

Assessment of body mass index among undergraduate medical students—a cross-sectional study from the Medical College of Haryana

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Abstract

Background: Obesity has turned into a worldwide epidemic. The alarming rise in overweight and obesity among the young people, which forms a key link to the rise of other noncommunicable diseases such as diabetes, hypertension, stroke, and myocardial infarction, is the most important concern. Medical society is expected to have an ideal health.

Objective: To assess the body mass index (BMI) of the medical undergraduate students.

Materials and Methods: A descriptive cross-sectional survey was conducted in the Department of Community Medicine among 150 students; Data were collected using pretested questionnaire from 130 students after taking an informed consent. The height and weight of the students were measured, and the BMI was calculated.

Result: Among the 130 students, the mean + SD height of the students was 1.67 + 0.09 m, while the mean weight was 66.61 + SD 12.71 kg and the mean BMI 23.54 + SD 3.09 kg/m². Normal BMI was observed in 73.1% students, while 22.3% students were overweight, 3.1% obese, and only, 1.5% underweight. Overweight and obesity were significantly more in male than female students.

Conclusion: The study gives an idea about the high prevalence of overweight and obesity in the medical students. Our study reinforces the need for creating wakefulness among this population about the positive effects of normal nutritional status.

KEY WORDS: Overweight, BMI, medical students

Introduction

The burden of noncommunicable diseases is increasing globally and poses a major public health concern, a large part of which is preventable.^[1] Burden of noncommunicable diseases in general and cardiovascular disease, in particular, is

largely attributed to obesity both in the developed and developing countries.^[2] Obesity has reached epidemic proportions globally. In 2014, more than 1.9 billion adults, aged 18 years and older, were overweight. Of them, over 600 million were obese, 39% of adults aged 18 years and over overweight, in 2014, and 13% obese.^[3]

Obesity is an increase in body weight as the result of excessive accumulation of body fat. Body mass index (BMI) is commonly used to define obesity. It is defined as a person's weight in kilograms divided by the square of height in meters (kg/m²). According to the WHO, a person with a BMI ≥ 25 kg/m² is considered as overweight, and a person with a BMI ≥ 30 kg/m² is generally considered as obese.^[3]

Of the factors contributing to obesity, stress seems to be, particularly, important, as stressful condition leads to

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irregularity in diet, lack of exercise, and addiction, each being considered independent factors leading to obesity.^[4] Medical education is stressful throughout the whole course of training. The amount of material to be absorbed, social isolation, pressure of examination, discrepancies between expectation and reality all can be anticipated to bring psychological stress.^[5] The medical students are assumed to have a greater knowledge about healthy lifestyle and dietary habits when compared with nonmedical students. However, there is no evidence to indicate that this knowledge translates into practices in medical students; this is even more important, as they are the future physicians, and the students who personally ignore adopting healthy lifestyle are not likely to influence their patients.^[6]

Hence, this study was undertaken to find out the prevalence of overweight and obesity among the undergraduate medical students of MMIMSR, Mullana, Ambala, Haryana, India.

Materials and Methods

A descriptive cross-sectional survey was conducted in the month of July 2015 in the Department of Community Medicine. The study population consisted of all the 150 first year MBBS students. All the regular male and female students were included in the study. Students present on the day of study were included, and efforts were made twice to contact absentees. A total of 130 students participated in the study. A pretested questionnaire was used to collect and record information on age, sex, height in meters, and weight in kilograms, of each subject. Body weight and height were measured to the nearest 0.1 kg and 0.5 cm using standard calibrated scales and a nonstretch tape fixed to a flat vertical wall, respectively. To reduce the errors in measurement, the scales were checked for precision by weighing an object of known weight. BMI was calculated with the formula: weight

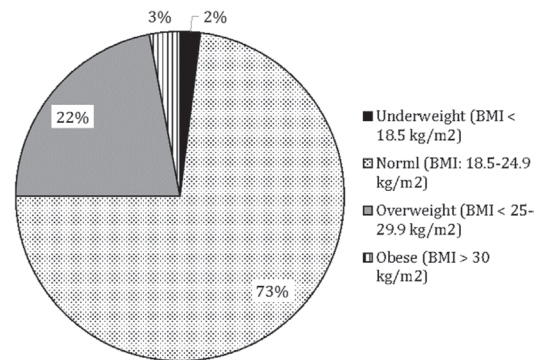


Figure 1: Distribution of the patients according to BMI.

(kg)/height (m²). Using cutoff points adapted from the WHO criteria, BMI < 18.49 kg/m² was defined underweight, 19–24.99 kg/m² normal, 25–29.9 kg/m² overweight, and ≥ 30 kg/m² obese. The data obtained were compiled and analyzed by using SPSS software, version 21.

Result

Of the 130 students who participated in the study, 62.3% were male and 37.7% female students. The mean age of the students was 21.8 ± 3.9 years. Most of the students belonged to urban area and were from upper-class families [Table 1]. The mean ± SD height of the students was 1.67 ± SD 0.09 m, the mean ± SD weight 66.61 ± 12.71 kg, and the mean ± SD BMI 23.54 ± 3.09 kg/m². As depicted in Figure 1, most (73.1%) of them showed normal BMI, while 22.3% of them were overweight, 3.1% obese, and only, 1.5% underweight. Overweight and obesity were observed more in the male than the female students [Figure 2]; this observation was statistically

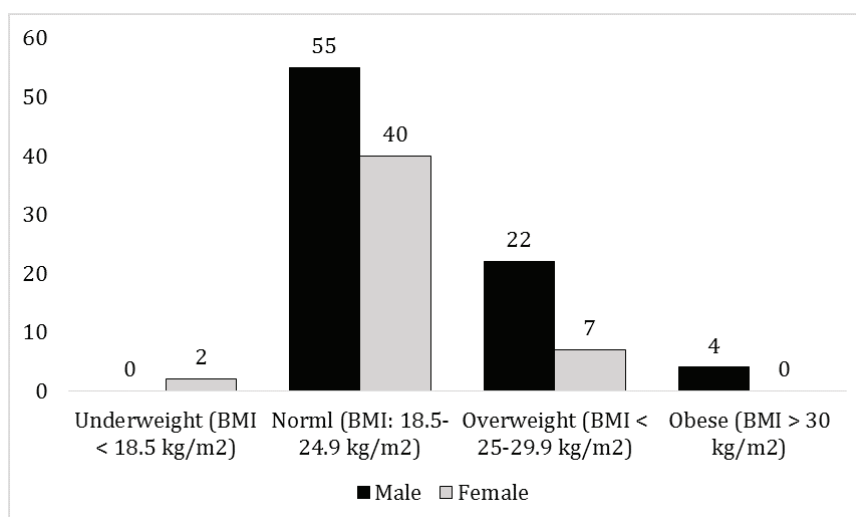


Figure 2: Distribution of the patients according to Gender & BMI.

Table 1: Sociodemographic characteristics of students ($n = 130$)

	Number of students
Age group (years)	
17–19	107
20–22	16
23–25	5
26–28	2
Gender	
Male	81
Female	49
SES (as per BJ Prasad classification)	
I	76
II	35
III	19
IV	0
V	0

Table 2: Positive family history

Factor	Mother	Father
Obesity	113	85
Hypertension	65	94
Diabetes	78	107

significant ($p = 0.03$). A total of 113 mothers and 85 fathers of the students were reported to be obese. History of hypertension and diabetes was present in 65 and 78 mothers, respectively, while among the fathers of the students, hypertension and diabetes were observed in 94 and 107 of them, respectively. A small number of them showed both the diseases [Table 2].

Discussion

In our study, 130 students participated, of which 62.3% were male and 37.7% were female students, while in the study done by Minhas *et al.*,^[7] 222 (28%) were male and 570 (72%) female students. The mean age of the participants in this study was 21.8 ± 3.9 years, which was comparable with the earlier study.^[8] However, the study done by Agarwal *et al.*^[9] in MMAC, Delhi, comprised younger participants.

We reported a mean \pm SD BMI of 23.54 ± 3.09 kg/m², higher than the earlier reported studies;^[7,10] this difference may be because most students were from higher socioeconomic status families and belonged to Punjab and Haryana states, who are considered to be following better dietary habits. Our study found comparatively more students (73.1%) showing normal BMI than the earlier reported studies.^[1,10] Boo *et al.*,^[11] in their study on the students from a Malaysian medical college, reported that 69% of students showed a normal BMI.

The prevalence of underweight was very low (1.5%), contrary to the reports obtained by Kumar *et al.*^[11] (20.1%) and Mani^[10] (10%) through their studies. The overall prevalence of overweight and obese was found to be 22.3% and 3.1%, respectively, which was similar to the results of the study done by Mani.^[10] Although Gupta *et al.*^[12] reported a similar prevalence of obesity through their study, the number of overweight students were fewer. Chhaya and Jadav,^[13] who carried out their study in a similar population, have reported a higher proportion of underweight (13.6%) and obesity (25.6%), when compared with our study. In our study, overweight and obesity was observed more in male than in the female students; the observation was statistically significant ($p = 0.03$) and comparable with the previous studies.^[7,11] On the contrary the study done by Lakshmi and Devi^[14] among the medical students of Tirupati reported no gender difference, while Hamid *et al.*,^[15] in their study, reported female students being more overweight among the students of Skims Medical College. Comparable with the past studies,^[7] family history of obesity in either of the parent was present in many students (mothers 113 and fathers 85); similarly, many of them showed a family history of diabetes or hypertension or both.

Conclusion

As the old maxim describe prevention is better than cure, if we correct the weight abnormalities, we may not need to face the complications of overweight, obesity, and underweight. So, the medical students should first make themselves physically fit with healthy dietary practice and lifestyle before serving the society around them.

We advise that the country needs to carry out a bigger study linking all the medical students, both the undergraduates and postgraduates, to make out the trends in the prevalence of overweight and plan necessary action. Taking into concern that lifestyle risk factors play a significant role in overweight and obesity, there is a necessity of regionally and nationally representative prevalence studies of lifestyle risk factors among the different groups of population.

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