



CODEN [USA]: IAJPB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.2527584>Available online at: <http://www.iajps.com>

Review Article

OBESITY AND WEIGHT MANAGEMENT IN SAUDI ARABIA

Yasser Hussain Al-Jaffer¹, Mohammed Abdulelah Abdulbaqi¹, Ahmad Qassem Ghallab², Saleh Mohammed Al Hai¹, Abbas Hassan Al Lashit¹, Rabab Abdullah Lajami³, Maha Jawad Alsafwani⁴, Zainab Hussain Alreda⁵, Mohammed Jamal Almarzooq⁶, Husain Noor Alnasser⁷

¹Qatif Primary Healthcare Center, ²Prince Saud Bin Jalwi Hospital, ³Al Reef Primary Healthcare Center, ⁴Alnabiah Primary Health Care, ⁵Aljamieih Health Center-Alkhubar, ⁶Safwa General Hospital, ⁷Khuildia Primary Healthcare Center

Abstract:

Introduction: Body mass index (BMI) is the most commonly used parameter for obesity measurement. The prevalence of obesity among Saudi nationals has expanded drastically over the past decade because of the lifestyle trends and dietary habits and is expected to reach as high as 59% in the year 2022. The prevalence is higher among women owing to culture.

Aim of work: In this review, we will discuss the comorbidities associated with obesity

Methodology: We conducted this review using a comprehensive search of MEDLINE, PubMed, and EMBASE, January 1985, through February 2017. The following search terms were used: obesity in Saudi Arabia, implications of obesity, cultural causes of obesity in Saudi Arabia, management of obesity

Conclusions: Obesity is an outcome of complex interaction between multiple co-variables. Genes, Socioeconomic status, and cultural beliefs, and environmental factors are associated with the development of, and difficulty treating, obesity. The prevalence of obesity in Saudi Arabia continues to rise with a direct reflection on comorbidities and healthcare costs. Early intervention and effective treatment of obesity are the mainstays to reduce costs and improve outcomes for these patients.

Key words: Saudi Arabia, obesity, risk factors, cultural obesity

Corresponding author:

Yasser Hussain Al-Jaffer,
jaffer_yh@hotmail.com,
0503883745.

QR code



Please cite this article in press Yasser Hussain Al-Jaffer et al., *Obesity And Weight Management In Saudi Arabia.*, Indo Am. J. P. Sci, 2018; 05(12).

INTRODUCTION:

Obesity is characterized as a state of abnormal or excessive fat aggregation in fat tissue, to the degree that health is impaired. The extent of excess fat in outright terms, and its dissemination in the body - either around the waist and trunk (stomach, focal or android weight) or peripherally around the body (gynoid obesity) - have imperative health implications. Generally, obesity is related with a more serious danger of disability or sudden mortality because of type 2 diabetes mellitus (T2DM) and cardiovascular Diseases (CVD), for example, hypertension, stroke and coronary heart disease and additionally gall bladder disease, certain tumors (endometrial, breast, prostate, colon) and non-fatal conditions such as gout, respiratory conditions, gastro-esophageal reflux disease, osteoarthritis and infertility. obesity additionally conveys serious implications for psychosocial health, primarily because of societal prejudice against fatness [1].

A focal circulation of body fat is related with a higher danger of morbidity and mortality than a more peripheral distribution. In addition, people with CVD risk factors, for example, T2DM, hypertension and smoking are presented to critical health dangers at lower levels of obesity. It is hence basic to evaluate people who are overweight or obese not exclusively to decide the degree of adiposity, yet in addition for the body fat distribution and the presence of co-morbid factors [2].

METHODOLOGY:

• Data Sources and Search terms

We conducted this review using a comprehensive search of MEDLINE, PubMed, and EMBASE, January 1985, through February 2017. The following search terms were used: obesity in Saudi Arabia, implications of obesity, cultural causes of obesity in Saudi Arabia, management of obesity

• Data Extraction

Two reviewers have independently reviewed the studies, abstracted data, and disagreements were resolved by consensus. Studies were evaluated for quality and a review protocol was followed throughout.

The study was approved by the ethical board of King Abdulaziz University Hospital

MEASURING OBESITY:

The body mass index (BMI) is a straightforward and regularly utilized parameter for classifying different

degrees of adiposity. It is taken from the weight of the person in kilograms divided by the square of the height in meters (kg/m^2). By the present World Health Organization (WHO) criteria, a BMI $<18.5\text{kg}/\text{m}^2$ is viewed as underweight, $18.5-24.9\text{kg}/\text{m}^2$ ideal weight and $25-29.9\text{kg}/\text{m}^2$ overweight or pre-obese. The obese classification is sub-divided into obese class I ($30-34.9\text{kg}/\text{m}^2$), hefty class II ($35-39.9\text{kg}/\text{m}^2$) and fat class III ($\geq 40\text{kg}/\text{m}^2$). A BMI greater than $28\text{kg}/\text{m}^2$ in adults is related with a three to four-fold more serious danger of morbidity due to T2DM and CVDs than in the general population [2].

Measurement of the waist circumference - estimated at the midpoint between the lower border of the Saudi nationals, and over the previous decade its prevalence has expanded drastically, because of the lifestyle trends and dietary habits rib confine and the iliac crest, or the waist: hip ratio (WHR) give valuable indices of abdominal fat accumulation and a superior correlation with a raised danger of ill health and mortality than BMI alone. An abdominal circumference more than 108 cm (40 inches) for men and 98 cm (35 inches) for women or a WHR > 1.0 and 0.85 in men and women, respectively, are currently acknowledged markers of extravagant stomach fat accumulation which correspond with a substantially raised danger of metabolic complications [3].

Prevalence of overweight and obesity in Saudi Arabia

Several trials have been done to estimate predominance of obesity and overweight among Saudi nationals, and over the previous decade its prevalence has expanded drastically, because of the lifestyle trends and dietary habits. **Memish et al.** [4] directed a national survey to examine obesity and its related factors in KSA; and in the process, interviewed 10,735 people ages of 15 years and older. The research gathered data regarding physical exercises, diet, health related behaviors and habits, socio-demographics characteristics, anthropometric estimations, use and access to healthcare, and chronic illnesses of the respondents using personal computer helped personal interviews. The outcomes uncover that 28.7% of the total respondents are obese, with a BMI greater than $30\text{kg}/\text{m}^2$, which is more prevalent among women (33.5%) than men (24.1%). Another trial done by national epidemiological health survey by gathering data from 17,232 Saudi households aging between 30-70 years. The research study discovers prevalence of overweight and obesity reaching 36.9% and 35.5% respectively in KSA. Male are observed to be fundamentally more

overweight; while female have more prevalence of obesity than the contrary opposite gender. Additionally, **Ahmed et al.** [5] give epidemiological data on obesity prevalence in Hail, KSA. using data of 5000 Saudis, extracted from 30 essential health care institutes, the trial discovers overall obesity prevalence of 63.6% in Hail region. additionally, 71% females and 56.2% males are obese in the region.

On the report of World Atlas data, Saudi Arabia is in list of one of the most obese globally (**Table 1**) [6], and shows a raise trend, and a prediction for the year 2022 if the trend remains the same.

Year	Men	Women	Overall
1992	12	20.7	16.4
2002	29.3	46.3	37.8
2012	35.1	58.7	46.9
2017	38.2	67.5	52.9
2022	41.4	77.6	59.5

Table 1: Obesity prevalence in Saudi Arabia in (%)

Causes of obesity in Saudi Arabia

In increase of obesity and overweight, the interaction of few factors which are considered as risks include, metabolic, genetic, environmental, and behavioral influences. The swift development in the rate of obesity is directly contributed by natural and behavioral factors, rather than the biological components. Additionally, racial or ethnic differences, consumption pattern, and lifestyle also impact the rate of obesity. For example, as compared rural areas, individuals in urban areas have greater obesity rate, possibly because of the use of high-fat diets and more inactive lifestyles. For daily life style, the extent of energy spent has additionally decreased throughout the years, which also help progress of obesity. obesity is also frequently associated with high socio-economic status; as populations in the developed countries are mostly influenced by obesity [4].

In the course of the past decades, Saudi Arabia has turned out to be progressively westernized, and now it has one of the highest obesities and overweight prevalence rates 3. The aftereffects of the study done by **Sabra et al.**[7] show the dietary pattern lifestyle, as indicated by which 71.5% of the respondents don't share family members in their meals, 46.9% sit in front of the TV while eating, and 35.7% feed on snacks as their main eating pattern. additionally, 82.7% of the students eat fast/junk food 1 to 6 times/week and 73.1% consume soft drinks over 7

times/week.

As indicated by **Horaib et al.** [8], obesity is a heritage of modernization of society. It includes faulty dietary habits, unhealthy diet, less physical lifestyle, and increased stress. In the Middle Eastern nations, these progressions are severe in the recent four decades. The everyday per capita consumption, amid this period, has expanded by 143.3% in the KSA. furthermore, the results are obvious with the drastic increase in prevalence and incidence of lifestyle-related diseases, which include ischemic heart maladies, diabetes, and hypertension.

Physical Inactivity

In Saudi Arabia, **Al-Nozha et al.** [9] mentioned a high prevalence of inactivity between adults (96%). There was drastically ($P < 0.001$) more inactive females (98.1%) than males (93.9%). Inactivity prevalence raises with an increasing age classification, specifically in males, and lowers with increasing levels of education. Inactivity was the greatest in the central region (97.3%) and least in the southern (94%) region of Saudi Arabia.

Eating out

In Saudi Arabia, **Amin et al.** [10] discovered that as eating outdoors increased in primary school children (6–11 years), the proportion of obesity raised. between those who did not consume meals outside the house, 9.4% were obese and the others were nonobese. The proportion of obesity raised to accomplish 52.7% between those who consume food outdoors for over 5 times per week. The association among eating outdoors and obesity between these children was greatest statistically drastic ($P < 0.001$). In Iran, a study showed food intake from meals taken away from home by adolescents (12–16 years), usage of 24 hours food recall. They figured out a huge difference on mean daily energy consumption ($P = 0.007$) among adolescents who consumed at least a single meal away from home than who did not consume (1618 kcal versus 1472 kcal, resp.) [11].

Cultural Factors

The impact of men in deciding women's attitudes towards body size is another vital problem in few nations in the region. In Qatar, for instance, around 43% of Arab women studied believed that men favored plump women. Same discoveries were reported in Morocco, as there is a cultural preference of body fatness between women of the Sahraoui ethnic group [12].

Al-Tawil et al. [13] theorized that women who wear trousers and skirt in Iraq would be aware early on any raise in their weight, particularly increase in their waist circumference, than women who wear loose grown or *abaya* (cultural long dress covering the entire body). They found that the proportion of obesity (BMI ≥ 25) was more prominent among women who wore grown at home than the individuals who wore pajamas ($P < 0.024$).

Women in the region are confronting a greater number of boundaries to physical activities than men. This is due men, generally, have more freedom and centers to practice sport and other recreational activities. In Bahrain, for instance, the primary sociocultural hindrances to rehearsing physical exercises seen by women were home commitments, care of kids, and negative mentalities by family members towards women practicing exercise/sport. Of the women studied, most believed that there is a sex discrimination, as sport and other recreational facilities are mostly provided for men [14].

Al-Tawil et al. [13] theorized that the traditional habit of food consumption from the same plate by family members may influence the amount of food intake as it is neither quantifiable nor restricted for every individual. This may encourage some family members to consume more. They found that the prevalence of obesity (BMI > 25) between the individuals who shared the same plate with family members was higher (77.5%) than the individuals who had not shared plates (69.4%), yet the difference was not statistically critical ($P = 0.592$).

Complications associated with obesity:

Obesity has for quite some time been related with morbidity and mortality. Among the notable complications of extreme obesity are increased risks of developing diabetes, hypertension, and hyperlipidemia. The progressing of type 2 diabetes mellitus has been related with obesity in every ethnic groups and is positively corresponded with BMI. Similarly, excess body weight is thought to account for up to one-fourth of cases of hypertension in adults. Obese individuals, particularly those with central fat distribution, are at increased risk for several abnormalities in lipid metabolism, specifically, high serum cholesterol, low-density lipoproteins, and very low-density lipoproteins and triglycerides, as well as mild decrease in serum high-density lipoproteins. Heart disease and ischemic stroke are other critical and well-evidenced complications of morbid obesity. Obesity

additionally increases mortality from various malignancies, most significantly of the esophagus, colon, rectum, liver, gallbladder, pancreas, and kidney, and additionally non-Hodgkin's lymphoma and multiple myeloma. Severe obesity has been related with an increased rate of death from all causes and diminished life expectancy regardless of age, smoking, educational accomplishment, geographic area, and physical activity levels [15].

Direct Healthcare Costs

Comparing obese and normal weight people, there were more than one-third raise in the yearly healthcare cost and a 77% of medication between obese. A vast national review of 21877 people from the Medical Expenditure Panel Surveys (MEPS) revealed 2006 expenses over all non-institutionalized payers (e.g., Medicare, Medicaid, and private insurers). The outcomes have demonstrated that patients who were obese had yearly costs of \$1429 by average. This was a 42% higher than patients of ordinary weight. This reality associated to about a \$40 billion increase in medicinal spending. For Medicare patients, outpatient administrations and drugs were the fundamental contributors of expenses. The obese spent about \$600 every year more than ordinary weight patients [16].

MANAGEMENT OF OBESITY:

Diet

The foundation of any obesity treatment includes diminishing energy intake (food consumption/diet) and/or increasing energy use (PA/workout) with the end goal to make a negative energy balance. The technique or treatment system by which the caloric consumption decrease is accomplished varies from diet to another and results in numerous options for the actual structure or type of diet. For instance, some diets emphasize caloric count, limiting portions, or using planned meal substitutions, while others lessen or limit particular type of foods or decrease or eliminate specific macronutrients in the diet. These techniques ultimately result in a decrease in calories consumed [17].

Drug

Drug treatment for obesity is recommended as a supplement to diet and workout in adults with a BMI of at least 30 kg/m² or of at least 27 kg/m² if associated by an obesity-related comorbidity. The US Food and Drug Administration (FDA) has recently accepted 2 new medicines for usage in obesity

regimen. These will soon accompany orlistat, a gastric and pancreatic lipase inhibitor, as medicines indicated for the prolonged therapy of obesity. harmful adverse effects have caused obesity medications initially accepted to be either terminated (fenfluramine, dexfenfluramine, phenylpropylamine) by the FDA or voluntarily removed (sibutramine). few new drugs (rimonabant, taranabant, high-dose topiramate) have been stopped in the US clinical research pathway due to what was thought to be undesirable risk (side effects) [17].

Surgery

The use of bariatric surgery as a therapy for obesity has grown over the recent few years. Due to the results in obese people with type 2 diabetes have been very impressive, the International Diabetes Federation has lately suggested consideration of bariatric surgery as an acknowledged treatment alternative in patients with a BMI of 30– 35 kg/m² when diabetes cannot be sufficiently controlled by traditional medical management. In 2011, the FDA extended endorsement of the LAP-BAND adjustable gastric banding system to be used in patients who have not been decreasing weight with a nonsurgical method and have a BMI of 30– 34 kg/m² with a current condition related with their obesity. Earlier endorsement had been restricted to a BMI \geq 35 kg/m² with a comorbidity or 40 kg/m² without. This controversial idea of bringing down the BMI cutoff for surgery has been assessed by several pivotal papers published throughout the recent 24 months in high-profile journals [18].

Recommendation for Management of Obesity in Saudi Arabia

Decrease in obesity is an imperative public general health consideration for the KSA and this guideline considers the variety of life routine, pharmacological, and in addition surgical management strategies that add to the present advancement of a broad national methodology to battle obesity. The Ministry of Health (MOH) at KSA propelled an evidence-based program to create clinical practice guidelines (CPG) for the management of practically common diseases in KSA. obesity was between the topics that were given a priority in this program, given its high negative effect on the health of people and the general public as a whole. In comparison with other guidelines published for obesity; agreement was established between Saudi Arabia, NICE, and USPSTF suggestions in regard to way of life, exercise, medication, and surgical treatment, the Canadian guidelines does not make treatment

recommendations however, advises screening for obesity using BMI as does the USPSTF [19].

The extent of the health issue of overweight and obesity is huge in the KSA, and in this manner the treatment and management of overweight and obesity in adult Saudis revolved into a fundamental piece of the bigger activity of the MOH to build up and create a program of strict development of guidelines. The utmost goals are to give guidance to clinicians and other medical decision makers and lessen unnecessary variability in clinical practice over the Kingdom [20].

The intervention in lifestyle, which are perceived as the foundation of obesity treatment, are multi-component management and treatment that include boosting healthy lifestyle habits, dietary interventions, dietary consultation, physical activity training and additionally mental and behavioral interventions. Regardless of the fact that the present guidelines focus on lifestyle refinement as a formula for managing overweight and obesity, the panel members recognize that permanent weight reduction could prove heavily difficult to accomplish on the basis of lifestyle interventions alone. Moreover, pharmacological and surgical application for weight management were included into the present guideline [20].

The panel chose to concentrate on 2 of the most commonly used drugs to promote weight reduction in KSA; orlistat and metformin, and to extend the consideration of other US-FDA accepted drugs because of the absence of Saudi studies for their use. Despite the fact that the Endocrine Society has a recent published CPG on the pharmacological treatment of obesity, where several drugs regularly prescribed in the United States were discussed, they encouraged additional inspection of drugs accessible in the United States by the European Medicines Agency and the funding of prolonged clinical trials in the European Union and elsewhere to study the safety and viability of these drugs. In regard to the surgical method in the management of obesity, the panel identified that data are restricted to sleeve gastrectomy techniques. The usage considerations need to address pre-operative screening necessities via well trained physicians for assessment of comorbidities and other causes for obesity, and in addition post-operative long lasting follow-up by interdisciplinary teams (trained doctor, surgeon, clinical nutritionist, psychotherapist), which are required to manage body weight and to prevent and treat dietary deficiencies and other complications [20];

21].

Because of the absence of data from Saudi Arabia in specific areas, the panel was not able to achieve some recommendations. henceforth, the panel has highlighted that research is required in specific fields, for example, the usage of portion-controlled diets, the generation of local proof for lifestyle modification to be applicable for the Saudi population and examining the strategies for individualized interventions rather than generic methodologies. Other specific proposed ideas were accepted upon by the panel members, for example, performing systemic review of observational studies in Saudi Arabia between both men and women to evaluate the role of cognitive behavioral therapy in the treatment of obesity, RCTs to be designed with adequate follow-up span that compare iso-caloric diets with fat content and lesser than 20%, around 20% and roughly 30%, RCTs are required on unselected obese and overweight populations that report all patient-critical results (namely, quality of life, function, morbidity and mortality) instead of surrogate results only. additionally, economic investigation in the Saudi Arabian health care system, trials analyzing whether and when to use multivitamin supplementation with orlistat, and long-term assessment of advantages and complications related with bariatric surgery, in addition, evidence from studies including people with lower BMI (30-35 kg/m²) are extra instances of recommended studies [20].

CONCLUSION:

Obesity is an outcome of complex interaction between multiple co-variables. Genes, Socioeconomic status, and cultural beliefs, and environmental factors are associated with the development of, and difficulty treating, obesity. The prevalence of obesity in Saudi Arabia continues to rise with a direct reflection on comorbidities and healthcare costs. Early intervention and effective treatment of obesity are the mainstays to reduce costs and improve outcomes for these patients.

REFERENCES:

1. **Kissebah AH, Krakower GR (1994):** Regional adiposity and morbidity. *Physiol Rev.*, 74: 761-811.
2. **Van Itallie TB (1985):** Health implications of overweight and obesity in the United States. *Ann Intern Med.*, 103: 983-988.
3. **Han TS, Seidell JC, Currall JE, Morrison CE, Deurenberg P, Lean ME (1997):** The influences of height and age on waist circumference as an index of adiposity in adults. *Int J Obes Relat Metab Disord.*, 21: 83-89.
4. **Memish ZA et al. (2014):** Obesity and associated factors--Kingdom of Saudi Arabia, 2013. *Prev Chronic Dis.*, 11: E174.
5. **Ahmed HG, Ginawi IA, Elsbali AM, Ashankyty IM, Al-Hazimi AM (2014):** Prevalence of obesity in Hail region, KSA: in a comprehensive survey. *J Obes.*, 2014: 961861.
6. **Al-Othaimen AI, Al-Nozha M, Osman AK (2007):** Obesity: an emerging problem in Saudi Arabia. Analysis of data from the National Nutrition Survey. *East Mediterr Health J.*, 13: 441-448.
7. **Sabra AA (2014):** Obesity among female intermediate nursing students of health science collage in Dammam city, Saudi Arabia: prevalence and associated factors. *Canadian Journal of Clinical Nutrition.*
8. **Bin Horaib G et al. (2013):** Prevalence of obesity among military personnel in Saudi Arabia and associated risk factors. *Saudi Med J.*, 34: 401-407.
9. **Al-Nozha MM et al. (2007):** Prevalence of physical activity and inactivity among Saudis aged 30-70 years. A population-based cross-sectional study. *Saudi Med J.*, 28: 559-568.
10. **Amin TT, Al-Sultan AI, Ali A (2008):** Overweight and Obesity and their Association with Dietary Habits, and Sociodemographic Characteristics Among Male Primary School Children in Al-Hassa, Kingdom of Saudi Arabia. *Indian J Community Med.*, 33: 172-181.
11. **Hejazi N, Mazloom Z (2009):** Socioeconomic status, youth's eating patterns and meals consumed away from home. *Pak J Biol Sci.*, 12: 730-733.
12. **Musaiger AO, Shahbeek NE, Al-Mannai M (2004):** The role of social factors and weight status in ideal body-shape preferences as perceived by Arab women. *J Biosoc Sci.*, 36: 699-707.
13. **Al-Tawil NG, Abdulla MM, Abdul Ameer AJ (2007):** Prevalence of and factors associated with overweight and obesity among a group of Iraqi women. *East Mediterr Health J.*, 13: 420-429.
14. **Al-Sendi AM, Shetty P, Musaiger AO (2004):** Body weight perception among Bahraini adolescents. *Child Care Health Dev.*, 30: 369-376.
15. **Klein S et al. (2004):** Clinical implications of obesity with specific focus on cardiovascular disease: a statement for professionals from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism: endorsed by the American College of Cardiology Foundation. *Circulation*, 110: 2952-2967.

16. **Tsai AG, Williamson DF, Glick HA (2011):** Direct medical cost of overweight and obesity in the USA: a quantitative systematic review. *Obes Rev.*, 12: 50-61.
17. **(1998):** Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults--The Evidence Report. National Institutes of Health. *Obes Res.*, 6 2: 51S-209S.
18. **Dixon JB, Zimmet P, Alberti KG, Rubino F, International Diabetes Federation Taskforce on E, Prevention (2011):** Bariatric surgery: an IDF statement for obese Type 2 diabetes. *Diabet Med.*, 28: 628-642.
19. **Stegenga H, Haines A, Jones K, Wilding J, Guideline Development G (2014):** Identification, assessment, and management of overweight and obesity: summary of updated NICE guidance. *BMJ*, 349: g6608.
20. **Alfadda AA et al. (2016):** The Saudi clinical practice guideline for the management of overweight and obesity in adults. *Saudi Med J.*, 37: 1151-1162.
21. **Apovian CM et al. (2015):** Pharmacological management of obesity: an endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.*, 100: 342-362.