Metabolic syndrome was the main exposure for this study and was defined using The International Diabetes Federation (IDF) proposal for diagnosis of metabolic syndrome criteria in 2004. Body mass index (BMI) for dialysis patients was classified as underweight (BMI

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Prevalence of Obesity in a Saudi Obstetric Population

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Abstract

OBJECTIVE: To estimate the prevalence of obesity and its determinants during the first month of gestation in Saudi women.
METHODS: Retrospective chart review of measured BMI in Al-Hassa, the largest province in Saudi Arabia, in 2007. Data were collected from records of 791 (72.6% of 1,089) pregnant women registered for prenatal care.

RESULTS: Height shows a normal Gaussian distribution, whereas weight is skewed positively (skewness of 0.77). The prevalence of underweight, normal weight, overweight, obesity, and extreme obesity (BMI > 40 kg/m²) were 8.5, 39.3, 23.6, 23.9, and 4.7%, respectively. Logistic regression revealed that the most important significant independent predictors of obesity are parity of 4 and more (odds ratio (OR) = 5.8) and urban residence (OR = 4.9).

CONCLUSION: Overweight, obesity, and extreme obesity are common (>52%) among pregnant women in Saudi Arabia. Health education to control body weight before pregnancy is warranted.

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Association of The UCP2 –866G/A Polymorphism with Type 2 Diabetes and Obesity in Saudi Population

MT Tayeb

Abstract

BACKGROUND: Diabetes mellitus is emerging as a major public health problem all over the world particularly Saudi Arabia. Recent studies reported that Uncoupling Protein 2 (UCP2) was associated with obesity and type 2 diabetes (T2D).

AIM OF THE STUDY: This study was conducted to clarify the contribution of polymorphism in UCP2 in obesity and T2D in the Saudi population.

SUBJECTS AND METHODS: The distribution of the –866G/A polymorphism was examined in a case-control study including samples from 110 obese patients, 81 T2D patients, 96 obese-T2D patients and 100 healthy unrelated Saudi subjects. The –866G/A polymorphism were determined by using PCR/RFLP (polymerase chain reaction/restriction fragment length polymorphism) techniques.

RESULTS: The results of this study showed that the frequency of the GG genotype was significantly higher in both obese and T2D patients (p-
value = 0.0001, p-value = 0.014, respectively) compared with healthy control. The G allele was significantly associated with increased risk of obesity (odd ratio, OR: 3.3; 95% confidence interval, CI: 1.37-7.98), but not with T2D (OR, 1.97; CI, 0.80-4.87). In obese-T2D patients group, no significant correlation with −866G/A polymorphism (p= 0.067; OR, 1.21; CI, 0.25-2.80). This unreeled study suggested that the G allele of UCP2 −866G/A polymorphism was related to obesity, which indicated the possible role of this polymorphism in causing metabolic syndrome.

CONCLUSION: This study concluded that the G allele of UCP2 −866G/A polymorphism might be related to obesity and T2D which might be used as a predictive marker for obesity and T2D.

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Nullchildhood Obesitynull: A Growing Threat to Public Health in Saudi Arabia

A Alam

Abstract

Saudi children and adolescents 15 years of age and younger constitute about 40% of the Saudi population (1). Early national Saudi medical literature referred to the existence of obesity and its health consequences as a feature of social affluence and economic prosperity (2,3,4). Unfortunately, the majority of reviewed studies were sporadic and did not represent the whole population. At the present time and until evidence-based conclusions can be reached regarding the exact prevalence of childhood obesity, the increasing demand on bariatric surgical interventions in Saudi Arabia could be an indication of the magnitude of the problem (5). The observation of obesity among school children has raised many concerns among educational and medical activists. Legislation has been implemented to restrict the purchase of junk food in school premises, and the consumption of fresh milk and dates as sources of energy and natural sweets were encouraged. The concept of adopting health promotion in schools was endorsed in different localities in Saudi Arabia; however, measurable outcomes of such actions are far from being recorded or have been completely evaluated (6). In an effort to exercise the epidemiological sense of the problem, a cross-sectional study including four private female primary schools in Riyadh city was conducted in 2007 and included about 1 072 students within the age group of 8 to 12 years. The majority belonged to above average socioeconomic status. The study revealed an almost 15%
prevalence of obesity among surveyed students, who had limited instructional physical education in schools, thus supporting Hills' and Peters' conclusion since 1998 that null an acquired contribution to obesity depends largely on an environment that promotes excessive food intake and discourages physical activity (7). The proportion of nullobesenu students significantly increased with age. It was cautiously concluded that null If this trend continues it can be alarming to the general status of health null. The interest in studying the growing epidemic of childhood obesity was shared by many health professionals from various medical subspecialties; so they united to establish a scientific workforce to deal with the situation from various dimensions and in a multidisciplinary approach expressed in the formulation of the Obesity Research Chair at King Saud University in 20082009. Undergraduate medical students of King Saud University were consequently involved in being part of an investigating team applying the Global School-Based Student Health Survey (GSHS), which is concerned with promoting healthy lifestyle practices in selected schools in Riyadh in 2008 and 2009 (8). Additionally, school children were provided with typed cards recording their body mass indices and were taught to calculate them by themselves to improve their awareness and to keep track of their annual progress. The assumption that null public health is threatened by the existence of childhood obesity in Saudi Arabian null deserves to be investigated. Threats to the overall health of a community are generally based on population health analysis in terms of morbidity and mortality. The economic cost of obesity, with job loss and low productivity should also be considered. Additionally, a surveillance system is needed to assist health care leaders and decision makers on planning for the future.


Laparoscopic Adjustable Gastric Banding in A Morbidly Obese Patient with Situs Inversus Totalis.

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Abstract

Laparoscopic adjustable gastric banding is a commonly performed bariatric operation worldwide. The presence of an anatomical variation like situs inversus demands preoperative assessment and preparedness on the part of the surgeon. We report a laparoscopic gastric banding performed on a morbidly obese patient with situs inversus totalis in the Kingdom of Saudi Arabia.
Impact of Obesity on Early Outcomes after Cardiac Surgery: Experience in a Saudi Arabian Center.
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Abstract

PURPOSE: The prevalence of obesity is a public health concern in most countries, including Saudi Arabia. Obesity has been considered a major risk factor for adverse outcomes after cardiac surgery.

MATERIALS AND METHODS: A single-center retrospective review (2001-2005) of adverse outcome after coronary artery bypass grafting (CABG) and valve surgery (total=462) categorized by body mass index (BMI) was performed. The patients with BMI≥30 were defined as the obese group and patients whose BMI<30 were labeled as the nonobese group.

RESULTS: Overall, 315 (68.2%) were classified as nonobese, and 147 (31.8%) were obese. Obese patients were older and more likely to have diabetes and hypertension. There were no significant differences between the two groups with regard to other comorbidity and risk factors. There was no association between the two groups and the outcomes of operative mortality and morbidities.

CONCLUSION: This study demonstrated that obesity does not increase the risk of death and most complications after cardiac surgery, aside from the unexplained increased risk of reoperation during the same admission.
Spinal Shrinkage as a Measure of Spinal Loading in Male Saudi University Students and its Relationship with Body Mass Index.

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Abstract

OBJECTIVE: To compare spinal shrinkage in obese and non-obese young male adults and to find any correlation between them.

METHODS: In 2006, 123 second-year male students studying in the Colleges of Medicine and Dentistry, King Faisal University, Dammam, Kingdom of Saudi Arabia, were examined for their weights, standing heights, and recumbent lengths. In this cross-sectional observational study, the students were grouped according to body mass index (BMI): normal range BMI <25; overweight BMI = 25-29.9; obese-BMI >30. Spinal shrinkage was calculated as the difference between standing height and the recumbent length of the subject. Influence of BMI on the magnitude of spinal shrinkage was compared by analysis of variance, and the relationship between spinal shrinkage and BMI was tested with Pearson's correlation test.

RESULTS: The obese group presented a significantly greater reduction in standing height (1.6% of recumbent length) compared to the normal group (1%) (p=0.019). Spinal shrinkage was found to be positively correlated with level of obesity (r=0.369).

CONCLUSION: Spinal shrinkage is positively correlated to BMI, which represents a persistent load on the spine in obese individuals. This conveniently demonstrable adverse effect of obesity might well be used as an instrument to inspire individuals to change their lifestyles.
Using "Spinal Shrinkage" as a Trigger for Motivating Students to Learn about Obesity and Adopt a Healthy Lifestyle.

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Abstract

Obesity is a global problem; however, relatively little attention is directed toward preparing and inspiring students of medicine and allied medical sciences to address this serious matter. Students are not routinely exposed to the assessment methods for obesity, its overall prevalence, causative factors, short- and long-term consequences, and its management by lifestyle modification. This physiology laboratory exercise involving students of medicine (n = 106) was developed to 1) introduce medical students to methods of obesity assessment and to differentiate between general and abdominal obesity, 2) generate an interest and sensitivity about obesity, and 3) stimulate thinking about modification of their lifestyle in relation to eating habits, weight control, and physical activity. Spinal shrinkage (the difference between the standing height of a person and his/her recumbent length) was used as an immediate observable parameter to demonstrate the effect of adiposity. Spinal shrinkage is recognized as an index of the compressive forces acting on the spine and is related to body mass index. A positive correlation ($r = 0.365, P < 0.05$) was observed between body mass index and spinal shrinkage. A questionnaire was used to assess student responses to this exercise. Students were motivated to engage in more physical activity (74%), adopt healthier eating (63%), and enhance their knowledge about obesity (67%). They expressed keen interest in the laboratory exercise and found the sessions enjoyable (91%). The laboratory exercise proved to be a success in motivating the students to actively learn and inquire about obesity and to adopt a healthier lifestyle.
Overweight and Obesity and their Relation to Dietary Habits and Socio-Demographic Characteristics among Male Primary School Children in Al-Hassa, Kingdom of Saudi Arabia.

Amin TT, Al-Sultan Al, Ali A.

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Abstract

BACKGROUND: Several studies were carried out to study the prevalence of overweight and obesity among Saudi children, but those assessed the association between eating habits, socio-demographic differentials and obesity in these children are scarce.

OBJECTIVES: To assess the magnitude of obesity and overweight among male primary schoolchildren and to find the possible association between obesity/overweight with dietary habits and socio-demographic differentials among them.

STUDY DESIGN AND METHODS: A cross-sectional descriptive study including 1,139 Saudi male enrolled in the fifth and sixth grades in public primary schools in Al Hassa, KSA, through a multistage random sampling technique, submitted to interview using Youth and Adolescent Food Frequency Questionnaire, gathering data regarding dietary intake, some dietary habits, followed by anthropometric measurements with calculation of body mass index, the interpretation of which was based on using Cole's tables for standard definition of overweight and obesity. Socio-demographics data were collected through parental questionnaire form. Data analysis was carried out using SPSS 12 (SPSS Inc. Chicago, IL, USA), univariate as well as multivariate analyses were conducted.

RESULTS: The age ranged from 10 to 14 years. The prevalence of overweight among the included subjects was 14.2% while obesity was 9.7%, more in urban, older age students, mothers of obese and overweight were less educated, more working. Missing and or infrequent intake of breakfast at home, frequent consumption of fast foods, low servings of fruits, vegetables, milk and dairy product per day, with frequent consumption of
sweets/candy and carbonated drinks were all predictors of obesity and overweight among the included male schoolchildren.

**CONCLUSION:** The prevalence of childhood obesity is escalating and approaching figures reported in the developed countries. Less healthy dietary habits and poor food choices may be responsible for this high prevalence.

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**Overweight and Obesity and their Relation to Dietary Habits and Socio-Demographic Characteristics among Male Primary School Children in Al-Hassa, Kingdom of Saudi Arabia**

Tarek Tawfik Amin, Ali Ibrahim Al-Sultan and Ayub Ali

**Abstract**

**BACKGROUND:** Several studies were carried out to study the prevalence of overweight and obesity among Saudi children, but those assessed the association between eating habits, socio-demographic differentials and obesity in these children are scarce.

**OBJECTIVES:** To assess the magnitude of obesity and overweight among male primary schoolchildren and to find the possible association between obesity/overweight with dietary habits and socio-demographic differentials among them.

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CONCLUSION: The prevalence of childhood obesity is escalating and approaching figures reported in the developed countries. Less healthy dietary habits and poor food choices may be responsible for this high prevalence.


Overweight and Obesity in the Eastern Province of Saudi Arabia.

Al-Baghli NA, Al-Ghamdi AJ, Al-Turki KA, Al-Zubaier AG, Al-Ameer MM, Al-Baghli FA.

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Abstract

OBJECTIVE: To describe anthropometric characteristics of participants and the influence of sociodemographic and cardiovascular risk factors involved in the prevalence of obesity in the eastern province of Saudi Arabia.

METHODS: In the year 2004, all Saudi residents in the Eastern province aged 30 years and above, were invited to participate in a community screening campaign for early detection of diabetes and hypertension. Demographic data, medical history, life habits, weight, height, blood pressure, and glucose concentration were recorded using a structured questionnaire. Obesity and overweight were defined by body mass index (BMI) $\geq 30$ kg/m$^2$ and 25-29.9 kg/m$^2$, respectively. Logistic regression was used to predict the association of the significant factors with the prevalence of obesity.

RESULTS: Out of 195,874 participants, the overall prevalence of obesity was 43.8%, while 35.1% were overweight. The prevalence of underweight was 1.3%. The peak prevalence of obesity was observed in the age group 50-59 years. Obesity was higher among women than men, higher in housewives, and among the less educated than others ($p<0.0001$). Linear
regression analysis showed a strong proportional association of BMI with diabetes, hypertension, triglycerides and cholesterol, and an inverse proportional association with physical activity and smoking

CONCLUSION: Obesity and overweight constitute an important health problem affecting a high proportion of Saudi population. Addressing associated factors, and enhancing public health education is an important aim to focus on for weight control.


Is High-Altitude Environment a Risk Factor for Childhood Overweight and Obesity in Saudi Arabia?

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Abstract

OBJECTIVE: To describe the prevalence of childhood overweight and obesity in rural high- and low-altitude populations of southwestern Saudi Arabia and to identify specific at-risk groups within these populations.

METHODS: A cross-sectional study was conducted on 912 school children and adolescents aged 6-15 years born and living permanently at high altitudes (2800-3150 m) and 972 children and adolescents of comparable ages born and living permanently at low altitudes (< or =500 m). Height and weight were measured. For children <10 years, the weight-to-height index according to World Health Organization (WHO) standards was used for assessing overweight and obesity. For adolescents 10-15 years, overweight and obesity were assessed by age and gender-specific percentiles for body mass index based on the WHO/National Centre for Health Statistics reference population. A questionnaire was used for measuring parents' socioeconomic status.

RESULTS: The overall prevalence of overweight and obesity at high and low altitudes was 10%. The study showed that some school children and adolescents were at a significantly higher risk of developing overweight and obesity. Significant risk factors included moderate-to-high parental income, age > or =10 years, high-altitude birth and residence, and female sex (crude odds ratio 3.2 [95% CI, 1.8- 5.5], 2.3 [95% CI, 1.6-3.2], 2.1 [95% CI, 1.5-2.9], and 1.9 [95% CI, 1.4-2.6], respectively). A multivariate analysis using the direct binary logistic regression model revealed that moderate-to-high
parental income, age $\geq$ 10 years, female sex, and high-altitude birth and residence were significant independent predictors of childhood overweight and obesity. (adjusted OR 3.2 [95% CI, 1.6-2.6], 2.6 [95% CI, 1.8-3.8], 2.0 [95% CI, 1.6-2.9], and 1.8 [95% CI, 1.3-2.6]), respectively.

CONCLUSION: The present study identified risk factors for childhood overweight and obesity in Saudi Arabia. Among these, high altitude was a significant and independent factor. Future research is warranted to evaluate the exact mechanism by which a high-altitude environment may contribute to childhood overweight and obesity.


Maternal Obesity and Neonatal Congenital Cardiovascular Defects.
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Abstract

OBJECTIVE: To determine whether isolated congenital heart defects (CHDs) were associated with maternal obesity.

METHOD: In a retrospective study we compared the incidence and severity of isolated CHDs in the offspring of 428 women divided into 3 groups, one of women of normal weight (n=141), one of obese women (n=228), and one of morbidly obese women (n=59) according to their body mass index.

RESULTS: There were 143 mild (66.8%), 44 moderate (20.6%), and 27 complex (12.6%) forms of CHDs in the offspring and septal defects were the most common (61.7%). No significant differences were found among the 3 groups of women regarding the type or severity of CHDs in their respective offspring, or the corrective cardiac surgery required.

CONCLUSION: No association was found between maternal weight and isolated CHDs in the offspring.
**Overweight and Obesity and Their Relation to Dietary Habits and Socio-Demographic Characteristics among Male Primary School Children in Al-Hassa, Kingdom of Saudi Arabia.**

Amin TT, Al-Sultan Al, Ali A.

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**Abstract**

**BACKGROUND:** Several studies were carried out to study the prevalence of overweight and obesity among Saudi children, but those assessed the association between eating habits, socio-demographic differentials and obesity in these children are scarce.

**OBJECTIVES:** To assess the magnitude of obesity and overweight among male primary schoolchildren and to find the possible association between obesity/overweight with dietary habits and socio-demographic differentials among them.

**STUDY DESIGN AND METHODS:** A cross-sectional descriptive study including 1,139 Saudi male enrolled in the fifth and sixth grades in public primary schools in Al Hassa, KSA, through a multistage random sampling technique, submitted to interview using Youth and Adolescent Food Frequency Questionnaire, gathering data regarding dietary intake, some dietary habits, followed by anthropometric measurements with calculation of body mass index, the interpretation of which was based on using Cole's tables for standard definition of overweight and obesity. Socio-demographics data were collected through parental questionnaire form. Data analysis was carried out using SPSS 12 (SPSS Inc. Chicago, IL, USA), univariate as well as multivariate analyses were conducted.

**RESULTS:** The age ranged from 10 to 14 years. The prevalence of overweight among the included subjects was 14.2% while obesity was 9.7%, more in urban, older age students, mothers of obese and overweight were less educated, more working. Missing and or infrequent intake of breakfast at home, frequent consumption of fast foods, low servings of fruits, vegetables, milk and dairy product per day, with frequent consumption of
sweets/candy and carbonated drinks were all predictors of obesity and overweight among the included male schoolchildren.

**CONCLUSION:** The prevalence of childhood obesity is escalating and approaching figures reported in the developed countries. Less healthy dietary habits and poor food choices may be responsible for this high prevalence.


**Modified Alvarado Score for Acute Appendicitis in Overweight Patients.**

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**Abstract**

**OBJECTIVE:** To find out the efficacy of Modified Alvarado (MA) scoring system in diagnosis of acute appendicitis in the overweight patients.

**METHODS:** All the patients with suspected acute appendicitis admitted in the surgical department at King Fahad Hospital, Hofuf, Al-Hassa, during the period from September 2004 to December 2006 were included in the study. Patients with score of 7 or more of modified Alvarado score were included, patients with score of 6 or less were excluded. All patients underwent diagnostic laparoscopy, and the diagnosis was confirmed by histopathological examination.

**RESULTS:** There was total of 228 patients. Twenty-four percent were overweight and 12% patients were obese. Sixty percent of the patients had confirmed diagnosis of acute appendicitis.

**CONCLUSION:** Modified Alvarado scoring system is an easy method for diagnosis for acute appendicitis. It can be used as complementary aid for supporting the diagnosis of acute appendicitis in overweight and obese patients.
Obesity among Female School Children in North West Riyadh in Relation to Affluent Lifestyle.

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Abstract

OBJECTIVE: To estimate the prevalence of obesity among elementary school female students and to identify some obesity-associated risk factors.

METHODS: This cross-sectional study surveyed healthy female school students (grades 4-6) during 2006-2007. Four private schools in North West Riyadh, Kingdom of Saudi Arabia were selected where the majority of high income families enrolled their daughters. One thousand and two hundred students were included. A pre-designed validated questionnaire was used for data collection. Weights and heights were measured, and the body mass index (BMI) was calculated. Students were categorized into obese and non-obese according to BMI by age scale.

RESULTS: A total of 1072 students participated in the study with a response rate of 89.3%. Obesity was prevalent among 14.9% of students. We observed that the proportion of obese students inversely increased by age and schooling grade (p<0.001). Ninety-five percent of the students living in villas or big houses were obese. Approximately 89.2% admitted that they are performing some exercises; however, 13.8% of them were obese. Consuming fast food and soft drinks were common practiced among obese students. Watching television on daily basis was prevalent among 97.5% of obese students.

CONCLUSION: The existence of obesity promoting factors, calls for integrating interventions at family and school level to match changes in social and cultural context. Awareness is needed to enhance healthy lifestyle.
Assessment of The Relationship of Hepatic Enzymes with Obesity and Insulin Resistance in Adults in Saudi Arabia.

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Abstract

OBJECTIVES: This study was conducted to assess the relationship of hepatic enzymes and serum albumin to obesity and insulin resistance in adults in Saudi Arabia.

METHODS: A comparative study of 136 Saudi adults, comprising of 68 obese and 68 non-obese was conducted. Anthropometric measurements, hepatic enzymes, serum albumin, blood glucose, serum insulin, lipid profile, and homeostasis model assessment of insulin resistance (HOMA IR) were measured.

RESULTS: The study showed significantly higher levels of gamma glutamyl transpeptidase (GGT), alkaline phosphatase, fasting glucose, serum insulin, and HOMA IR p < 0.001, <0.004 < 0.005, <0.0001, <0.0001, among obese subjects. Hepatic enzymes correlated with both anthropometric measures (body mass index (BMI), and waist to hip ratio) and markers of insulin resistance (HOMA IR, insulin, and fasting glucose). However, the study found that GGT had the strongest associations. Significant inverse correlation was found between serum albumin and BMI, HOMA IR, and serum insulin, p< 0.01, <0.05, <0.01, respectively.

CONCLUSION: Deranged liver functions, especially GGT, had the strongest correlations with obesity and HOMA IR. GGT might be a better marker of hepatic pathology associated with obesity and insulin resistance in Saudi adults with restricted alcohol intake. The results also propose that albumin metabolism might be altered in obesity.
Overweight and Obesity And Their Association with Dietary Habits, and Sociodemographic Characteristics among Male Primary School Children in Al-Hassa, Kingdom of Saudi Arabia.

Amin TT, Al-Sultan Al, Ali A.

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Abstract

OBJECTIVES: To assess the magnitude of obesity and overweight among male primary school children, and to find the possible association between obesity/overweight and dietary habits and sociodemographic differentials among them.

STUDY DESIGN AND METHODS: A cross-sectional descriptive study, including 1139 Saudi male children enrolled in the 5(th) and 6(th) grades in public primary schools in Al Hassa, Kingdom of Saudi Arabia (KSA), was conducted. The test included a multistage random sampling technique, based on interview using Youth and Adolescent Food Frequency Questionnaire, gathering data regarding dietary intake, dietary habits, followed by anthropometric measurements with the calculation of body mass index (BMI), the interpretation of which was based on Cole's tables for the standard definition of overweight and obesity. Sociodemographic data were collected through a parental questionnaire from. Data analysis was performed using the SPSS 12 software (SPSS Inc. Chicago, IL, USA); both univariate and multivariate analyses were performed.

RESULTS: The age of the school children ranged from 10-14 years. The prevalence of overweight among the subjects was 14.2%, while that of obesity was 9.7%; the prevalence was more in the urban, older age students. The mothers of obese and overweight children were less educated and more working. Missing and or infrequent intake of breakfast at home, frequent consumption of fast foods, low servings per day of fruits, vegetables, milk and dairy products, with frequent consumption of sweets/candy and carbonated drinks were all predictors of obesity and overweight among the schoolchildren studied.
CONCLUSION: The prevalence of childhood obesity is escalating and approaching figures that have been reported till now from the developed countries. Less healthy dietary habits and poor selection of food may be responsible for this high prevalence.


Apolipoprotein B/Apolipoprotein A-I Ratio In Relation to Various Definitions of Metabolic Syndrome among Saudi Patients with Type 2 Diabetes Mellitus.

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Abstract

OBJECTIVE: To assess if the apolipoprotein (Apo) B/Apo A-I ratio in Saudi patients with type 2 diabetes mellitus (T2DM) is associated with metabolic syndrome (MetS).

METHODS: This cross-sectional study was conducted on 250 patients with T2DM, above 40 years of age, at King Abdulaziz University Hospital Diabetes Center in Riyadh, Saudi Arabia, between January and December 2006. Metabolic syndrome was defined, and compared according to 3 criteria, namely, National Cholesterol Education Program Adult Treatment Panel III, International Diabetes Federation, and World Health Organization.

RESULTS: In the 250 patients studied, all 3 definitions demonstrated significant increase in the Apo B/Apo A-I ratio, in Saudi type 2 diabetics with the MetS. There was a strong positive correlation between the Apo B/Apo A-I ratio and triglycerides, low-density lipoprotein cholesterol, and total cholesterol (r=0.43-0.54, p<0.0001), and a weak, yet significant, correlation (r=0.14-0.21, p<0.05) with waist circumference, waist-hip ratio, fasting glucose, and hemoglobin A1c, however, not with body mass index (r=0.01, p=0.88). In contrast, the ratio showed strong negative correlation with high-density lipoprotein cholesterol (r = -0.7, p<0.0001).

CONCLUSION: Apolipoprotein B/apolipoprotein A-I ratio is significantly associated with MetS in Saudi patients with T2DM, similar to observations made in other ethnic groups.
Trends in the Nutritional Status if Saudi Children.

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Abstract

OBJECTIVE: To evaluate the trend in the nutritional status of Saudi children over a 10-year period.

METHODS: The growth data collected between 1993--1994 were compared with those collected between 2004--2005 from all regions of the Kingdom. Both nutritional surveys had a similar design leading to representative samples of Saudi children determined by multistage probability sampling. Similar methodology of measurements of the weight and height were used. The data from the 1994 study, including the third, fifth, fiftieth, ninety-fifth, and the ninety-seventh percentiles, were plotted on the 2005 charts for the weight for age, height for age, weight for height.

RESULTS: Compared to the 1994 results, the data of the 2005 study indicate an upward shift of the lower percentiles of the weight for age, and the weight for height, more than height for age, indicating improved nutritional status. However, the upward shift of the higher percentiles for the weight for age, and weight for height in the 2005 survey, indicate increased trend for overweight and obesity.

CONCLUSION: There is a demonstrable improvement in the nutritional status of Saudi children, and also tendency toward overweight and obesity over the last decade.
Obesity and Related Behaviors among Adolescent School Boys in Abha City, Southwestern Saudi Arabia.

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Abstract

Using stratified sampling technique 2696 adolescent school boys (aged 11-19 years) in Abha City, Southwestern Saudi Arabia were interviewed and examined for weight and height using standardized techniques. The overall prevalence of obesity and overweight in the present study amounted to 16%. Using logistic regression analysis, lack of exercise practice in the previous week in general [aOR = 1.352, 95% confidence interval (CI) = 1.066-1.941] or in the class (aOR = 1.446, 95% CI = 1.083-1.931) were significantly associated with obesity. The present study showed that obesity among adolescent school boys in Abha City is a public health problem. There is a need for a national program in the country to prevent and control obesity among adolescents. The program should incorporate: dietary management of obesity, promotion of physical activity, health education campaigns and consideration of the possibility of providing facilities for practicing physical activity and exercise in the community.

Self-Reported Knowledge and Pattern of Physical Activity Among School Students in Al Khobar, Saudi Arabia.

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Abstract

The aim of this cross-sectional study was to determine the self-reported knowledge and pattern of physical activity among a sample of 1240 male and 1331 female intermediate and secondary school students in Al-Khobar city, Saudi Arabia. The majority of male and female students knew that physical activity is protective against diseases in general (92.9% and 91.8%
respectively) and in the prevention of obesity (69.4% and 78.5%) but had poor knowledge about the role of physical activity in the prevention of diabetes mellitus and hypertension. Significantly more male students than female students practised physical activity 3+ times per week (45.6% versus 33.7%). Age and the knowledge that exercise protects from obesity were the main determinants of the practice of physical activity among male students.


Hyperlipidemia in Saudi Arabia.


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Abstract

OBJECTIVE: To determine the prevalence of hyperlipidemia among Saudis of both genders in rural and urban communities.

METHODS: Selected Saudis in the age group of 30-70 years were studied over a 5-year period between 1995 and 2000 in Saudi Arabia. Data were obtained from history, physical examination, and analysis of fasting plasma lipids. The data were analyzed to classify individuals with hypercholesterolemia (HC) (total cholesterol > or =5.2 mmol/l), and hypertriglyceridemia (HT) (total triglycerides > or =1.69 mmol/l). Logistic regression analysis was performed to provide a risk assessment model and correlation with other coronary artery disease (CAD) risk factors.

RESULTS: The number of study samples included in the final analysis was 16,819. The prevalence of HC was 54% with mean cholesterol level of 5.4+/1.52 mmol/l. Prevalence of HC among males was 54.9% and 53.2% for females, while 53.4% among urban Saudis and 55.3% for rural Saudis. Hypertriglycemia prevalence was 40.3% with mean triglycerides level of 1.8+/1.29 mmol/l. Males had statistically significant higher HT prevalence of 47.6% compared to 33.7% in females (p<0.0001).

CONCLUSION: Hyperlipidemia is reaching higher prevalence rates in KSA. This finding may suggest that CAD will soon be a major health problem.
Reduction in obesity by adopting healthier eating habits, and increasing physical activity are of considerable importance to our community.


Effect of Bispectral Index (BIS) Monitoring on Postoperative Recovery and Sevoflurane Consumption among Morbidly Obese Patients Undergoing Laparoscopic Gastric Banding.


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Abstract

Early and uneventful postoperative recovery of morbidly obese patients remains a challenge for anesthesiologists. It could be valuable to titrate the administration of inhaled anesthetic, such as sevoflurane, in morbid obese patients, in order to shorten emergence using bispectral index (BIS) monitoring. It would be a great advantage if BIS permitted a more rapid recovery and less consumption in morbidly obese patients with a high cost inhaled agent. The aim of the study is to show whether the titration of sevoflurane based on the BIS monitoring would allow shortening of recovery time in morbidly obese patients and to evaluate whether BIS monitoring would contribute to reduce the amount of sevoflurane administered while providing an adequate anesthesia.

PATIENTS AND METHODS: Thirty morbidly obese ASA I & II patients undergoing laparoscopic gastric banding (LAGB) procedures were studied. In the first group (15 patients), patients were anesthetized without the use of BIS (non BIS or control group), and sevoflurane being administered according to standard clinical practice (control group). In the second group (15 patients), sevoflurane was titrated to maintain a BIS value between 40 and 60 during surgery, and then 60-70 during 15 min prior to the end of surgery (BIS group). Recovery times were recorded. Time to extubation was also noted, as well as the time to achieve a modified Aldrete score of 9 were evaluated subsequently at 10-min intervals until 3 h after surgery by nurses who had no knowledge of the study. Sevoflurane consumption was calculated using the vaporizer weighing method.
RESULTS: Awakening and extubation times were significantly shorter in the BIS group (P < 0.05). In the BIS (vs. non BIS) group, there were no significant differences observed in the time to obtain an Aldrete score of 9. The sevoflurane consumption and cost in the BIS group were lower than in the non BIS group (P < 0.05).

CONCLUSION: Bispectral index monitoring during anesthesia for morbidly obese patients provides statistically significant reduction in recovery times. It also has the added advantage in decreasing sevoflurane consumption.


Safety of Percutaneous Tracheostomy in Obese Critically Ill Patients: A Prospective Cohort Study.

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Abstract

Obesity has been described as a relative contraindication for percutaneous tracheostomy. The objective of our study was to examine the safety and complications of percutaneous tracheostomy in obese patients. We conducted a prospective cohort study of all consecutive patients who underwent percutaneous tracheostomy at a tertiary medical-surgical intensive care unit between May 2004 and October 2005. We compared percutaneous tracheostomy in obese patients (body mass index > or = 30 kg/m2) to non-obese patients. We documented the occurrence of the following complications: aborting the procedure, accidental extubation, conversion to surgical tracheostomy, paratracheal placement, the development of pneumothorax, major bleeding (requiring blood product transfusion or surgical intervention) or death. We also documented hypoxia, minor bleeding (requiring pressure dressing or suturing), subcutaneous emphysema and transient hypotension. During the study period, 227 percutaneous tracheostomies were performed. There were 50 percutaneous tracheostomies in the obese group and 177 in the non-obese group. In 45 obese patients, percutaneous tracheostomy was performed without bronchoscopic guidance. Major complications were significantly higher in obese patients (12% vs. 2%, P = 0.04), while the rate of minor complications was not significantly different between the two groups. There were no instances of death or pneumothorax, subcutaneous emphysema or need for surgical intervention during or in the postoperative
period in either group. Our study suggests that percutaneous tracheostomy can be performed safely in the majority of obese patients.

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Almajwal, AM, Williams, PG, Batterham, MJ and Alothman, AM,

Abstract

OBJECTIVE: To seek agreement from key stakeholders on the main issues, considerations and key questions that need to be addressed when developing evidence based guidelines for nutritional management of obesity in Saudi Arabia.

METHODS: Forty six health professionals (including, dietitians, physicians, academics and government representatives) participated in an invited workshop held in Riyadh in June 2007.

Participants were divided into groups to discuss five topics: priority areas to include in a critical literature review, best formats for presentation of guidelines, particular local issues to consider, information to be included in appendices, and methods to encourage the adoption and use of the guidelines. A questionnaire was also distributed to participants and they were asked to rank their level of agreement about issues related to the process of guideline development.

RESULTS: Participants agreed that Saudi clinical practice guidelines are necessary for dietitians and other health professionals to guide effective nutritional management of obesity. They also agreed about the most important key questions that need to be addressed in the guidelines. In contrast, there was no general agreement about the best formats of the guidelines and this may be due to the limited use of the guidelines for daily practices. Participants also discussed other topics and their views are summarized Conclusion: The development of specific clinical practice guidelines for nutritional management of obesity in Saudi Arabia is warranted and will be valued by Saudi dietitians and other health professionals.
Laparoscopic Adjustable Gastric Band for Morbid Obesity - Local Experience in Al-Ahsa Region of Saudi Arabia

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Abstract

OBJECTIVE: To present our experience of laparoscopic gastric banding (LAGB) for morbid obesity in the Eastern Province of Saudi Arabia

Design: Retrospective reviews of patients undergoing surgery for morbid obesity.

Setting: King Fahad Hospital, Hofuf, Saudi Arabia

Subjects: One-hundred and eighty two (182) patients from January 2000 to December 2006 were included in the study.

INTERVENTION: Laparoscopic gastric banding

Main Outcome Measures: Preoperative age, sex, body mass index (BMI), co-morbidities, operative variables and postoperative hospital stay and complications were recorded. The postoperative weight loss was recorded at three monthly intervals.

RESULTS: The mean age was 30.3 years (range 18 - 51 years) and the mean BMI was 52.6 kg per square meter (range 41 - 61.5 kg per square meter). There were two conversions to open procedure because of dense adhesions from previous surgeries. The mean operative time was 2.7 hours (range 1.25 - 3.5 hours). The mean postoperative hospital stay was 3.7 days (range 2 - 12 days). There was no mortality. Three patients had band removal after one year postoperatively. The mean follow up period was 11 months (range 3 - 40 months). The mean BMI decreased to 50.2, 45.4, 41.2 and 37.7 kg per square meter at 3, 6, 9 and 12 months postoperatively, with an average excess weight loss reduction of 43.5% after one year.

CONCLUSIONS: Laparoscopic gastric banding is an effective and safe procedure for the treatment of morbid obesity in Saudi patients.
Planning For the Development of Evidence Based Guidelines for the Nutritional Management of Obesity in Saudi Arabia

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Abstract

OBJECTIVE: To seek agreement from key stakeholders on the main issues, considerations and key questions that need to be addressed when developing evidence based guidelines for nutritional management of obesity in Saudi Arabia.

METHODS: Forty six health professionals (including, dietitians, physicians, academics and government representatives) participated in an invited workshop held in Riyadh in June 2007. Participants were divided into groups to discuss five topics: priority areas to include in a critical literature review, best formats for presentation of guidelines, particular local issues to consider, information to be included in appendices, and method to encourage the adoption and use of the guidelines. A questionnaire was also distributed to participants and they were asked to rank their level of agreement about issues related to the process of guideline development.

RESULTS: Participants agreed that Saudi clinical practice guidelines are necessary for dietitians and other health professionals to guide effective nutritional management of obesity. They also agreed about the most important key questions that need to be addressed in the guidelines. In contrast, there was no general agreement about the best formats of the guidelines and this may be due to the limited use of the guidelines for daily practices. Participants also discussed other topics and their views are summarized

CONCLUSION: The development of specific clinical practice guidelines for nutritional management of obesity in Saudi Arabia is warranted and will be valued by Saudi dietitians and other health professionals.
The Prevalence of Abdominal Obesity and Its Associated Risk Factors in Married, Non-Pregnant Women Born and Living in High Altitude, Southwestern, Saudi Arabia.

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Abstract

OBJECTIVE: To determine the prevalence of abdominal obesity and it's associated risk factors in a married, non-pregnant, high altitude female population.

METHODS: A cross-sectional study conducted from January to March 2003, with 438 currently married non-pregnant women aged 18-60 years, born and permanent residents in and around Abha, southwestern heights, Kingdom of Saudi Arabia. A questionnaire describing the demographic, social, reproductive, physical activity, and educational status was completed. The subjects were measured by weight, height, and waist circumference (WC). Body mass index (BMI) was calculated for each woman (BMI=weight [Kg]/height [m²]). Abdominal obesity was defined as WC>88cm, and total obesity as BMI > or =30 according to the World Health Organization criteria.

RESULTS: The overall prevalence of abdominal obesity was 41.1%. The prevalence was positively and significantly associated with age, total obesity, and parity (p=0.0001 for all), negatively and significantly with educational level (p=0.0001), and negatively and insignificantly with strenuous physical activity (p=0.9). Results of multiple logistic analyses showed that age, total obesity, and educational level were independent risk factors for abdominal obesity.

CONCLUSION: The study highlighted the high prevalence of abdominal obesity and showed that in addition to total obesity, intra-abdominal fat deposition is influenced by other lifestyle and reproductive factors. Community health education programs, which provide information on the high prevalence of abdominal obesity and its risk factor to all women, will be certainly justifiable, and prevention strategies should be implemented accordingly.

Al-Hazzaa HM.

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Abstract

OBJECTIVE: To determine the trends in body fatness and obesity among Saudi primary schoolboys using the data from 2 cross-sectional studies conducted in 1988 and 2005.

METHODS: Two sets of data were analyzed. The first set (n=1082) was conducted in 1988 and the second (n=702) set was conducted in 2005. Both studies used multistage random samples involving primary-school boys aged 6-14 years from Riyadh, Kingdom of Saudi Arabia. Measurements included weight (Wt), height (Ht), biacromial (BA) and bi-iliac (Bl) widths, triceps (T), subscapular (S) skinfolds, S/T ratio, body mass index (BMI), body fat percentage (fat%), lean body mass (LBM), and the proportion of obese boys (fat% > or = 25% of Wt).

RESULTS: From 1988-2005 there were significant increases in all variables except LBM. The lowest changes were observed in body structures (Ht, BA, and BI) and the highest were in body fatness (T, S, and fat%). During this 17-year period, the mean BMI standard deviation increased from 16.5 +/- 2.1 to 18.0 +/- 4.0 kg/m² and fat percentage increased from 13.2 +/- 4.7 to 19.7 +/- 10.0%. In addition, S/T ratio increased by 13.5%, indicating shifts toward central obesity over time. However, the biggest increase was seen in the proportion of obese schoolboys (from 3.4% in 1988 to 24.5% in 2005).

CONCLUSION: Findings indicate rising trends in BMI, body fatness, central obesity, and prevalence of obesity among Saudi schoolboys over the last 2 decades. Increased obesity prevalence among Saudi children is a major public health concern.
Hormonal Levels of Leptin, Insulin, Ghrelin, and Neuropeptide Y in Lean, Overweight, and Obese Saudi Females.

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Abstract

OBJECTIVE: To studied the relationship that exists between leptin, ghrelin, insulin, neuropeptide Y (NPY), anthropometric, and metabolic variables in Saudi females.

METHODS: The study was conducted at the Department of Genetics, King Faisal Specialist Hospital & Research Center, Riyadh, Kingdom of Saudi Arabia from November 2004 to August 2005. One hundred and twenty-two Saudi females were divided into 3 body mass index (BMI) groups: lean (N=60), overweight (N=17), and obese (N=45). Fasting leptin, ghrelin, insulin, NPY and glucose concentrations were determined.

RESULTS: Leptin levels in overweight and obese groups were significantly higher than those in lean group. Leptin levels showed a positive correlation with BMI in obese (0.81), overweight (0.78), and lean (0.48). In contrast, ghrelin concentration decreased in obese and overweight subjects compared to lean subjects. Ghrelin levels were negatively correlated with BMI in obese (-0.81), overweight (-0.58), and lean subjects (-0.62). Negative correlations were found between serum insulin and ghrelin concentrations in lean and obese subjects. Glucose and insulin levels were significantly higher in the obese group compared to controls. No differences were found in serum NPY between the 3 groups.

CONCLUSION: Leptin levels increased remarkably with increasing BMI. A leptin resistance state seems to exist in many obese and overweight individuals. Ghrelin concentration was decreased in overweight and obese subjects. These data demonstrate a significant inverse relationship between ghrelin and leptin levels in overweight and obese subjects.
Epidemiology, Clinical and Complications Profile of Diabetes in Saudi Arabia: A Review.

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Abstract

Diabetes mellitus is emerging as a major public health problem in Saudi Arabia in parallel with the worldwide diabetes pandemic, which is having a particular impact upon the Middle East and the third world. This pandemic has accompanied the adoption of a modern lifestyle and the abandonment of a traditional lifestyle, with a resultant increase in rates of obesity and other chronic non-communicable diseases. The indigenous Saudi population seems to have a special genetic predisposition to develop type 2 diabetes, which is further amplified by a rise in obesity rates, a high rate of consanguinity and the presence of other variables of the insulin resistance syndrome. We highlight the epidemiology, clinical and complications profiles of diabetes in Saudi people. Diabetes is well studied in Saudi Arabia; however, there seems to be little research in the area of education and health care delivery. This is of paramount importance to offset the perceived impact on health care delivery services, to lessen chronic diabetes complications, and to reduce the expected morbidity and mortality from diabetes.
Serum Leptin And Its Relation to Anthropometric Measures of Obesity in Pre-Diabetic Saudis.

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Abstract

BACKGROUND: Little information is available on leptin concentrations in individuals with IGT. This study aims to determine and correlate leptin levels to anthropometric measures of obesity in pre-diabetic, (IFG and IGT), type 2 diabetic and normoglycaemic Saudis.

METHODS: 308 adult Saudis (healthy controls n = 80; pre-diabetes n = 86; Type 2 diabetes n = 142) participated. Anthropometric parameters were measured and fasting blood samples taken. Serum insulin was analysed, using a solid phase enzyme amplified sensitivity immunoassay and also leptin concentrations, using radio-immunoassay. The remaining blood parameters were determined using standard laboratory procedures.

RESULTS: Leptin levels of diabetic and pre-diabetic men were higher than in normoglycaemic men (12.4 [3.2-72] vs 3.9 [0.8-20.0] ng/mL, (median [interquartile range], p = 0.0001). In females, leptin levels were significantly higher in pre-diabetic subjects (14.09 [2.8-44.4] ng/mL) than in normoglycaemic subjects (10.2 [0.25-34.8] ng/mL) (p = 0.046). After adjustment for BMI and gender, hip circumference was associated with log leptin (p = 0.006 with R2 = 0.086) among all subjects.

CONCLUSION: Leptin is associated with measures of adiposity, hip circumference in particular, in the non-diabetic state among Saudi subjects. The higher leptin level among diabetics and pre-diabetics is not related to differences in anthropometric measures of obesity.
Growth Pattern among Primary School Entrants in King Abdul-Aziz Housing City for National Guard in Riyadh, Saudi Arabia.

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Abstract

OBJECTIVE: To provide information on nutritional status of primary school entrants at King Abdul-Aziz Housing City for National Guard in Riyadh, Saudi Arabia and compare it with national and international studies of anthropometric data on weight and height.

METHODS: A cross-sectional study carried out at the School Health Clinic in King Abdul-Aziz Housing City for National Guard in Riyadh, Saudi Arabia. The study population comprised 6207 children aged 4-8 years from both sexes attending the obligatory pre-school health examination for years 2003-2005. Weight, height, and demographic data were collected according to international standards and the body mass index (BMI) calculated. The data were computer analyzed using Statistical Package for Social Sciences and Anthro 2005 and compared to international references.

RESULTS: Obesity, defined as BMI<95th centile in our population was found to be 4%, which is less than the national and international references. This also applies to underweight, defined as Weight-for-Height Z score less than -2 SD, which was found to be 5.8%. While stunting, defined as height Z score less than -2 SD was higher than international references (5.9%).

CONCLUSION: Compared to national and international references, our population is more similar to the American reference population than the national population, with a healthier growth pattern that could be related to the nature of the less urbanized community, the policies limiting the fast food chains inside the housing city and the presumed higher physical activity of children in our population. Thus, we encourage the promotion of more health programs to preserve this healthy pattern, and the performance of more studies to help understand the nature of growth related factors in our community.
Pedometer-Determined Physical Activity among Obese and Non-Obese 8- To 12-Year-Old Saudi Schoolboys.

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Abstract

Physical activity levels were measured in obese and non-obese 8- to 12-year-old schoolboys (n=296). Anthropometric measures included weight, height, body mass index (BMI), triceps and subscapular skinfolds, predicted fat percentage, fat mass (FM), fat-free mass (FFM), FM index (FMI), and FFM index (FFMI). Physical activity was assessed using an electronic pedometer for three continuous weekdays. Boys were divided into active and inactive groups based on daily accumulation of pedometer counts above or below 13,000 steps. Obesity was defined as body fat content that equals or exceeds 25% of body weight. The international age- and gender-specific child BMI cut-off points were also used to define overweight and obesity. Estimated fat content for the whole sample averaged 23.3+/−9.7%. More than 37% of the boys were classified as obese. The mean step counts were about 13,489+/−5,791 steps per day (range: 335-29,169 steps). Over 71% of the boys accumulated 10,000 steps or more per day. Based on BMI standards, mean step counts for the obese group (10,602+/−4,800 steps/day) were significantly (p=0.004) lower than in the normal group (14,271+/−5,576 steps/day). Based on fat percentage, obese boys also accumulated significantly (p=0.009) lower numbers of steps per day (12,682+/−5,236) than did non-obese boys (14,915+/−5,643). Further, there were significant differences (p<0.05) between active and inactive boys in weight, BMI, triceps and subscapular skinfolds, fat percentage, FMI, and flexibility. It is concluded that the prevalence of obesity and inactivity among Saudi boys aged 8-12 years was high. Active boys exhibited significantly lower body fat percentage and BMI than inactive peers. Obese boys, on the other hand, were significantly less active than non-obese boys. Increased prevalence of obesity and physical inactivity among Saudi children is a major public health concern.
Laparoscopic Adjustable Gastric Banding in Adolescent: Safety And Efficacy.

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Abstract

BACKGROUND: Obesity prevalence is rapidly increasing among children and adolescents worldwide. It is considered one of the most alarming public health issues facing the world today. The adult experience has demonstrated that surgery is the only effective means of achieving persistent weight loss in obese patients. However, little is known about bariatric surgery in children and adolescents. The aim of this study is to evaluate the safety and efficacy of laparoscopic adjustable gastric banding (LAGB) in this group of patients.

METHODS: A retrospective review included all children and adolescents who underwent LAGB from January 2003 to December 2005.

RESULTS: Fifty-one patients underwent LAGB. The mean age was 16.8 years (range, 9-19), and the mean body mass index was 49.9 kg/m2 (range, 38-63). Mean excess weight loss was 42% at 6 months and 60% at 1 year follow-up. The most prevalent comorbidities were obstructive sleep apnea, limited physical activities, hypertension, and diabetes mellitus. Band adjustments were performed under fluoroscopic guidance in 5 patients and direct access as a clinic procedure in the remaining. One patient required port repositioning under fluoroscopic guidance. The mean follow-up was 16 months (range, 3-34). There was no mortality or significant postoperative complications.

CONCLUSION: The absence of significant nutritional deficiency, the continued adjustability, and potential reversibility of LAGB make it the safest, least invasive, and most effective bariatric surgery that can be offered to the young and adolescent population.

Adiposity and Physical Activity Levels among Preschool Children in Jeddah, Saudi Arabia.

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Abstract

OBJECTIVE: To assess the levels of adiposity and physical activity among Saudi preschool children from Jeddah.

METHODS: Participants included 224 Saudi preschool children, randomly selected from public and private preschools in Jeddah during April and May of 2006, using a multistage stratified sampling technique. Measurements included weight, height, body mass index, triceps and subscapular skinfolds, fat percentage, fat mass (FM), fat-free mass (FFM), FM index (FMI) and FFM index (FFMI), time spent watching television and physical activity levels using electronic pedometer for 3 continuous days during weekdays.

RESULTS: The fat content averaged 20.6% of body weight, while the prevalence of obesity was 10.8%. There were significant gender differences in fat percentage, FM, FFM, FMI, and FFMI. The mean value for pedometer-determined steps counts for the preschool children was 6773.2 steps per day. Boys were significantly more active than girls. Only 22.4% of the preschool children had 10,000 steps or more per day. There were no significant age differences in skinfolds measurements, fat percentage, FMI, FFMI, central obesity or daily steps counts. Television viewing time increased by 22.5% from age 4 to age 6. Compared to non-obese, obese preschool children were significantly heavier, taller and had higher values for all adiposity indices and television viewing time.

CONCLUSION: A considerable proportion of Saudi preschool children is obese and even a greater proportion is physically inactive. Obesity and physical inactivity represent major risks for a number of non-communicable diseases, and an early intervention is most appropriate.
Obesity: An Emerging Problem in Saudi Arabia. Analysis of Data from The National Nutrition Survey

A.I. Al-Othaimeen, M. Al-Nozha and A.K. Osman

Abstract
To document the prevalence of obesity in Saudi Arabia, we used data from a cross-sectional study on 19,598 individuals in 2,837 households. Body mass index, skinfold thickness and mid-arm circumference were measured. Prevalence of obesity ranged from 33.9% in Ha'il to 11.7% in Jizan. More women than men were obese, 23.6% compared to 14.2%. Prevalence of overweight was 30.7% for males and 28.4% for females. Obesity was present in all age groups. It is clear that changes must be made to the lifestyle of the Saudi population in order to reduce the prevalence of obesity.

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Abstract

The aim of this study was to determine the prevalence and the socioeconomic risk factors associated with obesity among female school-aged children and adolescents in primary and intermediate schools in Al-Khobar city, Kingdom of Saudi Arabia. This is a cross-sectional study conducted in Al-Khobar city, which is located in the eastern part of Saudi Arabia, during the period of January to March 2003. It involved 2239 female schoolchildren randomly selected from 30 regular government and private primary and preparatory schools. The students' ages ranged from 6 to 17 years, with a mean of 10.49 +/- 2.64 years. A multistage stratified random sampling technique with proportional allocation was used. Data were collected using questionnaires and anthropometric measurements. Body mass index interpretation was based on using a table of standard definitions for overweight and obesity in children (Cole's). The spss version 10 (SPSS Inc., Chicago, IL, USA) was used for data entry and analysis. A chi-squared test was used in cross-tabulation analysis to test the significance of association between body mass index and socioeconomic variables. The prevalence of overweight and obesity were 20% and 11%, respectively. The prevalence of overweight was higher among schoolchildren with father in private work (P<0.01) and the prevalence of overweight and obesity was higher among schoolchildren with highly educated mothers (P=0.008). The prevalence of overweight and obesity among female school-aged children and adolescents in the Al-Khobar city was very high. Accordingly, it is recommended that health education programmes regarding obesity should be provided to all schoolchildren, their families and teachers.
Adiposity and Physical Activity Levels among Preschool Children in Jeddah, Saudi Arabia.

Al-Hazzaa HM, Al-Rasheedi AA.

Exercise Physiology Laboratory, King Saud University, PO Box 9792, Riyadh 11423, Kingdom of Saudi Arabia. halhazza@hotmail.com

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CONCLUSION: A considerable proportion of Saudi preschool children is obese and even a greater proportion is physically inactive. Obesity and physical inactivity represent major risks for a number of non-communicable diseases, and an early intervention is most appropriate.
Hemodynamic Profile During Laparoscopic Cholecystectomy Versus Laparoscopic Bariatric Surgery: The Impact of Morbid Obesity.

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Abstract

The present study investigated the hemodynamic profile using impedance cardiography (ICG) monitor during pneumoperitoneum for laparoscopic cholecystectomy versus bariatric surgery in order to determine the impact of body weight on hemodynamics.

METHODS: 32 adult patients (two groups, each 16 patients) were studied. Group 1 (16 patients) scheduled to undergo laparoscopic cholecystectomy (lapchole) with body mass index (BMI) 28 +/- 5 kg/m2. Group 2 (16 patients) scheduled to undergo laparoscopic adjustable band (LAGB) surgery for treatment of morbid obesity with BMI 45.3 +/- 8 kg/m2. under general anesthesia. Besides routine monitoring, impedance cardiography was used for hemodynamic monitoring. Three stages were identified for statistical analysis A, pre-insufflation, B, during severe pneumoperitoneum and C, at gas deflation.

RESULTS: The mean values of cardiac index in group 1 at stages A, B and C were, 3.0 +/- 1.7, 2.5 +/- 0.5 and 2.7 +/- 0.5 L/min/m2 respectively with significant low values in stage B compared to stage A (p < 0.05). The same trend continue in group 2 where the mean values were, 2.4 +/- 0.6, 1.8 +/- 0.6 and 2.3 +/- 0.9 L/min/m2 respectively with significant differences compared to group 1 mean values (p < 0.05). Other hemodynamic variables showed non-significant differences (p > 0.05).

CONCLUSIONS: Cardiac index showed significant decreasing trend in morbid obese patients compared to nonobese, which may reflect the effect of body weight on hemodynamics. On the other hand other hemodynamic parameters was not altered by body weight. We believe that hemodynamics should be closely monitored during laparoscopic surgery with pneumoperitoneum.
Is It Necessary to Consider Obesity when Constructing Norms for Hemoglobin or When Screening for Anemia Using Hemoglobin Levels?

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Abstract

OBJECTIVE: To assess the relationship of total adiposity and abdominal adiposity on hemoglobin levels in Saudi nonpregnant women.

METHODS: We carried out this cross-sectional study during winter of 2002 (from January to March) in and around Abha city, Kingdom of Saudi Arabia. Included in the study were 530 non-pregnant women between the age of 18-65 years. Body weight was measured using an Avery Beam weighing scale, while height was measured using a stadiometer and waist circumference using a fiberglass. Hemoglobin levels were estimated using cyanmethemoglobin method. Total obesity was defined as body mass index (BMI) \( \geq 30 \) and abdominal obesity as WC >88 cm.

RESULTS: The mean and median hemoglobin levels were significantly higher in abdominally obese women compared with totally obese (p<0.04 versus <0.02) and non obese ones (p<0.04 versus <0.03). No significant differences in the mean and median hemoglobin levels were observed when abdominally obese women were compared with both abdominally and totally obese ones (p<0.7 for both). The mean and the median hemoglobin levels were virtually identical in non-obese and totally obese women. Statistical analysis showed that the mean hemoglobin level was positively and significantly associated with WC (p<0.005) and negatively and insignificantly associated with BMI (p<0.8).

CONCLUSION: In view of the positive and significant association between abdominal obesity and the mean hemoglobin level in this population, abdominal obesity should be considered when constructing norms for hemoglobin or when screening for anemia using hemoglobin levels.
Coronary Heart Disease Risk Factors: Prevalence and Behavior Among Male University Students in Dammam City, Saudi Arabia.

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Abstract

Smoking, hypertension, and diabetes mellitus are the common risk factors among patients with coronary heart disease (CHD). High dietary fat intake, smoking, and lack of physical exercise have all been documented as independent risk factors for the development of CHD. The aim of the present study was to determine the prevalence of CHD risk factors among King Faisal University (KFU) male students in Dammam city, Saudi Arabia. A sample size of 10% of the target population (2054 male students of KFU colleges) was selected comprising 205 students. The study sample was selected by a multistage stratified random sampling technique with proportional allocation from all class levels. The response rate was 77.6%, where a total of 159 students were included in the study. Data was collected using an interviewer-administered questionnaire, which included sociodemographic variables and risk factors for CHD. The following measurements were performed: weight, height, body mass index (BMI), waist-to-hip ratio (WHR), blood pressure, and random capillary blood glucose. It was found that 28.9% of the university students do not practice any type of physical exercise. About 19% of the students were current smokers. A high proportion of university students were consuming fast foods, saturated fats, and soft drinks. Overweight (24.5%), obesity (11.9%), severe obesity (10.7%) as measured by BMI, as well as unacceptable WHR (10.7%) as an indicator of obesity were evident. Family history of obesity and unacceptable WHR were found to be statistically associated with increased obesity. Therefore, intervention programs to raise the health awareness of adolescents about CHD risk factors and encourage them to adopt a healthy dietary behavior, promote physical exercise and smoking cessation should be initiated.

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Abstract

OBJECTIVE: To examine the trends in body mass index (BMI) of Saudi male adolescents between 1988 and 1996.

METHODS: The data set came from three major population-based cross sectional studies. They all involve nationally representative samples and were conducted between 1988 and 1996. BMI was calculated from body height and mass and plotted at the 50(th) and 90(th) percentiles.

RESULTS: BMI of Saudi adolescents progressively increased at both 50(th) and 90(th) percentiles between 1988 and 1996. The increases in BMI during the eight-year period ranged from 9.6 to 10.8% at the 50(th) percentiles and from 10.9 to 13.9% at the 90th percentiles. At ages 15-18 years, the yearly increase in median BMI from 1988 to 1996 averaged 0.246 kg/m(2).

CONCLUSION: The rising trends in BMI between 1988 and 1996 are indication of increasing obesity among Saudi male adolescents. More attention to the promotion of healthy nutrition and physical activity throughout childhood and adolescence is required.
The Prevalence of Abdominal Obesity and Its Associated Risk Factors in Married, Non-Pregnant Women Born and Living in High Altitude, Southwestern, Saudi Arabia

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Abstract

OBJECTIVES: To determine the prevalence of abdominal obesity and its associated risk factors in a married, non-pregnant, high altitude female population. Methods: A cross-sectional study conducted from January to March 2003, with 438 currently married non-pregnant women aged 18-60 years, born and permanent residents in and around Abha, southwestern heights, Kingdom of Saudi Arabia. A questionnaire describing the demographic, social, reproductive, physical activity, and educational status was completed. The subjects were measured by weight, height, and waist circumference (WC). Body mass index (BMI) was calculated for each woman (BMI=weight [Kg]/height [m^2]). Abdominal obesity was defined as WC>88cm, and total obesity as BMI≥30 according to the World Health Organization criteria. Results: The overall prevalence of abdominal obesity was 41.1 %. The prevalence was positively and significantly associated with age, total obesity, and parity (p=0.0001 for all), negatively and significantly with educational level (p=0.0001), and negatively and insignificantly with strenuous physical activity (p=0.9). Results of multiple logistic analyses showed that age, total obesity, and educational level were independent risk factors for abdominal obesity.

CONCLUSION: The study highlighted the high prevalence of abdominal obesity and showed that in addition to total obesity, intra-abdominal fat deposition is influenced by other lifestyle and reproductive factors. Community health education programs, which provide information on the high prevalence of abdominal obesity and its risk factor to all women, will be certainly justifiable, and prevention strategies should be implemented accordingly.
Association of Obesity with Increased Mortality in the Critically Ill Patient.

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Abstract

The impact of obesity on critical care outcomes has been an issue for debate in the literature. Variable data and conflicting results have been reported. The purpose of our study is to examine the impact of obesity on the outcome of patients admitted to a tertiary closed Intensive Care Unit (ICU) in Saudi Arabia. Data was obtained from a prospectively collected database from September 2001 to May 2004. Patients younger than 18, those with burns, brain death and readmissions were excluded. The study population was stratified into six groups according to their Body Mass Index (BMI). Primary endpoints were ICU and hospital mortality, duration of mechanical ventilation and ICU length of stay. A total of 1835 patients were included in the analysis. Baseline characteristics were similar among the six groups including severity of illness scores, reflected by Acute Physiology and Chronic Health Evaluation II (APACHE II) scores. The ICU mortality was not statistically different among the groups. Hospital mortality was lower in patients with BMI 35-39.9 kg/m2 and BMI >40 kg/m2 compared to those with BMI 18.5-24.9 kg/m2. Multivariate analysis showed that a BMI >40 kg/m2 was an independent predictor of lower hospital mortality (odds ratio 0.51, 95% confidence interval 0.28-0.92, P 0.025) after adjustment for other confounding factors. In conclusion, mortality of obese critically ill patients was not higher than patients with normal weight. In fact, the hospital mortality was lower for patients with BMI >40 kg/m2 compared to the normal BMI group despite similar severity of illness. Obesity might have a protective effect, although further studies are needed to substantiate this finding.

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Abstract

Obesity, as a core component of the metabolic syndrome, is among the top ten global health risks classified by the World Health Organization (WHO) as being strongly associated with the development and progression of chronic renal disease—a widely prevalent but often silent condition. Obesity carries elevated risks of cardiovascular morbidity and mortality besides having an array of metabolic complications. Maladaptive glomerular hemodynamics with increased intraglomerular pressure in association with vasoactive, fibrogenic substances released from adipocytes, in addition to cytokines and hormones, are the key factors in the causation of renal injury and the progression of nephron loss among obese subjects.

Correlation of Leptin and Sex Hormones with Endocrine Changes in Healthy Saudi Women of Different Body Weights.

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Abstract

BACKGROUND: A relationship between estrogen and leptin has been described during the follicular phase of both spontaneous menstrual cycles and cycles stimulated with exogenous follicle-stimulating hormone (FSH), which suggest that leptin has either a direct effect on or is regulated by gonadal steroids in the human ovary. To examine the changes in plasma leptin levels during the menstrual cycle, we studied the association between plasma leptin and reproductive hormones in young, healthy Saudi women.
SUBJECTS AND METHODS: Sixty-five young women between 19 to 39 years of age, with a normal menstrual cycle, were grouped into 33 overweight and obese females of BMI >25 kg/m2, and 32 lean females of BMI <25 kg/m2. Anthropometrics measurements were made at the time of the collection. Samples were analyzed for leptin, progesterone, estradiol (E2), FSH, luteinizing hormone (LH), cortisol, and testosterone concentrations.

RESULTS: Overweight and obese women, compared with lean, tended to have a significantly higher plasma leptin levels (11.38 +/- 4.06 vs. 6.22 +/- 2.87 ng/mL; P=0.05). In overweight and obese subjects, circulating leptin concentrations showed a direct correlation with BMI (r=0.53; P=0.002), hip circumference (r=0.32; P=0.005), waist-hip ratio (r=0.37; P=0.042), weight (r=0.41; P=0.021), and E2 on day 3 (r=0.35; P=0.048). In all correlation analyses, leptin levels did not correlate with cortisol or testosterone. In lean subjects, a bivariate correlation analysis showed that plasma leptin concentrations were directly correlated to hip circumference (r=0.43; P=0.012). Moreover, a direct correlation was found with progesterone on day 10 (r=0.43; P=0.014) and E2 on day 24 (r=0.47; P=0.007).

CONCLUSION: There is a link between plasma leptin and progesterone concentrations during the menstrual cycle, and the variation in circulating estradiol concentrations may have an influence on circulating leptin in female subjects.


Obesity and Its Correlation with Spirometric Variables in Patients With Asthma.

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Abstract

BACKGROUND: The severity of bronchial asthma has been associated with increased body mass index (BMI) in several studies. We studied obesity in the asthmatic population and its possible correlation with spirometric variables.

METHODS: We reviewed the medical records of 200 patients who underwent spirometry and were followed up in a pulmonary clinic for asthma. Ninety patients fulfilled the inclusion criteria. Patients were divided into Group? (forced expiratory volume in 1 second [FEV1] = 80%, n = 64)
and Group II (FEV1 60% to 79%, n = 26). Patients with BMI = 30 were labeled as obese. In each group, correlates of BMI and forced expiratory flow, midexpiratory phase (FEF25%-75%) were analyzed with linear regression.

RESULTS: The mean ages were 33.9 +/- 13 years and 33.73 +/- 10 years in Groups I and II, respectively. The mean BMI was 30.2 +/- 6 (Group I) and 30.36 +/- 6 (Group II). BMI = 30 was seen in 56.7% of patients in Group I and 53.3% in Group II. BMI did not correlate with spirometric variables in both groups. FEF25%-75% correlated with FEV1 and FEV1:forced vital capacity (FVC) in Group I (P = .003 and .0001, respectively) and FEV1:FVC in Group II (P = .0001). In Group 1, 38% of the patients had FEF25%-75% less than 80%.

CONCLUSION: Although obesity was prevalent in asthmatic patients, BMI did not correlate with any of the spirometric variables. A significant number of patients with normal FEV1 had impaired midflow rates that may reflect ongoing small airway inflammation.


Standards of Growth and Obesity for Saudi Children (Aged 3-18 Years) Living at High Altitudes.


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Abstract

AIM OF STUDY: To standardize the growth parameters for Saudi children aged 3-18 years living at high altitude and to investigate the appropriateness of using the National Center for Ilealth Statistics (NCIIS) growth standards for the assessment of children's growth at this high altitude area.

SUBJECTS AND METHODS: The present study follows a cross-sectional study design. A total of 13,580 native Saudi children (7,193 boys and 6,387 girls) aged 3-18 years living in Abha City (Elevation: 3,100 meters above sea level) constituted the study's sample. All chronically and acutely ill children were excluded. The data regarding the children were obtained from the well-baby clinics at primary health care centers and nurseries, as well as primary, intermediate and secondary schools. The percentiles for the weight and height and the body mass index (BMI) were calculated
separately for the boys and the girls using one-year intervals. BMI values above the 95th and below the 5th percentiles were considered as diagnostic for obesity and underweight, respectively.

RESULTS: Median values of weight and height for Saudi’s children (both boys and girls) were lower than their corresponding values for children in the USA. Median values of the BMI for the Saudi’s boys were almost identical to those of the USA’s NCHS median values through all ages that were studied. On the other hand, the median values for the BMI were almost identical for the Saudi’s and USA’s girls aged 3-9 years. However, after the age of 9 years the differences in the median values for the BMI were increased progressively due to the higher values for the Saudi’s girls.

CONCLUSIONS: The use of the NCHS growth standards is not appropriate for the assessment of growth of children that live in the high altitude area of Abha and further studies are needed to determine the exact impact of high altitude on the growth patterns in children.

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A Comparison of the Prevalence of Metabolic Syndrome in Saudi Adult Females Using Two Definitions.

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Abstract

The aim of this study was to estimate the prevalence of metabolic syndrome in Saudi adult women aged 18 years and above using the criteria of International Diabetes Federation (IDF) and modified National Cholesterol Education Program Adult Treatment Panel III (mNCEP-ATPIII). A cross-sectional survey was performed involving a group of 2577 non-pregnant Saudi women subjects aged 18-59 years residing in a military city in northern Saudi Arabia recruited from a primary care setting. Anthropometric data, together with a brief medical history, were obtained at initial contact, and laboratory investigations were performed on the following day after fasting for 12 h. Data on all variables required to define the metabolic syndrome according to IDF and mNCEP-ATPIII criteria were available for only 1922 subjects who attended the laboratory for investigations (response rate of 74.6%). Non-respondents were excluded from data analysis. Prevalence rates were estimated according to both
Age-adjusted prevalence of metabolic syndrome was found to be 16.1% and 13.6% by IDF and mNCEP-ATPIII definitions, respectively. Abdominal obesity was the most common component in the study population (44.1% by mNCEP-ATPIII and 67.9% by IDF cut-off points). It was followed by low serum high-density lipoprotein cholesterol (36.0%). About two-thirds of the subjects (66.4% by mNCEP-ATPIII and 67.9% by IDF definitions) exhibited at least one criterion for metabolic syndrome by both definitions. Mean values and prevalence of individual components of the syndrome showed a steady rise with increase in age, general and abdominal obesity, and the presence of diabetes. Since the cut-off values for waist circumference by IDF definition were lower, prevalence rates by this definition were higher than those defined by mNCEP-ATPIII. High prevalence rates in this young sample predict a sharp rise in the prevalence rates of this syndrome among Saudi women over the next few years.


Osteoarthritis of Knees and Obesity in Eastern Saudi Arabia.

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Abstract

OBJECTIVE: To find out the prevalence and relation between osteoarthritis of knees and obesity in Al-Ahsa region, Kingdom of Saudi Arabia (KSA).

METHODS: The study included 243 male and female patients diagnosed with osteoarthritis of knees between June 2001 to March 2003. All patients were recruited from the Physical Therapy Department, King Fahd Hofuf Hospital, Hofuf, KSA. The clinical diagnosis was supported by plain x-rays of knees, and of other joint if needed. The weight and height of all patients were taken using one standard weight and height scale, and body mass index was also calculated and recorded.

RESULTS: More than 90.53% of the patients referred with osteoarthritis of the knees were obese or overweight. The mean body weight of all patients was 84.61 kg and the mean height was 1.59 meters. Osteoarthritis of the knees was more common in obese female than male patients with a female to male ratio of 2.37:1.
CONCLUSION: Obesity is a disease. The aim of all health professionals and others in the community should be directed to the prevention of this disease and its risk to develop multiple complications.


Standards of Growth and Obesity for Saudi Children (Aged 3 -18 Years) Living at High Altitudes.


Department of Child Health, College of Medicine, King Khalid University, Abha, Saudi Arabia. Fariss2000@yahoo.com

Abstract

AIM OF STUDY: To standardize the growth parameters for Saudi children aged 3-18 years living at high altitude and to investigate the appropriateness of using the National Center for Health Statistics (NC(HS) growth standards for the assessment of children's growth at this high altitude area.

SUBJECTS AND METHODS: The present study follows a cross-sectional study design. A total of 13,580 native Saudi children (7,193 boys and 6,387 girls) aged 3-18 years living in Abha City (Elevation: 3,100 meters above sea level) constituted the study's sample. All chronically and acutely ill children were excluded. The data regarding the children were obtained from the well-baby clinics at primary health care centers and nurseries, as well as primary, intermediate and secondary schools. The percentiles for the weight and height and the body mass index (BMI) were calculated separately for the boys and the girls using one-year intervals. BMI values above the 95th and below the 5th percentiles were considered as diagnostic for obesity and underweight, respectively.

RESULTS: Median values of weight and height for Saudi's children (both boys and girls) were lower than their corresponding values for children in the USA. Median values of the BMI for the Saudi’s boys were almost identical to those of the USA's NCHS median values through all ages that were studied. On the other hand, the median values for the BMI were almost identical for the Saudi’s and USA's girls aged 3-9 years. However, after the age of 9 years the differences in the median values for the BMI were increased progressively due to the higher values for the Saudi's girls.
CONCLUSIONS: The use of the NCHS growth standards is not appropriate for the assessment of growth of children that live in the high altitude area of Abha and further studies are needed to determine the exact impact of high altitude on the growth patterns in children.


Body Mass Index of Kuwaiti Children Aged 3-9 Years: Reference Percentiles and Curves.

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Abstract

AIM: The suitability of using the standards for body mass index (BMI), produced in the U.S. by the National Center for Health Statistics, for assessing overweight and obesity among children in Kuwait and other Arabian Gulf countries has not been examined. These standards were obtained from better-nourished and genetically different populations to those found in Kuwait and in other Gulf region countries. The purpose of this study was to develop BMI reference percentiles and curves appropriate for children aged 3-9 in these countries.

METHOD: Attempts were made to include all healthy Kuwaiti kindergarten and elementary education children in this study The total sample was 113,013, comprising 55,053 males and 57,960 females. The children were measured for weight and height from which the BMI was calculated. Appropriate polynomial regression smoothing techniques were used to obtain the best-fitting percentile curves.

RESULTS: At percentiles < or =25th, the BMI of boys exceeded that of girls. At the 50th percentile, boys' BMI was mostly higher than or equal to that of the girls except at age nine where it was lower At the 75th percentile, the BMI of both genders was similar, with exceptions at age six and nine years. At the 85th and 95th percentiles, girls' BMI was consistently higher than males. At the lowest percentile, the BMI of US children was higher than Kuwaiti, Saudi (starting at six) and Iranian children. The BMI of Kuwaiti children at higher percentiles was higher than that of Saudi, Iranian (except at age < four years) and US children.

CONCLUSION: BMI curves for Kuwaiti children follow almost the same pattern as their US counterparts but with noticeable variations especially at
the lower and higher percentiles. This study may reflect that western standards may not be directly applicable to assess the level of BMI in Kuwait and possibly in the neighbouring Gulf countries, since they may overestimate the levels of overweight, obesity and underweight.


Metabolic Syndrome in Saudi Arabia.


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Abstract

OBJECTIVES: Metabolic syndrome (MS) is a well-established risk factor for the development of coronary artery disease (CAD). We designed this study to obtain the prevalence of MS and each of its components in Saudi Arabia. This study is part of Coronary Artery Disease in Saudi Study (CADISS).

METHODS: We conducted this community-based national epidemiological health survey by examining Saudi subjects in the age group of 30-70 years of selected households over a 5-year period between 1995 and 2000 in Saudi Arabia. We interviewed all subjects, examined and took measurements of their blood pressure, weight, height, waist circumference, as well as fasting samples of plasma glucose, triglycerides, and high-density lipoprotein (HDL) cholesterol. We obtained the prevalence of MS based on the presence of at least 3 of the following: abdominal obesity (waist circumference > 102 cm (40 inch) in male and > 88 cm (35 inch) in female), triglycerides > or = 150 mg/dl (1.69 mmol/L), HDL cholesterol < 40 mg/dl (1.03 mmol/L) in male and < 50 mg/dl (1.29 mmol/L) in female, blood pressure > or = 130/85 mm Hg, fasting glucose > or = 110 mg/dl (6.1 mmol/L) as defined by the Adult Treatment Panel (ATP) III in 2001.

RESULTS: We included 17,293 subjects in this survey during the study period. The overall age-adjusted prevalence of MS in Saudi Arabia obtained from this study is 39.3%. Age adjusted prevalence in males is 37.2% and crude prevalence is 40.9% (95% confidence interval [CI] 39.8-42), while females have a higher prevalence of 42% and crude prevalence of 41.9% (95% CI 40.9-42.9). Saudi subjects from urban areas have significantly higher prevalence of 44.1% (95% CI 43.2-45) compared to those living in rural areas of 35.6% (95% CI 34.3-36.7) (p<0.0001). Low HDL affects 81.8%
of females and 74.8% of males with MS leading all other factors, and it continued to be consistent in all different age groups. Metabolic syndrome is a risk factor for CAD, as the prevalence of CAD was higher among patients with MS (6.7%) compared to subjects without MS (4.6%) \(p<0.0001\).

**CONCLUSION:** The prevalence of MS is high in Saudi Arabia. Low HDL cholesterol plays a major role in the contribution to the MS in Saudi Arabia. Therefore, we recommend routine assessment for the components of MS in patients with CAD, furthermore, we encourage aggressive management of the MS for primary prevention of CAD, particularly, measures to increase HDL cholesterol.


**Prevalence of Metabolic Syndrome in Saudi Adult Soldiers.**

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**Abstract**

**OBJECTIVE:** To estimate the prevalence of metabolic syndrome in Saudi male soldiers aged 20 years and above using the criteria of the National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATP III).

**METHODS:** We performed a cross-sectional survey involving a group of 2250 Saudi male soldiers aged 20-60 years residing in a military city in Northern Saudi Arabia in 2004. Participants were recruited from a primary care setting. Anthropometric data together with a brief medical history were obtained from the subjects at initial contact. Laboratory investigations were performed on the following day after fasting for 12 hours. Data on all variables required to define the metabolic syndrome according to NCEP ATP III criteria were available only for 1079 subjects who attended the laboratory for investigations (response rate: 47.9%). Data obtained from these subjects were analyzed excluding the non-respondents from the study sample.

**RESULTS:** The age-adjusted prevalence of metabolic syndrome was found to be 20.8%. Abdominal obesity was the most common component in the study population (33.1%) closely followed by raised serum triglycerides
(32.2%) and elevated systolic blood pressure (29.5%). Over two-thirds of the subjects (71%) exhibited at least one criterion for metabolic syndrome. Prevalence of individual factors and mean values of the components of the syndrome showed a steady increase with increase in age and body fat.


Obesity and Cardiovascular Risk Factors in Saudi Adult Soldiers.

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Abstract

OBJECTIVE: To examine the relationship between obesity and cardiovascular risk factors among men aged 20 years and above.

METHODS: The study involved a cross-sectional survey of 2,250 Saudi male soldiers aged between 20 and 60 years residing in a military city in northern Saudi Arabia conducted in 2004. Anthropometric measurements, blood pressure, and a brief medical history were obtained in a pre-set questionnaire. Serum lipid profile and fasting plasma sugar were requested for all the subjects. A total of 1,079 subjects responded with a response rate of 47.9%. A multivariate analysis was performed to assess the relationship between general obesity, abdominal obesity, and cardiovascular risk factors.

RESULTS: Over 82% of the subjects were either overweight or obese. Abdominal obesity was found in one third, and approximately half were either current or ex-smokers. The means of anthropometric and laboratory measured risk factors for cardiovascular disease showed a progressive rise with increase in age, abdominal, and general obesity.

CONCLUSION: This study has shown a high prevalence of overweight and obesity positively correlated with the prevalence of cardiovascular risk factors among Saudi adult male soldiers. There is a need for concerted efforts aimed at achieving ideal body-weight together with a reduction in the co-existent risk factors for cardiovascular disease.
Serum Resistin, Adiposity and Insulin Resistance in Saudi Women with Type 2 Diabetes Mellitus.

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Abstract

BACKGROUND: The role of adipocyte hormones in modulating insulin sensitivity and glucose tolerance are of increasing interest and importance in studies of type 2 diabetes mellitus. Recently a unique signaling molecule, resistin, has been proposed as playing a role in the pathogenesis of obesity-related insulin resistance, but its relevance to human diabetes remains uncertain. Therefore, we assessed the relationship between serum resistin concentrations and insulin resistance in lean, overweight and obese (OW/OB) non-diabetic and diabetic Saudi women.

SUBJECTS AND METHODS: We measured fasting serum resistin levels in 44 diabetic women with a mean body mass index (BMI) of 31.82 +/- 4.35 kg/m², 21 OW/OB non-diabetic women with a mean BMI 30.71 +/- 3.42 kg/m² and in 24 lean women with a mean BMI of 23.33 +/- 1.24 kg/m². Insulin resistance was assessed using the homeostasis model assessment for insulin resistance formula derived from fasting insulin and glucose levels.

RESULTS: The concentrations of fasting serum resistin showed significant differences among the three groups (P<0.001). Mean serum resistin concentrations increased from lean (11.59 +/- 2.08) to OW/OB non-diabetic (16.29 +/- 2.29) to diabetic (19.42 +/- 3.60 ng/mL) women. Significantly higher levels of glucose (P<0.001) and values for the homeostasis model assessment ratio (HOMA-R) (P<0.01) occurred in the diabetic compared to the lean and OW/OB non-diabetic subjects. Furthermore, resistin correlated significantly and positively with hip circumferences (r=0.39, P=0.039), weight (r=0.51, P=0.005), insulin (r=0.40, P=0.033), HOMA-R (r=0.49, P=0.007) and glucose (r=0.39, P=0.038) in diabetic women. In OW/OB non-diabetic subjects, resistin correlated with insulin (r=0.59, P=0.015) and HOMA-R (r=0.616, P=0.011). No correlation was observed with glucose, height, hip, waist, weight, and waist-hip ratio (WHR) in the lean and OW/OB non-diabetic groups.
CONCLUSION: Resistin concentrations are elevated in patients with type 2 diabetes and are associated with obesity and insulin resistance. These data indicate that resistin might be involved in the development of diabetes in humans.


**Serum Resistin is Associated with C-Reactive Protein & LDL Cholesterol in Type 2 Diabetes and Coronary Artery Disease in a Saudi Population.**

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**Abstract**

**AIMS:** Resistin is an adipocyte-derived factor implicated in obesity-associated type 2 diabetes (T2DM). This study examines the association between human serum resistin, T2DM and coronary heart disease.

**METHODS:** One hundred and fourteen Saudi Arabian patients (male: female ratio 46:68; age 51.4 (mean +/- SD)11.7 years; median and range: 45.59 (11.7) years and BMI: 27.1 (mean +/- SD) 8.1 Kg/m2 median and range: 30.3 (6.3) were studied. Serum resistin and C-reactive protein (CRP), a marker of inflammation CRP levels, were measured in all subjects. (35 patients had type 2 diabetes mellitus (T2DM); 22 patients had coronary heart disease (CHD).

**RESULTS:** Serum resistin levels were 1.2-fold higher in type 2 diabetes and 1.3-fold higher in CHD than in controls (p = 0.01). In addition, CRP was significantly increased in both T2DM and CHD patients (p = 0.007 and p = 0.002 respectively). The use of regression analysis also determined that serum resistin correlated with CRP levels (p = 0.04, R2 0.045).

**CONCLUSION:** The findings from this study further implicate resistin as a circulating protein associated with T2DM and CHD. In addition this study also demonstrates an association between resistin and CRP, a marker of inflammation in type 2 diabetic patients.
Sleep-Related Breathing Disorders in Obese Patients Presenting with Acute Respiratory Failure.

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Abstract

INTRODUCTION: The study was conducted to assess the clinical and polysomnographic characteristics of patients with sleep-related breathing disorders who presented to the intensive care unit (ICU) with acute respiratory failure and the practicability of performing polysomnography for such patients.

MATERIAL AND METHODS: We analyzed clinical presentation, cause of admission to the ICU, ICU course and outcome of 11 subjects with acute respiratory failure who were diagnosed to have sleep disordered breathing based on polysomnography between October 1999 and January 2003. Subjects were compared to 11 patients with obstructive sleep apnea syndrome matched to each subject using body mass index, age and apnea hypopnea index measured at the time of diagnosis (matched comparison group). Repeated arterial blood gases and polysomnography were done for 8 subjects compliant to treatment 6-8 months after discharge from ICU.

RESULTS: The reason for ICU admission for all subjects was hypercapnic respiratory failure. pH and daytime PaO2 were significantly lower in studied subjects compared to the matched comparison group while awake daytime PaCO2 was significantly higher. Subjects had frequent episodes of hypoventilation. Follow up arterial blood gases and polysomnography 6-8 months after treatment (non-invasive ventilation) in compliant subjects showed significant improvement in all blood gases parameters.

CONCLUSIONS: Early polysomnography (or portable cardio-respiratory monitoring) allows accurate diagnosis and institution of the appropriate ventilation method. Further studies should assess the evolution of respiratory drive in patients with sleep disordered breathing and hypercapnia under therapy (non-invasive ventilation).
Obesity in Saudi Arabia.


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Abstract

OBJECTIVE: Obesity and overweight are well known risk factors for coronary artery disease (CAD), and are expected to be increasing in the Kingdom of Saudi Arabia (KSA) particularly among females. Therefore, we designed this study with the objective to determine the prevalence of obesity and overweight among Saudis of both gender, between the ages of 30-70 years in rural as well as in urban communities. This work is part of a major national project called Coronary Artery Disease in Saudis Study (CADISS) that is designed to look at CAD and its risk factors in Saudi population.

METHODS: This study is a community-based national epidemiological health survey, conducted by examining Saudi subjects in the age group of 30-70 years of selected households over a 5-year period between 1995 and 2000 in KSA. Data were obtained from body mass index (BMI) and were analyzed to classify individuals with overweight (BMI = 25-29.9 kg/m²), obesity (BMI >/=30 kg/m²) and severe (gross) obesity (BMI >/=40 kg/m²) to provide the prevalence of overweight and obesity in KSA.

RESULTS: Data were obtained by examining 17,232 Saudi subjects from selected households who participated in the study. The prevalence of overweight was 36.9%. Overweight is significantly more prevalent in males (42.4%) compared to 31.8% of females (p<0.0001). The age-adjusted prevalence of obesity was 35.5% in KSA with an overall prevalence of 35.6% [95% CI: 34.9-36.3], while severe (gross) obesity was 3.2%. Females are significantly more obese with a prevalence of 44% than males 26.4% (p<0.0001).

CONCLUSION: Obesity and overweight are increasing in KSA with an overall obesity prevalence of 35.5%. Reduction in overweight and obesity are of considerable importance to public health. Therefore, we recommend a national obesity prevention program at community level to be implemented sooner to promote leaner and consequently healthier community.
Prevalence of Obesity and Overweight among Saudi Adolescents in Eastern Saudi Arabia.

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Abstract

OBJECTIVE: To determine the prevalence of obesity and overweight among Saudi adolescents, using the 2 most widely used international references.

METHODS: A cross-sectional study conducted towards the end of 2001 on a random sample of third grade intermediate and all 3 grades of secondary school Saudi students of both genders in Al-Khobar area, Eastern Saudi Arabia. The body mass index (BMI) was calculated. The American National Health and Nutrition Examination Survey (NHANES) growth charts, which have been adopted by the World Health Organization (WHO), were used. Student with a BMI of <85th and >95th percentile for age and genders, were defined as overweight and <95th percentile defined as obese. The International Obesity Taskforce (IOTF) age-sex-specific BMI cut-offs reference for defining overweight and obesity was used for comparison.

RESULTS: The sample was 1766 students, comprising 675 males and 1091 females. The mean age was 16.4 +/- 1.7 years. The prevalence of obesity was higher in male than female students (19.3% versus 11.8%) while a higher proportion of female students than males were overweight (17.2% versus 10.2%). No significant difference was found between the 2 references used to determine the prevalence of obesity and overweight.

CONCLUSION: The high prevalence of overweight and obesity recorded in this study call for prevention programs based on dietary and physical education in schools.
Alveolar Bone Loss in Obese Subjects.

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Abstract

BACKGROUND: Obesity was found to be significantly associated with periodontal disease prevalence as measured by probing depth and clinical attachment loss. The aim of this study was to examine if obesity correlates with chronic periodontitis as diagnosed by radiographic alveolar bone loss.

METHOD: Four hundred subjects ≥ 18 years old were included; 200 with body mass index (BMI) ≥ 30 kg/m² (obese) and 200 with BMI < 25 kg/m² (non-obese). Alveolar bone loss was determined from full mouth radiographs for each subject. Logistic regression models were used to estimate the association of obesity and periodontitis.

RESULTS: Obesity was found to be significantly associated with periodontitis in the uni-variate regression analysis (OR = 2.37, 95% CI, 1.55-3.63). After adjusting for age, gender, smoking, employment, diabetes, marital status, and number of teeth present, obese subjects were found to be 1.86 times more likely to have periodontitis (95% CI, 0.99-3.51) than non-obese ones. When the sample was stratified based on age, the multivariate association was statistically significant among individuals < 40 years of age (OR = 2.67, 95% CI, 1.09-6.58) while among individuals ≥ 40 years of age the association was statistically insignificant (OR = 1.06, 95% CI, 0.57-1.95). Stratifying the sample based on gender and smoking status revealed a stronger association among females than males (OR = 3.14 vs. 1.95) and among non-smokers than smokers (OR = 3.36 vs. 2.22).

CONCLUSIONS: Obesity is associated with increased prevalence of periodontitis as measured by radiographic alveolar bone loss, especially among younger individuals. Prevention and management of obesity may be considered to promote better systemic and periodontal health.
Intragastric Balloon for Obesity: A Retrospective Evaluation of Tolerance and Efficacy.

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Abstract

BACKGROUND: The intragastric balloon may be used for weight reduction for mild or moderate obesity, or for preoperative weight loss for super-obesity. The authors retrospectively evaluated the tolerance and efficacy of the BioEnterics Intragastric Balloon (BIB).

METHODS: From October 2002 to July 2004, intragastric balloons were placed, under endoscopic control, in 44 patients (mean BMI 45 kg/m², mean age 31 years). The balloons were filled with 500-600 mL of normal saline. Removal was recommended for 6 months after balloon insertion.

RESULTS: 6 patients (13.6%) were lost to follow-up, 7 super-obese patients underwent LAGB at our hospital, and 2 patients had the BIB procedure performed twice. Balloon placement was uneventful. Removal was performed endoscopically in 38 patients under conscious sedation with anesthesiological assistance (2 patients had the BIB removed under general anesthesia). No cases of tracheal aspiration or spontaneous balloon evacuation were encountered. Sideeffects were vomiting during the 1st week (77.2%), occasional vomiting for >3 weeks (11.3%), hypokalemia (6.8%), functional renal insufficiency (4.5%), abdominal pain (15.9%), and gastroesophageal reflux (6.8%). There was 1 gastric perforation (treated laparoscopically after removal of the BIB), 1 gastric ulcer, 4 cases of intolerance (1 of these elected to have LAGB), and 1 died (from other medical conditions). Mean excess weight loss was 13 kg (33 kg in the super-obese).

CONCLUSIONS: The BIB appears to be safe provided that it is removed within the specified 6 months. Surveillance is necessary. It was efficient in reducing weight in patients with mild or moderate obesity and as preoperative treatment for super-obese patients to reduce the surgical risk before LAGB.

Relationship between Plasma AngiotensinII, Leptin and Arterial Blood Pressure.

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Abstract

OBJECTIVE: Obesity and hypertension are 2 closely associated conditions and obesity probably predisposed to hypertension. The mechanism of the association between obesity and hypertension is not clear. The aim of the present study was to clarify the relationship between blood pressure (BP), body mass index (BMI), serum angiotensinII (AGII) and serum leptin levels and to investigate the relation between serum AGII and leptin. This study also aimed to rule out if there is a difference in serum AGII and leptin levels between lean and obese hypertensive females.

METHODS: We measured fasting serum AGII and leptin levels in 16 normotensive lean (LN) females, 25 obese normotensive (ON) females, 12 lean hypertensive (LH) females and 25 obese hypertensive (OH) females. All subjects had no evidence of preexisting cardiovascular disease, were non pregnant, had no previous history of ill health or smoking and were not on antihypertensive therapy. This study was performed in King Abdul-Aziz University Hospital, Jeddah, Kingdom of Saudi Arabia from January 2002 through to January 2003

RESULTS: In lean groups, there were a significant increase in BMI and serum AGII in hypertensive group compared to normotensive group while the serum leptin level was insignificantly higher in hypertensive group than in normotensive group. On the other hand, there was a significant increase in serum AGII, BMI and serum leptin for obese hypertensive compared to obese normotensive group. The mean arterial blood pressure (ABP) was significantly correlated to serum AGII, serum leptin and BMI in all groups. A significant correlation was found between serum AGII and serum leptin if all studied females (LN, LH, ON and OH) or obese females (ON and OH) were analyzed (P=0.000 and 0.04). However, in lean females (LN and LH) there was no relation between serum AGII and serum leptin.

CONCLUSION: When obesity is present, both serum AGII and serum leptin were strong predictor of BP, which is not the case in lean females in whom only serum AGII is a predictor of BP. Elevation of serum AGII and serum
leptin levels when associated with increased BMI may contribute to the pathophysiology of obesity induced hypertension. Further study on leptin resistance in obese persons and its relation to increased ABP has to be carried out.


Prevalence of Physical Inactivity in Saudi Arabia: A Brief Review.

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Abstract

Major lifestyle changes in recent years in Saudi Arabia may be leading to physical inactivity and a low level of physical fitness. This paper reviews the current literature about physical inactivity in the Saudi Arabian population and discusses its implications for health. Available data from a small number of studies suggests a high prevalence (43.3%-99.5%) of physical inactivity among Saudi children and adults alike. Furthermore, the proportion of Saudi children and adults who are at risk due to inactivity is much higher than for any other coronary heart disease risk factor. It is recommended that a national policy encouraging activity in daily life be established and more studies are carried out to address physical activity patterns with representative samples of the Saudi Arabian population.
Relationship of Leptin Concentration to Gender, Body Mass Index and Age in Saudi Adults.

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Abstract

OBJECTIVE: Leptin concentrations are highly correlated with body fat storage and exhibit sexual dimorphism, with women having higher concentrations at every level of relative or absolute adiposity. To test whether or not this relation is consistent across the Saudi population. This study aims to investigate the effect of gender, obesity related parameters, and age on leptin levels from representative samples of Saudi women and men.

METHODS: This study was carried out at King Abdul-Aziz University, Jeddah, Kingdom of Saudi Arabia during the year 2003. Fasting leptin concentrations were determined after an overnight fast in 122 healthy subjects (57 women, 65 men; age 20-75 years; body mass index [BMI] 16-56 kg/m2). The subjects were separated into female and male groups. To clarify the age and BMI-related changes in leptin levels, each gender was divided into 3 BMI groups (lean 15-24, overweight 25-30 and obese >30 kg/m2), and 3 age groups (younger 20-34, middle-aged 35-49 and older 50-75 years); and they were treated separately. Anthropometrics measurements (weight, height, waist, and hip circumferences), blood pressure, and fasting glucose levels were taken at the time of the collection.

RESULTS: In the whole group, leptin levels were between 0.16-21.72 ng/ml, and females had higher leptin concentration (6.04 +/- 4.71 ng/ml versus 1.72 +/- 0.95 ng/ml, p<0.0001) than males. Gender differences remained clear when leptin concentrations were divided by BMI or age. In comparing the pattern of changes between the 2 genders, leptin levels were low in lean individuals and rose with increased BMI in both genders. Age-related change in leptin levels showed a tendency toward a non-significant reduction in older women and a significant (p=0.05) rise in older men. Correlation analysis between leptin and BMI were highly significant in female (r=0.64; p=0.0001) and male (r=0.49; p=0.0001) groups independent of age and sex. The findings were further explored using stepwise multiple linear regression analysis with leptin concentrations as the dependent
variable and age, BMI, waist hip ratio (WHR), waist, and hip measurements as independent variables. The analysis demonstrated that the determinants of leptin concentrations were BMI and age ($r=0.69; p=0.015$) in women and BMI, age and WHR ($r=0.61; p=0.01$) in men.

**CONCLUSION:** The present study demonstrates that there are gender-specific and age-dependent gender-specific differences in leptin concentrations in healthy Saudi individuals. However, this study indicates that there may be unknown variables that may also influence leptin levels in Saudi women and men.


**Body Mass Index for Saudi Children with Down's Syndrome.**

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**Abstract**

**AIM:** Children with Down's syndrome (DS) have a higher prevalence of obesity than children without DS. This study aimed to assess the prevalence of overweight/obesity and to establish reference body mass index (BMI) percentile curves for Saudi children with uncomplicated DS below the age of 5 y.

**METHODS:** BMI was measured prospectively in 785 children with DS and compared with 989 Saudi children without DS. Both groups were compared with the international cut-off point figures for age and gender.

**RESULTS:** Obesity was not a prominent features in Saudi children with DS and their mean BMI curves were linear to the international cut-off points for BMI, indicating a clear tendency for overweight. BMI reference percentile curves were constructed.

**CONCLUSION:** Reference curves for BMI worked out in this study, taken in conjunction with those for height and weight, will be useful in monitoring the size and shape of Saudi children with DS up to the age of 5 y.

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Abstract

To determine frequency of cardiovascular risk factors in Saudi and non-Saudi diabetic patients, we studied patients attending King Abdulaziz University Hospital for follow-up in the period January 1997 to December 2001. Cardiovascular risk factors, including hypertension, hyperlipidaemia, obesity and smoking, were studied as well as degree of blood glucose control. Of 1122 patients in the study, 48% were Saudis and 52% non-Saudis. No statistically significant difference was found for prevalence of cardiovascular risk factors between the two groups. Correlation of each of the risk factors to patient's age showed significant correlation to hypertension and smoking.

Dehydroepiandrosterone Sulfate Levels in Women. Relationships with Body Mass Index, Insulin and Glucose Levels.

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Abstract

OBJECTIVE: Dehydroepiandrosterone (DHEA) and DHEA-sulfate (DHEA-S) are the most abundant steroids in human plasma. Previous studies have shown that administration of DHEA-S is more effective than DHEA in reducing adipose tissue mass and cellularity in rats. Another study suggested that maintaining high levels of DHEA-S might prevent the development of obesity. Therefore, this study aims to determine the relationship of plasma dehydroepiandrosterone sulfate (DHEA-S) levels with respect to obesity, fasting insulin and glucose levels in a cohort of obese and normal weight healthy Saudi women.
METHODS: This study was carried out at King Abdul-Aziz University Hospital, Jeddah, Kingdom of Saudi Arabia during the year 2001. A total of 65 healthy volunteers between 19-30 years of age with body mass index (BMI) of 15.35-38.30 kg/m² were grouped into 26 young obese females of BMI > 27 kg/m² and 39 young lean females of BMI < 27 kg/m². Weight, height, waist and hip circumference, fasting blood glucose, insulin and DHEA-S levels were measured.

RESULTS: Dehydroepiandrosterone-S levels were found lower in the obese group than in the lean women. In all subjects, DHEA-S levels were related negatively with BMI (p=0.02, correlation co-efficient [r]=-0.25) and hip circumference (p=0.03, r=-0.27). In the obese group, DHEA-S levels showed a significant positive relationship with insulin (p=0.03, r=0.43). No significant relationship was found between DHEA-S and glucose levels in considering either the whole group or the obese women.

CONCLUSION: Hip circumference, as a corollary for peripheral obesity, was better associated with DHEA-S than the waist circumference or waist-to-hip ratio. The data indicated that BMI and hip circumference are important factors in explaining DHEA-S variability. Insulin could have an independent regulatory effect on DHEA-S secretion, but glucose metabolism is not related.
Increased Frequency of Angiotensin-Converting Enzyme DD Genotype in Saudi Overweight and Obese Patients.

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Abstract

BACKGROUND: Several studies have been carried out to investigate the insertion/deletion (I/D) polymorphism of angiotensin-converting enzyme (ACE) in obese and normal weight individuals, often with contradictory results in different populations. In some studies, the DD genotype occurs at a high frequency in obesity, while in others no association has been demonstrated. Since obesity and overweight are of frequent occurrence in the Saudi population, we initiated this study to investigate the I/D polymorphism of ACE in obese, overweight and normal weight Saudis.

PATIENTS AND METHODS: The study group included 457 Saudi males and females. The height and weight were measured and body mass index (BMI) was calculated. Based on the BMI value, the total study population was classified as normal, overweight and obese. A total of 117 obese (BMI >30 (kg/m²)), 185 overweight (BMI=25-29.9 (kg/m²)) and 155 normal weight individuals (BMI< (kg/m²)) were enrolled. Polymerase chain reaction (PCR) and agarose gel electrophoresis were used to study the ACE polymorphism. For the deletion (D) form, a 190 bp and for the insertion (I) form, 490 bp DNA fragment were obtained on 2% agarose gel electrophoresis.

RESULTS: The frequency of DD genotype was 76.9% in the obese, and 73.5% in the overweight individuals, compared to 19.66% and 24.86% of the ID genotype in the obese and overweight, respectively. Among the normal weight individuals, the frequency was significantly lower for DD and higher for the ID genotype, i.e., 58.7% for DD and 40% for ID. The allele frequencies in the obese were 0.867 and 0.133 for the D and I alleles, respectively. While in the overweight, the frequencies were 0.859 and 0.141 for these alleles, respectively, compared to 0.787 and 0.213 in the normal weight individuals.
CONCLUSIONS: The DD genotype and D allele occur at a high frequency in Saudi overweight and obese individuals, and may have some role in fat accumulation by affecting metabolic pathways of fat, thus leading to the development of overweight and obesity.


Obesity among Saudi Male Adolescents in Riyadh, Saudi Arabia.

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Abstract

OBJECTIVE: The purpose of the study was to determine the prevalence of overweight and obesity and its correlates among Saudi male adolescents in Riyadh. As well as evaluating their knowledge, attitude and practice towards obesity.

METHODS: A cross-sectional study conducted in intermediate and secondary schools in Riyadh, Saudi Arabia was carried out during a 5-month period, September 2001-January 2002. A sample of 894 Saudi male adolescents (age 12-20 years) was selected through the multi-stage sampling technique. Socio-demographic characteristics; dietary and activity history; obesity-related knowledge and behavior; and family and past medical history data were obtained by a self-administered questionnaire. Anthropometric measurements of weight and height were performed. Body mass index (BMI) was calculated, and adolescents with a BMI age-specific percentile of > or = 85th-< 95th were considered overweight and > or = 95th were considered obese.

RESULTS: The prevalence of overweight was 13.8% and obesity was 20.5%. Family history (odds ratio, 2.49; 95% confidence interval, 1.72-3.61) and lack of physical activity (odds ratio, 1.63; 95% confidence interval, 1.01-2.62) were associated with adolescent obesity. Twenty percent of overweight participants did not think they were overweight.

CONCLUSION: Obesity constitutes an important public health problem among male adolescents in Riyadh. A national prevention program with involvement of schools is recommended to avoid obesity-related morbidity in adulthood.
Overweight and Obesity in Saudi Females of Childbearing Age.

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Abstract

OBJECTIVE: Overweight and obesity are among the most frequently encountered multifactorial disorders in most populations of the world. The aim of this study was to determine the prevalence of overweight and obesity in Saudi females of childbearing age.

MATERIALS AND METHODS: The study was approved by the University Scientific Committee. It included a group of 600 randomly recruited healthy females with age ranging from 16-45 y. Four hundred and twenty one were students and 179 were housewives attending outpatient clinics for minor illnesses. Informed consent was obtained. Height and weight were recorded on one occasion. Body mass index (BMI) was calculated.

RESULTS: Height, weight and BMI showed normal Gaussian distribution in these females and there was a significant positive correlation between BMI and age of each subject (r=0.505; P</=0.001). Prevalence of leanness, normal weight, overweight, obesity and morbid obesity were calculated in the total group and in different age groups. Significant increase in the prevalence of both overweight and obesity occurred with age. Unmarried and married females were compared and the latter had a higher prevalence of both overweight and obesity compared to the former. This difference persisted after taking into account differences in the age of the two groups. Students and housewives were compared but no differences in the prevalence were observed in the two groups.

DISCUSSION: The results of this study show that overweight and obesity are frequently encountered in Saudi females of childbearing age. The prevalence of overweight and obesity was higher amongst a group of married women than among a group of single women. There is an urgent need to spread awareness about obesity, its consequences and ways and means of prevention among the females.
Prevalence and Risk Factors of Obesity and Overweight in Adult Saudi Population

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Abstract

The objective of this study was to determine the prevalence and factors associated with obesity and overweight among adult Saudis using a national survey data from 1990 to 1993. The study population included 1652 men and 1619 women between 30 to 70 years of age. The prevalence of obesity was 49.15% in women and 29.94% in men, while the prevalence of being overweight but not obese was 31.55% in women and 41.91% in men. Obese and overweight women and men were significantly more likely to be between 40–49 years of age, with higher income, and hypertensive. Although physical activity was low in all women, obese women were significantly less likely to be engaged in any physical activity. Obese and overweight men were more likely to be non-smokers. Intervention strategies that target this population at risk are needed in Saudi Arabia.
Comparison between Body Mass Index, Triceps Skin Fold Thickness and Mid-Arm Muscle Circumference in Saudi Adolescents.

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Abstract

INTRODUCTION: Adolescence is an important period in an individual's life. Overweight and obesity are fraught with several health problems even later in life. The objective of this study was to estimate the overweight, obesity, body fat and muscle content of Saudi adolescents as compared to a recognized reference population.

SUBJECTS AND METHODS: Data were collected from a sample of Saudi adolescents in Jeddah from 42 boys' and 42 girls' schools during the month of April 2000. Data collection was done by personal interviews to collect sociodemographic factors and by direct measurement of weight, height, triceps skin fold thickness (TSF) and mid-arm circumference (MAC). The 50th, 85th, and 95th percentiles (P50, P85 and P95) for body mass index (BMI) and triceps skin fold thickness (TSF) were taken, then the 50th, 90th, and 95th percentiles (P50, P90 and P95) for the mid-arm muscle circumference (MAMC) were calculated. These measurements were compared with corresponding values of the National Health and Nutrition Examination Survey I (NHANES I).

RESULTS: The P85 and P95 for BMI and TSF were higher for Saudi adolescents than the NHANES I and the difference was wider for P95. Conversely, there was a lower MAMC at P90 and P95 than the NHANES I reference population curves. The lower MAMC curves were less marked in girls than in boys. On the other hand, Saudi boys and girls showed on average similar body mass index indicated by BMI at P50, which was misleading, since those adolescents showing similar body mass index had more fatness than the average reference population indicated by TSF at P50, and less muscularity on average than reference population indicated by MAMC at P50.

CONCLUSION: Overweight and obesity with increased body fat content and decreased body muscle content appear to be widespread among Saudi
adolescents even among those adolescents showing average body mass index. Public health interventions are required to improve quality of food, encourage physical activity and exercise, as well as correct the perception of appropriate body stature.


The Prevalence of Obesity and Overweight in 1-18-Year-Old Saudi Children.

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Abstract

OBJECTIVES: The aim of this study was to review the prevalence of overweight and obesity in Saudi children with ages ranging up to 18 years.

SUBJECTS AND METHODS: The study was a cross-sectional national epidemiological household survey, and the study group included 12071 children (boys 6281; girls 6420), with ages ranging from 1-18 years. Their height and weight were measured and body mass index (BMI) was calculated. The study group was classified as obese or overweight, using age- and sex-specific cut-off points for BMI for determining overweight and obesity in children.

RESULTS: The overall prevalence of overweight was 10.7% and 12.7% in the boys and girls, respectively, and obesity was 6.0% and 6.74% in the two groups, respectively. The children were grouped according to the province to which they belonged, and prevalence of obesity and overweight were calculated for each province. The highest frequency was in the Eastern Province, while the lowest was in the Southern Province. The children were further grouped into 1-6, 6-12 and 12-18-year-olds and prevalence of obesity and overweight was calculated. In addition, at yearly intervals, the prevalence of obesity and overweight was calculated. Among the boys and girls, the maximum prevalence of obesity was in the 2-3 year-olds. A decrease in prevalence was found in both males and females up to the age group of 8-13 years, and then the prevalence increased again up to the 18 years age.

CONCLUSION: This epidemiological household survey shows the overweight and obesity trends in Saudi children based on the international
sex-specific cut-off points for BMI. It also shows a variable prevalence in different age groups until after 13 years, when the prevalence rate increases.


Radiographic Osteoarthritis and Obesity.

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Abstract

OBJECTIVE: To determine the association between obesity and radiographic osteoarthritis (OA) of the knee and generalized OA.

METHODS: A cross-sectional survey of patients attending 14 primary clinics for a variety of medical complaints was conducted. They were consented, interviewed, examined and radiographed for the presence of knee and generalized OA. The association between OA and weight was then assessed. This study was carried out in 14 primary care clinics in North Riyadh, Kingdom of Saudi Arabia, between September 1998 through to March 1999.

RESULTS: Two hundred and nineteen patients (118 males, 101 females) completed the study and their results were analyzed. We found a strong association between excess weight and knee OA in females [overall ratio (OR) 3.28 (95% confidence intervals (CI), 2.07-5.36)] and a weaker link with knee OA in males [OR 1.88 (95% CI, 1.24-2.92)]. Generalized OA was found to be associated with obesity in females only [OR 1.93 (95% CI, 1.09-3.43)]. Reporting of joint symptoms in patients with radiographic knee OA was also associated with obesity (P=0.0001).

CONCLUSION: Excess weight is strongly associated with knee OA in females and symptoms of joint pain in all OA patients, with a weaker but still significant link with male knee OA and generalized OA in females.
A Comparative Study of Prevalence of Overweight and Obesity in Children in Different Provinces of Saudi Arabia.

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Abstract

The aim of this study was to determine the prevalence of overweight and obesity in Saudi children from different provinces of the country and in different age groups. A total of 12,701 children (6,281 boys and 6,420 girls) with ages ranging from 1 to 18 years were enrolled during a household screening programme in different provinces of Saudi Arabia and height and weight were recorded. Body Mass Index (BMI) was calculated and applying age and sex specific cut-off points for BMI the children were grouped into overweight and obese. The overall prevalence of overweight was 10.68 and 12.7 per cent and that of obesity was 5.98 and 6.74 per cent in the boys and girls, respectively. In the different provinces the prevalence of overweight ranged from 8.8 to 27.4 per cent and from 9.3 to 27.6 per cent and obesity ranged from 4.7 to 10.4 per cent and from 4.3 to 13.8 per cent in the boys and girls, respectively. Prevalence of overweight and obesity was also calculated after grouping the children into 17 groups according to age. It is concluded that overweight and obesity occur in all provinces of Saudi Arabia although at a variable prevalence. In general, girls have a higher prevalence of both overweight and obesity compared with boys. Eastern province children have the highest prevalence and the Southern province children have the lowest prevalence of overweight and obesity. When grouped according to age, overweight and obesity tend to increase with age. Suggestions are made to prevent overweight and obesity development in Saudi children.

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Abstract

Overweight and obesity trends were investigated for schoolchildren and adolescents in Jeddah using data from 1994 and 2000. Individuals aged 10-20 years were selected using multistage stratified random sampling and direct measurements were made of body weight and height. Percentiles were calculated for body mass index (BMI), body weight and height for specific age and sex strata. For both sexes, BMI increased between 1994 and 2000 at the 50th percentile but higher still at the 85th and 95th percentiles. The increase in body weight and BMI were marked for all age groups; however boys showed the largest increase aged 10-16 years, whereas girls showed the lowest at 14-16 years. Public health intervention is crucial to prevent or reduce overweight and obesity among youth.

Validity of Self-Reported Weight and Height Among Saudi School Children and Adolescents.

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Abstract

OBJECTIVE: To explore the relationship between self-reported weight and height to actual weight and height in a cross-sectional representative sample of school students in Jeddah City, Kingdom of Saudi Arabia and its relation to selected socio-economic and socio-demographic factors. Also to evaluate the validity of self-reported weight and height measurements.
METHODS: Data was collected from a sample of Saudi school students in Jeddah City, KSA from 42 boys' schools and 42 girls' schools during the month of April 2000. Data collection was carried out by an in-person interview to collect sociodemographic and self-reported weight and height, as well as, actual measurement of weight and height. Body mass index was classified according to age and genders into underweight (<15th percentile), normal weight (>=15th percentile to <85th percentile), overweight (>=85th percentile to <95th percentile) and obesity (>=95th percentile). Validity of self-reported obesity, as compared to measured body mass index, was assessed.

RESULTS: A total of 2,860 Saudi school students were enrolled in the study with an age range from 9 to 21 years (mean=13.9, standard deviation=2.8). Overweight was reported in 13.4% and obesity in 13.5% of school students. Overweight and obesity were more marked among those of at least 13 years of age, male of high social class and students with highly educated mothers. Slightly above half of the school children were unaware of their weight and height giving an unknown body mass index in approximately 60% of cases. Among the remaining 40% who reported their weight and height, underestimation of weight was around 2.7 kg and was mainly among girls, in 16-21 year old group, high socio-economic class and born from educated mothers. Overestimation of height by 4 cm was reported mainly among the overweight, obese, girls, those with at least 16 years of age. Sensitivity of determining obesity by reported weight and height was low especially among girls and those of at least 16-years of age while specificity was more among boys than girls and improved by increase in age.

CONCLUSION: Our results display the inaccuracy of self-reported weight and height in tracking obesity in our youth population. These results also emphasize the need for community and school based programs for preventing and reducing obesity in school age through improving the nutritional status awareness, diet habits and life style in order to ensure health and longevity.

CONCLUSION: The prevalence of childhood obesity is escalating and approaching figures that have been reported till now from the developed countries. Less healthy dietary habits and poor selection of food may be responsible for this high prevalence.
Physical Activity, Fitness and Fatness among Saudi Children and Adolescents: Implications for Cardiovascular Health.

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Abstract

During recent years, the Kingdom of Saudi Arabia has witnessed a tremendous development at an astounding rate. The standard of living rises and mechanization has been apparent in all aspects of people's life. As industrialization and modernization progress, a number of changes in physical activity and eating habits are likely to occur. Indeed, physical inactivity and sedentary living with associated low level of physical fitness are increasingly becoming prevalent in the Saudi society. These lifestyle changes undoubtedly carry unfavorable consequences on health outcomes of the Saudi population. This paper reviews the status of physical activity among Saudi children and adolescents and discusses its implications to cardiovascular health and fitness. From the available evidences, it appears that most Saudi children and adolescents do not meet the minimal weekly requirement of moderate to vigorous physical activity necessary for effectively functioning cardiorespiratory system. Furthermore, active Saudi boys tend to have favorable levels of serum triglycerides and high density lipoproteins-cholesterol compared with inactive boys. Sixteen percent of Saudi schoolboys are considered obese (fat content is above 25% of body mass). Body fat percent of Saudi boys seems to have increased over the past decade. Body fatness correlated significantly with several coronary artery disease risk factors. Based on the available evidences, promotion of physical activity among Saudi children and adolescents appears warranted and national policy encouraging active living is also needed.
Central Obesity in Elderly Individuals in South-Western Saudi Arabia: Prevalence and Associated Morbidity.

Abolfotouh MA, Daffallah AA, Khan MY, Khattab MS, Abdulmoneim I.

Department of Family Health, High Institute of Public Health, University of Alexandria, Alexandria, Egypt. mabolfotouh@yahoo.com

Abstract

Central obesity in all individuals aged 65 years and over (n = 810) in the catchment areas of three primary health care centres in Abha was determined from the waist circumference (WC) and waist-to-hip ratio (WHR). The age-adjusted prevalence of central obesity was 32.4% and 43.5% based on the WC and WHR indicators respectively. WC was significantly associated with the risk of diabetes and hypertension, while WHR was significantly associated with the risk of diabetes only. These findings suggest that reducing the prevalence of central obesity in old age would decrease the risk of diabetes and hypertension. WC is a powerful independent predictor mainly of hypertension risk, while WHC is a good predictor of the risk of diabetes.

Physical Activity Profile of Adult Males in Riyadh City.

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Abstract

OBJECTIVE: To assess the patterns and determinants of physical activity among Saudi adult males living in Riyadh.

METHODS: Self-administered questionnaires were filled out by 1333 randomly selected Saudi males 19 years and older, during the Fall of 1996.

RESULTS: Over 53% of Saudi males were totally physically inactive, and another 27.5% were irregularly active. Only 19% of the entire sample were active on a regular basis. A curvilinear relationship was found between age and inactivity, with the middle age group the least active. Physical activity was lower among those who were married, work in the private sectors,
working 2 shifts, less educated, or who had only one day off during the week. Time constraint seems to be the major contributing factor to inactivity, while maintaining health and losing weight were the most important reason for being physically active among Saudi males.

**CONCLUSION:** The proportion of Saudi males who are at risk for inactivity is very high. Indeed, it is exceedingly higher than those who are at risk for hypertension, hypercholesterolemia, obesity, or cigarette smoking. Public policies are needed to encourage active living and discourage sedentary habits. Health care providers have an important role in promoting physical activity among the population.


**Central Obesity in Elderly Individuals in South-Western Saudi Arabia: Prevalence and Associated Morbidity.**

Abolfotouh MA, Daffallah AA, Khan MY, Khattab MS, Abdulmoneim I.

Department of Family Health, High Institute of Public Health, University of Alexandria, Alexandria, Egypt. mabolfotouh@yahoo.com

**Abstract**

Central obesity in all individuals aged 65 years and over (n = 810) in the catchment areas of three primary health care centres in Abha was determined from the waist circumference (WC) and waist-to-hip ratio (WHR). The age-adjusted prevalence of central obesity was 32.4% and 43.5% based on the WC and WHR indicators respectively. WC was significantly associated with the risk of diabetes and hypertension, while WHR was significantly associated with the risk of diabetes only. These findings suggest that reducing the prevalence of central obesity in old age would decrease the risk of diabetes and hypertension. WC is a powerful independent predictor mainly of hypertension risk, while WHC is a good predictor of the risk of diabetes.

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Abstract

The increasing prevalence of overweight and obesity is an important public health problem contributing to significant excess in morbidity and mortality. A cross-sectional national epidemiological household survey showed that the prevalence of obesity in female Saudi subjects was among the highest reported. Obesity is a complex multifactorial chronic disease that develops from an interaction of genotype and the environment. Our understanding of how and why obesity develops is incomplete, but involves the integration of social behavioral, cultural physiological, metabolic and genetic factors. While there is agreement about health risks of overweight and obesity, there is less agreement about their management. Primary health care services should play the dominant role for obesity management. Family physicians need to assess the patient's readiness to enter weight loss therapy and take appropriate steps for motivation. Weight loss and weight maintenance therapy should employ the combination of low caloric diet, increased physical activity, and behavioral therapy. Weight loss drugs may be used as part of comprehensive weight loss program. Weight loss surgery is an option for carefully selected patients with severe obesity Body Mass Index greater than 40. After successful weight loss, a program consisting of dietary therapy, physical activity, and behavioural therapy, which should be continued indefinitely, enhances the likelihood of weight loss maintenance.

Prevalence of Hypertension in Obese and Non-Obese Saudis.

El-Hazmi MA, Warsy AS.
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Abstract

OBJECTIVE: Obesity occurs at a high prevalence in the Saudi population. Studies in literature show that hypertension occurs more frequently in obese individuals. This study was designed to determine the prevalence of hypertension in obese Saudis in comparison with results obtained in non-obese individuals.

METHODS: The screening involved a statistically designed household screening program. Only adults 14-70 years of age were included in the study. Blood pressure (systolic and diastolic) was measured when the individuals were in sitting position and height and weight were used to calculate Body Mass Index. All individuals with Body Mass Index > 30 were classified as obese and hypertension was measured as systolic blood pressure > 140 and diastolic blood pressure > 90 or both. The prevalence of hypertension was calculated in the obese and non-obese group. Chi square analysis was carried out to determine the significance of the difference in prevalence in different groups.

RESULTS: In the non-obese males and females the prevalence of hypertension was 4.8% and 2.8%. While in the obese group the prevalence was almost 1.6 times higher in the males (8%) and 3.52 times higher (8%) in the female obese. The results were separated on the basis of the province to which the population belonged and hypertension prevalence was calculated in the obese and non-obese. In each region the prevalence of hypertension was higher in the obese group compared to the non-obese group. Non-obese females had significantly lower hypertension prevalence than the male in the same province but the hypertension prevalence was higher in the females compared to the male in the obese group. Male in the Eastern, Southern and Western provinces did not show an increased hypertension prevalence in the obese.

CONCLUSION: Since the prevalence of obesity is high in Saudis and since obesity and hypertension occur together and cause serious complications, it is strongly suggested that measures are adopted to decrease prevalence of obesity and its underlying complications. Awareness programs are required at the level of the general public for successful implication of preventive programs.
The Prevalence of Overweight and Obesity Amongst Hypertensive and Diabetic Adult Patients in Primary Health Care.

Al-Turki YA.

Department of Family Medicine, KKUH, College of Medicine, KSU, PO Box 28054, Riyadh 11437, Kingdom of Saudi Arabia.

Abstract

OBJECTIVE: To estimate the prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care centers, Riyadh, Saudi Arabia.

METHODS: A retrospective review of the medical records of 3186 adult hypertensive and diabetic patients in 10 primary health care centers in Riyadh, from August to October 1999.

RESULTS: Nineteen percent of the patients were their ideal weight (body mass index < 25 kg/m2), while 35% were overweight (body mass index 25-29.9 kg/m2). Forty one percent were moderately obese (body mass index 30-40 kg/m2) and 5% were morbidly obese (body mass index > 40 kg/m2).

CONCLUSION: Overweight and obesity are coexisting risk factors amongst hypertensive and diabetic adult patients, and are an important focus for treatment and prevention of high blood pressure and diabetes.

Prevalence Of Overweight And Obesity In Diabetic And Non-Diabetic Saudis.

el-Hazmi MA, Warsy AS.

Department of Medical Biochemistry, College of Medicine, King Khalid University Hospital, Riyadh, Saudi Arabia.

Abstract

A total of 14,660 individuals were included in the study. A fasting blood sample and 2-hour post-glucose load blood sample from each participant were analysed for blood sugar. Participants were classified as diabetic or non-diabetic and as either obese (BMI > 30 kg/m2), overweight (BMI 25-29.9 kg/m2) or normal (BMI < 25 kg/m2). The prevalence of obesity was calculated in the total sample and separately for diabetic and non-diabetic
males and females. The results showed obesity and overweight in 13.05% and 27.23% of males and 20.26% and 25.20% of females respectively. The prevalence of both obesity and overweight were significantly higher among diabetics than non-diabetics. In each province, diabetics had a significantly higher prevalence of obesity than non-diabetics. Several interprovincial variations were seen. Public education on obesity and overweight and ways to decrease them are recommended in Saudi Arabia.


Body Mass Index (BMI) In The Saudi Population Of Gassim.

Soyannwo MA, Kurashi NY, Gadallah M, Hams J, el-Essawi O, Khan NA, Singh RG, Alamri A, Beyari TH.

Nephrology Unit, King Fahd Specialist Hospital (KFSH), Buraidah, Gassim, Saudi Arabia.

Abstract

In a total cross-sectional population survey of the Faizia East Primary Health District of Buraidah, Gassim region of Saudi Arabia, 6,044 (2727 male and 3317 females) subjects out of a de facto population of 7695 got their BMI computed because infants and restless or bedridden subjects could not be examined. Mean (+/- SD) and percentiles (25th & 75th) were calculated in the conventional 5-year age cohorts as well as in functional age groups, namely, 0-5, 6-12, 13-49, 50-69 and 70+ years. 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles were computed only for the functional age groups. In general, the trend was for BMI to increase with age in both genders but the curve pattern showed some plateauing from about the age of 50 with slight decline in later life. Females had significantly higher indices than males, this becoming quite prominent from the 10-14 year age cohort. This difference persisted irrespective of the types of age grouping or residential location. Overall means (+/- SD) were 20.14 +/- 5.98 vs 22.22 +/- 7.21 for males and females respectively; df: 5771; p = 0.0000; 95% CI: -2.43, -1.735. Subjects in the urban living environment had significant higher indices than their rural counterpart: (21.666.92 vs 20.446.33: df: 5771; P = 0.0000; 95% CI: 1.595, -0.840). From the age of 15 about one quarter of females are overweight (BMI at the 75th percentile > 25) and from 30 years the same proportion are frankly obese (BMI > 30). Both systolic and diastolic blood pressure were significantly positively correlated with BMI in
both genders: male SBP: $r = 0.22$, $P < 0.0001$; male DBP: $r = 0.21$, $P < 0.00001$; female DBP: $r = 0.18$, $P < 0.00001$.


Central Obesity in Elderly Individuals In South-Western Saudi Arabia: Prevalence and Associated Morbidity.

Abolfotouh MA, Daffallah AA, Khan MY, Khattab MS, Abdulmoneim I.

Department of Family Health, High Institute of Public Health, University of Alexandria, Alexandria, Egypt. mabolfotouh@yahoo.com

Abstract

Central obesity in all individuals aged 65 years and over ($n = 810$) in the catchment areas of three primary health care centres in Abha was determined from the waist circumference (WC) and waist-to-hip ratio (WHR). The age-adjusted prevalence of central obesity was 32.4% and 43.5% based on the WC and WHR indicators respectively. WC was significantly associated with the risk of diabetes and hypertension, while WHR was significantly associated with the risk of diabetes only. These findings suggest that reducing the prevalence of central obesity in old age would decrease the risk of diabetes and hypertension. WC is a powerful independent predictor mainly of hypertension risk, while WHC is a good predictor of the risk of diabetes.
Alarming High Prevalence of Overweight/Obesity among Sudanese Children.

Nagwa MA, Elhussein AM, Azza M, Abdulhadi NH.

Unit of Biochemistry, The Central Laboratory, Ministry of Science and Technology, Khartoum, Sudan.

Abstract

The objective of this study was to estimate the prevalence of obesity among schoolchildren in Khartoum state, Sudan. Multistage stratified random sampling methodology was used. Sampling included different residential areas within the state. A total of 1138 children between the ages of 10 and 18 years were involved in the study. More than 9% of the children were obese, 10.8% were overweight whereas combined overweight/obesity scored 20.5%. The prevalence of combined overweight/obesity among higher, middle and lower socioeconomic class children was 56.8, 27.3 and 3.1%, respectively. These figures, being higher than those reported among Nigerian and South African children, living in similar conditions, may refer to an emerging problem of overweight and obesity especially among children of the higher and middle class families. Adoption of national programs of promoting healthy food habits and physical activity among children is recommended.
these shifts on childhood hypertension are unclear. Our objectives were to (1) Determine the prevalence of hypertension among primary schoolchildren in Khartoum, Sudan; (2) Determine whether hypertension in this setting is associated with obesity. We performed a cross sectional study of 6-12y children from two schools randomly selected in Khartoum, Sudan. Height, weight, BMI, BP and family history of hypertension were assessed. Age-, height- and gender-specific BP curves were used to determine prehypertension (90-95%) and hypertension (>95%). Of 304 children, 45 (14.8%) were overweight; 32 (10.5%) were obese; 15 (4.9%) were prehypertensive and 15 (4.9%) were hypertensive. Obesity but not family history of hypertension was associated with current hypertension. In multiple logistic regression, adjusting for family history, children who were obese had a relative-risk of 14.7 (CI 2.45-88.2) for systolic hypertension compared to normal-weight children. We conclude that overweight and obesity are highly prevalent among primary schoolchildren in urban Sudan and are strongly associated with hypertension. That obesity-associated cardiovascular sequelae exist in the developing world at young ages may be a harbinger of future CVD in sub-Saharan Africa.


Epidemiology of Underweight and Overweight-Obesity among Term Pregnant Sudanese Women.

Rayis DA, Abbaker AO, Salih Y, Diab TE, Adam I.

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Abstract

BACKGROUND: The increasing prevalence of obesity in young women is a major public health concern. Few data are available concerning the epidemiology of malnutrition especially obesity among pregnant women in the developing countries. A cross sectional study was conducted at Khartoum hospital during February-April 2008, to investigate prevalence of underweight, obesity, and to identify contemporary socio-demographic predictors for obesity among term pregnant women in Khartoum Hospital, Sudan. After taking an informed consent, a structured questionnaire was administered to each woman to gather information on educational level, age and parity. Maternal weight and height were measured and expressed as body mass index (BMI - weight (kg)/height (m) 2).
FINDINGS: Out of 1690 term pregnant women, 628 (37.1%) were primigravidae, 926 (54.8%) had ≥ secondary educational level (minimum of 8 years) and 1445 (85.5%) were housewives. The mean (SD) of the age and parity were 27.2 (6.3) years and 2.0 (2.1) respectively. Out of these 1690 women, 94(5.5%) were underweight (BMI of ≤ 19.9 Kg/m²), 603 (35.6%) were overweight (BMI of 25 - 29.9 Kg/m²) and 328 (19.4%) were obese (BMI of ≥ 30 Kg/m²). In multivariate analyses, obesity was positively associated with age (OR = 1.2, 95% CI = 1.0-1.1; P< 0.001), and with women's education (OR = 1.8, 95% CI = 1.2-2.7; P = 0.001). Obesity was positively associated with parity in univariate analyses only (OR = 1.1, 95% CI = 1.0-1.2; P = 0.02)

CONCLUSION: The high prevalence of obesity in these pregnant women represents a competing public health problem in Sudan. More research is needed.

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Hypertension and Obesity in Police Forces Households in Khartoum, Sudan: A Pilot Report - Part of the "Police Forces Hypertension, Diabetes, Renal Insufficiency, and Thyroid Derangements (Hydrit) Study", Sudan

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Abstract:
Premature mortality from cardiovascular diseases could be prevented by the effective control of hypertension (HTN). Excess weight is associated with increased rate of death from all-causes. Nationwide data for the status of hypertension and excess weight in the Sudanese population are not available. All the consenting 426 inhabitants of two police housing-complexes were included. Blood pressure (BP), anthropometric measurements as well as blood samples were taken. Standard interviewing procedures were used to record medical history, socio-demographic and lifestyle characteristics. The data was analysed through univariate and multivariate regressions. The overall prevalence of hypertension (based on two BP measurements) was 27%. Less than a third (29.8%) of the hypertensive subjects were aware of their disease. Pharmacotherapy among those aware of their disease was prescribed in 94.1%. However, 59.4% of them were compliant with their prescribed medicines and 28.1% attained effective BP control. Prevalence of hypertension was significantly higher in older individuals (> 50 years of age), overweight (body mass index, (BMI) > 25) and those who had better education (> 10 years of schooling). The cumulative prevalence of overweight (BMI 25-29.9 kg/m2) was 30% while that for obesity (BMI ≥ 30 kg/m2) was 19.2%. Abdominal obesity was observed in 19.5% of males and 46.2% of females. Overweight subjects were more than twice likely to be hypertensive than their non-overweight counterparts (odds ratio 2.33 [1.49-3.64]). In the sample examined, the prevalence of hypertension and excess weight seemed to be comparable to other countries; this makes them a public health priority.
SYRIA


Modifiable Cardiovascular Risk Factors among Adults in Aleppo, Syria.

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Abstract

OBJECTIVES: This report provides the first comprehensive and standardized assessment of the distribution of cardiovascular disease (CVD) risk factors in Syria, where such data are still scarce.

METHODS: A population-based household survey was conducted in Aleppo (population >2.5 million), involving 1,168 subjects ≥25 years old (47.7% men; mean age 44.7 ± 12.7 years). Information about socio-demographics, personal behavior, and other CVD risk factors was collected. Anthropometric measurements and fasting blood samples were obtained.

RESULTS: The prevalence of clinical risk factors of CVD (ClinRFs) was 45.6% for hypertension, 43.2% for obesity, 21.9% for hypercholesterolemia and 15.6% for diabetes. The prevalence of behavioral risk factors (BehRFs) was 82.3% for physical inactivity, 39.0% for smoking, and 33.4% for unhealthy diet. All ClinRFs increased with age, while gender was associated only with obesity and smoking. Education was associated with obesity and diabetes (P < 0.05 for all).

CONCLUSIONS: Adults in Syria have some of the world’s highest prevalence of CVD risk factors. Unhealthy behaviors and social norms unfavorable to women may explain some of such risk profiles.

Adolescent Obesity in Syria: Prevalence and Associated Factors.

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Abstract

BACKGROUND: Data on the prevalence of overweight and obesity in Eastern Mediterranean countries remain scarce, particularly for children and adolescents. The objective of this study is to estimate the prevalence of obesity and examine associated factors and covariates amongst school adolescents in Syria.

METHODS: A cross-sectional survey of a representative sample of 776 adolescents (386 males and 390 females), aged 15-18 years, was conducted in six randomly chosen secondary schools in Damascus, the capital city of Syria. Anthropometric measurements and dietary assessment data were collected using standard methods and techniques. Overweight and obesity were defined according to World Health Organization 2007 child growth standards.

RESULTS: The prevalence rates of overweight and obesity were estimated at 18.9 and 8.6%, respectively. Carbohydrate and saturated fatty acid intakes were significantly higher amongst overweight and obese (250.66 and 32.82 g/day, respectively) as compared with normal weight adolescents (218.12 and 26.10 g/day, respectively). Regression analysis showed that the likelihood of obesity was significantly greater amongst adolescent boys than girls (OR = 2.30, P < 0.05) and amongst subjects reporting family history of obesity (OR = 2.98, P < 0.05). The odds of obesity increased consistently with increasing educational attainment of both parents and was higher (OR = 1.63) amongst adolescents reporting lower crowding index than their counterparts.

CONCLUSION: Our findings of a positive association between obesity and socio-economic status measured by parental education and crowding index call for intervention strategies for the promotion of healthy dietary practices not only amongst school adolescents but also parents, targeting families as the unit of intervention. Further studies are needed to examine nutritional habits and food choices amongst families of different socio-economic strata.
Serum Resistin Levels in Syrian Obese Patients with Diabetes Mellitus Type II.

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Abstract

OBJECTIVE: To determine serum resistin levels in obese patients with diabetes mellitus type II.

METHODS: We studied 87 subjects in an sectional study, divided into 3 groups: obese, obese diabetic and normal subjects. Their age, gender and body mass index were recorded. Serum resistin, insulin, glucose, cholesterol, high-density lipoproteins, low-density lipoproteins, triglyceride, urea and creatinine were measured.

RESULTS: The mean +/- SD plasma resistin for the obese diabetic group is 7.32 +/- 3.74 ug/ml versus 4.25 +/- 1.77 ug/ml in the control group (p=0.021). Intro-group comparison of obese subjects (diabetics versus non-diabetics) revealed higher levels of resistin, glucose, triglyceride, cholesterol and low density lipoproteins in diabetic subjects, but no statistically significant difference of high density lipoproteins. Furthermore, resistin correlated significantly and positively with body mass index (r = 0.375; p<0.05), resistin correlated significantly and negatively with high-density lipoproteins (r = -0. 363; p<0.05).

CONCLUSION: Serum resistin levels are increased in obese patients with type 2 diabetes compared with controls. Resistin appears to be a possible link between obesity and type 2 diabetes in humans.
Prevalence of Obesity and its Associated Factors in Aleppo, Syria.

Fouad M, Rastam S, Ward K, Maziak W.

Abstract

BACKGROUND: Obesity and its related adverse health effects have become major public health problems in developing countries. It has been increasing more rapidly in low-income and transitional than in industrialized countries. This study aims to provide the first population-based estimates of the prevalence of obesity in Aleppo, Syria, and to examine its association with a number of risk factors in the adult population.

METHODS: An interviewer-administered survey of adults 18-65 years of age, residing in Aleppo, Syria was conducted in 2004, involving a representative sample of 2038 participants (54.8% female, mean age 35.3+/12.1, age range 18-65 years) with a response rate of 86%. Demographic factors and anthropometric measurements were obtained for all participants. The main outcome was prevalence of obesity which was defined as BMI>/= 30 kg/m(2).

RESULTS: The prevalence of obesity was 38.2%, higher in women than in men (46.3% and 28.4% respectively). It increased with age being highest in the 46-65 year-old age group. Obesity was highest among Arabs (40.1%), the unemployed (49.8%), illiterate (50.4%), married (44%) especially women with multiparity, low socio-economic status(45.4%), and those with a low physical activity score (40.3%). Obesity was seen among 48.2% of ex-smokers, 39.3% of non-users of alcohol and 57.5% of participants treated for depression. An association was observed between obesity and an increasing frequency intake of certain food items. Among women, an association was observed between obesity and the number of births.

CONCLUSION: Our data show that obesity is a major health problem in Aleppo, Syria especially among women. It is related to age, marital status, and consumption of certain food items and it shows a significant prevalence among women with repeated pregnancies.
Comparing the Effect of Smoking and Obesity on Health Status in the First Population-Based Survey in Syria

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Abstract

OBJECTIVE: Smoking and obesity are highly prevalent in Syria and are considered to be the most urgent public health problems. The aim of this paper is to compare the effects of smoking and obesity on health status based on the first population-based survey conducted in Syria.

METHODS: In 2004, a cross-sectional survey was conducted among adults residing in Aleppo-Syria involving 2038 participants, (54.8% female, mean age 35.3±12.1, age range 18-65 years, response rate 86%). Demographic factors and anthropometric measurements were obtained for all participants, as well as self-reported health/disability and smoking status. The main dependent variable was health status measured by a count of thirteen common chronic health conditions and health-related quality of life measured by physical health scale.

RESULTS: Current smoking was found among 40.1% of participants (60.2% men, 23.% women), while obesity was found among 38.2% of the participants (men 28.3%, women 46.3%). Obesity (p<.001) but not current smoking (p=.10) was significantly related to the number of chronic diseases. Similarly, obesity (p<.001) but not current smoking (p=.33) was related to health-related quality of life. In conclusion, although smoking may still account for more premature death, obesity appears to have a stronger association with the occurrence of chronic medical conditions and reduced health-related quality of life in Syria.
Association between Eight Adiponectin Polymorphisms, Obesity, and Metabolic Syndrome Parameters in Tunisian Volunteers.

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1 Biochemistry Department, Sahloul University Hospital, Sousse, Tunisia.

Abstract

BACKGROUND: Adiponectin is a plasma protein produced by the adipose tissue, with insulin sensibility, antiinflammatory and antiatherogenic properties. Many adiponectin gene polymorphisms have been described, and their implication in obesity, metabolic syndrome, and cardiovascular diseases was controversial. Our aim was to study the relationship between eight adiponectin polymorphisms (-1391G/A, -1377C/G, 4522C/T, 395 G/A, 276G/T, 639C/T, 45T/G, and +2019delA), metabolic syndrome parameters, and the risk of obesity in Tunisian volunteers.

METHODS: We have recruited 169 nonobese (sex ratio=0.594, mean age 43.25±13.12 years; mean body mass index (BMI) 24.73±3.50 kg/m(2)) and 160 obese (BMI ≥30 kg/m(2)) (sex ratio=0.221, mean age 48.41±10.92 years; mean BMI 36.6±4.8 kg/m(2)). Genotyping was performed using polymerase chain reaction restriction fragment length polymorphism (PCR-RFLP). Glucose, insulin, and lipids were measured. BMI and homeostasis model assessment of insulin resistance (HOMA-IR) were calculated.

RESULTS: The polymorphisms 276G/T, 639 C/T, 11391 G/A, 11374C/G, and +2019delA seem to contribute to obesity. In fact, adjusted odds ratios (ORs) of obesity associated with mutated genotypes of each polymorphism were, respectively: OR=0.64, P=0.039; OR=1.85, P=0.018; OR=1.68, P=0.044; OR=1.77, P=0.038; and OR=1.94, P=0.010. Mutated genotypes at 639 C/T were associated with higher waist circumference, BMI, and systolic and diastolic blood pressure. In addition, the 11391AA genotype was associated with increased BMI. Concerning 2019delA, the delAdelA genotype was associated with increased HOMA-IR and BMI, suggesting a possible effect of these single-nucleotide polymorphisms (SNPs) on insulin resistance parameters. Mutated genotypes at 276G/T were associated with lower serum insulin concentration and lower systolic and diastolic blood pressure.
The other genotypes showed no association with metabolic syndrome parameters.

**CONCLUSION:** Adiponectin gene polymorphisms were associated with obesity and metabolic syndrome parameters in Tunisian volunteers.


**The G3057A LEPR Polymorphism is Associated with Obesity in Tunisian Women.**


Research Laboratory LR99ES11, Biochemistry Department, Rabta University Hospital, Tunis, Tunisia.

**Abstract**

**OBJECTIVES:** The aim of this study was to evaluate the effect of the G3057A (rs62589000) LEPR polymorphism on obesity risk and plasma leptin, insulin, and lipid levels in a sample of the Tunisian population.

**DESIGN AND METHODS:** Three hundred and ninety-three obese patients and 317 controls participated in this study. The G3057A genotype was determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) analysis.

**RESULTS:** In the entire study sample, no significant differences in genotype frequencies were observed between obese patients and controls. However, stratified analysis by gender revealed a quantitative increase in the variant allele (33.3% vs. 25.8%; $\chi(2)=4.90$, $p=0.026$) in obese women (but not men) compared to controls. When a dominant model of inheritance was assumed, the GA+AA genotypes were more prevalent in these obese female patients than in controls (58.3% vs. 47.8%; $\chi(2)=4.08$, $p=0.044$). Unconditional logistic regression showed that in women only, obesity risk was significantly higher for homozygotes for the variant allele (OR=2.73, 95% CI 1.03-7.21) and for carriers of GA+AA genotypes (OR=1.53, 95% CI 1.01-2.31) compared with homozygotes for the normal allele. The association between the G3057A LEPR variant and obesity remained statistically significant even after adjustment for age. No relationship was found between the G3057A LEPR polymorphism and leptin and insulin levels. Additionally, this LEPR gene variant had no effect on plasma lipid concentrations.
CONCLUSION: There is evidence in this study that the G3057A LEPR polymorphism is associated with obesity in Tunisian women.


Clinicopathological Characteristics of Obesity-Associated Focal Segmental Glomerulosclerosis.

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Abstract

Obesity-related glomerulopathy (ORG) is a secondary form of focal segmental glomerulosclerosis (FSGS) occurring in obese patients with a body-mass index higher than 30 kg/m(2). It is typically manifested by nephrotic-range proteinuria without full nephrotic syndrome, and progressive renal insufficiency. Characteristic morphologic features include the consistent presence of glomerulomegaly, predominance of perihilar variant of FSGS, and the relatively mild fusion of visceral epithelial cell foot processes. The concept of podocyte depletion as a driver of the glomerular scarring in obesity-associated FSGS is well documented. The underlying mechanisms are likely to be related in part to the oxidative stress and the impairment of the integrity of the slit diaphragm and cell adhesion resulting mainly from angiotensin II and transforming growth factor-β. These proapoptotic cytokines are upregulated in obesity in response to insulin resistance, compensatory hyperinsulinemia and glomerular hyperfiltration-hypertension mediated mechanical stress. This review is designed to discuss the clinicopathologic features of obesity-associated FSGS, with a focus on the podocyte injury, which is involved in the onset and progression of the glomerulosclerotic process. Ultrastructural glomerular lesions are documented.

**Six-Minute Walk Test Improved Forearm Skin Blood Flow in Tunisian Obese Women.**

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Clinical Laboratory of Physiology, Medical School of Sousse, Department of Physiology, University of Sousse, Sousse, Tunisia.

**Abstract**

The purpose of this study was to investigate whether 6-min walk test (6MWT) would improve the forearm skin blood flow (FSBF) response to acetylcholine (ACh), an endothelium-dependent vasodilator, in Tunisian women over a wide range of BMI. The FSBF was measured noninvasively using a laser Doppler flowmeter in response to local infusion of a cumulative dose of ACh, before and after the 6MWT for 102 healthy women; the results were expressed as percentage of baseline. The 6MWT was monitored and recorded. The mean response of FSBF to ACh was significantly greater before as well as after the 6MWT in lean (1,235 ± 123% vs. 1,644 ± 140%) than in overweight (630 ± 62% vs. 1,080 ± 66%) and obese subjects (402 ± 38% vs. 795 ± 40%) (P < 0.0001). Our regression analysis also revealed that the maximal FSBF response to ACh (i.e., its efficacy) was inversely correlated with BMI both before as well as after the 6MWT (r = -0.828, P < 0.0001; r = -0.859, P < 0.0001, respectively), and the efficacies of ACh in the three groups were all significantly elevated following the 6MWT (P < 0.0001). As indicated by ANOVA test, the 6MWT improved the FSBF responses of the lean, overweight, and obese subjects, by 33, 71, and 98%, respectively. We confirm that obesity induced a reduction of skin vasodilatory reserve and altered both endothelial-dependent relaxation and wall compliance. However, our new data clearly demonstrated that the 6MWT not only improved significantly the FSBF responses in the three groups of women, but the obese patients appeared to benefit more from the 6MWT than the overweight and the lean subjects.
Abstract

BACKGROUND: A significant association between psoriasis and the metabolic syndrome (MetS) has been frequently reported.

OBJECTIVE: The aim of this study was to specify the main factors that determine the MetS in psoriatic Tunisian patients.

METHODS: A case-control study has included 164 psoriatic patients and 216 controls.

RESULTS: The prevalence of MetS was higher in cases than in controls but without statistical differences [35.5% vs. 30.8%, odds ratio (OR): 1.39 CI: 0.88-2.18; P=0.095]. According to gender, the prevalence of MetS was significantly increased only in psoriatic women (47.4% vs. 30%, OR: 1.89, CI: 1.11-3.21; P=0.01). A multiple logistic regression, considering the effect of age, and gender, showed that the prevalence of MetS was significantly higher in cases than in controls (OR: 1.73, CI: 1.06-2.82; P=0.03). MetS components analysed separately showed a significantly higher prevalence of decreased high-density lipoprotein cholesterol (HDLc) (60.9% vs. 35.9%, OR: 2.77, CI: 1.8-4.27, P<0.001) and for increased hypertension (50% vs. 40%, OR: 1.48, CI: 0.97-2.257, P=0.04) in psoriatic patients. According to gender, HDLc was significantly decreased in both genders (male: OR: 2.075, CI: 1.24-3.47, P=0.004; female: OR: 3.58, CI: 2.07-6.19, P<0.0001), while hypertension was increased only in psoriatic men (OR: 2.09, CI: 1.24-3.51, P=0.004) and abdominal obesity only in psoriatic women (OR: 2.31, CI: 1.30-4.11, P=0.002).

CONCLUSION: Decreased HDLc is the main biological abnormality that characterized MetS in Tunisian psoriatic patients. Moreover, contrary to men, psoriatic women have shown a significantly higher prevalence of MetS, which is, in addition to decreased HDLc, mainly attributed to abdominal obesity.


Abstract

BACKGROUND: The change of the way of life and the food practices in Tunisia due inter alia to the improvement of the socioeconomic conditions induced low fuel consumption of food with significant nutritional interest such as those rich in food fibres which have positive effects on the reduction and the prevention of some complications of the metabolic diseases such as the obesity whose prevalence among Tunisian women is increasingly high.

OBJECTIVE: We assessed the association between the mean daily fiber intake and anthropometric parameters, the serum lipid profile and the serum glucose concentration among urban Tunisian women.

METHODS: We conducted a 7-day food weighing method among 260 women of which 60 are obese (BMI>30kg/m(2)). The weighing method was done by trained and experienced workers in the National Institute of Nutrition of Tunisia. All the results were treated with the (Bilnut) software (1991 version) to which a list of 235 special Tunisian foods was added. We calculated their mean daily fiber intake and we prospectively evaluated the correlations between it and the BMI, the waist circumference, total plasma cholesterol, HDL-cholesterol, triglyceridemia and glycaemia.

RESULTS: Obese women are found to consume less fiber than non-obese women (21.73±3.25g/day vs 26.25±2.7g/day; P<0.0001). Very high and significant correlations were observed between dietary fiber intake and the parameters investigated: BMI (r=-0.709, P<0.0001), waist circumference (r=-0.790; P<0.0001), total plasma cholesterol (r=-0.488; P<0.0001), triglyceridemia (r=-0.741; P<0.0001) and glycaemia (r=-0.557, P<0.0001). However, we find a positive but a non significant correlation with the HDL-cholesterol and the mean daily fiber intake (r=0.309; P=0.02).
CONCLUSIONS: This study provides additional support to the inverse association between fiber consumption and weight gain, the serum lipid profiles, the glycaemia and the waist circumference. Our findings emphasizes the relevance of increased the intakes of fiber from varied sources that may help avoid weight gain among obese adults.


Renin-Angiotensin System Polymorphisms in Relation to Hypertension Status and Obesity in a Tunisian Population.

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Abstract

Essential hypertension (HTA) is the clinical expression of a disordered interaction between the genetic, physiological, and biochemical systems that under usual conditions maintain cardiovascular homeostasis. We studied the effects of the angiotensinogen M235T, angiotensin converting enzyme insertion/deletion (ACE I/D), and angiotensin II receptor 1 (AT1R) A1166C gene polymorphisms on the risk of HTA and to evaluate the relationship between these polymorphisms and obesity. We performed AGT, ACE and AGTR genotyping in 142 hypertensive patients and 191 control subjects using PCR-RFLP methods and PCR, respectively. The three polymorphisms were significantly associated with HTA. Individuals carrying the mutated TT of AGT, DD of ACE and CC of AT1R genotypes had an 1.67 (P = 0.032), 3.09 (P < 0.001) and 3.45 (P < 0.001)-fold increased risk of HTA. After adjustment for sex, smoking, diabetes, dyslipidemia, BMI, triglycerides and DD, TT and CC genotypes, BMI was independent risk factor of HTA (OR = 3.14; P < 0.001). An association of BMI with ACE gene polymorphism (P = 0.035), whereas no association with AGT and AT1R gene polymorphisms was obtained. The proportion of hypertensives is as high as 21.8 and 13.4% in the overweight and the obese DD group. The present study implies that the genotyping for the variants of RAS gene could in the future become an important part of the clinical process of risk identification for HTA.
Prehypertension among Adults in Great Tunis Region (Tunisia): A Population-Based Study.


Research laboratory LR99ES11, biochemistry laboratory, Rabta hospital, 1007 Jebbari, Tunis, Tunisia.

Abstract

PURPOSE: The present study aimed to determine the prevalence of prehypertension (preHTN) and its cardiometabolic profile in Tunisians, and to estimate the risk for coronary heart disease (CHD) according to blood pressure status.

PATIENTS AND METHOD: This cross-sectional study was conducted in 2004-2005, and used a two-stage cluster sampling method to select a representative sample of the Great Tunis population. A total of 2712 individuals (1228 men and 1484 women), aged 35 to 69 years were included. Definition and classification of hypertension (HTN) was performed according to guidelines from the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure (JNC-7) report.

RESULTS: The prevalence of preHTN and HTN was 56.8% and 25.0% in males, and 43.1% and 36.1% in females, respectively. Subjects with preHTN and those with HTN showed higher prevalence of diabetes, dyslipidemia, obesity and abdominal obesity than the normotensive (NT) group. The metabolic syndrome (MetS) was found in 8.0%, 17.8% and 53.8% of NT, preHT and HTN subjects, respectively. The risk of developing CHD within 10 years, as predicted by the Framingham-Anderson model, was above 15% for 3.9%, 31.1% and 65.0% among NT, preHTN and HTN subjects, respectively. In multivariate analysis, preHTN was associated with age (OR [95% CI], 1.02 [1.01-1.03]; P<0.01), male gender (2.51 [1.89-3.23]; P<0.001), obesity (2.36 [1.71-3.26]; P<0.01), abdominal obesity (1.53 [1.14-2.06]; P<0.01) and smoking (0.70 [0.53-0.92]; P<0.01).

CONCLUSION: PreHTN is very common in Tunisians. It is associated with a higher prevalence of cardiometabolic risk factors and confers a higher risk for subsequent CHD. These findings support the recommendations of lifestyle modification for preHTN patients.


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Abstract

BACKGROUND: The increase in the burden of chronic diseases linked to the nutrition transition and associated dietary and lifestyle changes is of growing concern in south and east Mediterranean countries and adolescents are at the forefront of these changes. This study assessed dietary intake and association with socio-economic factors and health outcomes among adolescents in Tunisia.

METHODS: Cross-sectional survey (year 2005); 1019 subjects 15-19 y. from a clustered random sample. Dietary intake was assessed by a validated semi-quantitative frequency questionnaire (134 items) as was physical activity; the Diet Quality Index International measured diet quality; dietary patterns were derived by multiple correspondence analysis from intakes of 43 food groups. Body Mass Index (BMI) ≥85th and 95th percentile defined overweight and obesity. Waist Circumference (WC) assessed abdominal fat. High blood pressure was systolic (SBP) or diastolic blood pressure (DBP) ≥90th of the international reference for 15-17 y., and SBP/DBP ≥120/80 mm Hg for 18-19 y.

RESULTS: Energy intake levels were quite high, especially for females. The macro-nutrient structure was close to recommendations but only 38% had a satisfactory diet quality. A main traditional to modern dietary gradient, linked to urbanisation and increased economic level, featured an increasing consumption of white bread, dairy products, sugars, added fats and fruits and decreasing consumption of oils, grains, legumes and vegetables; regarding nutrients this modern diet score featured a decreasing relationship with total fat and an increase of calcium intake, but with an increase of energy, sugars and saturated fat, while vitamin C, potassium and fibre decreased. Adjusted for age, energy and physical activity, this modern pattern was associated with increased overweight in males (2nd vs.
1st tertile: Prevalence Odds-Ratio (POR) = 4.0[1.7-9.3], 3rd vs. 1st: POR = 3.3[1.3-8.7]) and a higher WC. Adjusting also for BMI and WC, among females, it was associated with decreased prevalence of high blood pressure (2nd vs. 1st tertile: POR = 0.5[0.3-0.8], 3rd vs. 1st tertile: POR = 0.4[0.2-0.8]).

**CONCLUSION:** The dietary intake contrasts among Tunisian adolescents, linked to socio-economic differentials are characteristic of a nutrition transition situation. The observed gradient of modernisation of dietary intake features associations with several nutrients involving a higher risk of chronic diseases but might have not only negative characteristics regarding health outcomes.


**Metabolic Syndrome is Associated with Gastroesophageal Reflux Disease Based on a 24-Hour Ambulatory Ph Monitoring.**


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**Abstract**

Several studies have focused on the relationship between metabolic syndrome and gastroesophageal reflux disease (GERD). They were based on GERD complications, whereas little is known about the association between metabolic syndrome and objectively measured esophageal acid exposure. The aim of our study was to assess the relationship between metabolic syndrome and GERD based on a 24-hour pH testing. It was a cross-sectional study including 100 consecutive patients who underwent a 24-hour pHmetry monitoring and were assessed for the five metabolic syndrome components as well as for body mass index (BMI). Among the 100 patients, 54 had a pathological acid GERD. The 46 GERD-free patients represented control group. Sex distribution was comparable between both groups but GERD patients were older than controls (44.59 vs. 37.63 years, P= 0.006) and more often obese or with overweight (83.3 vs. 60.9%, P= 0.01). Frequency of metabolic syndrome as a whole entity was higher among patients with GERD than those without GERD (50 vs. 19.56%; P= 0.002) with
a crude odds ratio of 4.11 (95% confidence interval: 1.66-10.14). Multivariate regression analysis showed that metabolic syndrome as well as an age ≥ 30 years were independent factors associated to GERD but not BMI and sex. Abnormal waist circumference and fasting glucose level ≥ 100 mg/L were the only independent factors among the five components of metabolic syndrome. Metabolic syndrome but not BMI was an independent factor associated to GERD. These results confirm the hypothesis that central obesity is associated to GERD.


Grape Seed Extract Alleviates High-Fat Diet-Induced Obesity and Heart Dysfunction by Preventing Cardiac Siderosis.

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Abstract

Obesity is a tremendous public health problem, characterized by ectopic accumulation of fat into non-adipose tissues, leading to oxidative stress and chronic inflammation, in which the heart is the most severely affected organ. We used an experimental model of high-fat-diet (HFD)-induced obesity to analyze the link between oxidative stress and heart dysfunction. We also studied the cardioprotective effect of a grape seed and skin extract (GSE). Exposure of rats to HFD during 45 days induced heart hypertrophy, inflammation as assessed by plasma CRP elevation and contractile dysfunction as revealed after ischemia/reperfusion of Langendorff-perfused hearts. HFD also induced cardiac steatosis and lipotoxicity, which are linked to an oxidative stress status, worsened by increased siderosis and resulting in Ca(2+) overload. Importantly, GSE alleviated all the deleterious effects of HFD treatment. These studies suggest that GSE is a safe anti-obesity and cardioprotective agent that should also find potential applications in other inflammatory damaging conditions as stroke.
Adiponectin Expression and Metabolic Markers in Obesity and Type 2 Diabetes.


Laboratory of Genetics, Immunology and Human Pathology, Biology Department, Faculté Des Sciences de Tunis, CAMPUS, El Manar University, Tunisia.

Abstract

BACKGROUND: Adiponectin has emerged over the last decade as a key adipokine linking obesity, insulin resistance, and Type 2 diabetes. However, the molecular mechanisms controlling adiponectin expression in adipose tissue are not fully elucidated. Furthermore, increasing evidence indicates that peroxisome proliferator-activated receptor-γ (PPARγ) plays an important, and beneficial, role in modulating adiponectin expression.

AIM: The aim of the present study was to assess the separate role of obesity and Type 2 diabetes in the relationship between endogenous PPARγ signaling and adiponectin expression in subcutaneous adipose tissue.

SUBJECTS AND METHODS: Enzyme-linked immuno sor bent assay and real time quantitative PCR analysis were carried out in overweight, obese, and/or diabetic Tunisian patients who underwent an abdominal surgery.

RESULTS: These results collectively indicate that circulating levels of adiponectin were decreased in all overweight, obese, and/or diabetic (p<0.001). However, the subcutaneous mRNA expression of adiponectin was reduced only in diabetics (p<0.01) but presents some discrepancies in obese individuals. Moreover, mRNA levels of adiponectin were positively correlated with levels of mRNA encoding PPARγ and its heterodimeric partner retinoid X receptor-α (RXR-α), in both obese and diabetic patients.

CONCLUSION: Our study on Tunisian patients shows impaired regulation of circulating and mRNA adiponectin levels dependent of metabolic disorders in obesity and Type 2 diabetes. The data suggest that subcutaneous adipose tissue may play an important role in modulating adiponectin expression in diabetes and obesity. Moreover, adiponectin mRNA could be potentially regulated by endogenous PPARγ/RXRα-dependent pathways.
**Abstract**

**OBJECTIVE:** The aim of this study was to test the utility of preferred walk-run transition speed (WRTS) in exercise training adjunct to dietary restriction for obesity management in healthy obese women.

**MATERIALS AND METHODS:** 37 obese women (age: 35 ± 9 years, body mass index (BMI): 34.9 ± 4.6 kg/m(2)) were assigned to an intervention pilot study during 6 months of restricted diet alone (RD) followed by 6 months of RD combined with WRTS (RD and WRTS) as a training exercise. Body mass, waist circumference (WC), fat mass (FM), fat free mass (FFM), active cell mass (ACM), fasting glucose, serum lipids (triacylglycerol (TG), total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), apo-lipoproteins A1 (ApoA1) and B (ApoB)), leptin and insulin concentrations, and HOMA-IR were assessed at baseline (T0), at the end of the RD alone (T1), and at the end of the RD and WRTS programme (T2).

**RESULTS:** Mean weight loss was 8.6 ± 4.9 kg and 2.2 ± 2.9 kg for (T0-T1) and (T1-T2), respectively. Significant BMI and WC reductions were reported at T1 and T2. FM decreased significantly both with RD and with RD and WRTS training whereas FFM and ACM increased with RD and WRTS training only. TG decreased significantly with the two phases of the programme. A significant increase in HDL-C, and a decrease in LDL-C and TC/HDL-C ratio were noticed with RD and WRTS training. Heart rate monitored in training improved significantly after RD and WRTS training. A significant relationship (r = 0.542, p < 0.02) was demonstrated between reductions in serum leptin and insulin concentrations observed with both RD and WRTS training.

**CONCLUSION:** The addition of WRTS training to RD promoted a greater reduction in body mass, WC, FM, leptin and insulin concentrations, improved metabolic and cardiovascular risk factors, and enhanced cardiovascular fitness.
Adiponectin Expression and Metabolic Markers in Obesity and Type 2 Diabetes.


Laboratory of Genetics, Immunology and Human Pathology, Biology Department, Faculté Des Sciences de Tunis, CAMPUS, El Manar University, Tunisia.

Abstract

BACKGROUND: Adiponectin has emerged over the last decade as a key adipokine linking obesity, insulin resistance, and Type 2 diabetes. However, the molecular mechanisms controlling adiponectin expression in adipose tissue are not fully elucidated. Furthermore, increasing evidence indicates that peroxisome proliferator-activated receptor-γ (PPAR-γ) plays an important, and beneficial, role in modulating adiponectin expression.

AIM: The aim of the present study was to assess the separate role of obesity and Type 2 diabetes in the relationship between endogenous PPAR-γ signaling and adiponectin expression in subcutaneous adipose tissue.

SUBJECTS AND METHODS: Enzyme-linked immunosorbent assay and real time quantitative PCR analysis were carried out in overweight, obese, and/or diabetic Tunisian patients who underwent an abdominal surgery.

RESULTS: These results collectively indicate that circulating levels of adiponectin were decreased in all overweight, obese, and/or diabetic (p<0.001). However, the subcutaneous mRNA expression of adiponectin was reduced only in diabetics (p<0.01) but presents some discrepancies in obese individuals. Moreover, mRNA levels of adiponectin were positively correlated with levels of mRNA encoding PPARγ and its heterodimeric partner retinoid X receptor-α (RXR-α), in both obese and diabetic patients.

CONCLUSION: Our study on Tunisian patients shows impaired regulation of circulating and mRNA adiponectin levels dependent of metabolic disorders in obesity and Type 2 diabetes. The data suggest that subcutaneous adipose tissue may play an important role in modulating adiponectin expression in diabetes and obesity. Moreover, adiponectin mRNA could be potentially regulated by endogenous PPARγ/RXRα-dependent pathways.
Prevalence and Risk Factors of Overweight and Obesity in Elementary Schoolchildren in the Metropolitan Region of Tunis, Tunisia.


Ministere de la Sante Publique, Tunis, Tunisie.

Abstract

BACKGROUND: Local data about prevalence of obesity in emerging countries are rather scarce. Risk factors for obesity, well known in most industrialized countries, are poorly understood in Tunisia.

AIMS: To assess prevalence of overweight and obesity and to investigate associations with possible risk factors in a group of 6-12 year-old schoolchildren in Tunis, Tunisia.

METHODS: A descriptive transversal study including a sample of 1335 schoolchildren (6-12 years; mean: 9.7 ± 1.5 years) was conducted in Tunis. Personal and parental data were collected by Questionnaires completed by parents. Height and weight were measured and body mass index was calculated. Prevalence of overweight and obesity was defined based on international agreed cut-off points. Results: Prevalence of overweight and obesity was 19.7% and 5.7%, respectively. Risk factors associated with overweight were: high degree-educated mother and father: 17.3% vs 11.7% (p=.01) (OR (95%CI): 1.58; 1.09-2.29) and 26% vs 17.4% (p=.002) (OR: 1.66; 1.21-2.29), respectively; mother, father high in occupational hierarchy: 7.2% vs 3.6% (p=0.009) (OR: 2.1; 1.2-3.7) and 14% vs 9% (p=.014) (OR: 1.6; 1.1-2.48), respectively. Overweight children had a significantly higher consumption of bread (p=.044), of snack intake (p=0.046) and of soft drink consumption (p=.035).

CONCLUSIONS: Prevalence of overweight and obesity in this cohort are 19.7% and 5.7%, respectively. Substantial differences in food choices in families with the highest socio-economic status are among risk factors contributing to obesity development.
TCF7L2 Is Associated with Type 2 Diabetes in Nonobese Individuals from Tunisia.


Laboratory of Genetics, Immunology and Human Pathologies, Faculty of Sciences of Tunis, 2092 Tunis, Tunisia.

Abstract

The transcription factor 7-like 2 (TCF7L2) rs7903146 T allele was associated with type 2 diabetes (T2D) in most populations worldwide. In individuals of European descent, the association with T2D was recently found to be modulated by obesity status. However, further studies are necessary to clarify if whether interaction exists among subjects of non-European descent. In the present study, we analyzed the association of rs7903146 with T2D in 90 nonobese (Body Mass Index [BMI] <25kg/m(2)), 171 overweight (25≤BMI<30kg/m(2)) et 98 obese (BMI≥30kg/m(2)) individuals from Tunisia. The T allele was nominally associated with T2D in nonobese subjects (Odds Ratio [OR]=3.24 [1.10-9.53], P=0.021) whereas no effect was detected in overweight (P=0.3) and obese (P=0.22) individuals. Consequently, the same risk allele decreased susceptibility to obesity in T2D subjects (OR=0.47 [0.23-0.94], P=0.029) but not in normoglycemic controls (P=0.44). When analyzed all together, no allelic association was observed with T2D (P=0.20) whereas an artefactual association with decreased obesity (0.59 [0.38-0.90], P=0.013) was detected. As in Europeans, TCF7L2 is therefore not a risk factor for obesity in Tunisians, but its effect on T2D risk is modulated by obesity. In conclusion, the TCF7L2 rs7903146 T allele is nominally associated with T2D susceptibility in nonobese individuals from Tunisia.
Abstract

BACKGROUND: Prevalence of obesity is increasing steadily. It exposes the patient to numerous complications and represents a serious public health issue. Various treatments were tried. Surgery is actually a credible alternative. Many techniques can be made by laparoscopic approach.

AIM: To evaluate early and late results of laparoscopic treatment of morbid obesity by two techniques: gastric banding adjustable and gastric by-pass.

METHODS: From May 2001 to July 2007, 27 patients were laparoscopically operated on for severe obesity in our department. Twenty four patients were treated with a gastric banding and 3 patients with gastric bypass. The primary endpoint was: excessive weight loss (EWL), BMI variations and patients' satisfaction. The secondary endpoints were mortality, morbidity and conversion.

RESULTS: The mean age was 36 years. There were 4 males and 23 females. The mean preoperative weight was 122.4 kg (range: 87-152) and the mean body mass index (BMI) was 42,5 kg/m2 (range 36.5-52 kg/m2). The mean operating time was 129 minutes (range: 50-300). The mean hospital stay was 4.76 days (range: 3-8). There were no postoperative deaths. Early complication was present in 3 patients. Late complications were present in one patient. No conversion to laparotomy was necessary. BMI decreased from 42.9 to 31 kg/m2 and EWL reached 43%.

CONCLUSION: The results of our experience are encouraging with an acceptable complication rate and no death. Laparoscopic treatment can be done with good results.
Obesity Induced Bronchopulmonary Hyperresponsiveness in Tunisian Women.


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Abstract

OBJECTIVE: The specific objective of this investigation was to determine whether bronchopulmonary responsiveness (BPR) to methacholine (MCH) was associated with the body mass index (BMI) of Tunisian women.

SUBJECTS: In all, 160 healthy nonsmoker women (52 lean, 45 overweight and 63 obese) were recruited and examined in the Clinical Laboratory of Physiology located in the Medical School of Sousse. The average ages (+/- s.e.) of the three categories of lean, overweight and obese subjects were 27.7+/-1.1, 33.2+/-1.7 and 37.5+/-1.3 years, respectively. Their corresponding mean BMIs (+/- s.e.) were 21.9+/-0.3, 27.7+/-0.2 and 36.5+/-0.8 kg m(-2), respectively.

MEASUREMENTS: Before their inclusion into the study, subjects were screened for their lung status by measuring their pulmonary function testing parameters using a whole body plethysmograph. BPR was assessed, using a cumulative concentration response curve technique, by measuring with a spirometer the decrease in forced expiratory volume in 1 s (FEV(1)) in response to a cumulative dose of MCH.

RESULTS: After adjusting for age, significant differences in both FEV(1) and forced vital capacity (VC) were found between the obese and lean groups (P<0.01), as well as between the obese and overweight groups (P<0.01). In addition, forced expiratory flow between 25 and 75% of VC was significantly different between the obese and lean groups (P<0.001), as well as between the lean and overweight groups (P=0.015). The mean maximum fall of FEV(1) in response to MCH challenge was significantly higher for the obese group (12.0%) than for the overweight (9.8%) or the lean (6.6%) group (P<0.01). Furthermore, the efficacy of the MCH agonist promoting the maximal response (E(max)) and its potency or effective dose producing 50% of the maximal response (ED(50)) were both associated with BMI (the higher the BMI, the higher the E(max) and the lower the ED(50)).
CONCLUSION: Our data clearly show that obesity affects pulmonary function performance in Tunisian women by potentially promoting their bronchial hyperreactivity as suggested by the significant correlation between their BMI and the efficacy of the MCH, as well as its potency.


**Relationship between Subcutaneous Adipose Tissue Expression of Leptin and Obesity in Tunisian Patients.**


Laboratoire de Génétique, Immunologie et Pathologies Humaines, Département de Biologie, Faculté des Sciences de Turnis, Université Tunis-el Manar, Tunisie.

Abstract

**BACKGROUND:** The incidence of obesity has dramatically increased in overall the world. It is a consequence of imbalance between energy intake and energy expenditure. Leptin is a fat derived adipokine that has emerged over the past decade as a key hormone in the regulation of food intake and energy expenditure. Elevated leptin levels are found in obese humans, suggesting a role of leptin in regulating body weight and adiposity.

**AIM:** The aim of this study was to investigate the change of leptin mRNA expression level and its correlation with obesity and several metabolic variables in Tunisian patients.

**METHODS:** Real time quantitative polymerase chain reaction (QPCR) analysis was carried out among two groups who underwent an abdominal surgery: controls (n = 9) and obese patients (n = 7).

**RESULTS:** Leptin mRNA expression in subcutaneous adipose tissue was markedly increased in obese patients (p < 0.01). It was positively correlated with measures of obesity waist circumference (WC) (r = 0, 71, p < 0.01) and body mass index (BMI) (r = 0, 68, p < 0.01). Interestingly, leptin gene expression was also correlated to insulin resistance index (r = 0, 72, p < 0.01).

**CONCLUSION:** The present study is the first investigation of leptin regulation in subcutaneous adipose tissue of Tunisian population. Our data showed that leptin levels are higher in obese subjects than in control
subjects. This indicates that the subcutaneous adipose plays an important role in impaired adipokine regulation, and consequently in developing metabolic disorder.


The Metabolic Syndrome: Prevalence, Main Characteristics and Association with Socio-Economic Status in Adults Living in Great Tunis.


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Abstract

AIMS: This study aimed to determine the prevalence of the metabolic syndrome (MetS) and its association with socio-economic status in the population of Great Tunis.

METHODS: The study included 2712 subjects (1228 men and 1484 women), aged 35-70 years and living in the Great Tunis region, all of whom were recruited between March 2004 and June 2005. The sample was weighted by using the inverse of the response rate according to governorate, district and gender. The MetS was defined according to the National Cholesterol Education Program-Adult Treatment Panel III.

RESULTS: In the studied population, the overall prevalence of the MetS was 31.2%, and it was significantly more frequently seen in women than in men (37.3% vs 23.9%, respectively; P<0.001), as were abdominal obesity (69% vs 21.6%, respectively; P<0.001), high blood pressure (50.3% vs 43.1%, respectively; P<0.001) and low HDL cholesterol (40.6% vs 33.6%, respectively; P<0.001), the most common characteristics of the MetS. Also, the prevalence of the MetS increased with age in both genders, but more so in women. In those aged greater than 55 years, the prevalence of MetS was 56.7% in women and 30.7% in men. An inverse relationship was observed between level of education and prevalence of the MetS in women, with the highest prevalence being in illiterate women and the lowest in those who were university graduates.

CONCLUSION: The prevalence of the MetS is markedly high within the population of Great Tunis and especially in women. As these findings
predict future increases in cardiovascular disease in these populations, substantial efforts need to be made to fight against obesity and sedentary lifestyles to ameliorate the expected poor health outcomes.


[Obesity and dyslipidemia in Tunisian bipolar subjects].

[Article in French]

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**Abstract**

This study aims to investigate the prevalence of obesity and overweight and their association with lipid parameters in bipolar patients. Our study included 130 patients with bipolar disorder and 130 control subjects aged respectively 37.9 +/- 12.1 and 37.2 +/- 13.1 years. Obesity was evaluated by body mass index (BMI). Concentrations of total cholesterol, triglycerides, cLDL and cHDL were determined by enzymatic methods and ApoA1, ApoB and Lp(a) by techniques immunoturbidimetric. The prevalence of obesity in patients is 30.1% vs 12.3% in controls. A significant increase in BMI was noted in patients compared with controls regardless of sex and tobacco status and in patients aged less than 35 years and those consumers of alcohol. The majority of obese and overweight patients are treated with valproic acid. We found increase in cholesterol (4.41 +/- 1.02 vs 3.90 +/- 0.98 mmol/L), in cLDL (2.13 +/- 1.09 vs 1.29 +/- 0.56 mmol/L) and in Lp(a) (236 +/- 207 vs 163 +/- 150 mg/L) and decrease in HDLC (0.98 +/- 0.28 vs 1.09 +/- 0.36 mmol/L), more frequent at the obese patients and those presenting an overweight. In conclusion, in bipolar patients, obesity and overweight are frequent and associated with perturbations in lipid profile particularly an increase in total cholesterol, cLDL and Lp(a) and decrease in cHDL that increase the risk of cardiovascular disease.
The G3057A LEPR Polymorphism is Associated with Obesity in Tunisian Women.


Research Laboratory LR99ES11, Biochemistry Department, Rabta University Hospital, Tunis, Tunisia.

Abstract

OBJECTIVES: The aim of this study was to evaluate the effect of the G3057A (rs62589000) LEPR polymorphism on obesity risk and plasma leptin, insulin, and lipid levels in a sample of the Tunisian population.

DESIGN AND METHODS: Three hundred and ninety-three obese patients and 317 controls participated in this study. The G3057A genotype was determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) analysis.

RESULTS: In the entire study sample, no significant differences in genotype frequencies were observed between obese patients and controls. However, stratified analysis by gender revealed a quantitative increase in the variant allele (33.3% vs. 25.8%; chi(2)=4.90, p=0.026) in obese women (but not men) compared to controls. When a dominant model of inheritance was assumed, the GA+AA genotypes were more prevalent in these obese female patients than in controls (58.3% vs. 47.8%; chi(2)=4.08, p=0.044). Unconditional logistic regression showed that in women only, obesity risk was significantly higher for homozygotes for the variant allele (OR=2.73, 95% CI 1.03-7.21) and for carriers of GA+AA genotypes (OR=1.53, 95% CI 1.01-2.31) compared with homozygotes for the normal allele. The association between the G3057A LEPR variant and obesity remained statistically significant even after adjustment for age. No relationship was found between the G3057A LEPR polymorphism and leptin and insulin levels. Additionally, this LEPR gene variant had no effect on plasma lipid concentrations.

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Abstract

In this article, we evaluated BMI and response to neoadjuvant chemotherapy (NC) in premenopausal Tunisian women with operable breast cancer. From May 2006 to July 2009, 800 patients were diagnosed and received NC from CHU Farhat Hached (Sousse, Tunisia). Patients were categorized as obese (BMI >/=30 kg/m(2)), overweight (25 </= BMI < 30 kg/m(2)), or normal/underweight (BMI <25 kg/m(2)). Logistic regression was used to examine associations between BMI and pathologic complete response (pCR). Breast cancer-specific, progression-free, and overall survival times were examined using the Kaplan-Meier method and Cox proportional hazards regression analysis. Median age was 42 years; 27% of patients were obese, 25% were overweight, and 48% were normal or underweight. In the univariate model, there was a significant difference in pCR to NC for obese compared with normal/underweight patients. In multivariate analysis, there was no significant difference in pCR for obese compared to normal weight patients. Overweight and the combination of overweight and obese patients were significantly less likely to have a pCR (odds ratio (OR) = 0.59; 95% confidence interval (CI), 0.37-0.95; and OR = 0.67; 95% CI, 0.45-0.99, respectively). Higher BMI was associated with worse pCR to NC. So, its association with worse overall survival suggests that greater attention should be focused on this risk factor to optimize the care of breast cancer patients.
Study of Tnfalpha -308G/A and IL6 -174G/C Polymorphisms in Type 2 Diabetes and Obesity Risk in the Tunisian Population.


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Abstract

OBJECTIVES: We investigated two genetic markers in pro inflammatory molecules : TNFalpha -308G/A and IL6 -174G/C in order to assess their effect on type 2 diabetes (T2D) and obesity in the Tunisian population.

DESIGN AND METHODS: The study sample includes 228 patients with T2D and 300 healthy controls. Genotyping of IL6 -174G/C (rs1800795) was performed using Automated Dye Terminator Sequencing and of TNFalpha -308G/A (rs1800629) using the LightTyper technology.

RESULTS: SNPs IL6 -174G/C and TNFalpha -308G/A are associated neither with T2D (p=0.89, p=0.34 respectively) nor with risk for overweight (p=0.86, p=0.12 respectively) in Tunisian population. Bonferroni correction showed that the founded association of IL6 -174G/C SNP with T2D susceptibility restricted to overweight patients (p(nominal)=0.03, p(corrected)=0.0033) is likely to be a random result.

CONCLUSION: SNPs IL6 -174G/C and TNFalpha -308G/A are not major contributors to T2D or obesity risk in our Tunisian population.
Obesity-Induced Impairment of Endothelium-Dependent Vasodilation in Tunisian Women.


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Abstract

OBJECTIVE: It is now well recognized that obesity is a major public health concern, and its prevalence has tremendously increased worldwide over the last decades, including Tunisia. As obesity is associated with cardiovascular diseases, the purpose of this study was to investigate the effect of obesity on forearm skin blood flow (FSBF) response to acetylcholine (Ach), an endothelium-dependent vasodilator, in Tunisian women over a wide range of body mass indices (BMIs).

SUBJECTS: One hundred and eighty healthy women with an average age of 34+-6 years, an average height of 162+-7 cm and an average weight of 78+-19 kg participated in this investigation. The mean BMIs of the 60 lean, 50 overweight and 70 obese subjects were 22.1+-0.3, 27.7+-0.2 and 38.4+-0.7 kg m(2), respectively.

MEASUREMENTS: The FSBF was measured non-invasively using a laser Doppler flowmeter in response to local infusion of a cumulative dose of Ach.

RESULTS: After adjusting for age, the mean response of FSBF to Ach was significantly greater in lean (1168%+-78) than in overweight (643%+-38) and obese subjects (323%+-18) (P=0.002; P<0.0001, respectively), suggesting a reduction of the endothelium-dependent nitric oxide (NO) release by obesity. Our regression analysis also revealed that the maximum FSBF response to Ach (that is, its efficacy) was inversely correlated with BMI, waist and hip circumferences (r=-0.994, P=0.002; r=-0.2, P<0.0001, and r=-0.321, P=0.001, respectively).

CONCLUSION: Our data demonstrate a reduction of skin vasodilatory reserve in obese patients and suggest a defect of both endothelial-dependent relaxation and wall compliance associated with obesity.
**Dietary Intakes of Essential Nutrients among Arab and Berber Ethnic Groups on Rural Tunisian Island.**

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**Abstract**

**OBJECTIVE:** The dietary intake was investigated and food sources were identified among Tunisian ethnic groups from Jerba Island in the south of Tunisia.

**METHODS:** Ninety-four subjects of moderate socioeconomic status (47 Berbers and 47 Arabs) aged 32 to 64 y completed a 1-mo qualitative food-frequency questionnaire and a single 24-h dietary recall, and dietary intakes and demographic status were observed from 2006 to 2007.

**RESULTS:** The prevalence of overweight and obesity was not significantly associated with Arab men compared with Berber men. Therefore, obesity was significantly associated with Berber women (P<0.001). Height was significantly different between Arab and Berber women (P<0.001). There were no significant differences in energy intake between men and women. Protein intake was not significantly different between ethnic groups. Milk and dairy products in the Berber group were significantly different from the Arab group. Intakes of calcium, zinc, iron, and folate were below recommended nutrient intakes in men and women in the two ethnic groups. Vitamin E intake was greater in Berbers than in Arabs (P<0.01).

**CONCLUSION:** Ethnicity was significantly associated with dietary intakes in the two ethnic groups of Jerba Island.


[Article in French]

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Abstract

OBJECTIVES: To evaluate the prevalence of binge eating disorder (BED) in a population of obese patients, to appreciate the impact of obesity on BED through a comparison between the obese group and a control group, and to assess anxiety, depression and quality of life in obese patients with BED.

PATIENTS AND METHODS: A cross-sectional study including 60 obese patients and 60 controls. BED was diagnosed using the Binge Eating Scale. Quality of life was assessed by the Quality Of Life, Obesity and Dietetics Scale, and depression and anxiety symptoms by the Hospital Anxiety and Depression Scale.

RESULTS: The obese group had a higher prevalence of BED than the control group (40% versus 8.3%; p < 0.001; OR = 3.5). The average score of BES was also higher (p < 0.001). Obese patients with BED were younger (p = 0.034). BED was correlated with an early onset of obesity (p = 0.01; OR = 1.12), depression (p = 0.002), anxiety (p = 0.008) and a poorer quality of life.

CONCLUSION: This study confirms the relationship between obesity and BED, which is correlated with a high prevalence of anxiety and depression and with a poorer quality of life.
Gender-Specific Effect of Pro12Ala Polymorphism in Peroxisome Proliferator-Activated Receptor Gamma-2 Gene on Obesity Risk and Leptin Levels in a Tunisian Population.


Research Laboratory LR99ES11, Biochemistry Department, Rabta University Hospital, Tunis, Tunisia.

Abstract

OBJECTIVES: This study was undertaken to investigate the impact of the Pro12Ala (rs1801282) polymorphism of the peroxisome proliferator-activated receptor gamma-2 (PPARgamma-2) gene on obesity or body mass index (BMI) and plasma leptin, insulin, adiponectin and lipid levels in a sample of the Tunisian population.

DESIGN AND METHODS: The study included 387 obese patients and 288 control subjects. The Pro12Ala genotype was determined by polymerase chain reaction followed by a digestion with the restriction of endonuclease BstUI.

RESULTS: In the whole population, there is no significant difference in genotype frequencies of the Pro12Ala polymorphism between obese patients and controls. However, separate analysis by gender revealed that obese men (but not women) had significantly higher frequency of Pro/Ala genotypes compared to controls (12.2% vs. 4.1%; chi(2)=6.76, p=0.009). In comparison to Pro/Pro homozygotes, Ala-allele bearers had a significantly higher risk of obesity [OR (95% CI)=3.26 (1.28-8.33)]. When obese subjects were stratified according to type 2 diabetes status, the association with obesity was only significant in obese non-diabetic patients [OR (95% CI)=3.74 (1.43-9.74), p=0.007]. Additionally, obese male patients carrying the Ala-allele had significantly higher body mass index (p=0.007) and plasma leptin levels (p=0.023) compared to those homozygous for Pro-allele. The significant effect of Pro12Ala polymorphism on plasma leptin levels disappeared after adjustment for age and BMI.

CONCLUSION: The present study provides evidence that the Pro12Ala polymorphism of the PPARgamma-2 gene is associated with obesity in non-diabetic men from Tunisian origin.
The G1057D Polymorphism of IRS-2 Gene Is Not Associated with Type 2 Diabetes and Obese Patients among Ethnic Groups in Tunisian Population.

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Abstract

BACKGROUND: Type 2 of diabetes is the most common metabolic disorder and results from the interaction between genetic and environmental factors. Insulin receptor substrate-2 (IRS-2), one of the major substrates of the insulin receptor, has a crucial role in insulin signalling and in beta cell development and survival. While several polymorphisms have been identified in the IRS-2 gene, the association of the Gly1057Asp polymorphism with type 2 diabetes has been studied in European and Chinese populations, but the results have been inconsistent.

OBJECTIVES: The aim of this study was to investigate the association of Gly1057Asp polymorphism in insulin receptor substrate-2 (IRS-2) gene among patients with type 2 diabetes in well defined ethnic groups from Djerba Island in Southeastern Tunisia.

METHODS: The studied population (172 Arabs and 100 Berbers) includes 162 patients with type 2 diabetes and 110 healthy controls. BMI was calculated for each subject. The subjects were unrelated and randomly selected Arabs and Berbers were equally distributed between controls and diabetics. The G1057D polymorphism of the IRS-2 gene was genotyped using PCR-RFLP assay.

RESULTS: This case/control study indicated that frequency of the IRS-2 Gly1057Asp polymorphism was not significantly different between the healthy controls and type 2 diabetic groups, neither between healthy nor obese subjects, in both ethnic groups. Moreover, this polymorphism is present at a lower frequency in Djerbian than in neighbouring European populations.

CONCLUSION: These results strongly argue against a major role of the Gly1057Asp IRS-2 polymorphism in the pathogenesis of type 2 diabetes in Djerbian subjects.
Harrabi I, Bouaouina M, Maatoug J, Gaha R, Ghannem H.

Abstract
No evidence exists regarding the prevalence of the metabolic syndrome in adolescents in North African countries. We aimed to estimate the prevalence of the metabolic syndrome in Tunisian adolescents. A representative sample of 1569 adolescents was enrolled. The prevalence of the metabolic syndrome was 0.4% with no statistical difference according to sex (p > 0.05). Overweight/obesity was the most common component of the metabolic syndrome (13.7%). This information will be used to develop prevention programs by promoting healthy lifestyles in schools.

Association of G-2548A LEP Polymorphism with Plasma Leptin Levels in Tunisian Obese Patients.

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Abstract
OBJECTIVES: The aim of this study was to examine the association of the G-2548A polymorphism of the human leptin gene (LEP) with body mass index (BMI), plasma leptin, insulin, and lipid parameters in a sample of Tunisian population.

DESIGN AND METHODS: Two hundred and twenty nine obese patients (BMI>=30 kg/m(2)) were screened and compared to 251 normal weight subjects (BMI<25 kg/m(2)). The human leptin gene promoter G-2548A genotype was determined by polymerase chain reaction followed by a digestion with the restriction of endonuclease CfoI.

RESULTS: In the entire study sample, carriers of -2548A allele had significantly lower leptin levels than homozygous for -2548G allele (14.28+/-
9.10 ng/mL vs. 18.27+/−12 ng/mL, p<0.001 respectively) adjusted for BMI and gender. In obese patients but not control, subjects carrying the -2548A allele exhibited lower leptin levels than those with GG genotype (16.96+/−8.27 ng/mL vs. 21.37+/−11.72 ng/mL, p=0.001 respectively) adjusted for BMI and gender. In this group, carriership of the -2548A allele was identified, by multiple linear regression models, as significant independent predictor for leptin levels variability. Separate analyses by gender revealed that only in obese women, the -2548A allele was found to be associated with lower leptin levels independently of BMI (p=0.004).

CONCLUSIONS: The present study showed that G-2548A LEP polymorphism is associated with lower leptin levels in Tunisian obese women.


Prevalence of Conventional Cardiovascular Risk Factors in the Great Tunis Population


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Abstract

BACKGROUND: This study was designed to determine the prevalence of main cardiovascular risk factors in the population of Great Tunis.

SUBJECTS AND METHODS: This cross-sectional study included 2483 individuals aged 35 to 70 years dwelling in the Great Tunis region, recruited between March 2004 and June 2005. The sample was weighted using the inverse of response rate according to governorate, district and sex.

RESULTS: Obesity and abdominal obesity were observed respectively in 34 and 48% of subjects. The prevalence of these two factors was particularly elevated in females (46 and 69% respectively). Hypertension was common (31%), especially in women (36%). Diabetes mellitus and dyslipemia were found in 15 and 21% of subjects, respectively, without difference according to sex. More than half of men and 8% of women were current smokers.

CONCLUSION: The prevalence of conventional cardiovascular risk factors is dramatically high in the population of Great Tunis. These findings predict a future expansion of cardiovascular diseases in this population. Profound
changes of lifestyle and dietary habits of Tunisians are needed to reduce the risk of cardiovascular morbidity and mortality.


**LEPR P.Q223R Polymorphism Influences Plasma Leptin Levels and Body Mass Index in Tunisian Obese Patients.**


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**Abstract**

**BACKGROUND:** The leptin receptor (LEPR) plays a crucial role in the regulation of body weight. Several common polymorphisms have been described in the human LEPR gene including the p.Q223R polymorphism (rs1137101). The association of this polymorphism with obesity or related metabolic phenotypes has been controversial. The aim of this study was to investigate the impact of the LEPR p.Q223R polymorphism on body mass index (BMI), plasma leptin and lipid parameters in a sample of the Tunisian population.

**METHODS:** The study included 391 obese patients and 302 normal weight subjects. LEPR p.Q223R genotypes were identified by the PCR-RFLP analysis.

**RESULTS:** Obese patients homozygous for RR genotype showed lower leptin levels than those with other genotypes (p = 0.005) adjusted for age, BMI and gender. Stratified analysis by gender revealed that obese male patients carrying the R allele showed significantly lower BMI (p = 0.007) and leptin levels (p = 0.037) than subjects homozygous for the Q allele. In obese women, the LEPR p.Q223R polymorphism was found associated with lower leptin concentrations (p = 0.05). After adjustment for age and BMI, the association between the LEPR variant and plasma leptin remained significant only within female patients (p = 0.027). A general linear model including leptin as dependant variable and age, BMI, menopausal status and genotype as covariates revealed that the LEPR p.Q223R polymorphism is independently associated with leptin levels in obese women (p = 0.026).

**CONCLUSIONS:** Our findings suggest that the LEPR p.Q223R polymorphism influences plasma leptin levels and BMI in obese patients.
Prevalence of Obesity and Associated Socioeconomic Factors among Tunisian Women from Different Living Environments.


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Abstract

Adult Tunisian women aged 20-59 (national random sample, n = 1849), were assessed with respect to environmental and socioeconomic factors associated with obesity (body mass index $\geq 30$ kg m$^{-2}$) and abdominal obesity (waist circumference $\geq 88$ cm). At the national level, prevalence of obesity and abdominal obesity were, respectively, 22.6% and 29.2%, but varied markedly (both $P < 0.0001$) among living environments classified as big cities (30.2% and 36.6%), other cities (25.9% and 32.4%), rural clustered (19.4% and 24.8%) and rural dispersed (9.5% and 16.5%). Adjusted prevalences of both types of obesity increased with age, parity and economic level of the household, while educationally, the risk was greatest in women with intermediate schooling. Differences between the four environments were accounted for by socioeconomic factors, mostly household wealth, except for most rural environment; socio-cultural factors were possibly influential. Observed differences between rural areas confirmed that finer measures of urbanization are necessary for the drivers of obesity prevalence at the national level. Obesity was still more prevalent in wealthy than in poor women, but given the high prevalence in all the environments, actions are needed at the national level before highly prevalent obesity extends into those of lower socioeconomic status and thereby increases health inequities.
Nutritional Status of Tunisian Adolescents: Associated Gender, Environmental and Socio-Economic Factors.

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Abstract

OBJECTIVE: To assess the nutritional status of Tunisian adolescents and associated factors.

DESIGN: A cross-sectional study based on a national stratified random cluster sample.

SUBJECTS AND METHODS: In all, 1,295 boys and 1,577 girls aged 15-19 years, of whom 28.4 % had already left school. Socio-economic characteristics of the parents, anthropometric measurements, food behaviours and physical activity of the adolescents were recorded during home visits.

RESULTS: Prevalence of underweight, overweight and obesity (WHO/National Center for Health Statistics reference) were, respectively, 8.1 %, 17.4 % and 4.1 % among boys and 1.3 %, 20.7 % and 4.4 % among girls; abdominal obesity was highly prevalent among both sexes. Prevalence of overweight differed by region (from 11.5 % to 22.2 %) and was higher in urban v. rural areas for males (21.7 % v. 10.4 %) but not for females (21.7 % v. 19.2 %). These differences were partially mediated by socio-economic and lifestyle factors for males. For females, influence of cultural factors is hypothesised. In rural areas, overweight was more prevalent among boys of higher economic level households, having a working mother or a sedentary lifestyle; for girls, prevalence increased with the level of education of the mother. In urban areas, prevalence of overweight was related to eating habits: it was higher for boys with irregular snacking habits and for girls skipping daily meals. Urban girls having left school were also more overweight.

CONCLUSION: Overweight and abdominal obesity in late adolescence have become a true public health problem in Tunisia with the combined effects of cultural tradition for girls in rural areas, and of rapid economic development for boys and girls in cities.
Effects of Two-Month Physical-Endurance and Diet-Restriction Programmes on Lipid Profiles and Insulin Resistance in Obese Adolescent Boys.


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Abstract

AIM: The aim of this study was to assess the impact of a two-month programme of physical endurance and dietary restriction, alone and combined, on plasma lipids and insulin resistance in obese adolescents.

METHODS: A total of 24 obese adolescent boys participated in programmes of either dietary restriction (R), physical endurance at the point of maximum lipid oxidation (LIPOX(max)) (E) or diet combined with training (R+E). Anthropometric characteristics, metabolic measures and biochemical analyses were performed in all subjects before and after the interventions. An estimated insulin resistance was calculated using the homoeostasis model assessment (HOMA-IR) index.

RESULTS: At the end of the two-month programmes, adolescents in the R+E group showed greater reductions in body mass index (-3.9+/-.07 kg/m(2)) and waist circumference (-12.3+/-.48 cm) (P<0.001) than either the R or E group. A significant decrease (P<0.01) in HOMA-IR index (-2.13+/-.011), plasma triglycerides, LDL and total cholesterol was also seen in the R+E group. Moreover, at the end of the programme, the ratio of HDL cholesterol to triglycerides was significantly increased from baseline in the R+E group (0.93+/-.09 vs. 0.68+/-.11; P<0.01).

CONCLUSION: Compared with either moderate physical endurance or dietary restriction, a combination of both resulted in a significant decrease in cardiovascular risk factors and HOMA-IR index in obese adolescent boys.
[Contribution of Exercise and Diet in the Management of Knee Osteoarthritis in the Obese].

[Article in French]

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Abstract

OBJECTIVE: Our objective was to determine whether exercise and weight loss are more effective either separately or in combination, in improving pain and physical function in obese adults with moderate knee osteoarthritis (OA).

PATIENTS AND METHODS: Forty-five obese adults, with a body mass index greater than 35 kg/m2 or 30≤BMI<35 associated to at least one cardiovascular risk factor, suffering from knee pain with evident radiographic signs of knee OA, were involved in our study. All patients were evaluated at baseline and at the end of the study. The assessment parameters were weight loss, the bioelectric impedance analysis, pain, six-minute walk distance, cardiovascular parameters, and muscular strength. The physical function was measured with the Womac and the Lequesne indexes. Patients were randomized into four groups, a control group (G1), exercise only group (G2), diet plus exercise group (G3) and diet only group (G4).

RESULTS: There was no difference between the four groups at baseline. Significant improvement of function (Womac) was noticed in groups performing exercise only (G2) (26%), diet plus exercise (G3) (37.89%) and diet only (G4) (18.34%). We also noticed an improvement in pain in G2 (p=0.04), G3 (p<0.001) and G4 (p=0.02). The improvement of quadriceps strength was noted only in G2 (p=0.01) et G3 (p=0.001) without any change in control group and diet only group (G4). The improvement of cardiovascular parameters was observed only in G2 and G3. Weight loss, decreased BMI and waist circumference was more important in diet plus exercise group (G3).
CONCLUSION: The combination of weight loss and exercise provide better improvements in physical function and pain in obese adults with knee OA compared with either intervention alone. Exercise used alone or associated to dietary provides better improvements in physical capacity and muscle strength.


Tunisian Children Reference for Body Mass Index and Prevalence of Obesity.


National Institut of Nutrition, Tunis, Tunisia.

Abstract

BACKGROUND: The prevalence of obesity in children is known to be increasing rapidly worldwide but few population-based surveys have been undertaken in North Africa and in the Middle East.

AIMS: Report the means of body mass index with values corresponding to the different percentiles in boys and girls by age from a large nationally representative sample of the Tunisian children population. The second aim was to estimate the prevalence of obesity and over weight in children and adolescent using the 85th and 95th body mass index percentile respectively derived from the U.S.A. first National Health and Nutrition Survey and also the International cut off points for body mass index for overweight and obesity proposed by the International Obesity Task Force and Rolland Cachera.

SUBJECTS AND METHODS: We have used data from the Tunisian National Nutrition Survey, a cross sectional health study providing a large nationally representative sample of the Tunisian population including 3885 children and adolescent.

RESULTS: The mean of BMI was of 16,63 +/- 2,58 Kg/m2 among boys and 17.36 +/- 3.52 Kg/m in girls. The BMI increased with age and more precociously in girls (10 years) that in boys (13-14 years). The mean+2SD of the BMI approached the 95th percentile. It is noticed that our 85th percentile and 95th percentile as well in the girls and in boys were lower than the same percentiles of the children of other countries (NHANES I, IOTF) and that our 97th percentile is higher than that of the French according to tables of Roland Cachera. By conside ring the NHANES I and
the IOTF, the prevalence of obesity were rather weak (<5%) but high according to the tables of Roland Cachera (3 to 11%).

CONCLUSION: The prevalence of obesity was low in 1996 according to references' of the NHANES I and IOTF but high according to tables' of Roland Cachera. Prevention of obesity by a healthy way of life remains the most effective means in the long and undoubtedly less expensive realizing programs of regular monitoring.


The -2548G/A LEP Polymorphism Is Associated with Blood Pressure in Tunisian Obese Patients.


Research Laboratory LAB-SM-01, Biochemistry Department, Rabta Hospital, Tunis, Tunisia.

Abstract

OBJECTIVE: To examine the association of a common -2548G/A (rs7799039) promoter variant of the human leptin gene (LEP) with obesity or body mass index (BMI) and its associated phenotypes such as blood pressure variability and the prevalence of hypertension in a sample of the Tunisian population.

DESIGN AND METHODS: Two hundred and twenty-nine obese patients were screened and compared with 251 normal weight subjects. The -2548G/A LEP polymorphism was analysed by PCR-RFLP procedure.

RESULTS: No significant association was found between the -2548G/A polymorphism and obesity or BMI. However, in obese patients subjects with AA genotype had significantly higher systolic (p = 0.003) and diastolic (p = 0.002) blood pressure compared with those with GA or GG genotypes. Stratified analysis by gender revealed that male patients but not female homozygous for -2548A allele exhibited significantly increased systolic (p = 0.01) and diastolic (p<0.001) blood pressure than did carriers of -2548G allele. Multiple linear regression analysis revealed that AA genotype significantly affect systolic and diastolic blood pressure in obese men. Additionally, significant association between AA genotype and higher prevalence of hypertension was found in male patients (p = 0.03).

CONCLUSION: The present study showed that the -2548G/A LEP polymorphism is associated with blood pressure in obese male patients.
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Abstract

BACKGROUND: Obesity becomes a major problem in our country during the last decades.

AIM: Evaluation of the prevalence of obesity and overweight in Tunisia.

METHODS: Prospective epidemiological survey concerning a representative sample of Tunisian Population realised on 2001 by the Tunisian National Health Public Institut. Medical visit and anthropometric measurements were performed by medical investigators at subject's home. Statistical analysis using SAS program were performed. WHO body mass index criteria were used to define overweight and obesity. Population investigated included 8576 adults and adolescents 15 years or older, 4232 men and 4344 women.

RESULTS: Prevalence of obesity is 12.2% (6.1% in men, 18.3% in women, p<0.001). Prevalences of obesity grade I, II, and III are respectively 8.7%, 2.9% and 0.7%. Prevalence of overweight is 21.8% (8.9% in men, 12.8% in women, p<0.001). Prevalences of obesity and overweight are respectively in rural districts 8.6% and 10.2%, in urban districts 14.8% and 23.6% (p<0.001). Tunisian eastern areas are more affected by obesity and overweight than western areas but there isn't a north-south gradient.

CONCLUSION: Our study shows that prevalences of overweight and obesity in Tunisia became quite similar to the prevalence in European countries, but concerned especially women and eastern areas, more industrialised and more urbanised than the western ones. Preventive strategies should be rapidly implemented in Tunisia to stop the growing of this health public problem.
The -2548G/A LEP Polymorphism Is Associated with Blood Pressure in Tunisian Obese Patients.


Research Laboratory LAB-SM-01, Biochemistry Department, Rabta Hospital, Tunis, Tunisia.

Abstract

OBJECTIVE: To examine the association of a common -2548G/A (rs7799039) promoter variant of the human leptin gene (LEP) with obesity or body mass index (BMI) and its associated phenotypes such as blood pressure variability and the prevalence of hypertension in a sample of the Tunisian population.

DESIGN AND METHODS: Two hundred and twenty-nine obese patients were screened and compared with 251 normal weight subjects. The -2548G/A LEP polymorphism was analysed by PCR-RFLP procedure.

RESULTS: No significant association was found between the -2548G/A polymorphism and obesity or BMI. However, in obese patients subjects with AA genotype had significantly higher systolic (p = 0.003) and diastolic (p = 0.002) blood pressure compared with those with GA or GG genotypes. Stratified analysis by gender revealed that male patients but not female homozygous for -2548A allele exhibited significantly increased systolic (p = 0.01) and diastolic (p<0.001) blood pressure than did carriers of -2548G allele. Multiple linear regression analysis revealed that AA genotype significantly affect systolic and diastolic blood pressure in obese men. Additionally, significant association between AA genotype and higher prevalence of hypertension was found in male patients (p = 0.03).

CONCLUSION: The present study showed that the -2548G/A LEP polymorphism is associated with blood pressure in obese male patients.
Waist Circumference Cut-Off Points for Identification of Abdominal Obesity among the Tunisian Adult Population.


Institut National de Nutrition, Tunis, Tunisia.

Abstract

AIMS: Waist circumference (WC) is a convenient measure of abdominal adipose tissue. It itself is a cardiovascular disease (CVD) and diabetes-risk factor and is strongly linked to other CVD risk factors. There are, however, ethnic differences in the relationship of WC to the other risk factors. The aim of this study was to determine the optimal cut-off points of WC and body mass index (BMI) at which cardiovascular risk factors can be identified with maximum sensitivity and specificity in a representative sample of the Tunisian adult population and to investigate any correlation between WC and BMI.

METHODS: We used a sample of the Tunisian National Nutrition Survey, a cross-sectional population-based survey, conducted in 1996 on a large nationally representative sample, which included 3435 adults (1244 men and 2191 women) of 20 years or older. WC, BMI, blood pressure and fasting blood measurements (plasma glucose, total cholesterol, triglycerides) were recorded. Receiver operating characteristic (ROC) curve analysis was used to identify optimal cut-off values of WC and BMI to identify with maximum sensitivity and specificity the detection of high blood pressure, hyperglycaemia, high blood cholesterol and hypertriglyceridaemia.

RESULTS: ROC curve analysis suggested WC cut-off points of 85 cm in men and 85 cm in women for the optimum detection of high blood pressure, diabetes and dyslipidaemia. The optimum BMI cut-off points for predicting cardiovascular risk factors were 24 kg/m(2) in men and 27 kg/m(2) in women. The cut-off points recommended for the Caucasian population differ from those appropriate for the Tunisian population. The data show a continuous increase in odds ratios of each cardiovascular risk factor, with increasing level of WC and BMI. WC exceeding 85 cm in men and 79 cm in women correctly identified subjects with a BMI of >/=25 kg/m(2), sensitivity of >90% and specificity of >83%.
CONCLUSIONS: Based on the ROC analysis, we suggest a WC of 85 cm for both men and women as appropriate cut-off points to identify central obesity for the purposes of CVD and diabetes-risk detection among Tunisians. WCs of 85 cm in men and 79 cm in women were the most sensitive and specific to identify most subjects with a BMI $\geq$25 kg/m$^2$.


**Frequency and Risk Factors of Obesity in Tunisian Adolescent.**

Blouza-Chabchoub S, Rached-Amrouche C, Jamoussi-Kammoun H, Bouchaa N.

Service ORL & Chirurgie Cervico-Faciale, Tunisie.

**Abstract**

The aim of the study was to determine the prevalence and the risk factors of obesity in Tunisian adolescent. METHODS: This prospective study included 1050 adolescents (aged 13 to 17 years) from two high schools according to the socioeconomic status. The aim was to evaluate the prevalence and the main risk factors of obesity in this studied group. The weight and height of every adolescent were measured and the Body Mass Index (BMI) was calculated for each of them. Using this criteria and referring to the curves of this Index for the age established by the National Health and Nutrition Examination Survey (NHANES) we found 49 obese adolescents. We evaluated the spontaneous food intake for each of them during three days. The results showed that the frequency of obesity is 5.1% without significant difference between the two schools. The highest obesity frequency is noticed at age 13 and 14 years in the two sexes. The obesity frequency is significantly more important in males of the high socioeconomic status. Family history of obesity was noticed in 51% of obese adolescents. Most of them (96%) had abnormal alimentary behavior. 52% of them had an excess of caloric intake and 82% an excess of lipid without significant difference between the two schools.
Prevalence of Metabolic Abnormalities in the TunisianAdults: A Population Based Study.


National Institut of Nutrition, Tunis, Tunisia. radhia.bouguerra@rns.tn

Abstract

AIMS: To estimate the prevalence of individual metabolic abnormalities and the cluster of metabolic abnormalities in a representative sample of the Tunisian adult population and to identify their relationship with gender, age and residency. The definition used is an adaptation of the NCEP ATP III definition, using total cholesterol $\geq 5.2$ mmol/l instead of HDL-cholesterol.

MATERIALS AND METHODS: We used a sample of the Tunisian National Nutrition Survey (TNNS), a cross-sectional health survey conducted in 1996, to estimate the nutritional status of the population. The TNNS included 2927 adults aged 20 years or older who had measurements of height, body weight, waist circumference, blood pressure, fasting plasma glucose, total cholesterol and triglycerides. The cluster of metabolic abnormalities was defined as the presence of three or more metabolic abnormalities.

RESULTS: The prevalence of abdominal obesity, hypertriglyceridemia, high total cholesterol, high blood pressure and high fasting plasma glucose was, respectively, 9%, 23%, 24%, 45% and 15% in men and 33%, 19%, 29%, 44% and 15% in women. The prevalence of the cluster was more frequent in women than in men (18% versus 13%, $P<0.001$) and in those living in urban communities (21% in women, 16% in men) rather than rural communities (11% in women, 8% in men) ($P<0.001$). The prevalence also increased significantly with age ($P<0.001$).

CONCLUSION: The cluster of metabolic abnormalities and its components are common in the Tunisian adult population and prevalence increases significantly with female sex, urban residency and age.

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Abstract

AIMS: To report the prevalence of the metabolic syndrome in Arab men and women using the new International Diabetes Federation (IDF) criteria, and to compare this with the prevalence using the 1999 World Health Organization (WHO) and 2001 National Cholesterol Education Program Adult Treatment Panel III (NCEP ATPIII) definitions.

METHODS: The study involved 863 subjects (343 men and 520 women) aged > or = 40 years living in Tunis, Tunisia, taken from an initially randomized, population sample.

RESULTS: The prevalence of the metabolic syndrome using the IDF criteria was found to be 45.5%; 55.8% in women and 30.0% in men (P < 0.001), higher than the rates of 28.7% (WHO) and 24.3% (NCEP ATPIII) using the previous definitions. Using all the definitions, the prevalence was higher in women than in men predominantly because of significant differences in central obesity and high-density lipoprotein (HDL) cholesterol and, to a lesser extent, hypertension.

CONCLUSION: The increased prevalence using the IDF criteria compared with the 1999 WHO criteria and the 2001 NCEP ATPIII definitions is striking and has huge implications for public health worldwide. The major reason for the higher rate using the new definition seems to be the predominant focus placed on central obesity. Using tighter criteria for fasting glycaemia has also played a factor. The question remains as yet unanswered as to whether the new IDF criteria are better at predicting hard outcomes such as diabetes mellitus and cardiovascular diseases.
[Distribution of Anthropometrical Parameters in Infants in the Monastir Region, Tunisia].

[Article in French]

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Abstract

We evaluated the distribution of anthropometrical parameters in infants in Monastir and compared them with the National Center of Health Statistics reference. Our prospective study included 3033 infants attending primary health care centres for vaccinations who were followed for 18 months. In each visit, we measured weight-for-age, height-for-age and weight-for-height. We found a difference between our distribution curve and the NCHS reference. The prevalence of growth retardation increased with age. The prevalence of under-weight and of wasting were less than 10%. Obesity was seen 6.2% of infants aged 3 months and 11.6% aged 9 months.

Diabetes Metab. 2005 Apr;31(2):119-23.

The Peroxisome Proliferator Activated Receptorgamma2 (Ppargamma2) Pro12Ala Variant: Lack of Association with Type 2 Diabetes in Obese and Non Obese Tunisian Patients.

Zouari Bouassida K, Chouchane L, Jellouli K, Chérif S, Haddad S, Gabbouj S, Danguir J.

Service of Experimental Nutrition, Institute of Nutrition, Tunis, Tunisia.

Abstract

OBJECTIVES: Peroxisome proliferator activated receptorgamma2 (PPARgamma2) is a nuclear receptor that regulates adipocyte differentiation, lipid metabolism and probably insulin sensitivity. There have been several reports on the relationship between the PPARgamma2 Pro12Ala genotype and the development of obesity or type 2 diabetes. We designed a case-controlled study to investigate the potential association of
the genetic variation of the PPARgamma2 gene with type 2 diabetes in Tunisians.

**METHODS:** We used the polymerase chain reaction and restriction enzyme digestion to characterize the variation of the Pro12Ala polymorphism of the PPARgamma2 gene in 242 unrelated Tunisian patients with type 2 diabetes and 246 healthy control subjects.

**RESULTS:** Analysis of the Pro12Ala polymorphism of the PPARgamma2 gene in patients with type 2 diabetes and in control subjects revealed no significant differences in the PPARgamma2 allele frequencies between diabetic patients and control subjects. However the PPARgamma2 Ala12 allele was found significantly associated with a high level of systolic blood pressure in diabetic patients. Stratification of diabetic patients on obese and non obese subjects showed non significant differences in the PPARgamma2 Ala12 frequency between the two groups.

**CONCLUSION:** These results suggest that the PPARgamma2 gene is unlikely a major gene for type 2 diabetes mellitus or obesity in Tunisian subjects.

*Diabetes Metab.* 2004 Apr;30(2):175-80.

**Polymorphism of Stress Protein HSP70-2 Gene in Tunisians: Susceptibility Implications in Type 2 Diabetes and Obesity.**

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Service de Nutrition expérimentale, Institut de Nutrition, Tunis, Tunisie.

**Abstract**

**OBJECTIVES:** Tumor necrosis factor alpha (TNFalpha) is expressed primarily in adipocytes and elevated levels of this cytokine have been linked to obesity and insulin resistance. Several studies have shown statistical evidence of linkage between obesity and the chromosomal region encompassing the TNFalpha gene, suggesting that TNF alpha and/or a nearby gene is involved in the pathogenesis of obesity. Recently we analyzed the -308 TNFalpha polymorphism and that of HSP70-2 gene in Tunisian patients with obesity and no significant difference in allele frequencies of the -308 TNFalpha polymorphism was found between obese patients and controls. In contrast, polymorphism in HSP70-2 gene was found to be highly associated with obesity. Both TNFalpha and HSP70-2
genes have been mapped within the major histocompatibility complex (MHC). We designated a case-controlled study to investigate a potential association of genetic variation of the TNFalpha and that of the heat shock protein 70-2 (HSP70-2) with type 2 diabetes.

**METHODS:** We used the polymerase chain reaction and restriction enzyme to characterize the variation of the TNFalpha promoter region and that of the HSP70-2 gene in 280 unrelated Tunisian patients with type 2 diabetes and 274 healthy control subjects.

**RESULTS:** Analysis of the -308 TNFalpha polymorphism in patients with type 2 diabetes and in control subjects revealed that the heterozygous TNF1/TNF2 genotype was significantly less frequent in the patient group (p=0.003), suggesting that TNF1/TNF2 may be considered as a protective marker against type 2 diabetes (OR=0.58). In contrast, a significant relative risk of type 2 diabetes was found associated with the P2-HSP70-2 homozygous genotype in non-obese diabetic subjects (OR=1.97; p=0.0012).

**CONCLUSION:** These results along with those showing high frequency of P2-HSP70-2 genotype in obese Tunisians, suggest that HSP70-2 polymorphism has susceptibility implications in both obesity and diabetes.


**Clustering of Cardiovascular Risk Factors among Obese Urban Schoolchildren in Sousse, Tunisia.**

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**Abstract**

Against a background of increasing obesity among Tunisians, we conducted a transversal survey of 1569 children aged 13-19 years selected by multistage cluster sampling to evaluate the prevalence of obesity and clustering of cardiovascular risk factors among obese schoolchildren in the urban area of Sousse. Obese children were found to have higher blood pressure, higher triglyceride levels and lower high-density lipoprotein cholesterol levels than children of normal weight. In both genders, the mean height and weight across all age groups was significantly higher in urban than in rural children. Our study indicates that obesity and the adverse effects of being over the ideal body weight are no longer limited to industrialized countries.
Obesity and Life Style in a Population of Male School Children Aged 6 to 10 Years in Ariana (Tunisia).

[Article in French]

Ben Slama F, Achour A, Belhadj O, Hsairi M, Oueslati M, Achour N.
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Abstract

The increase of the prevalence of the obesity in childhood puts in reason some factors of the environment and the way of life of the child that encourage the hold of weight at these topics of as much more that if they are exposed genetically. A prospective survey has been done close to 3148 school boy aged of 6 to 10 years and who were schooled in the gouvernorat of Ariana showed that the prevalence of the obesity is around 3.7%. A survey case/witness has been achieved in a second time on the way of life of the group of the obese matched to a group of children no obese. An intended questionnaire to parents of children of these 2 groups permitted to collect some informations concerning the weight and the present size of parents, habits of life of their children. The weight to the birth has been searched for in the school medical file or from the notebook of health of the child. The obesity of parents is one factor of risk of the child obesity. The short length of sleep (< 8 hours), the erosion between meals especially in the evening after the dinner, the daily consumption of sugary foods and sparkling drinks is the important risk factors exposing to the infantile obesity this group of age. These behaviours can be corrected by a strategy of prevention and nutritional education.

[Article in French]


Service d'épidémiologie, CHU Farhat-Hached, 4000 Sousse, Tunisie.

Abstract

AIM: The aim of this study was to assess the prevalence of obesity and overweight and their relationship with cardiovascular disease risk factors.

METHODS: Epidemiological survey based on a representative sample of 1569 urban school children of Sousse, Tunisia.

RESULTS: Overweight (BMI > or = 25) was significantly higher in girls (16.1%) than in boys (11.6%); (chi 2 = 8.2; p = 0.004). Obesity (BMI > or = 30) was slightly higher in girls (3.7%) than in boys (2.7%); (chi 2 = 0.89; p = 0.34). Girls had significantly higher BMI, diastolic blood pressure, cholesterol and HDL cholesterol levels than boys who had however significantly higher levels of systolic blood pressure. Overweight was significantly higher in children who did not practice sport at school: 22 versus 13.1% (p < 0.002), in groups of youngsters who were not affiliated to school sport or city associations. Overweight children had a significantly higher levels of cholesterol, HDL cholesterol and means of systolic and diastolic blood pressures.

CONCLUSION: These results will serve to set up a regional program of health promotion at schools.
[Study of Overweight and Obesity in a Population of Urban School Children in Sousse, Tunisia].

[Article in French]


Service d'épidémiologie, CHU Farhat-Hached, 4000 Sousse, Tunisie.

Abstract

AIM: The aim of this study was to assess the prevalence of obesity and overweight and their relationship with cardiovascular disease risk factors.

METHODS: Epidemiological survey based on a representative sample of 1569 urban school children of Sousse, Tunisia.

RESULTS: Overweight (BMI≥25) was significantly higher in girls (16.1%) than in boys (11.6%); (χ²=8.2; p=0.004). Obesity (BMI≥30) was slightly higher in girls (3.7%) than in boys (2.7%); (χ²=0.89; p=0.34). Girls had significantly higher BMI, diastolic blood pressure, cholesterol and HDL cholesterol levels than boys who had however significantly higher levels of systolic blood pressure. Overweight was significantly higher in children who did not practice sport at school: 22 versus 13.1% (p<0.002), in groups of youngsters who were not affiliated to school sport or city associations. Overweight children had a significantly higher levels of cholesterol, HDL cholesterol and means of systolic and diastolic blood pressures.

CONCLUSION: These results will serve to set up a regional program of health promotion at schools.
**Genetic Variation in the Stress Protein Hsp70-2 Gene Is Highly Associated with Obesity.**

Chouchane L, Danguir J, Beji C, Bouassida K, Camoin L, Sfar H, Gabbouj S, Strosberg AD.

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**Abstract**

**BACKGROUND:** Tumor necrosis factor-alpha (TNF-alpha) expression is increased in adipose tissue of both rodent models of obesity and obese humans. It has therefore been considered as a candidate gene for obesity. Several studies have indeed shown statistical evidence of linkage between obesity and the chromosomal region encompassing the TNF-alpha gene, suggesting that TNF-alpha and/or a nearby gene (eg hsp70 gene) is involved in the onset and progression of weight gain. We designed a case-controlled study to investigate the potential association of polymorphism of the TNF-alpha and that of a stress protein (hsp70-2) with obesity.

**METHODS:** We used the polymerase chain reaction and restriction enzyme digestion to characterize the variation of the TNF-alpha promoter region and that of the hsp70-2 gene in 343 unrelated Tunisian patients with obesity and 174 healthy control subjects.

**RESULTS:** Analysis of the -308 TNF-alpha polymorphism in patients with obesity and in control subjects did not reveal an association between TNF-alpha alleles and obesity. In contrast, polymorphism analysis of the hsp70-2 gene in patients with obesity demonstrated highly significant differences in genotypic distribution of this bi-allelic locus compared to the control subject group. Homozygosity for one hsp70-2 allele was highly associated with obesity (r²=7.12; P<10(-6)).

**CONCLUSION:** Tunisian persons carrying the P2/P2 genotype of the hsp70-2 gene may have an increased risk of obesity.
UNITED ARAB EMIRATES


Nutrition Transition in The United Arab Emirates.


Department of Nutrition, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC, USA.

Abstract

Background/Objectives:The United Arab Emirates has undergone remarkable economic and social transformations over the past few decades. We present findings on the prevalence of overweight and obesity, dietary and activity patterns among Emiratis in 2009/10, and explore associated urbanization and wealth factors.

Subjects/Methods:A cross-sectional study was conducted in 628 randomly selected households in all seven emirates. Sociodemographics, 24-h dietary recalls, physical activity and anthropometric data were collected from adult females (≥19 years), adolescents (11-18 years) and children (6-10 years) in each family via in-person interviews using validated questionnaires.

Results:In 2009/10, 65% of adult women, 28% of male adolescents and 40% of female adolescents, 25% of male children and 41% of female children were overweight or obese. 43% of girls and 38% of boys (6-10 years) consumed more calories than their estimated energy requirements. Snacking represents a major source of Emirati caloric intake (>20%) of total calories. In addition, caloric beverages account for 8-14% of total calories. Meanwhile, physical activity levels are low, especially among female Emiratis and those living in urban areas.

Conclusions:These trends represent the potential risk for severe cardiometabolic problems in the United Arab Emirates. The significant gender differentials among children and adolescents are driven by diet and activity differences. More attention should be paid to educate the public on nutrition (for example, limit the consumption of sugared sodas, fruit drinks and whole milk, promote water and low-fat/skim milk consumption instead) and encourage physical activity from a young age, especially among females. Built environments and social support for improved lifestyle choices by individuals are needed.

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Anthropometric Characteristics and Obesity among Adolescents in The United Arab Emirates.

Zaal AA, Brebner J, Musaiger AO, Souza RD.
Department of Preventive Medicine, Ministry of Health, Dubai, United Arab Emirates.

Abstract

Anthropometric measurements and the prevalence of overweight and obesity were studied in 661 adolescents aged 12-17 years from Dubai, United Arab Emirates. Mean values for height and weight increased steadily with age in both sexes. Mean values for waist circumference ranged from 70.8-76.6 cm in males and 64.0-68.8 cm in females. Hip circumference varied from 84.8-91.2 cm in males and 84.9-91.2 cm in females. Body mass index was generally higher in males than in females (range 21.9-23.6 kg/m2 and 19.8-24.1 kg/m2 respectively). The overall prevalence of overweight and obesity was 19.3% and 21.6% in males and 12.3% and 19.5% in females. This study confirms the high incidence of overweight and obesity in Dubai adolescents.


UAE Population Reference Standard Charts for Body Mass Index and Skinfold Thickness, at Ages 0-18 Years.

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Department of Paediatrics.

Abstract

Aims To determine a range of anthropometric measurements including skinfold thickness measurements in four different areas of the body, to construct population growth charts for body mass index (BMI), skinfolds, and to compare these with growth charts from other countries. One aim was also to validate body fat charts derived from skinfold thickness. Methods A national cross-sectional growth survey of children, 0-18 years old, was conducted using multistage stratified random sampling. The sample size included at least 200 children in each age-sex group. Height, weight, biceps skinfold, triceps skinfold, subscapular skinfold, suprailliac skinfold, and mid-upper-arm circumference were measured in each child.
We describe correlation, standard deviation scores relative to the other standards, and calculation of body density in the United Arab Emirates population. We determined whether any of the above is a good indicator of fatness in children. Results BMI, upper-arm circumference, sum of four skinfolds, and percentage body fat charts were constructed using the LMS method of smoothing. BMI was very significantly correlated with sum of skinfold thicknesses, and mid-upper-arm circumference. Prevalence of obesity and overweight in ages 13-17 years was respectively 9.94% and 15.16% in females and 6.08% and 14.16% in males. Derived body fat charts were found not to be accurate Conclusion A national BMI, upper-arm circumference, and sum of four skinfolds chart has been constructed that can be used as a reference standard for the United Arab Emirates. Sum of four skinfold thickness charts can be used as crude determinants of adiposity in children, but derived body fat charts were shown to be inaccurate.


Metabolic Syndrome among the Young Obese in The United Arab Emirates.

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Abstract

Obesity is the sixth major risk factor for the overall burden of disease globally, and is associated with a constellation of metabolic derangements starting early in life. Features of metabolic syndrome (MS) were assessed among obese young individuals in the UAE. Of the 260 obese young people screened, 44% were found to have MS. Prevalence of MS was more among boys than girls and there was a significant association with a positive family history of obesity, diabetes or hypertension. Subjective report of psychological distress was found in 95%, and significant depressive symptoms were present among three-quarters of those with MS. The prevalence and magnitude of obesity and its sequelae including MS is increasing worldwide, and newly modernized countries are particularly at risk. Child health professionals must be aware of this and attempts should be made for early identification and necessary intervention including attention to psychological issues.

Trainer SS.

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Abstract

The countries of the Arab Gulf have experienced accelerated development and urbanization over the last 50 years. Changes in health have likewise been dramatic: Kuwait, Saudi Arabia, Bahrain, and the UAE now have some of the highest proportions of obese/overweight people in the world, with correspondingly high rates of chronic disease. In the UAE, particularly high rates of obesity/overweight have been reported among middle-aged Emirati women, but other problems relating to health and nutrition are starting to be identified in younger age groups as well. This article describes preliminary data from a project among young Emirati women in the UAE. This study examines how these women cope with the increased availability of fast food, changing work patterns, and evolving ideas about body image, "risk," and health within a larger context of increasing chronic disease and weight gain throughout the UAE.

Barriers and Facilitators of Weight Management: Perspectives of Arab Women at Risk for Type 2 Diabetes.

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Abstract

Obesity and associated chronic diseases, such as type 2 diabetes, are highly prevalent in the United Arab Emirates (UAE). This qualitative study explored weight management behaviours and perceptions of women who are at increased risk for type 2 diabetes through focus group interviews. A total of
75 Emirati national women (age, 20-60 years) considered high risk for type 2 diabetes participated in eight focus groups. Purposive sampling was used to recruit women from primary healthcare centres (PHCs) in Al Ain, UAE. Qualitative research methodology involving a modified approach to grounded theory was used to guide data collection and analysis. Focus group interviews transcripts were thematically analyzed using NVivo software. A number of personal, social and physical environmental themes emerged as both barriers and enablers that are consistent with the social ecological model of health promotion. Low motivation, lack of social support, competing demands, lack of culturally-sensitive exercise facilities and sociocultural norms that restrict outdoor physical activities were the main barriers cited by the participants. On the other hand, social support, such as having other women to walk with, helped them stay physically active. Suggestions from the participants included enhancing social support for women, greater access to dietitians and nutrition information, and increasing availability of culturally-sensitive exercise facilities. This study provides valuable information in the development of culturally congruent healthy weight promotion programmes for women at risk for type 2 diabetes in the UAE and has implications for obesity intervention programmes for women in other Arabian Gulf countries.


Metabolic Syndrome Prevalence, Dietary Intake, and Cardiovascular Risk Profile among Overweight and Obese Adults 18-50 Years Old from The United Arab Emirates.

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Abstract

BACKGROUND: The prevalence of diabetes mellitus is among the highest worldwide, and metabolic syndrome predisposes to diabetes.

METHODS: We recruited 227 overweight/obese Emirati adults living in the city of Al-Ain, Emirati of Abu Dhabi to screen for the metabolic syndrome and to assess for the most relevant criteria for the metabolic syndrome in this population. We identified subjects as having the metabolic syndrome if they had three of the following characteristics: Waist circumference (WC) >88 cm in women and >102 cm in men; plasma glucose >5.5 mmol/L; blood
pressure >130/85 mmHg, triglycerides (TG) >1.7 mmol/L, and high-density lipoprotein cholesterol (HDL-C) <1.0 mmol/L in men and <1.3 mmol/L in women. In addition to features of metabolic syndrome, lipoprotein subfractions and 24-hour dietary recalls were assessed in a random sample of participants.

**RESULTS:** A total of 92 subjects (40.5%) were classified as having metabolic syndrome. The most relevant clinical criteria associated with metabolic syndrome were large WC, high blood pressure, and low HDL-C. Only 7% of subjects had TG >1.7 mmol/L, whereas 95% had plasma LDL-C >2.6 mmol/L. In addition, subjects presented low concentrations of medium very-low-density lipoprotein (VLDL) and small HDL subfractions in agreement with low concentrations of HDL-C and TG. Dietary analysis revealed high-energy consumption, with diets high in total carbohydrates, fat, and simple sugars. In addition, subjects were sedentary with only 14% of the population engaged in physical activity.

**CONCLUSIONS:** The high prevalence of metabolic syndrome among overweight/obese Emirati adults predisposes this population to increased risk for developing diabetes and cardiovascular disease. Public health involvement targeting poor dietary habits and exercise programs among Emirati citizens is urgently needed.

**Overweight and Obesity in Pregnancy Do Not Adversely Affect Neonatal Outcomes: New Evidence.**

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**Abstract**

We studied neonatal outcomes of infants of obese mothers in a cohort of 6,125 deliveries, using logistic multivariate analysis to remove the role of potential confounding variables. Although, as in previous reports, the crude unadjusted prevalence of several adverse neonatal outcomes was higher in these infants, the multivariable analysis revealed that only two outcomes remained significantly associated with maternal overweight and obesity: neonatal macrosomia (adjusted odds ratios aOR 1.4, p < 0.001) and meconium aspiration syndrome (aOR 1.6, p = 0.05), indicating that the
unadjusted association with the other outcomes was caused by confounding factors. Nonetheless, as macrosomia is associated with increased health risks both to the mothers and their infants, and maternal obesity with considerable maternal morbidity during pregnancy, these results should not lead to complacency, but instead encourage better prevention of obesity in general and during pregnancy in particular.


Physical Activity and Reported Barriers to Activity among Type 2 Diabetic Patients in The United Arab Emirates.


Department of Internal Medicine, Faculty of Medicine and Health Sciences, UAE University, United Arab Emirates.

Abstract

OBJECTIVES: This study was designed to assess the physical activity practice among type 2 diabetic patients in the United Arab Emirates (UAE).

METHODS: This is a cross-sectional study of type 2 diabetic patients who participated in the outpatient clinics in Al-Ain District, during 2006. The patients completed an interviewer-administered questionnaire, and measurements of blood pressure, body mass index, body fat, abdominal circumference, glycemic control (HbA1c), and fasting lipid profile.

RESULTS: Of the 390 patients recruited, only 25% reported an increase in their physical activity levels following the diagnosis of diabetes, and only 3% reported physical activity levels that meet the recommended guidelines. More than half of the study subjects had uncontrolled hypertension (53%) and unacceptable lipid profiles; 71% had a high low-density lipoprotein (LDL), 73% had low high-density lipoprotein (HDL), and 59% had hypertriglyceridemia. Forty-four percent were obese and a further 34% were overweight. Abdominal obesity was also common (59%). Only 32% had an acceptable glycemic control.

CONCLUSIONS: The physical activity practice of type 2 diabetic patients in the UAE is largely inadequate to meet the recommended level necessary to prevent or ameliorate diabetic complications. Interventions aiming at overcoming the barriers to physical activity are urgently needed.
Abstract

**AIM:** to study the association between the dietary habits and behavioural factors with the increased risk of obesity amongst adolescents in Dubai, United Arab Emirates (UAE).

**METHOD:** A cross-sectional study was carried out among 661 adolescents (324 boys and 337 girls) aged 12 to 17 years selected by means of a multistage stratified random sampling technique.

**RESULTS:** The highest percentage of obesity was observed at 14 years of age in boys (30.5%) and at 13 years of age in girls (35.4%). There was a significant association between the frequency of eating breakfast \((P = 0.048)\), snacking between breakfast and lunch \((P = 0.044)\), and obesity in girls but not in boys. A high risk of obesity was associated with eating breakfast at school in both boys \((OR = 3.0; CI 1.1-8.3)\) and girls \((OR = 3.4; CI 1.6-7.4)\). Fast foods showed a significant association with obesity in girls \((P = 0.007)\), but not in boys \((P = 0.745)\). The risk of obesity was higher in boys who ate fast foods at home \((OR = 1.3; CI 0.5-3.2)\) but less in girls \((OR = 0.2; CI 0.1-1.0)\).

**CONCLUSION:** Intervention programs focused on promoting changes in lifestyles, food habits and increasing physical activity need to be implemented at the earliest.
Nanotechnology in Elevation of the Worldwide Impact of Obesity and Obesity-Related Diseases: Potential Roles in Human Health and Disease.

Eldaw A.
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Abstract

Current worldwide data show epidemics of obesity and type 2 diabetes with no real solutions apart from continuous calls to changing lifestyle and food habits. Despite health messages that are communicated by health authorities, the epidemic is growing. More people are affected with health consequences that are usually frightening as more resources are wasted, especially in areas where health care and resources are lacking. Nanotechnology applications in food industry present practical approaches that help produce more tasty food with little calories, functional foods, and nutritional supplements and alter the fats and sugar contents of our foods with potential for many more applications. Consequently, this opens more windows to better control of many nutritional deficiencies as well as obesity and type 2 diabetes, especially among children and young adults who are addicted to fast food. With such potential, food producers, policy makers, health authorities, food scientists, and governments need to collaborate and make all possible efforts to fund and support research in different areas of food produced using nanotechnology. So far, consumers are not prepared to accept food produced using nanotechnology, mainly because information on the safety of such products are not enough. This issue needs to be addressed and researched well using suitable risk assessment methodologies. Consumers need to be assured, and involved as well, to avoid the "refusal state" that still exists against many safe products such as genetically modified organisms and irradiated food. There is the possibility that consumers could perceive that they will bear the potential risks posed by nanotechnology applications while the benefits will accrue mainly to others, such as food processors or farmers.
Prevalence of Overweight and Obesity among Adult Females in The United Arab Emirates.

Sheikh-Ismail LI, Henry CJ, Lightowler HJ, Aldhaheri AS, Masuadi E, Al Hourani HM.

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Abstract

The purpose of this present study was to investigate the prevalence of overweight and obesity in adult females in the United Arab Emirates. A total number of 724 females, age 20-90 years, were recruited from the seven Emirates. The sample was divided into three age groups, 20 to <30 years, 30 to <60 years and >60 years. Height, weight and mid-upper-arm circumference were measured in each subject. Overweight and obesity were defined as a body mass index of 25.0-29.9 kg/m² and >30 kg/m², respectively. The prevalence of overweight and obesity were 27% and 16%, respectively. The age group between 30 and <60 years had the highest prevalence of overweight (33%) and obesity (24%). In conclusion, the findings from our study suggest that a high proportion of adult females in the United Arab Emirates are overweight and obese. The consequences of this are a serious concern for public health and need to be addressed.

Analysis of the Relationship of Leptin, High-Sensitivity C-Reactive Protein, Adiponectin, Insulin, and Uric Acid to Metabolic Syndrome in Lean, Overweight, and Obese Young Females.

Abdullah AR, Hasan HA, Raigangar VL.

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Abstract

OBJECTIVE: Over the last decade there has been a steady rise in obesity and co-morbidity, but little is known about the rate of metabolic dysfunction among young adults in the United Arab Emirates. Various factors have been implicated as biomarkers of metabolic syndrome. The objective of this
study was to analyze the relationships of leptin, C-reactive protein (CRP), adiponectin, insulin, and uric acid to the metabolic syndrome components in lean, overweight, and obese young females.

**METHODS:** This was a cross-sectional study of 69 apparently healthy young females, who were classified according to their body mass index (BMI) (kg/m(2)) into three groups: lean (<or=25), overweight (>25 and <30), and obese (>or=30). Estimated biomarkers were: leptin, insulin, adiponectin, high-sensitivity [hs]-CRP, uric acid, blood sugar, high-density lipoprotein (HDL), low-density lipoprotein (LDL), total cholesterol, and triglycerides (TG). Anthropometric measures, blood pressure, and homeostasis model assessment-insulin resistance (HOMA-IR) were also measured.

**RESULTS:** Serum leptin, hs-CRP, insulin, and uric acid increased significantly (p < 0.01) with increased BMI. Only one significant correlation (p < 0.05) between the biomarkers and the metabolic syndrome components was found in lean subjects (leptin vs. waist circumference r = 0.48) as opposed to six in the obese group (hs-CRP vs. waist circumference and systolic blood pressure [SBP], r = 0.45 and r = -0.41, respectively; insulin vs. diastolic blood pressure [DBP], r = 0.47; adiponectin vs. blood sugar, r = -0.44; and uric acid vs. waist circumference and TG, r = 0.5 and r = 0.51, respectively).

**CONCLUSION:** Estimation of the levels of studied biomarkers could be an important tool for early detection of metabolic syndrome before the appearance of its frank components. Uric acid seems to be the most reliable biomarker to identify obese subjects with metabolic syndrome.


**Barriers to Weight Management among Emirati Women: A Qualitative Investigation of Health Professionals' Perspectives.**

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**Abstract**

Obesity and associated chronic diseases such as type 2 diabetes are highly prevalent in the United Arab Emirates. This qualitative study explored weight management barriers for Emirati women and strategies that can facilitate their weight management efforts. In-depth individual interviews
were conducted with a purposive sample of 29 primary health care physicians, dietitians, and nurses in Al Ain and Abu Dhabi medical districts. A modified grounded theory was used to guide data collection and analysis. Interview notes were analyzed thematically and inductively using the NVivo software. The three main emerging themes were barriers, motivators, and suggestions. A number of personal, health care system-related, social and physical barriers to weight management were identified. Participants' suggestions to facilitate weight management for Emirati women included: health awareness programs, policies that support lifestyle changes, and provision of the necessary resources. They recommended peer support and culturally-acceptable programs that provide a holistic approach to obesity prevention and management. This study has useful applications in the development of community-based interventions for the prevention and management of overweight and obesity among women in the United Arab Emirates.


Health Effects of Soda Drinking in Adolescent Girls in The United Arab Emirates.

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Abstract

BACKGROUND: There is a growing concern in the medical and scientific communities about the harmful effects associated with carbonated soft drinks. In several observational studies, intake of carbonated beverages was associated with reduced bone mass, decreased calcium level in the blood, and increased fracture risk. Soda drinks is a contributing factor in the prevalence and incidence of both dental caries and obesity especially among adolescents and young adults so they are more likely to be diagnosed as diabetic.

OBJECTIVES: This study aims at studying the prevalence of soda drinking among adolescent girls and discovering its health effects.
SUBJECTS AND METHODS: A cross-sectional study was designed, and a multistage random sample was performed in schools and colleges in Dubai. A total of 275 students were selected. A self-administrative questionnaire was distributed and blood, and urine samples were collected. Anthropometric measures and laboratory investigations (lipid profile, renal function, and blood and urine electrolytes) were done.

RESULTS: Age range was 10 to 22 years, with mean of 16.2 years. Prevalence of soda drinking was 81.8%. About half of the ever-drinkers (47.5%) have tried to quit drinking. There was no significant difference in body mass index between drinkers and nondrinkers (chi(2) = 2.1, P > .05). The concentration of blood sodium was less in drinkers, whereas the concentrations of urea and creatinine were not affected by drinking. There was no significant difference in blood calcium between drinkers and nondrinkers (P > .05). Drinkers were associated with higher risk of increased calcium and phosphorus excretion in urine (odds ratio, 1.1; 95% confidence interval, 0.38-3.3).

CONCLUSION: Soda drinking was associated with higher risk of obesity and decreasing level of blood calcium and increasing urinary calcium excretion, which may lead to osteoporosis later in life. Soda drinking did not have any effect on renal function tests in our study group.


Assessment of Dietary Practice among Diabetic Patients in The United Arab Emirates.


Department of Internal Medicine, Faculty of Medicine and Health Sciences, UAE University, Al-Ain, United Arab Emirates.

Abstract

OBJECTIVES: The aim of this study was to assess dietary practices and risk profile (hypertension, obesity, lipid profile and glycemic control) among people with diabetes in Al-Ain District, United Arab Emirates (UAE).

METHODS: During 2006, we performed a cross-sectional study of diabetic patients attending diabetic outpatient clinics at Tawam Hospital and primary health care centers in Al-Ain District. Subjects completed an interviewer-administered questionnaire, blood pressure, body mass index, percentage body fat and abdominal circumference were measured and
recorded and the most recent HbA1c levels and fasting lipid profile were identified.

RESULTS: A sample of 409 diabetic patients was recruited, 50% of whom were illiterate. Only 24% read food labeling. 76% reported being unable to distinguish clearly between low and high carbohydrate index food items and no one reported counting calorie intake. 46% reported that they had never been seen by dietician since their diagnosis. Their overall risk profile, notably body weight, lipid profile and blood pressure, was very unfavorable; more than half of the study sample had uncontrolled hypertension and uncontrolled lipid profile and the majority was overweight (36%) or obese (45%). Abdominal obesity was particularly common (59%). Only 31% had an HbA1c of less than 7%.

CONCLUSIONS: The dietary practices of diabetic patients in the UAE are inadequate and need improvement.


Prevalence of Overweight and Obesity among Children in The United Arab Emirates.

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Abstract

The aim of the study was to determine the prevalence of overweight and obesity in children in the United Arab Emirates (UAE). Secondary analysis was undertaken of data on 4381 children aged 5-17 years from the 1999 UAE-National Iodine Deficiency Surveillance Study. Data on weight and height from that study were used to calculate body mass index. The prevalence of overweight and obesity was estimated using International Obesity Task Force criteria. Overall, 944 (21.5%) of children were overweight and 601 (13.7%) of these were obese. More girls than boys were overweight (22.9% vs. 20.2%; P < or = 0.001). Non-citizen girls were more likely to be obese (odds ratios [OR] 1.767, 95% confidence intervals [CI] 1.48-2.102) than UAE girls. Boys in the rural areas had the lowest prevalence (23.6%) and were the least likely of all the children to be either overweight (OR 0.785, 95% CI 0.629-0.974) or obese 0.732 (95% CI 0.591-0.912). This study demonstrates a high prevalence of overweight in children in the UAE. Prompt actions are needed to initiate preventative and interventionist strategies to reverse the trend of this emerging epidemic.
Childhood Obesity in United Arab Emirates Schoolchildren: A National Study.

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Abstract

OBJECTIVE: The study assessed the national prevalence of obesity among schoolchildren in the United Arab Emirates (UAE).

SUBJECTS: A stratified 10% random sample of 16,391 children was drawn from 145,492 pupils in the UAE.

METHODS: Height and weight were measured by physicians and trained nurses, and the body mass index (BMI; weight (kg)/height (m)^2) was computed. BMIs for UAE were compared to recently published international standards.

RESULTS: Comparison of BMIs to international reference data revealed that UAE children are at increased risk for overweight (>25 kg m^-2 and ≥30 kg m^-2) and obesity (≥30 kg m^-2). For example, 10-year-old male UAE children had 1.7 times the rate of overweight compared to international standards and 1.9 times at 18 years. Similarly, female UAE children have 1.8 times the rate of overweight compared to international standards at 10 and 18 years of age. Obesity was 2.3-fold higher among UAE males at 14 years compared to international standards, and increased to 3.6 times at 18 years of age. Among UAE female children, obesity was same as males at 14 years, 2.3 times than the international standards. At 18 years of age, UAE female obesity was 1.9-fold higher than the international standard, nearly one-half the rate of obesity among UAE males at the same age.

CONCLUSION: The frequency of obesity among UAE youth is two to three times greater than the recently published international standard. Profound public health implications of childhood obesity for UAE children and young adults are seriously increased because of adult chronic disease processes (e.g. cardiovascular disease, diabetes) normally attendant to increased obesity rates.
Physical Activity and Levels of Inactivity in Adolescent Females Ages 11-16 Years in The United Arab Emirates.

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Abstract

The purpose of this study was to investigate patterns of physical activity and levels of inactivity in adolescent females in the United Arab Emirates (UAE). A total of 58 adolescent females, age 11-16 years, were recruited from two female-only governmental schools in Abu-Dhabi. Subjects were divided into two groups: 11-13 years (n = 22) and 14-16 years (n = 36). Physical activity patterns were determined from a 3-day activity diary. Total energy expenditure (TEE) was estimated using a factorial approach. The amount of physical activity was expressed as the physical activity level (PAL) and the activity-related energy expenditure (AEE). The number of hours spent watching television was estimated from the activity diaries. There were no significant differences in the energy expenditure parameters between age groups or between schooldays and weekends. PAL was low in both age groups. Television was the predominant leisure time pursuit. The number of hours per day spent watching television (median and interquartile range) was 2.5 (2.3-3.1) in 11-13 years and 2.5 (2.3-2.8) in 14-16 years. Television-watching was significantly higher during the weekend than schooldays: 11-13 years (P = 0.006) and 14-16 years (P < 0.001). In conclusion, the amount of physical activity undertaken by adolescent females in the UAE was very low. Cultural and weather restrictions and social change of the community in the UAE are not conducive to physical activity and play a major role in levels of physical inactivity. This may explain, in part, the rise in the incidence of obesity in this population.
Assessment of Obesity, Lifestyle, and Reproductive Health Needs of Female Citizens of Al Ain, United Arab Emirates.

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Abstract

This study was conducted to determine the reproductive and lifestyle characteristics in a representative sample (n = 535) of women in Al Ain, United Arab Emirates, to guide the development of health programmes for this population with rising affluence. A cross-sectional survey was carried out using the stratified two-stage sampling technique. Although most women were young, were pre-menopausal, did not smoke, reported good health status, and 84% (95% confidence interval [CI] 81-87%) reported being sufficiently active to meet expert recommendations, the prevalence of obesity (defined by body mass index \( \geq 30 \)) was very high (35%; 95% CI 31-39%) and many (28%; 95% CI 24-32%) reported having a chronic disease. The prevalence of obesity was associated positively with age and negatively with education (p < 0.001 for both). Postmenopausal women had significantly more chronic diseases, reported poor health more often, were less physically active (p < 0.001 for all), and had a higher percentage of body fat (p = 0.002) compared to premenopausal women. Health services should emphasize the prevention and treatment of obesity and improving the general health status of postmenopausal women.

Prevalence of Overweight among Adolescent Females in The United Arab Emirates.

Al-Hourani HM, Henry CJ, Lightowler HJ.

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Abstract

The purpose of the study was to investigate the prevalence of overweight in adolescent females in the United Arab Emirates (UAE). A total of 898 females, ages 11-18 years, were recruited from five of the seven Emirates
with the highest resident Emirati population. Height, weight, triceps skinfold thickness (TSF), and mid-upper-arm circumference were measured in each subject. Reference data from the National Health and Nutrition Examination Surveys (NHANES) were used for comparison. At risk for overweight or overweight were defined as a body mass index (BMI, kg/m(2)) >or=85-95th percentile and >or=95th percentile, respectively. Mean values for BMI and TSF at all ages were higher than the 50th percentile (median) of the NHANES reference data. Using the BMI classification, 14% and 9% of all subjects were classified as at risk for overweight or overweight, respectively. The proportion of subjects at risk for overweight ranged between 7-19% and the prevalence of overweight ranged between 6-15%. The proportion of subjects with a BMI >or=85 percentile ranged from 15% at age 17 years to 33% at age 11 years. Furthermore, 27% and 28% of subjects ages 11 and 12 years, respectively, were above the TSF 90th percentile. These two age groups also showed a high prevalence of overweight using the BMI classification. In conclusion, the findings from our study suggest that a high proportion of adolescent females in the UAE are overweight or at risk for overweight. The consequences of this are a serious concern for public health and need to be addressed.


**Obesity and Low Back Pain.**

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**Abstract**

Obesity and low back pain (LBP) are common health problems among patients attending Primary Health Care (PHC) in general practice at the United Arab Emirates (UAE). The objective of this study was to determine whether obesity is associated with low back pain. A cross-sectional face-to-face interview questionnaire survey was conducted. The questionnaire was a modified version of the Roland-Morris Scale for evaluating back disability. The interviews were conducted in Arabic by qualified nurses. A multi-stage stratified sample 1,103 UAE national aged 25-65 years, who attended PHC clinics for any reason, were invited to participate but only 802 subjects were eligible to be included for the statistical analysis. The data were analyzed using univariate and multivariate statistical methods. Of the 802
subjects, 428 (53.4%) were males and 374 (46.6%) were females. The mean age of the males was 40.5 +/- 11.5 years and females was 38.2 +/- 10.5 years (p = 0.004). The mean BMI of the males was 26.4 +/- 7.4 and females was 27.8 +/- 5.6 (p = 0.002). The overall prevalence of LBP in the present study was 64.9% (95% confidence interval, 61.0-68.8) and respectively, 56.1% in males and 73.8% in females. The results revealed that there was association between BMI and some socio-demographic variables with the respect of with low back pain. Back pain had more influence on the life style habits on females than in males. Stepwise multiple regression analysis showed that only age (p < 0.0001), educational level (p = 0.001), gender (p = 0.002), place of living (p = 0.019), BMI (p < 0.0001), and housing condition (p = 0.02) had significant effect on the presence of LBP in patients. The present study showed that obesity is moderately associated with low back pain.


**Lifestyle Factors Associated with Obesity among Male University Students in The United Arab Emirates**

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**Abstract:**

A cross-sectional survey of 300 male university students (18-25 years) in the United Arab Emirates was carried out to study the relationship between obesity and some lifestyle factors. Obesity was determined using body mass index (weight/height2), with cut-off of <25 and =25, to represent non-obese
and obese students, respectively. The overall prevalence of obesity was 35.7 per cent, which was higher than their counterpart female students. The risk of obesity was found to be greater among those who had a family history of obesity (relative risk, RR=1.88), watched television for more than four hours a day (RR=1.31), were smokers (RR=1.35), were not practising sport (RR=1.77) and had a car (RR=1.23). However, only family history of obesity was found to be statistically significant. The study suggests that social and lifestyle factors are important factors for the occurrence of obesity among male university students.


**Pregnancy Outcome in Women with Morbid Obesity.**

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**Abstract**

**OBJECTIVE:** To study the effects of morbid obesity defined as a first trimester maternal body mass index of >40 on the perinatal outcome.

**METHODS:** One hundred and eighty-eight singleton pregnancies of women with first trimester BMI >40 who delivered at Al-Mafraq Hospital, Abu Dhabi during 1996-1998 were studied. A control group of normal body mass index matched for age and parity were selected and the perinatal variables were compared between groups. Morbidly obese women with diabetes and hypertension antedating the index pregnancy were later excluded and the data were re-analyzed.

**RESULTS:** Morbidly obese women were noted to have significantly adverse perinatal outcomes including hypertensive disorders of pregnancy (28.8 vs. 2.9%, P<0.0001), gestational diabetes (24.5 vs. 2.2%, P<0.0001), cesarean section (15.2 vs. 9.3%, P<0.05) and macrosomia (32.6 vs. 9.3%, P<0.001) compared to non-obese women. However, we noted a significantly lower rate of prematurity in the obese group (0.5 vs. 5.3%, P<0.001). Even when morbidly obese women with (a) diabetes and hypertension antedating the index pregnancy and (b) those who developed gestational diabetes and/or pregnancy-induced hypertension during the index pregnancy were excluded from the analysis, significant differences in the perinatal outcomes still persisted.

**CONCLUSION:** Morbid obesity appears to be an independent risk factor for adverse perinatal outcome.
Prevalence of Obesity among School Children in The United Arab Emirates.

Al-Haddad F, Al-Nuaimi Y, Little BB, Thabit M.
Saif Bin Ghubash Hospital, Ras Al Khaimah, United Arab Emirates.

Abstract

The objective of this study was to investigate the prevalence of obesity among schoolchildren in the United Arab Emirates, using the body mass index (BMI) as the indicator. The sample included 1,787 males and 2,288 females 6-16 years. Physicians and trained nurses measured height and weight, and the BMI (kg/m(2)) was calculated. The 50(th) centile of the BMI was not different from that for the US. Similarly, the height and weight of UAE children approximate the US reference data. About 8% of UAE boys and girls have BMI's >/=95(th) percentile of US reference values. Using the 85(th) percentile as the criterion, 16.5% and 16.9% of males and females, respectively, are classified as overweight. This composite figure does not differ from the expected 15% based on reference data. The data thus indicate that high levels of obesity are present among UAE children and adolescents. These findings have public health implications for this generation of UAE youth during their adult years, including heart disease and diabetes, because the rate of morbid obesity is approximately twice that expected in reference data. Am. J. Hum. Biol. 12:498-502, 2000.
Prevalence of Type 2 Diabetes and Other Cardiovascular Risk Factors in A Semirural Area in Yemen.

Gunaid AA, Assabri AM.

Abstract

The study determined the prevalence of type 2 diabetes, abnormal glucose tolerance and other cardiovascular risk factors in a sample of 250 adults aged > or = 35 years in a semirural area near Sana'a, the capital of Yemen. The overall crude prevalence of diabetes was 10.4% (95% CI: 6.6%-14.2%) and the age-standardized rate was 6.3% (95% CI: 5.4%-7.2%). The age-standardized rate of having either impaired fasting glucose or impaired glucose tolerance was 9.0% (95% CI: 6.0%-12.0%) and the age-standardized prevalence of hypertension was 14.2% (95% CI: 13.0%-16.0%). Age and waist circumference were independently related to total glucose intolerance. The observed high frequency of central obesity suggests a dietary origin for these adverse health conditions.
RESULTS: The mean age of the children was 12.6 +/- 2 years. Overweight was 6.2% and obesity was 1.8%. The prevalence of overweight and obesity was higher among private schoolchildren (p<000), females (p = 0.002), children with a sedentary lifestyle (p = 0.001) and children with a family history of obesity (p = 0.013). Also there is a positive association of overweight/obesity with the education level of the parents (p = 0.013 for the father and p = 0.19 for the mother) and consumption of unhealthy foods.

CONCLUSION: Prevalence of overweight and obesity is low and positively associated with the education level of the father, private schooling, sedentary lifestyle, and with students who took unhealthy meals.


Type II Diabetes Mellitus and Impaired Glucose Tolerance in Yemen: Prevalence Associated Metabolic Changes and Risk Factors.

Al-Habori M, Al-Mamari M, Al-Meer A.

Abstract

OBJECTIVE: To investigate the prevalence of type II Diabetes Mellitus (DM) and impaired glucose tolerance (IGT) and identify the metabolic abnormalities and risk factors associated with these conditions in an urban city of Yemen.

RESEARCH DESIGN AND METHODS: Cross-sectional, population-based study investigating 498 adults (245 males and 253 females) aged 25-65 years. The 1999 modified World Health Organization criteria were adopted for the diagnosis of Diabetes Mellitus and IGT. A standard questionnaire was applied and blood lipids, blood pressure, body mass index (BMI) and waist/hip ratio (WHR) were determined.

RESULTS: The overall prevalence of type II Diabetes Mellitus was 4.6% (7.4% in males and 2% in females). Impaired glucose tolerance (IGT) and impaired fasting glucose (IFG) were found in 2% and 2.2% of the study population. Factors independently related to any abnormality in glucose tolerance, using logistic regression analysis, were sex, hyperlipidaemia, hypertriglyceridaemia, and hypertension; whereas sex and age related to DM. More than 80% of the type II diabetics were over the age of 40, 35% being hyperlipidaemic, 22% being hypertensive and 18% obese. Sixty percent of IGT subjects were hyperlipidaemic and 20% were obese.
Approximately 78% of obese individuals (≥30 kg/m²) had normal glucose tolerance.

**CONCLUSION:** The prevalence of type II DM and its potential increase reflected by the high prevalence of obesity in normal glucose tolerance subjects in the Yemeni population constitutes a major public health problem.
Prevalences of Overweight, Obesity, Hyperglycaemia, Hypertension and Dyslipidaemia in the Gulf: Systematic Review

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Abstract

OBJECTIVES: To examine the prevalence of risk factors for diabetes and its complications in the Co-operation Council of the Arab States of the Gulf (GCC) region.

DESIGN: Systematic review:

Setting Co-operation Council of the Arab States of the Gulf (GCC) states (United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar, Kuwait).

Participants Residents of the GCC states participating in studies on the prevalence of overweight and obesity, hyperglycaemia, hypertension and dyslipidaemia.

Main outcome measures Prevalences of overweight, obesity and hyperglycaemia, hypertension and hyperlipidaemia.

RESULTS: Forty-five studies were included in the review. Reported prevalences of overweight and obesity in adults were 25–50% and 13–50%, respectively. Prevalence appeared higher in women and to hold a non-linear association with age. Current prevalence of impaired glucose tolerance was estimated to be 10–20%. Prevalence appears to have been increasing in recent years. Estimated prevalences of hypertension and dyslipidaemia were few and used varied definitions of abnormality, making review difficult, but these also appeared to be high and increasing.

CONCLUSIONS: There are high prevalences of risk factors for diabetes and diabetic complications in the GCC region, indicative that their current
management is suboptimal. Enhanced management will be critical if escalation of diabetes-related problems is to be averted as industrialization, urbanization and changing population demographics continue.


**Strategy to Combat Obesity and to Promote Physical Activity in Arab Countries.**


**Abstract**

Obesity has become a major public health problem in the Arab countries, creating a health and economic burden on these countries' government services. There is an urgent need to develop a strategy for prevention and control of obesity. The third Arab Conference on Obesity and Physical Activity was held in Bahrain in January 2010, and proposed the Strategy to Combat Obesity and Promote Physical Activity in Arab Countries. This strategy provides useful guidelines for each Arab country to prepare its own strategy or plan of action to prevent and control obesity. The strategy focused on expected outcomes, objectives, indicators to measure the objectives, and action needs for 9 target areas: child-care centers for preschool children, schools, primary health care, secondary care, food companies, food preparation institutes, media, public benefit organizations, and the workplace. Follow-up and future developments of this strategy were also included.
The Comparison of Prevalence of Diabetes and Hypertension between Rural Areas of Fars and Rural Areas of EMRO Region

hossain faramarzi, P Bagheri, abbas bahrampour, leila halimi

Abstract

Introduction: Since monitoring and evaluation of diabetes and hypertension in individuals/the population greatly contribute to improving both clinical care and following identification of disease in the region and even the country, and to manage prevent and control diabetes and hypertension and their risk factors, the goal of this study was to compare disease status in rural areas of Fars province and rural areas of the EMRO region.

Materials and Methods: The current study is a descriptive-analytic cross sectional one that has been conducted in 2008 by randomized cluster sampling, based on data obtained from an extensive provincial screening plan for adults aged over 30 years in rural areas of Fars province. Based on these data, the prevalence of diabetes, hypertension and their risk factors were calculated and the relationship between diabetes and hypertension was determined by risk factors including age, sex, family history, and MI using Chi square and t-test and SPSS software version 17 and Minitab version, prevalences in 15 is rural areas were compared with the ones in EMRO region countries.

Results: The prevalence of hypertension and diabetes rural areas of Fars province were calculated to be 21.8% and 11.14% respectively as compared with rural areas of EMRO region countries. The prevalence of diabetes was also lower on the average and the prevalence of obesity (BMI>30), was less than other countries in the region and Iran.

Conclusion: In general, although, the prevalence obtained in this study was lower than other regional countries, raising a waredness in high rish groups affected public commitment to basic information transmitting to high risk classes of the society should be taken into account and commitment by the
health system administration and the government to sustain monitoring of health, to ensure curtailing the burden of diabetes and hypertension and associated risk factors among countries of the region.


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Abstract

This paper reviews studies on the prevalence of overweight, obesity and related nutrition-related non-communicable diseases in Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the UAE. Obesity is common among women; while men have an equal or higher overweight prevalence. Among adults, overweight plus obesity rates are especially high in Kuwait, Qatar and Saudi Arabia, and especially among 30-60 year olds (70-85% among men; 75-88% among women), with lower levels among younger and elderly adults. The rate of increase in obesity was pronounced in Saudi Arabia and Kuwait. Prevalence of obesity is high among Kuwaiti and Saudi pre-schoolers (8-9%), while adolescent overweight and obesity are among the highest in the world, with Kuwait having the worst estimates (40-46%); however, comparison of child data is difficult because of differing standards. Among nutrition-related non-communicable diseases, hypertension and diabetes levels are very high and increase with age, with the UAE performing the worst because of a rapid rate of increase between 1995 and 2000. Additional monitoring of the prevalence of metabolic syndrome and cancers is necessary. Nationally representative longitudinal surveys with individual, household and community-level information are needed to determine the importance of various factors that contribute to these troubling trends.
Prevalence and Etiology: Middle East and North Africa (MENA) Countries

Hafez Elzein and Sima Hamadeh

Abstract

The increasing prevalence of obesity at an alarming rate in many parts of the world probably has multiple underlying etiologies. Obesity is generally attributed to a combination of genetic and/or environmental factors. In children, genetic, prenatal and perinatal factors have a great effect on individual predisposition, practices and behaviors, contributing to a long-term positive energy balance.

Childhood Obesity in the Middle East: A Review.

Mirmiran P, Sherafat-Kazemzadeh R, Jalali-Farahani S, Azizi F.

Abstract

Accurate and comprehensive data on the extent of the problem of childhood obesity is lacking in countries of the Middle East. This review, based on a Medline search, summarizes the prevalence of obesity among children and adolescents in the region during 1990-2007. The highest rates of obesity and overweight were reported from Bahrain and the lowest from the Islamic Republic of Iran. Studies from Saudi Arabia, Islamic Republic of Iran and Kuwait showed an upwards trend in childhood obesity compared with a decade ago. Lack of uniformity in reference standards and reporting systems renders comparisons difficult. Nevertheless, the high prevalence of childhood obesity in the Middle East should stimulate policy-makers in the region to set up effective national and regional surveillance systems.
Gender Differences In Prevalence of the Metabolic Syndrome in Gulf Cooperation Council Countries: A Systematic Review.

Mabry RM, Reeves MM, Eakin EG, Owen N.

Abstract

AIMS: To systematically review studies documenting the prevalence of the metabolic syndrome among men and women in Member States of the Gulf Cooperative Council (GCC; Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates)-countries in which obesity, Type 2 diabetes and related metabolic and cardiovascular diseases are highly prevalent.

METHODS: A search was conducted on PubMed and CINAHL using the term 'metabolic syndrome' and the country name of each GCC Member State. The search was limited to studies published in the English language. The metabolic syndrome was defined according to the Third Adult Treatment Panel (ATPIII) of the National Cholesterol Education Program (NCEP) and/or International Diabetes Federation (IDF) definitions. The methodological quality of each study was evaluated based on four criteria: a national-level population sample; equal gender representation; robustness of the sample size; an explicit sampling methodology.

RESULTS: PubMed, CINAHL and reference list searches identified nine relevant studies. Only four were considered high quality and found that, for men, the prevalence of the metabolic syndrome ranged from 20.7% to 37.2% (ATPIII definition) and from 29.6% to 36.2% (IDF definition); and, for women, from 32.1% to 42.7% (ATPIII definition) and from 36.1% to 45.9% (IDF definition).

CONCLUSIONS: Overall, the prevalence of the metabolic syndrome in the GCC states is some 10-15% higher than in most developed countries, with generally higher prevalence rates for women. Preventive strategies will require identifying socio-demographic and environmental correlates (particularly those influencing women) and addressing modifiable risk behaviors, including lack of physical activity, prolonged sitting time and dietary intake.
Nutrition Transition and Cardiovascular Disease Risk Factors in Middle East and North Africa Countries: Reviewing the Evidence.

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Department of Epidemiology and Population Health, American University of Beirut, Lebanon.

Abstract

AIM: To examine the burden of cardiovascular disease (CVD) risk factors in Middle East and North Africa countries and their associations with dietary behaviors as nutrition transition is unfolding in the region.

DATA: Data on CVD risk factors were collected from scholarly papers and a systematic review of published articles was performed. Dietary patterns were derived from the WHO Food and Agriculture Organization Statistical Databases.

RESULTS: Wide variations exist across countries in the prevalence of CVD risk factors, namely obesity, diabetes, hypertension, hyperlipidemia, smoking and physical inactivity, with some countries showing high values of certain factors which approach those observed in the developed world. In particular, obesity prevalence rates have reached alarming levels, particularly among women in the oil-rich countries (over 40%), making it the most pressing health concern in the region. Trends in the dietary pattern illustrated a consistent rise in total energy supply by approximately 730 kcal per capita per day between 1970 and 2005. Dietary patterns showed an increased consumption of fat and animal protein and a decreased intake of carbohydrates, particularly whole grain cereals, and fresh fruits and vegetables.

CONCLUSION: Regional differences were attributed to differences in lifestyle, occupation and a shift from traditional food habits. Our understanding of the CVD disparities across various geographic regions is key to our effort in planning relevant intervention programs. Public health efforts should focus on obesity, physical inactivity and unhealthy dietary practices. The success of these interventions depends on governmental commitment, multisectoral partnership and a consideration of the sociocultural norms of the target population.
Obesity, the Metabolic Syndrome, and Type 2 Diabetes in Developing Countries: Role of Dietary Fats and Oils.

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Abstract

Developing countries are undergoing rapid nutrition transition concurrent with increases in obesity, the metabolic syndrome, and type 2 diabetes mellitus (T2DM). From a healthy traditional high-fiber, low-fat, low-calorie diet, a shift is occurring toward increasing consumption of calorie-dense foods containing refined carbohydrates, fats, red meats, and low fiber. Data show an increase in the supply of animal fats and increased intake of saturated fatty acid (SFAs) (obtained from coconut oil, palm oil, and ghee [clarified butter]) in many developing countries, particularly in South Asia and South-East Asia. In some South Asian populations, particularly among vegetarians, intake of n-3 polyunsaturated fatty acids (PUFAs) (obtained from flaxseed, mustard, and canola oils) and long-chain (LC) n-3 PUFAs (obtained from fish and fish oils) is low. Further, the effect of supplementation of n-3 PUFAs on metabolic risk factors and insulin resistance, except for demonstrated benefit in terms of decreased triglycerides, needs further investigation among South Asians. Data also show that intake of monounsaturated fatty acids (MUFAs) ranged from 4.7% to 16.4%en in developing countries, and supplementing it from olive, canola, mustard, groundnut, and rice bran oils may reduce metabolic risk. In addition, in some developing countries, intake of n-6 PUFAs (obtained from sunflower, safflower, corn, soybean, and sesame oils) and trans-fatty acids (TFAs) is increasing. These data show imbalanced consumption of fats and oils in developing countries, which may have potentially deleterious metabolic and glycemic consequences, although more research is needed. In view of the rapid rise of T2DM in developing countries, more aggressive public health awareness programs coupled with governmental action and clear country-specific guidelines are required, so as to promote widespread use of healthy oils, thus curbing intake of SFAs and TFAs, and increasing intake of n-3 PUFAs and MUFAs. Such actions would contribute to decelerating further escalation of "epidemics" of obesity, the metabolic syndrome, and T2DM in developing countries.
Global Prevalence and Trends of Overweight and Obesity among Preschool Children$^{1,2,3,4}$

Mercedes de Onis, Monika Blössner, Elaine Borghi

Abstract

BACKGROUND: Childhood obesity is associated with serious health problems and the risk of premature illness and death later in life. Monitoring related trends is important.

OBJECTIVE: The objective was to quantify the worldwide prevalence and trends of overweight and obesity among preschool children on the basis of the new World Health Organization standards.

DESIGN: A total of 450 nationally representative cross-sectional surveys from 144 countries were analyzed. Overweight and obesity were defined as the proportion of preschool children with values >2 SDs and >3 SDs, respectively, from the World Health Organization growth standard median. Being “at risk of overweight” was defined as the proportion with values >1 SD and ≤2 SDs, respectively. Linear mixed-effects modeling was used to estimate the rates and numbers of affected children.

RESULTS: In 2010, 43 million children (35 million in developing countries) were estimated to be overweight and obese; 92 million were at risk of overweight. The worldwide prevalence of childhood overweight and obesity increased from 4.2% (95% CI: 3.2%, 5.2%) in 1990 to 6.7% (95% CI: 5.6%,
7.7%) in 2010. This trend is expected to reach 9.1% (95% CI: 7.3%, 10.9%), or ≈60 million, in 2020. The estimated prevalence of childhood overweight and obesity in Africa in 2010 was 8.5% (95% CI: 7.4%, 9.5%) and is expected to reach 12.7% (95% CI: 10.6%, 14.8%) in 2020. The prevalence is lower in Asia than in Africa (4.9% in 2010), but the number of affected children (18 million) is higher in Asia.

CONCLUSIONS: Childhood overweight and obesity have increased dramatically since 1990. These findings confirm the need for effective interventions starting as early as infancy to reverse anticipated trends.

EMHJ (Eastern Mediterranean Health Journal), 2010;16(2).

Practices in Child Growth Monitoring in the Countries of the Eastern Mediterranean Region
Abul-Fadl,1 K. Bagchi 2 and L. Cheikh Ismail

Abstract

Growth reference charts are among the most sensitive and valuable tools for assessing the health and development of children. A questionnaire survey was answered by 16 of the 21 ministries of health in the Eastern Mediterranean Region countries (EMR) about their use of growth charts for children under 5 years. Most of the countries (13/16) used the NCHS/WHO charts and weight-for-age was the most commonly used. Charts for height-for-age and head circumference-for-age were less commonly used. Problems in the use of charts were identified. The introduction of the new WHO Child Growth Standards, based on exclusively breastfed babies, is a unique opportunity to support growth monitoring and optimal feeding practices in EMR.


Stunting is a Major Risk Factor for Overweight: Results from National Surveys in 5 Arab Countries.
El Taguri A, Besmar F, Abdel Monem A, Betilmal I, Ricour C, Rolland-Cachera MF.
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Abstract
We analysed data on overweight and stunting from large national surveys performed between 2001 and 2004 in 5 Arab countries (Djibouti, Libyan Arab Jamahiriya, Morocco, Syrian Arab Republic and Yemen). Overweight and stunting were defined according to new WHO growth standards. Overweight ranged from 8.9% in Yemen to 20.2% in Syrian Arab Republic. The risk ratio (RR) for overweight in stunted children ranged from 2.14 in Djibouti to 3.85 in Libyan Arab Jamahiriya. RR ranged from 0.76 in mildly stunted children of Yemen to 7.15 in severely stunted children in Libyan Arab Jamahiriya. Etiological fraction in the population ranged from 7.49% to 69.76%.


Optimal Cut-Points for Body Mass Index, Waist Circumference and Waist-To-Hip Ratio Using the Framingham Coronary Heart Disease Risk Score in an Arab Population of the Middle East.

Al-Lawati JA, Barakat NM, Al-Lawati AM, Mohammed AJ.

Abstract

We aimed to determine the gender-specific optimal cut-points for body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR) associated with risk of cardiovascular disease, using Framingham risk score and receiver-operating characteristic (ROC) analysis, among Omani Arabs. Nine percent of men, compared to 3% of women, had a 10-year total coronary heart disease (CHD) risk $\geq 20\%$. In both genders, WHR was a better predictor of CHD (area under the ROC curve 0.771 for men and 0.802 for women), followed by WC (0.710 and 0.727) and BMI (0.601 and 0.639), respectively. For a 10-year CHD risk of $\geq 20\%$, the optimal cut-points to assess adiposity in Omani men and women were $\geq 22.6$ and $\geq 22.9$ kg/m$^2$ for BMI, $\geq 78.5$ and $\geq 84.5$ cm for WC, and $> 0.96$ and $> 0.98$ for WHR, respectively. To identify obesity among Omani Arabs, different cut-points for BMI, WC and WHR than the currently recommended ones are needed.
Obesity and the Metabolic Syndrome in Developing Countries.

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Abstract

CONTEXT: Prevalence of obesity and the metabolic syndrome is rapidly increasing in developing countries, leading to increased morbidity and mortality due to type 2 diabetes mellitus (T2DM) and cardiovascular disease.

EVIDENCE ACQUISITION: Literature search was carried out using the terms obesity, insulin resistance, the metabolic syndrome, diabetes, dyslipidemia, nutrition, physical activity, and developing countries, from PubMed from 1966 to June 2008 and from web sites and published documents of the World Health Organization and Food and Agricultural Organization.

EVIDENCE SYNTHESIS: With improvement in economic situation in developing countries, increasing prevalence of obesity and the metabolic syndrome is seen in adults and particularly in children. The main causes are increasing urbanization, nutrition transition, and reduced physical activity. Furthermore, aggressive community nutrition intervention programs for undernourished children may increase obesity. Some evidence suggests that widely prevalent perinatal undernutrition and childhood catch-up obesity may play a role in adult-onset metabolic syndrome and T2DM. The economic cost of obesity and related diseases in developing countries, having meager health budgets is enormous.

CONCLUSIONS: To prevent increasing morbidity and mortality due to obesity-related T2DM and cardiovascular disease in developing countries, there is an urgent need to initiate large-scale community intervention programs focusing on increased physical activity and healthier food options, particularly for children. International health agencies and respective government should intensively focus on primordial and primary prevention programs for obesity and the metabolic syndrome in developing countries.
Comparison of BMI-For-Age in Adolescent Girls in 3 Countries of the Eastern Mediterranean Region.

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Abstract

International comparisons of adolescent overweight and obesity are hampered by the lack of a single agreed measurement reference. We compared 3 BMI-for-age references on samples of adolescent girls from Egypt, Kuwait and Lebanon. Overweight and obesity was highest in Kuwait and lowest in Lebanon. Performance of the 3 standards differed only slightly although one was particularly applicable in country-to-country comparisons.

Childhood Overweight, Obesity, and the Metabolic Syndrome in Developing Countries.

Kelishadi R.

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Abstract

The incidence of chronic disease is escalating much more rapidly in developing countries than in industrialized countries. A potential emerging public health issue may be the increasing incidence of childhood obesity in developing countries and the resulting socioeconomic and public health burden faced by these countries in the near future. In a systematic review carried out through an electronic search of the literature from 1950-2007, the author compared data from surveys on the prevalence of overweight, obesity, and the metabolic syndrome among children living in developing countries. The highest prevalence of childhood overweight was found in Eastern Europe and the Middle East, whereas India and Sri Lanka had the lowest prevalence. The few studies conducted in developing countries showed a considerably high prevalence of the metabolic syndrome among
youth. These findings provide alarming data for health professionals and policy-makers about the extent of these problems in developing countries, many of which are still grappling with malnutrition and micronutrient deficiencies. Time trends in childhood obesity and its metabolic consequences, defined by uniform criteria, should be monitored in developing countries in order to obtain useful insights for primordial and primary prevention of the upcoming chronic disease epidemic in such communities.


Overweight and Obesity in the Eastern Mediterranean Region: Can We Control It?

Musaiger AO.

Abstract

Obesity has become an epidemic problem worldwide, and in the Eastern Mediterranean Region the status of overweight has reached an alarming level. A prevalence of 3%-9% overweight and obesity has been recorded among preschool children, while that among schoolchildren was 12%-25%. A marked increase in obesity generally has been noted among adolescents, ranging from 15% to 45%. In adulthood, women showed a higher prevalence of obesity (35%-75%) than men (30%-60%). Several factors, such as change in dietary habits, socioeconomic factors, inactivity and multiparity (among women) determine obesity in this Region. There is an urgent need for national programmes to prevent and control obesity in the countries of the Region.
Nutrition-Related Health Patterns in the Middle East.
Galal O.

Abstract

Nutritionally-related health patterns in the Middle East have changed significantly during the last two decades. The main forces that have contributed to these changes are the rapid changes in the demographic characteristics of the region, speedy urbanization, and social development in the absence of steady and significant economic growth. Within these changes, the Middle East has the highest dietary energy surplus of the developing countries. The population in the region has a low poverty prevalence, at 4%. The region's child malnutrition rate is 19%, suggesting that nutrition insecurity remains a problem due mainly to poor health care and not due to inadequate dietary energy supply or poverty. The one extreme country, Afghanistan, has an extremely high dietary energy deficit of 490 kilocalories and a 40% malnutrition rate. Iran and Egypt have relatively high child malnutrition rates of 39 and 16% respectively, but belong to the dietary energy surplus group. Morocco and the United Emirates have the lowest child malnutrition rates of 6 and 8% respectively. In the Middle East, as in other parts of the world, large shifts have occurred in dietary and physical activity patterns. These changes are reflected in nutritional and health outcomes. Rising obesity rates and high levels of chronic and degenerative diseases are observed. These pressing factors that include the nature and changes in the food consumption pattern, globalization of food supply, and the inequity in health care will be discussed.

Lifestyle and Ethnicity Play a Role in All-Cause Mortality.
Lubin F, Lusky A, Chetrit A, Dankner R.

Abstract

The Israeli population is characterized by its marked ethnic diversity. These ethnic groups (originating mainly from Yemen/Aden, the Middle East, North Africa and Europe/America) have kept traditional distinct lifestyle habits and exhibit different morbidity and mortality trends. The aim of the present study was to evaluate the associations among ethnic background, lifestyle patterns and 18-y all-cause mortality. A subgroup of 632 individuals aged
41-70 y, drawn from a larger stratified cohort from the Israel Glucose Intolerance, Obesity and Hypertension study, were personally interviewed, using a quantified food-frequency questionnaire, including most food items consumed by the different subpopulations in Israel. Physical activity was also evaluated, as well as smoking status. Weight, height and blood pressure (BP) measurements were taken. Predictors of mortality were assessed using Cox proportional hazards models. Over the 18-y follow-up period, 151 deaths occurred (24%). In comparison with Yemenites, the adjusted hazard ratios (HR) for all cause mortality were HR = 1.77 [95% confidence interval (CI): 1.01-3.09] for Europeans/Americans; HR = 1.63 (95% CI: 0.89-2.99) for those from a Middle Eastern background; and HR = 1.56 (95% CI: 0.82-2.97) for North Africans. Mortality risk was 43% lower among those consuming > or =25 g of dietary fiber daily [HR = 0.57 (95% CI: 0.41-0.72)], and 42% lower for those consuming <300 mg/d of cholesterol [HR = 0.58 (95% CI: 0.34-0.96)]. Accumulating an average of 0.5 h/d of moderate physical activity reduced mortality by 47% [HR = 0.53 (95% CI: 0.29-0.97)]. Smoking increased systolic BP, older age and male sex increased mortality risk. We conclude that in our study, although ethnic origin and lifestyle habits are interrelated, each affects mortality independently.


Obesity In Women from Developing Countries.

Martorell R, Khan LK, Hughes ML, Grummer-Strawn LM.

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Abstract

OBJECTIVES: The key objective was to estimate obesity (>=30 kg/m^2) in women 15-49 y from developing countries. A second objective was to study how obesity varies by educational level and by residence in urban and rural areas. A third objective was to investigate how national incomes shape the relationship between obesity and eduction or residence.DESIGN: The analyses use cross-sectional data from nationally representative surveys from developing countries carried out in the last decade. Most of the surveys were Demographic Health Surveys (DHS). Data from a survey from the USA are used for comparison. Setting:The 39 surveys used come from 38 d
SUBJECTS: A total of 147,938 non-pregnant women 15-49 y were included in the analyses.

RESULTS: The percentage of obese women was 0.1% in South Asia, 2.5% in Sub-Saharan Africa, 9.6% in Latin America and the Caribbean, 15.4% in Central Eastern Europe/Commonwealth of Independent States (CEE/CIS), 17.2% in the Middle East and North Africa, and 20.7% in the USA. Levels of obesity in countries increased sharply until a gross national product of US$1500 per capita (1992 values) was reached and changed little thereafter. In very poor countries, such as in Sub-Saharan Africa, obesity levels were greatly concentrated among urban and higher educated women. In more developed countries, such as those in Latin America and the CEE/CIS regions, obesity levels were more equally distributed in the general population.

CONCLUSIONS: Based on the analyses presented and on a review of the literature, it is concluded that obesity among women is a serious problem in Latin America and the Caribbean, the Middle East and North Africa, and the CEE/CIS region. Obesity is less of a concern in Sub-Saharan Africa, China and South Asia. Obesity levels increased over time in most of the limited number of countries with data, but at varying rates. Rising national incomes in developing countries and increased 'Westernization' will most likely lead to increased levels of obesity in the future.

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