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Prevalence of Obesity and Overweight among Majmaah University Students

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ABSTRACT

In recent couple of decades the food preferences among young adults have changed from traditional food to fast food. These trends resulted in obesity among an important section of future generation of Kingdom of Saudi Arabia. The aim of this study was to assess Body mass index (BMI) and abdominal obesity among Majmaah University male and female university students. Participants (N=303), 151 women and 152 men, were systematically chosen from various colleges of Majmaah university. The anthropometric measurements (weight and height) and abdominal circumference with Gulick tape were taken. Results indicate that men and women are 12.5% are thin, 29.4% are normal and 58.1% are obese. Among 303 total samples, 31% women were categorized as obese as compared to men who were only 27% as per BMI. The waist circumference measure revealed 27.8 % categorized in substantial high health risk for girls and 26.2 % for boys. The percentage of obesity among students in first level students was high (14.9%) as compared to the 9th level students (1%).

Keywords: Body weight, Overweight, Obesity, Body

INTRODUCTION

Obesity is a major risk factor for cardiovascular disease in the general population.¹²³ Cardiovascular disease is a leading cause of mortality and morbidity in developed and developing countries.⁴ Obesity is recognized as a major determinant of many other such as cancers, gallbladder diseases, respiratory problems and musculoskeletal disorders. It also induces type 2 diabetes mellitus (DM). Moderate weight loss (10% to 15% of body weight) has been shown to decrease health risks and medical problems in 90% of obese patients. This is due to improvements of their heart function, blood pressure, glucose tolerance and lipid profiles, as well as decreased requirements for medication, decreased incidence and duration of hospitalization, and decreased postoperative complications.⁵

Although BMI and waist circumference are the recommended⁷ and most clinically feasible means of identifying patients who are overweight or obese in clinical practice.

Waist circumference is another clinically feasible measurement that may be used independently or in addition to BMI⁸ to assess weight-related health risk. The World Health Organization has identified sex-specific waist circumference values that signify increased health risk (≥80 cm for women, ≥94 cm for men) and substantially increased health risk (≥88 cm for women, ≥102 cm for men).⁶ Waist circumference correlates well with BMI (r=.84”.88), requires only a tape measure, and provides an estimate of abdominal fat.⁹,¹⁰ Abdominal fat is more strongly associated with health risk than fat stored in other regions of the body.¹¹
RESEARCH PROBLEM AND SIGNIFICANCE

Research problem

The Saudi population is a young population (60% are 20 years or younger). It is, therefore, anticipated that the prevalence of DM will increase rapidly in the near future and become among the highest in the world, especially with the high prevalence of obesity in school children. Some estimate that it was 40–50% in 2020.19

Significance

A. Estimate the prevalence of obesity among university students.
B. Identify the high risk group.
C. Based on the results appropriate policies can be developed to curb the obesity epidemic.

Research objective

1. Primary objective is to estimate the prevalence of obesity among university students.
2. Secondary objective is to compare the relative high risk group.

Literature Review

Study on children (aged 6–18 years) revealed 13, 15.8% prevalence of obesity. The highest incidence of 18% was found in Riyadh (the capital) and the lowest in Sabea (11.1%). In a review of obesity prevalence in the Arab world 7, it was concluded that one third of Arabs are obese as defined by a body mass index of ≥30 kg/cm².

Saudi adults population 14, 20 years or older, the overall prevalence of obesity was 22.1%. In males and females the prevalence was 17.8% and 26.6%, respectively, being higher in urban areas and increasing with age.

Obesity predisposes to insulin resistance and development of Type II DM. However, different ethnic groups seem to have varying risks with obesity. For example, in a follow up study of 16 years, the age adjusted incidence of developing DM was twice as much in black women than in white women (15% vs 7%) and one and a half times higher in black men than in white men (10.4% vs 6.9%). Obesity in blacks predisposes to DM more than a similar degree of obesity in whites.15

Increased energy intake (Kcal/day) from 86% of recommended daily allowances (RDA) in 1961–1963 to 140% of RDA in 1995. The protein intake has increased from 91% of RDA to 162% over the same period. Among women, the increases in energy and protein intakes were more pronounced, being 177% and 205%, respectively, of RDA in 1995.16. The changes in dietary habits that occurred in 20 years in the Kingdom of Saudi Arabia (KSA) took 137 years in Japan and 200 years in UK. 17 The percentage of family households owning a car in the 1960s was less than 5%, now the figure is 84%.

Classification Principal cut-off points
Underweight <18.50
Severe thinness <16.00
Moderate thinness 16.00 - 16.99
Mild thinness 17.00 - 18.49
Normal range 18.50 - 24.99
Overweight ≥25.00
Pre-obese 25.00 - 29.99
Obese ≥30.00
Obese class I 30.00 - 34.99
Obese class II 35.00 - 39.99
Obese class III ≥40.00

RESEARCH METHODOLOGY

Study Design: A University- based cross-sectional study.

Sample Frame: Students of Al-Majma,ah University.

Inclusion criteria: Students who were currently studying in Al-Majma,ah University in the academic year 1432-1433.

Instrumentation

1. Standardarised weighing Machine (Digital) with height calibration.
2. Tape measurement.

Informed consent was obtained from the willing students. (Appendix-1)

Anthropometric measurements

Bmi Measuring Procedure

Weight was measured with the digital standardized weighing machine. The subjects were requested to stand bare feet on the machine, heels resting together and the hands loosely on the side. While the
respondent look straight ahead, the measuring tongue was lowered towards the head until it gently touches the top of the head. Height measurement will appear in the read-off area was then recorded. Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters. Respondents were classified as per the BMI, in accordance with World Health Organization recommendation.18

Tape Measurement of Waist Circumference

Gulick model was used with a spring handle in order to control the tension applied on the abdomen

Procedure

As per the WHO protocol,

- Marking on bony landmarks of the right and left last rib margin.
- Marking bony landmarks of the right and left iliac crest.
- Mark the mid-distance between the last rib margin and the top of the iliac crest of the two sides.
- Tape was kept horizontal around the waist.

The subject stands with his or her feet shoulder-width apart. Participants were asked to cross their arms on their shoulders in a relaxed manner. A slight tension was applied to the tape (until the red mark appears) at the moment of the reading.

The measurement was taken at the end of a normal expiration, while ensuring that the participant does not contract the abdominal muscles. Experimenter engaged conversation with patient if he was suspected to contract the abdominal muscles. An average of three measurements was documented as final reading.

RESULTS AND FINDINGS

DISCUSSION

Our study results categorized students as per BMI and Waist circumference and found huge number of subjects randomly selected from a population of 15000 approx university students from Majmaah, Zulfi, karj province are obese. These findings are similar to what
was found by Abahussain et al 20 who assessed the nutritional status of 676 Saudi adolescent girls aged 12 to 19 years from Al-Khobar city, in the Eastern Province of Saudi Arabia. Using the body mass index (BMI) for determining the nutritional status of the girls, they found that 11% of girls were underweight, 61% were normal and 28% were overweight or obese. Preliminary results concerning the health and nutritional profile of adolescent girls in the Taif region of Saudi Arabia were gathered by Madani et al 21. Weight, height, and dietary patterns were obtained from 540 adolescent girls aged 12 to 18 years. Similarly In our research we found that 58.1 % (Figure 1) of students were obese.

As per the classification of BMI, pre-obese, obese I, obese II and obese III were 23.4, 11.2, 12.2, and 11.2 respectively. These results were in accordance with the results found by Al-Abbad 22 determined the prevalence of obesity and some of its associated risk factors using the same criteria to obesity as the previous study. Seven hundred students were randomly selected, aged 11-21 years, from 6 female intermediate and high schools in Al-Khobar city.

Al-Nuaim et al 23 determined the prevalence of overweight and obesity among 9,061 male school children aged 6-18 years old in Saudi Arabia. Children with evidence of chronic or acute diseases were excluded from the study. The percentage of expected BMI at the 50th percentile for each age group was computed. The 50th percentile of The National Center for Health Statistics/Center for Disease Control (NCHS/CDC) reference population was used as the expected standard population values. Childhood obesity was defined as children who weighed more than 120% of the expected median percentile of the reference population, and overweight as 110-120%. The results showed that the overall prevalence of overweight was 11.7% and obesity was 15.8%. The high prevalence of childhood obesity, when compared with the NCHS/CDC, calls for an early health education programme on the appropriate choice of diets for growth, health and longevity. (3) Recently, Al-Rashidi 24 studied 200 students of the Home Economics and Art Educational College in Jeddah, to determine the effect of social level and food habits on the spread of overweight and obesity. To determine the prevalence of overweight and obesity, BMI criteria was used. The results showed that 38.5% were of normal weight (BMI 20-25), 27.5% were lean (BMI less than 20), 16% were overweight (BMI 25-30) and 18% were obese (BMI more than 30).

Al-Shammari et al26 determined the prevalence of obesity among, 1,580 Saudi male attendees at 15 health centers in urban and rural areas in the Riyadh region. The mean age was 33.6 ± 13.5 years and BMI was 26.9 ± 5.7. Only 36.6% of subjects were at their ideal weight (BMI < 25), while 34.8% were overweight (BMI 25-29.9). Among them, 26.9% were moderately obese (BMI 30-40) and 1.7% was morbidly obese (BMI > 40).

According to the waist circumference, the male and female students (53.6%, 52.6%) were at equal risk of developing obesity related disorders. Similar results also were found by Ogbeide et al 27 who determined the prevalence of obesity among a sample of 1,485 adult patients (48% males and 52% females) at the outpatient department of Al-Kharj Military Industry Corporation Hospital. Binhemd et al 28 studied the height and weight of 1,072 Saudis (477 men and 595 women), aged 18-74 years, to determine the prevalence of obesity in patients attending the primary health care center of King Fahad Hospital, Al-Khobar. Similar findings were also reported by Al-Attas et al 29, indicating obesity was found more frequently in females than in males.

CONCLUSION

In view of the high prevalence of obesity, it is recommended that University preventive programmes for weight control and healthy life-style need to be introduced soon.

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Conflict of Interest

Our research had minimum conflict of interest and researcher bias as it requires data collection through a standardized instrument.

Ethical Clearance:

Ethical clearance was obtained from Ethical committee Basic Health science research centre of Majmaah University.
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