Original Article

Prevalence of Overweight and Obesity Among Medical Students at the University of Mosul

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Abstract

Background: Overweight and obesity are important reasons for mortality worldwide, Medical students are further susceptible to obesity due to their daily life with fewer hours of physical activity and disorderly food consumption habits. **Objectives:** The aim of this study was to evaluate the prevalence of overweight and obesity among medical students at the University of Mosul and to describe related dietary habits and physical activities. **Materials and Methods:** This study was conducted in the College of Medicine University of Mosul. A cross-sectional study design was selected. Messages were sent to 2179 students, and 1520 students agreed to participate with a response rate of 69.76%. A specially designed questionnaire form was filled out by each participant after a brief explanation of the study objectives. Anthropometric were measured including body weight and height. Body mass index was calculated as an indicator of overweight and obesity. **Results:** This study showed that more than three-quarters of the study population (79.54%) were between 18 and 24 years of age. Overweight and grade I obesity was observed among 21.05% and 4.48% of medical students, respectively. The study showed that overweight and grade I obesity were more prevalent in males than in females (27.66% and 7.09% in males compared to 17.15% and 2.93% in females, respectively) and this difference was found to be statistically highly significant. This study showed that approximately 78% of medical students stated that they practice exercise regularly. **Conclusion:** Obesity and overweight are more prevalent among male medical students than females.

Keywords: Body mass index, medical students, obesity, overweight, prevalence

Introduction

Overweight and obesity are important reasons for mortality worldwide; approximately 3 million deaths are recorded annually for causes related to overweight and obesity.[1-3] Increasing tendency of obesity among young adults is a universal phenomenon and it can be considered as one of the major public health challenges of the 21st century.[1,4,5] The prevalence rates of overweight and obesity among young adults are found to be 25%–50% in the Arab Gulf region.[6]

Though a large number of studies point out that obesity and overweight are a problem in developed countries, contemporary research also shows that developing world countries are not excluded.[6]

Obesity prevalence has nearly folded between 1980 and 2008.[7] A multiplicity of influences, including food regimen, genomic predisposition, physical exercise, and physiological and behavioral factors, are considered leading factors for obesity.[8,9]

Medical students are further susceptible to obesity due to their lifestyle with fewer hours of physical exercise and disorderly food consumption habits and thus are susceptible to obesity-related health risks like hypertension, dyslipidemia, and impaired glucose tolerance. However, commonly it remains an unnoticed problem despite its consequences.[10,11] Moreover many studies worldwide depicted a higher prevalence of overweight and obesity among medical students.[12-16]

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The aim of this study was to evaluate the prevalence of overweight and obesity among medical students at the University of Mosul and to describe related dietary habits and physical activities.

Materials and Methods

Study setting:

This study was conducted at the College of Medicine/ University of Mosul.

Study Period:

The study was conducted over 1-year period starting from the December 1, 2020 to the November 30, 2021.

Study design:

A cross-sectional study design was been selected to achieve the objectives of the study, all medical students of the college were invited to participate in the study through electronic messages with a brief explanation of the aim of the study. Messages were sent to 2179 students, and 1520 students agreed to participate with a response rate of 69.76%. The study was approved ethically and scientifically by the Council of the Department of Family and Community Medicine in meeting No. 3 on October 20, 2020 and the Council of College of Medicine in meeting No. 4 on November 15, 2020. All participants were interviewed directly by investigators, and a specially designed questionnaire form was filled out by each participant after a brief explanation of the study objectives. The questionnaire form includes information in regard to age, gender, and academic stage, in addition to exercise, and diet. Anthropometric data were calculated, body weight was measured to the nearest 0.5 kg using an electronic weight scale with light clothes; moreover, students' height was measured to the nearest 0.5 cm using a vertical wall scale and the students stood erect without shoes. Body mass index (BMI) was calculated according to the intentional procedure:

BMI = body weight (in kg)/height^2 (in meter).[17]

Classification of the study sample was conducted as follows:[17]

1. Underweight—BMI < 18.5
2. Normal weight—BMI 18.5 to <25
3. Overweight—BMI 25 to <30
4. Grade one obesity—BMI 30 to <35
5. Grade two obesity—BMI 30 to <35
6. Class three obesity—BMI 40+

Statistical analysis:

Data interpretation was conducted by using SPSS V20 and Excel 2010 computer systems, X^2 test was used to conduct the statistical analysis.

Ethical approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before the sample was taken. The study protocol and the subject information and the consent form were reviewed and approved by a local ethics committee according to document number 394 on October 21, 2020.

Results

This study showed that more than three-quarters of the study population (79.54%) were between 18 and 24 years of age. Moreover, only 0.66% of participants were more than 26 years of age [Table 1]. On the contrary Table 1 shows that female constitutes approximately 63% of the study population. First academic stage participants were 398 (26.185%) compared to only 157 (10.33%) participants from the sixth academic year.

Table 2 shows the distribution of study participants according to their BMI; it is clear that normal body weight was depicted by approximately two-thirds of students. On the contrary, overweight and grade I obesity were observed among 21.05% and 4.48% of medical students respectively. Moreover, the study showed that overweight and grade one obesity were more prevalent in males than in females (27.66% and 7.09% in males compared to 17.15% and 2.93% in females respectively) and this difference was found to be statistically highly significant [Table 2].

Table 3 gives a hint about participants' body weight distribution according to sex; it is evident that approximately 30% of males have a body weight 60–70 kg

Table 1: Demographic characteristics of the study population, Mosul, 2021

Age in years	No.	%
18-20	406	26.71
20-22	390	25.66
22-24	413	27.17
24-26	301	19.80
26+	10	0.66
Total	1520	100
Gender	No.	%
Male	564	37.11
Female	956	62.89
Total	1520	100
Academic stage	No.	%
First	398	26.18
Second	289	19.01
Third	185	12.18
Fourth	290	19.08
Fifth	201	13.22
Sixth	157	10.33
Total	1520	100

Table 2: Distribution of study population according to BMI, Mosul, 2021

BMI	Gender		Total	*P Value
	Male	Female		
	No. (%)	No. (%)	No. (%)	
Underweight < 18.5	36(6.38)	80 (8.36)	116 (7.63)	0.159
Normal 18.5-<25	308 (54.61)	676 (70.72)	984 (64.74)	0.000
Overweight 25-<30	156 (27.66)	164 (17.15)	320 (21.05)	0.000
Obesity Grade 1 30-<35	40 (7.09)	28 (2.93)	68 (4.48)	0.000
Obesity Grade 2 35-<40	8 (1.42)	8 (0.84)	16 (1.05)	0.238
Obesity Grade 3 40+	16 (2.84)	0 (0)	16 (1.05)	0.000
Total	564 (100)	956 (100)	1520 (100)	

*Chi-squared test used

Table 3: Distribution of study population according to weight, Mosul, 2021

Weight (kg)	Gender	
	Male	Female
	No. (%)	No. (%)
40–50	10 (1.77)	183 (19.14)
50–60	65 (11.52)	433 (45.29)
60–70	169 (29.96)	238 (24.89)
70–80	163 (28.91)	81 (8.47)
80–90	62 (10.99)	11 (1.15)
90–100	53 (9.39)	10 (1.06)
100 and above	42 (7.46)	0 (0)
Total	564 (100)	956 (100)

compared to 24.89% of females. On the contrary, only 9.39% and 1.06% of males and females were observed to have a body weight of 90–100 Kg.

This study showed that approximately 78% of medical students stated that they practice exercise regularly. About two-thirds of participants practice exercise for 1–3 h weekly. Moreover, only 22.3% of students use a diet regimen to decrease weight. A total of 664 participants stated that they consume fast food, 34.64% of them consume 1–2 fast food meals per week [Table 4].

Discussion

Obesity is still a universal public health concern. The prevalence of obesity is elevated considerably through all age groups in recent years. Numerous influences contribute to an augmented hazard of obesity, including unhealthy diet, such as the intake of high-calorie snacks rich in sugar and fat.[18] This study aimed to evaluate the prevalence of overweight and obesity among young adult medical students; the study showed that about half of the participants were 18–22 years of age. This result was found to be consistent with other studies conducted in Saudi Arabia and India.[18-20] Females constitute approximately 63% of the study sample; this result is comparable to the result of a study conducted in Saudi Arabia.[18] In regard to the dissemination of study participants according to the academic year, the result of this study was mildly different from the Saudi Arabia study; this difference might be due to different response rates among students in these studies.[18]

This study showed that 320 students (21.05%) were overweight; this result was found to be comparable with other studies conducted in Saudi Arabia Malaysia, and Oman.[18,21,22] On the contrary, greater prevalence of overweight has been reported in studies conducted in India, and Egypt, this difference might be due to differences in the social characteristics of the population.[23,24] Nevertheless this study revealed that the overall prevalence of obesity is 6.58%, this result was found to be similar to the results of a study conducted in Malaysia.[21] A higher prevalence of obesity (12.7%) has been reported in Saudi Arabia.[18] Moreover, a much lower prevalence was reported in Oman.[22] On the contrary, this study reported a higher prevalence of overweight and obesity among male students, a similar observation was reported in Pakistan.[25]

This study reported that about 78% of students stated that they practice exercise regularly, about 42% of them practiced only 1–2 h per week, and this result was similar to a study conducted in India,[20] and higher than what is reported in a study conducted among university students of Rama medical college Kanpur India.[19]

About two-thirds of medical students reported that they consume three regular meals daily, this figure is much higher than that reported by medical students in Saudi Arabia who report that about two-thirds of them consumed only two meals daily.[18] Moreover, approximately 65% of the study sample stated that they consume snakes, similar result was reported by medical students in Pakistan.[25]

In regard to fast food eating, 43.7% of participants reported that they consume fast food, and approximately 6% of them consumed it daily, this result is much higher than what is reported in India,[10,11] this difference might be

Table 4: Distribution of study population according to lifestyle characteristics, Mosul, 2021

Regular exercise practice	No.	%
Present	1190	78.29
Absent	330	21.71
Total	1520	100
Exercise duration In hours/ week	No.	%
1-2	499	41.93
2-3	325	27.31
3-4	221	18.57
4-5	118	9.92
5+	27	2.27
Total	1190	100
Follow diet regimen for Wt. reduction	No.	%
Yes	339	22.30
No	1181	77.70
Total	1520	100
No. of daily regular meals	No.	%
1	31	2.04
2	423	27.83
3	947	62.30
>3	119	7.83
Total	1520	100
Eating snacks	No.	%
Yes	993	65.33
No	527	34.67
Total	1520	100
Eating fast food	No.	%
Yes	664	43.70
No	856	56.30
Total	1520	100
Fast food consumption/week	No.	%
Daily	41	6.17
3–4	88	13.25
1–2	230	34.64
<1	305	45.94
Total	664	100

attributed to different socioeconomic conditions between the two localities.

Conclusion

It can be concluded that obesity and overweight are somewhat widespread among university medical students. BMI is a simple and active method to screen them so that well-timed actions could be unavailable to avoid their progress and hazardous health implications.

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Conflicts of interest

The author declares that there is no any conflict of interest.

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