



CODEN [USA]: IAJPBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

Available online at: <http://www.iajps.com>

Review Article

AN OVERVIEW OF IMPACT OF OBESITY ON POPULATION HEALTH AND HEALTHCARE SYSTEMS

¹ Bashaer Basha Alnadwi, ² Amer saeed alnadwi, ³ Saad thaib alluqmani, ⁴ Soloh Salah Alfahmy, ⁵ Nojood Ahmed Alzaaqa, ⁶ Ahmed Mesleh athagafi, ⁷ Alhumaiddi Jumaian Alreshidi, ⁸ Alhamidi obeid hayayan alzabny, ⁹ Hamad Ibrahim Asiri, ¹⁰ Basim Mohammad Alsulaimani

¹Specialist Nursing, Al-Zaher Health Center

²Nursing Technician, King Abdulaziz Hospital in Makkah

³Nursing Technician, King Abdulaziz Hospital in Makkah

⁴Nursing technician, King Abdulaziz Hospital in Makkah

⁵Nursing Technician, Albuhairat And Alfaiha Primary Health Care

⁶Nursing technician, King Abdul Aziz Hospital in Makkah

⁷Lab Specialist, Hail Health Affairs

⁸Technical operations, Ha'il health

⁹Nursing Technician, Maternity And Children Hospital

¹⁰ Nursing technician, King Abdul Aziz Hospital in Makkah

Abstract:

Obesity is a rapidly growing global public health concern. The prevalence of obesity has significantly increased in numerous nations across the globe over the past thirty years, potentially attributed to factors such as urbanization, sedentary behavior, and the rise in intake of high-calorie processed food. The significant rise in childhood obesity indicates a substantial future challenge in preventing chronic diseases within global public healthcare systems. Medical costs connected to obesity can be avoided to a considerable extent and can be improved by therapies that focus on modifying lifestyle habits and managing weight in older individuals.

Corresponding author:

Bashaer Basha Alnadwi,

QR code



Please cite this article in press Bashaer Basha Alnadwi et al, *An Overview Of Impact Of Obesity On Population Health And Healthcare Systems*, Indo Am. J. P. Sci, 2023; 10 (12).

INTRODUCTION:

Obesity is a rapidly growing worldwide public health concern. Obesity is classified as a widespread problem in the country, with around one-third of adults and one-sixth of children in the United States being affected [1]. In 2019, the World Health Survey found that the prevalence of obesity in Saudi Arabia was expected to be 20.2% [2]. In 2020, the prevalence of obesity in Saudi Arabia was reported to be over 25% [3]. These figures can be contrasted with the rates of occurrence in nearby nations, such as 27.8% in the United Arab Emirates (2017–2018), 30.7% in Oman (2017), 35.1% in Qatar (2016), 36.9% in Bahrain (2018), and 43.7% in Kuwait (2018), as documented by the World Health Organization [4] or the Global Obesity Observatory [5].

The significant rise in juvenile obesity indicates a substantial future load on global public healthcare systems in terms of preventing chronic diseases. Preventing obesity is crucial for treating obesity-related non-communicable diseases (OR-NCDs), such as insulin resistance/metabolic syndrome, characterized by high levels of insulin, type 2 diabetes, high blood cholesterol levels, high blood pressure, and coronary artery disease [6].

Nevertheless, notwithstanding the pressing nature of this issue, there are still discernible deficiencies in the existing knowledge regarding this matter. Prevalence of obesity is typically determined by surveys or demographic studies. Furthermore, the data regarding prevalence and trends are derived from weight measurements rather than body fat measurements [7]. The rise in body weight poses public health difficulties due to the appealing aesthetic of slender figures, as well as the negative health consequences associated with being overweight or obese [8]. The health status of those who are obese is often inferior to that of individuals with a normal weight, and the average lifespan of obese individuals is lower by around two years [9].

Obesity-related cardiovascular disorders are expected to rise in industrialized countries, leading to an increase in disability rates. The primary factor is the improved survival rate of individuals with cardiovascular illnesses in these countries. Furthermore, the inadequate availability of insulin in these nations would lead to a rise in handicap caused by obesity-related conditions and type 2 diabetes, specifically arteriosclerosis, nephropathy, and retinopathy [9]. Another health issue resulting from the growing prevalence of obesity is the prolonged

duration of obesity-related morbidity and disability, which is also expected to rise dramatically [9].

Research has substantiated that obesity is a significant public health concern that leads to reduced life expectancy, particularly among younger individuals. BMI alone, without taking into account other anthropometric parameters such as waist circumference or waist-to-hip ratio, is a robust indicator of overall mortality. This estimation encompasses both values that are higher and lower than the anticipated range of around 22.5-25 kg/m². Mortality rates beyond this specified range primarily correlate with cardiovascular disease [10].

DISCUSSION:

According to the World Health Organization (WHO), the economic burden of the obesity pandemic amounts to billions of dollars annually. This has a significant impact on healthcare costs, and the problem continues to worsen globally, particularly in industrialized nations. In the United States, obesity resulted in a nearly \$40 billion rise in medical expenditures by 2006, with prescription drug expenses accounting for \$7 billion of that total. In 2005, the total expenses associated with obesity in Australia amounted to \$1721 million. Out of this total, direct medical costs accounted for \$1084 million, while indirect costs amounted to \$637 million [11].

Obesity is linked to issues that can significantly affect health, productivity, and healthcare expenses [12]. For instance, type 2 diabetes (T2D) and cardiovascular disease have a strong connection to significant healthcare expenses, both directly and indirectly due to reduced productivity [13]. While the age-adjusted comparative prevalence of diabetes in Saudi Arabia is 18.7%, which is lower than in Qatar at 19.5% for 2021 [14], the larger population in Saudi Arabia [15] results in a much higher number of persons with diabetes compared to Qatar. Research conducted in the United States suggests that the expenses linked to obesity-related complications (ORCs) are greater in individuals with a higher body mass index (BMI) [12]. Obesity-related conditions (ORCs) such as type 2 diabetes (T2D) and hypertension are widespread in Saudi Arabia [16], although there is limited data on their influence on healthcare and social expenses. According to a recent microsimulation analysis, it is projected that there would be more than one million new instances of Type 2 Diabetes (T2D) caused by obesity among working-age individuals in Saudi Arabia by the year 2040. The total healthcare expenses associated with these cases are estimated to surpass

84.4 billion US dollars (USD) [17]. Addressing obesity and its associated consequences is a key objective of Saudi Vision 2030 [18], a comprehensive plan aimed at transforming various sectors, including healthcare. The plan includes steps to mitigate the impact of chronic diseases and their underlying risk factors.

The correlation between obesity and mental health issues remains ambiguous. Nevertheless, being overweight has a negative social perception, and discrimination against obesity might contribute to the development of certain psychological problems. Scientific research strongly indicates a growing risk of several negative effects on mental health and well-being, such as low self-esteem, mood disorders, motivational disorders, eating difficulties, distorted body image, and interpersonal communication problems. These factors directly or indirectly impact the overall quality of life [19].

Conversely, in certain instances, being subjected to discrimination based on obesity has resulted in the emergence of psychopathology and unhealthy behaviors, which, in a self-perpetuating cycle, exacerbate issues such as overeating, bulimia, or other associated problems. The text is enclosed in tags.

Several studies have demonstrated that obesity in both males and females heightens the likelihood of experiencing compromised sexual well-being [21]. Obese persons sometimes relate their appearance and weight to encountering regular challenges in their sexual activities [21]. Sexual behavior and its impact on sexual satisfaction, unwanted pregnancy, and abortion have been identified as significant concerns. Obese women who are simultaneously dealing with the intricacy of therapeutic procedures experience a significant decline in their sexual quality of life [21]. Therefore, it is crucial to prioritize extensive population-based research in order to determine the influence of overweight and obesity on various facets of mental well-being, such as mood disorders, communication difficulties, self-contentment, sexual health, and different aspects of overall quality of life [21,22].

The repercussions of physical co-morbidities associated to obesity encompass psychological problems and the stigmatization endured by those who are obese [23]. The stigma and discrimination associated with being overweight are well-documented in various aspects of life, such as physical and mental growth, educational systems, job opportunities, and access to healthcare [24]. Obese

persons frequently face criticism from their professors, physicians, and the general public. Occasionally, they also experience discrimination, mockery, societal prejudice, exclusion, and embarrassment [25]. The use of specialized obesity diagnostic or treatment procedures, such as anthropometric evaluations, may potentially influence the professional attitude of caregivers and subsequent clinical evaluation and service provision for obese individuals when they are seeking care [25].

Weight-related discrimination is directly associated with unhealthy behaviors such as compulsive overeating, binge eating, a sedentary lifestyle, and less physical activity, all of which contribute to increased weight gain. This recurring pattern further amplifies the likelihood of being subjected to weight-based discrimination [25].

Given the significance of the health hazards associated with being overweight or obese, as well as the growing incidence of these conditions worldwide, it is imperative to establish clearly defined control and prevention programs. These programs should be prioritized on the political health agenda. Further research is needed to investigate the impact of boosting physical activity, changes in food kinds and calorie consumption, and diagnosing and controlling eating behavioral impairments on the incidence of overweight and obesity [26].

Medical burden cost:

In Brazil, Bahia et al. [27] demonstrated that the annual direct medical expenses associated with overweight and obesity reached a staggering US\$2152 billion. The primary factor contributing to expenses was hospitalizations, which accounted for \$1473 billion (68.4% of total costs). Ambulatory procedures followed with a cost of \$679 million (31.6%). Onwudiwe et al. [28] reported that the yearly per capita direct medical expenses associated with overweight, obesity class I, and obesity class II/III were US\$3115, US\$3686, and US\$4386, respectively. In a 2005 study conducted in the US by Arterburn et al. [29], it was found that morbidly obese adults had an overall per capita health-care expenditure that was 81% higher than that of normal weight adults, 65% higher than that of overweight adults, and 47% higher than that of adults with class I obesity. The per capita expenditure for morbidly obese adults was reported to be US \$1975, while for normal weight adults it was US \$1735, for overweight adults it was US \$1415, and for adults with class I obesity it was not specified. In a study conducted by Daviglius et al. [30], the objective was to evaluate the financial burden of obesity based

on gender. The results revealed that severely obese men incurred expenditures that were 84% greater (US \$6192) than those of non-overweight men, while severely obese women had costs that were 88% higher (US \$5618) than non-overweight women.

According to Thorpe et al. [31], obese individuals had a per capita spending that was 37% greater compared to individuals with normal weight. Finkelstein et al. found that the rising occurrence of obesity in the USA resulted in over \$40 billion of additional medical expenses by 2006, which included \$7 billion in Medicare prescription drug expenses.

A separate study carried out in the United States revealed that the average amount of additional medical expenses incurred by overweight individuals was \$15,000, while obese individuals faced an average of \$26,000 in excess medical costs. Wee et al. [32] found that the average yearly health-care spending for people with a normal weight was \$2970. Overweight adults had an average expenditure of \$3038, while obese adults had an average expenditure of \$4333. The research conducted by Jansenn et al. revealed that in Ontario, the mean physician expenses for overweight adults were \$427 for males and \$578 for females, while for obese individuals, the expenditures were \$475 for males and \$682 for females. A study conducted in the UK from the perspective of the National Health System (NHS) revealed that the cost of overweight and obesity amounted to £5.1 billion [33].

In their study, Sichieri et al. [34] conducted a retrospective analysis to examine the economic consequences of hospitalizations in adult individuals (>20 years) in Brazil. The analysis revealed that in 2001, the combined costs of overweight and obesity accounted for 3.02% and 5.83% of total hospitalization costs among men and women, respectively. Zhao et al. [35] conducted a Cost of Illness (COI) study in China, which revealed that the total medical expenses attributed to overweight and obesity amounted to 21.11 billion Yuan (RMB) (equivalent to US \$2.74 billion) in 2003. This accounted for 3.7% of the country's overall medical costs.

A 2006 study conducted in Japan found that the average direct total expenses were 9.8% higher for overweight individuals and 22.3% higher for obese individuals compared to those with a normal weight [36].

The healthcare cost estimates derived for Saudi Arabia were comparable to published estimates from other nations with a reasonably high GDP per capita, for the majority of ORCs. Gaining cost figures for these disorders in the future would enable a more precise definition of the expenses associated with obesity and other related conditions. It is important to mention that the current study solely calculates the explicit expenses associated with ORCs and does not take into account the implicit costs related to decreased productivity or premature retirement. The indirect costs of many ORCs are comparable to the direct costs. For instance, systematic assessments of the costs of osteoarthritis and T2D showed that the spectrum of direct and indirect costs overlapped. Additionally, a recent analysis from Saudi Arabia revealed significant indirect costs associated with ORCs.

CONCLUSION:

Excessive weight and obesity impose a substantial health burden and will greatly affect healthcare costs. The number is 6. Obesity is strongly linked to the development of chronic medical conditions, reduced quality of life, and increased healthcare and medication expenses. The costs associated with obesity-related healthcare issues are significant for both individuals and healthcare systems.

According to the cautious methodology employed in this research, our results indicate that ORCs impose a significant economic strain on the healthcare system. Preventing or postponing the incidence of ORCs could result in substantial cost savings. Reallocating healthcare resources from managing these problems to other priorities could enhance the quality of care for all patients.

REFERENCES:

1. GBD 2015 Eastern Mediterranean Region Obesity Collaborators Burden of obesity in the Eastern Mediterranean Region: Findings from the Global Burden of Disease 2015 study. *Int. J. Public Health*. 2018;63:165–176.
2. World Health Organization. Health topics—obesity. https://www.who.int/health-topics/obesity#tab=tab_1.
3. Janssen F, Bardoutsos A, Vidra N. Obesity prevalence in the long-term future in 18 European countries and in the USA. *Obes Facts*. 2020;13(5):514–527.
4. Mitchell NS, Catenacci VA, Wyatt HR, Hill JO. Obesity: overview of an epidemic. *Psychiatr Clin North Am*. 2011;34(4):717–732.
5. Balhareth A, Meertens R, Kremers S, Sleddens E. Overweight and obesity among adults in the Gulf

- States: a systematic literature review of correlates of weight, weight-related behaviours, and interventions. *Obes Rev.* 2019;20(5):763–793.
6. Ministry of Health. Kingdom of Saudi Arabia World Health Survey—Final Report Riyadh, Saudi Arabia (updated 2019). <https://www.moh.gov.sa/en/Ministry/Statistics/Population-Health-Indicators/Documents/World-Health-Survey-Saudi-Arabia.pdf>.
 7. Henry FJ. Obesity prevention: the key to non-communicable disease control. *West Indian Med J.* 2011 Jul;60(4):446–51.
 8. Memish Z.A., El Bcheraoui C., Tuffaha M., Robinson M., Daoud F., Jaber S., Mikhitarian S., Al Saeedi M., AlMazroa M.A., Mokdad A.H. Obesity and associated factors—Kingdom of Saudi Arabia, 2013. *Prev. Chronic Dis.* 2014;11:1–10.
 9. Arnold M., Leitzmann M., Freisling H., Bray F., Romieu I., Renehan A., Soerjomataram I. Obesity and cancer: An update of the global impact. *Cancer Epidemiol.* 2016;41:8–15.
 10. Zammit C., Liddicoat H., Moonsie I., Makker H. Obesity and respiratory diseases. *Int. J. Gen. Med.* 2010;3:335.
 11. Kouris-Blazos A, Wahlqvist ML. Health economics of weight management: evidence and cost. *Asia Pac J Clin Nutr* 2007;16(Suppl 1): 329–38.
 12. Divino V, Ramasamy A, Anupindi VR, et al. Complication-specific direct medical costs by body mass index for 13 obesity-related complications: a retrospective database study. *J Manag Care Spec Pharm.* 2021;27(2):210–222.
 13. Muka T, Imo D, Jaspers L, et al. The global impact of non-communicable diseases on healthcare spending and national income: a systematic review. *Eur J Epidemiol.* 2015;30(4):251–277.
 14. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Diabetes data portal; 2021. <https://www.diabetesatlas.org/data/en/>.
 15. The World Bank. Population total, Saudi Arabia, 1960–2020. <https://data.worldbank.org/indicator/SP.PO.P.TOTL?locations=SA>.
 16. Alghnam S, Alessy SA, Bosaad M, et al. The association between obesity and chronic conditions: results from a large electronic health records system in Saudi Arabia. *Int J Environ Res Public Health.* 2021;18(23):12361.
 17. Alqahtani SA, Saxton J, Coker T, et al. How could different obesity scenarios alter burden of diabetes and liver disease in Saudi Arabia? Poster 165: In: proceedings of the 39th Annual Meeting of the Obesity Society (Obesity Week 2021) *Obesity.* 2021;29(2):113.
 18. Saudi Arabia Vision 2030, Healthcare Transformation. <https://www.vision2030.gov.sa/v2030/vrps/hstp/>.
 19. Scott KM, Bruffaerts R, Simon GE, Alonso J, Angermeyer M, de Girolamo G, et al. Obesity and mental disorders in the general population: results from the world mental health surveys. *Int J Obesity.* 2007;32(1):192–200.
 20. Hilbert A. The burden of the burden: current advances in weight stigma research. *Obesity Facts.* 2010;3(1):5–6.
 21. Kaneshiro B, Jensen JT, Carlson NE, Harvey SM, Nichols MD, Edelman AB. Body mass index and sexual behavior. *Obstetr Gynecol.* 2008;112(3):586–592.
 22. Kinzl JF, Fiala M, Hotter A, Biebl W, Aigner F. Partnership, sexuality, and sexual disorders in morbidly obese women: consequences of weight loss after gastric banding. *Obesity Surg.* 2001;11(4):455–458.
 23. Rosengren A, Lissner L. The sociology of obesity. *Front Horm Res.* 2008;36:260–270.
 24. Carr D, Friedman MA. Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *J Health Soc Behav.* 2005;46(3):244–259.
 25. Hawks SR, Goudy MB, Gast JA. Emotional eating and spiritual well-being: a possible connection? *Am J Health Educ.* 2003;34(1):30–33.
 26. O'Dea JA. Prevention of child obesity: 'First, do no harm' *Health Educ Res.* 2005;20(2):259–265.
 27. Bahia L, Coutinho ES, Barufaldi LA, et al. The costs of overweight and obesity-related diseases in the Brazilian public health system: cross-sectional study. *BMC Public Health* 2012;12:440.
 28. Onwudiwe NC, Stuart B, Zuckerman IH, Sorkin JD. Obesity and medicare expenditure: accounting for age-related height loss. *Obesity (Silver Spring)* 2011;19:204–11.
 29. Arterburn DE, Maciejewski ML, Tsevat J. Impact of morbid obesity on medical expenditures in adults. *Int J Obes (Lond)* 2005;29:334–9.
 30. Daviglius ML, Liu K, Yan LL, et al. Relation of body mass index in young adulthood and middle age to Medicare expenditures in older age. *JAMA* 2004;292:2743–9.

31. Thorpe KE, Florence CS, Howard DH, Joski P. The impact of obesity on rising medical spending. *Health Aff (Millwood)* 2004. Suppl Web Exclusives:W4- 480-6.
32. Wee CC, Phillips RS, Legedza AT, et al. Health care expenditures associated with overweight and obesity among US adults: importance of age and race. *Am J Public Health* 2005;95:159–65.
33. Janssen I, Lam M, Katzmarzyk PT. Influence of overweight and obesity on physician costs in adolescents and adults in Ontario, Canada. *Obesity Rev* 2009;10:51–7.
34. Sichieri R, do Nascimento S, Coutinho W. The burden of hospitalization due to overweight and obesity in Brazil. *Cad Saude Publica* 2007;23:1721–7.
35. Zhao W, Zhai Y, Hu J, et al. Economic burden of obesity-related chronic diseases in Mainland China. *Obes Rev* 2008;9(Suppl 1): 62–7.
36. Kuriyama S. Impact of overweight and obesity on medical care costs, all-cause mortality, and the risk of cancer in Japan. *J Epidemiol* 2006;16:139–44.
37. Malkin JD, Baid D, Alsukait RF, et al. The economic burden of overweight and obesity in Saudi Arabia. *PLoS One*. 2022;17(3):e0264993.