

Obesity in Saudi Arabia

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This paper highlights the current situation of obesity in Saudi Arabia. The prevalence of obesity ranged from 14% in children less than 6 years to about 83% in adults. Women were more prone to be overweight or obese than men. Several factors were reported to be associated with obesity in this country such as age, sex, socio-economic status, employment, education, and parity. More studies are needed to determine cultural influences in developing obesity. Strategy to prevent obesity in Saudi Arabia should include encouragement of physical activity, reduce intake of high fat foods and behaviour modification.

Bahrain Med Bull 2000;22(3):

It is well documented that obesity is associated with several chronic illnesses. Therefore, the prevalence of obesity in a population can be considered as a rough indicator for health status. Obesity is not an uncommon finding, particularly in affluent societies. In Saudi Arabia, obesity is becoming one of the most important public health problems¹. The available data clearly indicate a high prevalence of adult obesity particularly in women in the Kingdom.

This paper aims to briefly summarize the current state of knowledge about the prevalence of obesity, its predisposing factors, and its management in Saudi Arabia. This information is required for planning intervention programmes in nutrition and to offer new directions for improving the health of the people of Saudi Arabia.

PREVALENCE OF OBESITY

The prevalence of obesity in Saudi Arabia, ranges from 14% in children to about 83% in adult^{2,3}. This wide variation could be due to the differences in criteria used to define obesity and also to the differences in age, sex, and health status.

PRESCHOOL CHILDREN

The risk of childhood obesity and its continuation to adulthood is well established⁴. A survey carried out in the Kingdom² utilizing the National Centre for Health Statistics Standards revealed 14% childhood obesity among newborn to six years of age. The tracking of body mass and obesity from childhood through adulthood implies that the

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genetic, behavioural, and cultural factors involved in obesity operate early in life, can be identified in youth, and can be intervened upon⁵. The challenge for early identification and intervention has important public health implications.

SCHOOL CHILDREN AND ADOLESCENTS

Recently, Abahussain et al⁶ 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, it was found that 11% of girls were underweight, 61% were normal and 28% were overweight or obese. These findings revealed that adolescent girls in Saudi Arabia face two contrasting nutrition situations, underweight and overweight. These findings indicate the need for intervention programmes to promote better nutrition among school children and adolescents in Saudi Arabia.

Preliminary results concerning the health and nutritional profile of adolescent girls in the Taif region of Saudi Arabia were gathered by Madani et al⁷. Weight, height, and dietary patterns were obtained from 540 adolescent girls aged 12 to 18 years. The body mass index of NHANESI was used as a reference for adolescence. The prevalence of underweight among these girls was 14.7% (<15th percentiles), and 16.3% were overweight or obese (>85th percentiles). However, the majority (69.0%) were in the normal weight range (15th – 85th percentiles). It was concluded that the dietary pattern of Saudi adolescents was similar to that of their counterparts in Western communities. This suggests a change in dietary habits toward those practiced in Western communities, and may explain in part the steady rise in diet-related chronic diseases in this country.

Al-Abbad⁸ 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. The prevalence of underweight, normal, and overweight were 11.3%, 60.1%, and 28.6%, respectively. In view of the high prevalence of obesity, it was recommended that national preventive programmes for weight control and healthy life-style for all ages including children and adolescents should be established.

Al-Nuaim et al⁹ 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.

Recently, Al-Rashidi¹⁰ 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).

ADULTS

El-Hazmi and Warsy¹¹ determined the prevalence of overweight (BMI=25-29.9) and obesity (BMI \geq 30) in a total of 14,660 adult Saudi males and females (>14 years of age) in different regions of the Kingdom. The prevalence of overweight in the total population was 27.23% and 25.20% in males and females, respectively, while the prevalence of obesity was 13.05% and 20.26% in males and females respectively. This high prevalence of obesity is a cause for concern, since obesity is associated with several complications which increase both morbidity and mortality.

Al-Shammari et al¹² 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% were morbidly obese (BMI > 40).

Ogbeide et al¹³ determined the prevalence of obesity among a sample of 1,485 adult patients (48% males and 52% females) at the out-patient department of Al-Kharj Military Industry Corporation Hospital. Overweight was defined as BMI \geq 25 and <30, while obesity was \geq 30. The prevalence of overweight and obesity among the study sample was 31.5% and 40.5% for females and 40.2% and 21.0% for males, respectively. A high prevalence of obesity is observed, particularly in females. Outpatient departments and primary health care centers should include nutritionists on their teams to educate subjects on good nutritional habits and weight control.

Binhemd et al¹⁴ 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. Using a criterion of body mass index of greater than 25, 51.5% of the men, and 65.5% of the women were considered obese. More women than men were found to be obese. Similar findings were also reported by Al-Attas et al¹⁵, indicating obesity was found more frequently in females than in males.

THE ELDERLY

Literature search failed to show any study designed to determine specifically the prevalence of overweight and obesity among the elderly in Saudi Arabia. However, Al-Nuaim¹⁶ conducted a national epidemiological house-hold survey to study chronic metabolic disease in Saudis, 6,873 (52%) male and 6,304 (48%) female subjects, aged fifteen years and above. The results of the survey indicated that the prevalence of overweight (BMI = 25 to 30) increased with age, reaching a maximum at the 6th decade for male and female subjects. The prevalence of obesity (BMI > 30 to 40) also

increased with age, reaching a maximum at the 5th decade for male and female subjects. The mean BMI for male and female over sixty years old were 25.9 and 26.8, respectively. The prevalence of overweight for males and females over sixty were 37% and 34%, respectively, while the prevalence of obesity for males and females over sixty were 23% and 30%, respectively.

FACTORS AFFECTING OBESITY

The available data indicate that the prevalence of adult obesity in the Kingdom is high, and affects women in particular¹³⁻¹⁸, with a preponderance of abdominal obesity^{19,20}. There are several factors contributing to the high incidence of obesity amongst women. Watching television and eating snacks are the main activities during their leisure time, especially when the majority of women are not employed. Excessive food intake is also responsible for obesity in the country²¹. The attitude towards obesity is another important factor²². The traditional, long, comfortable, and wide clothes worn by women prevents them from noticing the gradual gain in weight²². The modernization and affluence in Saudi Arabia over the last three decades has probably caused the problems of obesity in vulnerable persons to surface²³. Some might even consider obesity as a sign of affluence³.

For males, middle age, lower education and joblessness predicted a higher risk for obesity¹². Patients living in rural areas had greater BMIs than those living in urban areas. Forty percent of overweight participants did not think they were overweight. The high prevalence of obesity and the lack of awareness among those afflicted emphasizes the need for community-based programmes for preventing and reducing obesity, since weight control is effective in ameliorating most of the disorders associated with obesity. Young parents who are at risk of developing obesity and who play a central role in perpetuating it in their offspring should be the target of obesity-prevention programmes¹².

In another study, Al-Nuaim et al.²⁴ conducted a community-based national epidemiological household survey to estimate the prevalence of overweight and to examine its association with the socio-demographic characteristics for 10,657 Saudi subjects aged 20 years and over. The mean age was 35.8 ± 14.27 and 50.8% of the sample were males. The overall prevalence of overweight was 31.2%; it was 33.1% for males and 29.4% for females. For obesity, the overall prevalence was 22.1% (males 17.8% and females 26.6%). The multiple logistic regression analysis showed that age, residential area, region, income, gender, and education are statistically significant predictors of obesity. The prevalence of obesity was higher in females than males, lower in subjects living in rural areas with traditional life-styles than those in more urbanized environments, and increased with increasing age. The observed prevalence and pattern of overweight and obesity with age and gender is similar to those observed in the Arab community and some Western nations.

In a cross-sectional study²⁵ in the Gassim region of Saudi Arabia, 6,044 subjects (2,727 males and 3,317 females) had their BMI computed in the following age groups, namely, 0-5, 6-12, 13-49, 50-69 and 70+ years. In general, the trend for BMI was to increase with age in both genders, but the curve pattern showed some plateauing from about the age of 50, with a slight decline in later life. Females had significantly higher indices than males, this becoming quite prominent from the 10-14

year age group. This difference persisted irrespective of the types of age grouping or residential location. Overall means (\pm) of BMI were 20.14 ± 5.98 vs 22.22 ± 7.21 for males and females, respectively. Subjects in the urban living environment had significantly higher indices than their rural counterparts.

Khawaja and Al-Sebai²⁶ conducted a study on a sample of 467 married non-pregnant Saudi female patients, using the cut-off point of >30 for the BMI as an indicator of obesity. The results showed that the overall prevalence of obesity was as high as 27%. Age, rather than parity, was a contributing factor to obesity. This appears more likely since the interval between pregnancies is usually short, and does not allow the female to lose the weight gained during pregnancy. This is particularly true in Saudi Arabia, where grand multiparity (the births of five or more viable infants) is a common occurrence^{27,28}.

Khashoggi et al²³ considered the factors affecting the rate of obesity among females whose ages ranged between 11 and 70 years in the Western Province of the Kingdom. The sample involved 950 females screened at primary health care centers and it was found that the prevalence of obesity was 64.3%, using BMI with a cut-off point of greater than or equal to 25 as an indicator of obesity. Multiple regression analysis indicated that five variables were significant predictors for obesity. These variables were age, marital status, number of servants, having children, and parity. Other factors were studied, including education and income, which were of no predictive value.

Al-Shagrawi et al²⁹ conducted a study to evaluate the factors affecting the prevalence of obesity among female Saudi college students. A sample of 460 female Saudi students, representing 21.2% of the total students, was selected using a systematic random procedure. The results showed that obesity was present among 20.9% of the students, using BMI equal to or greater than 25 as a criterion. There was a significant relationship between age, social status, daily dietary intakes of energy, fat and carbohydrate as independent variables, with obesity as a dependent variable. These researchers recommended that more attention should be given to nutritional education for university students regarding the selection of a balanced diet.

Recently, Rasheed³⁰ evaluated the association between the body weight of young female adults with self-reported eating behavior, weight control beliefs and practices related to dieting and exercise. A total of 77 female students from King Faisal University resided in the local hostel, all of whom participated in the study. The age of the women ranged from 17-25 years (mean age 20.7 years). Interestingly enough, the present study has shown weight-related beliefs and attitudes at the two ends of the spectrum – a tolerance of obesity at one end and an exaggerated concern for its occurrence at the other. Preference for the modern Western thin body image was clearly obvious in a subgroup of normal-weight females (37.5%), who expressed dissatisfaction with their weight status and wished to lose weight, as well as in nearly two-thirds (61.9%) of the underweight females who did not want to gain weight. Exercise is not part of a daily routine for women living in Saudi Arabia, a claim supported by the present study. Even among the obese of the studied population, exercise was not popular, and this was combined with a poor attitude and a low level of knowledge about exercise. In general, a negative attitude and lack of motivation for exercise largely prevailed among the study subjects. Unacceptable reasons, such as laziness or lack of time, showed that students were not inclined towards physical

work-outs. Judicious use and budgeting of time for exercise should receive special attention in health awareness programmes. If young people are convinced of the benefits of exercise in terms of better physical fitness and consequently an improved ability to handle the stresses of daily chores, as well as physically and mentally demanding education programmes, it would be possible to change their lifestyle³⁰.

Al-Rashidi¹⁰ showed in her recent study that there was a relationship between social level and weight average. The results showed that weight was higher with higher social level, and it was statistically significant ($p < 0.05$). There is a relationship between BMI and age. The older the students were the higher their BMI, and it was statistically significant ($p < 0.05$).

Hamilton et al³ quantify the prevalence of obesity in females in the infertility clinic at King Faisal Specialist Hospital in Riyadh. The results show that the prevalence of overweight and obesity is alarmingly high among infertile Saudi females. Eighty percent of the females were either overweight or obese before the introduction of ovulation-inducing agents. The high incidence of obesity, as found in this infertile Saudi population, must urge workers in the health care sector to inform the public about these adverse effects and start implementation of preventive measures.

A case control study³¹ was conducted to examine the theoretic differences for eating and exercise behavior among obese and non-obese women from an urban health center in Saudi Arabia. Perceptions regarding actual and ideal body size were also determined. The obese were significantly more likely to eat under emotional conditions of stress and anger, in secrecy, and indulge in binge eating ($p < 0.05$). Frequent snacking and regular drinking of soda drinks was also more common in this group compared to the controls ($p < 0.05$). A weak association was observed for nibbling at food without being aware, and preference of sweet foods compared to savoury ones by the obese ($p < 0.1$). A large group of the study population (75%) was either not exercising at all or doing so infrequently, a feature expected in the middle and lower social class group of women in this region. A sizeable proportion of women either overestimated (28.6%) or underestimated (28.9%) their actual body weight, with increasing education significantly related to overestimation of weight and vice-versa ($p < 0.05$). A change in the concept of an ideal body image from the overweight female to that of the slim figure was also observed with advancing education³¹.

MANAGEMENT OF OBESITY

Understanding the psychodynamics of obese patients and their families is a prerequisite to successful treatment. It is suggested that health education related to an awareness of a healthy body size and appropriate eating and exercise behaviour should be given through primary health centers, other health facilities and schools. Perhaps behaviour modification with respect to food intake will be effective in the treatment of obesity, especially in Saudi Arabia.

A reasonable level of physical activity is recommended, not only to lose body fat³², but also to improve circulation³³. This can be done either at home or at physical fitness centers. Women in the Kingdom are not allowed to participate in outdoor exercise programmes, hence physical fitness centers have opened in order to cater for women's needs for physical activities and exercise.

Surgical management of obesity has been introduced in Saudi Arabia for the treatment of patients with morbid obesity. In a surgical management study³⁴, the mean weight loss during one year was 39% in males and 33% in females. In another study³⁵, excess weight loss of 87% for morbid obesity patients was achieved at 6 months postoperatively.

CONCLUSION

The nutritional problems in Saudi Arabia are mainly due to a change in food habits, illiteracy and ignorance, rather than a shortage of food supply or low income. Therefore, it is essential for all people to eat a balanced diet which will provide the dietary requirements of all nutrients. Perhaps behavior modification with respect to food intake, will be effective in the treatment of obesity, especially in Saudi Arabia. Strenuous physical activity should be encouraged as a strategy directed towards weight reduction in the obese, as well as prevention of obesity in the Kingdom.

Studies are needed to determine the cultural influences in developing obesity. Knowledge of the social factors associated with obesity will help to identify high risk groups. Certainly, public health measures should focus on all members of society (i.e. in schools, via the printed media, TV, radio, etc..) to discuss the health hazards of being overweight.

Studies are also needed relating to the distinction between gynoid and android obesity³⁶. The latter type may correlate with medical morbidity, whereas the gynoid type may not^{37,38}.

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