

Prevalence of obesity and bariatric surgery among medical students in Riyadh, Saudi Arabia

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ABSTRACT

Background: Bariatric surgery is considered as a successful weight loss intervention in patients with high body mass index (BMI) and also in patients who are unable to lose weight in a nonsurgical way. **Aim:** To measure the prevalence of obesity among medical students and the association between obesity and lifestyle and obesity and the rate of bariatric surgery in obese students. **Method:** This is a cross sectional study which included 301 medical students in Riyadh. An online pretested and validated questionnaire was distributed among medical students. The collected data included weight, height, family background, lifestyle, and past medical and surgical history. **Result:** Our results demonstrated that the prevalence of overweight, obesity, and morbid obesity was 26.6%, 9.6%, and 6.3%, respectively, among medical students. Only 44.9% of them had a family history of obesity (n = 135). Upon assessment of lifestyle, we found that 58.8% of them had a good lifestyle and 41.2% had a bad lifestyle. We found that 42.5% of medical students included in this study have obesity, and 44% of students had history of obesity in their family. In the obese group, 47.6% had a bad lifestyle. There was significant relationship between obesity and lifestyle among medical students (P = 0.0004). We found that 83.1% of students never thought of undergoing bariatric surgery, 10% of them had thought of undergoing it, and 7% of the students had undergone bariatric surgery. **Conclusion:** the prevalence of obesity is less among medical student in comparison to other subgroups. The educational level and environmental factors play an important role in the prevalence of obesity.

Keywords: Bariatric surgery, medical student, obesity

Introduction

Obesity and overweight are defined as abnormal or excessive fat accumulation in the body. They are considered as a major risk factors for comorbid diseases.^[1] The World Health Organization (WHO) has categorized obesity into different levels

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according to the body mass index (BMI), which can be calculated by a person's weight (in kilograms) divided by the square of height (in meters). According to the WHO's criteria of obesity, the ideal BMI is 18.5–24.9 kg/m² and a BMI of 25–29.9 kg/m² is overweight or preobese. The obese category is subdivided into obese class I (30–34.9 kg/m²), obese class II (35–39.9 kg/m²), and obese class III (≥40 kg/m²).^[2,3]

The WHO data show that obesity is dramatically. In the arabic gulf region and worldwide.^[4] The WHO reported that 1.6 billion adults were overweight and obese globally in 2016, and by 2026, it

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is estimated to reach 2.6 billion.¹⁴ Saudi Arabia one of the highest level of obesity in the gulf region. In 2016, the prevalence of people with a BMI of 30 kg/m² was 35%. This is high compared to the prevalence in other Gulf countries. The prevalence was 29.8% in Bahrain and 37.9% in Kuwait.^{15,6}

There are many factors that can cause obesity, such as diet, genetic predisposition, lack of physical activities, and physiological and behavioral factors.⁷ Also, sedentary lifestyles and unhealthy dietary habits are considered as major factors causing obesity in the general public and adolescents.⁸ A study was conducted in England showed, decrease level of activity lead to obesity more than consuming higher food intake.⁹ A study showed in India that examined the development of obesity reported that both lack of physical activity and dietary behavior were significant in the development of obesity.¹⁰ A cross-sectional study conducted in Pakistan reported that most of the medical students (80.7%, 197 of 244) neither played sports in college nor did regular walking or jogging.¹¹⁻¹⁵

There are different strategies for weight loss, such as dietary modifications, increased physical activity, behavior therapy, pharmacotherapy for metabolic disease, and bariatric surgery.¹⁶ The goals of using these strategies are to prevent further weight gain or to achieve weight reduction. Bariatric surgery can be considered as a successful weight loss step in patients who have been unable to sustain weight loss by nonsurgical strategies.

In this study, we aimed to measure the prevalence of obesity among medical students and the association between obesity and lifestyle and obesity and the rate of bariatric surgery in obese students.

Materials and Methods

This is a cross-sectional study that was conducted at AlMaarefa University, Riyadh, Saudi Arabia. The study included 301 participants, consisting of all medical students who attended AlMaarefa University. An online questionnaire was distributed among the students. The collected data included weight, height, family background, lifestyle, and past medical and surgical history. Approved IRB was obtained at march 2020 from almaarefah university ethical committee.

The BMI was classified into the following categories: underweight, normal 18.5–24.9 kg/m², overweight 25–29.9 kg/m², obese 30–34.9 kg/m², and morbid obesity 35–39.9 kg/m².

Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 24. Frequency tables and charts were generated using Microsoft Excel. A *P* value less than 0.05 was considered significant. Data are presented in the form of tables.

Results

Three hundred and one medical students responded to our online survey. Of them, 221 (73.4%) were students in the clinical

years and 80 (26.6%) were students in the basic years [Table 1]. Also, 60.8% (*n* = 183) of the students were females and 39.2% (*n* = 118) of them were males [Table 2].

Out of 301 students, 250 (83.1%) never thought of undergoing bariatric surgery, 30 (10%) had thought of undergoing it, and 21 (7%) had already undergone bariatric surgery [Table 3].

According to the BMI, the students were classified as follows: 16 (5.3%) were underweight, the majority 157 (52.2%) had normal BMI, 80 (26.6%) were overweight, 29 (9.6%) were obese, and 19 (6.3%) were morbidly obese [Table 4].

Most of the participants (275, 91.4%) had not undergone bariatric surgery and 26 (8.6%) participants had undergone bariatric surgery [Table 5]. Also, 166 (55.1%) of the participants had no history of obesity in their family and 135 (44.9%) of them had a history of obesity in their family [Table 6].

Data on the lifestyle of students showed that 58.8% of them had a good lifestyle (*n* = 177) and 41.2% of them had a bad lifestyle (*n* = 124) [Table 7].

Regarding students' BMI classification and lifestyle, most of the normal students (*n* = 101, 64.3%) reported having a good lifestyle, while 56 (35.7%) of them had a bad lifestyle. Forty-six of the overweight students (57.8%) reported having a good

Table 1: Distribution of undergraduate medical students

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Clinical year (3-6)	221	73.4	73.4	73.4
Basic year (1-3)	80	26.6	26.6	100.0
Total	301	100.0	100.0	

Table 2: Distribution of gender

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Female	183	60.8	60.8	60.8
Male	118	39.2	39.2	100.0
Total	301	100.0	100.0	

Table 3: Willingness the desire of students to undergo bariatric surgery for obesity

Valid	Frequency	Percent	Valid percent	Cumulative percent
I did the bariatric surgery (obesity surgery)	21	7.0	7.0	7.0
No	250	83.1	83.1	90.0
Yes	30	10.0	10.0	100.0
Total	301	100.0	100.0	

lifestyle, while 34 of them (42.2%) had a bad lifestyle. Thirteen of the obese students (44.8%) reported having a good lifestyle and 16 of them (55.2%) had a bad lifestyle. Seven of the morbidly obese (36.8%) reported having a good lifestyle, while 12 of them (63.2%) had a bad lifestyle. Ten of the underweight

students (62.5%) reported having a good lifestyle and six of them (37.5%) had a bad lifestyle [Table 8]. Overall, there was statistically significant relationship between obesity and lifestyle among medical students ($P = 0.0004$).

Discussion

Our results demonstrated that the prevalence of overweight, obesity, and morbid obesity was 26.6%, 9.6%, and 6.3% respectively.

These results are inconsistent with a study published by Yousif *et al.*^[17] titled “Correlation between physical activity, eating behavior and obesity among Sudanese medical students Sudan.” The study revealed that the prevalence of obesity among 216 medical students at Al-Neelain University was 6.5%. These results indicate that the problem of overweight and obesity is higher among the medical students of Riyadh’s universities compared to that among the medical students of Al-Neelain University in Sudan, and is continuously growing. This difference in the prevalence of obesity may be due to sociocultural and geographic differences.

A study published by Al-Qahtani^[18] titled “Prevalence and predictors of obesity and overweight among adults visiting primary care settings in the southwestern region, Saudi Arabia” revealed the higher prevalence of overweight and obesity among the general population in the southwestern region of Saudi Arabia (38.3% and 27.6%, respectively) compared to the prevalence of overweight and obesity among medical students in Riyadh universities. This variation in the prevalence of obesity may be due to the lower awareness of the causes of obesity and its preventive measures among the general population compared to the medical students.^[19,20]

Also, the results demonstrated that the prevalence of bariatric surgery among medical students was 8.6%, even though 10% of those who had not undergone bariatric surgery before thought of undergoing it. These results indicate that medical students are more aware of stepwise management of obesity, and if there are no contraindications for bariatric surgery, it will be the last step for them.

In line with the hypothesis of a study published by Fruh^[8] on “Obesity: Risk factors, complications, and strategies for sustainable long-term weight management.” The study shows that the educational level and environmental factors play an important role in the prevalence of obesity. Our results build on existing evidence and show that these factors play a role in the prevalence of obesity among medical students. There was a statistically significant relationship found in our data between obesity and lifestyle among medical students ($P = 0.0004$).

To our knowledge, there is a lack of studies and meager information regarding the prevalence of obesity and bariatric surgery among medical students in the region, and our results

Table 4: Distribution of BMI classification

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Underweight	16	5.3	5.3	5.3
Normal	157	52.2	52.2	57.5
Overweight	80	26.6	26.6	84.1
Obese	29	9.6	9.6	93.7
Morbidly obese	19	6.3	6.3	100.0
Total	301	100.0	100.0	

BMI=Body mass index

Table 5: Prevalence rates of bariatric surgery among students

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
No	166	55.1	55.1	55.1
Yes	135	44.9	44.9	100.0
Total	301	100.0	100.0	

Table 6: Prevalence of family history of obesity

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
No	166	55.1	55.1	55.1
Yes	135	44.9	44.9	100.0
Total	301	100.0	100.0	

Table 7: Distribution of the quality of lifestyle among students

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Bad lifestyle	124	41.2	41.2	41.2
Good lifestyle	177	58.8	58.8	100.0
Total	301	100.0	100.0	

Table 8: Distribution of students’ BMI according to their lifestyle

BMI class	Lifestyle		Total
	Bad lifestyle	Good lifestyle	
Underweight	6	10	16
Normal	56	101	157
Overweight	34	46	80
Obese	16	13	29
Morbid obese	12	7	19
Total	124	177	301

BMI=body mass index, $P=0.0004$

will facilitate and help in preventing obesity and guide the obesity interventions toward the Saudi vision 2030.^[21]

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Conflict of interest

There are no conflicts of interest.

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