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Study of body mass index (BMI) in first year MBBS students in a medical college in Delhi, India.

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ABSTRACT

Overweight and obesity are assuming epidemic proportions in both developed and developing countries and is associated with a large number of life-threatening disorders such as CAD, metabolic syndrome, and other non-communicable diseases. Lot of factors contributing to obesity like stress, diet, lack of exercise and addiction. Medical students are exposed to a lot of stress throughout their education. More so in preparation for entrance exam (NEET) for admission to medical colleges throughout the country Hence, this study was undertaken to find out the prevalence of overweight and obesity among undergraduate medical students of Vardhman Mahavir Medical college & Safdarjung Hospital new Delhi and also to find the relationship of the family history of various disorders with BMI .A descriptive cross-sectional survey was conducted in the Department of Biochemistry among 152 students (who gave consent to be a part of study out of 163 .Data was collected using pretested questionnaire from students .The height and weight of the students were measured and the BMI was calculated. Results: Among the 152 students. Overweight and obesity were significantly more in male while underweight is more in female students.

The present study gives an idea about the high prevalence of overweight and underweight in the medical students. There is a need to create awareness and interest regarding healthy diet and body weight management among this future physician population. Nutritional education on dietary practices and life style change should be built in as supporting educational activity during student years.

KEY WORDS: Overweight, obesity, body mass index, medical students

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1. INTRODUCTION

The burden of non-communicable diseases is increasing globally and poses a major public health concern, a large part of which is preventable.¹ Burden of non-communicable diseases in general and cardiovascular disease, in particular, is largely attributed to obesity both in the developed and developing countries². Obesity has reached epidemic proportions globally. According to recent WHO global estimates, in 2016, more than 1.9 billion adults (aged 18 years and older) were overweight., out of which over 600 million were obese .Over all we can say that 39% of adults are overweight and 13% are obese³.The rapid increase of overweight and obesity, especially in the younger generation, in many low and middle-income countries like India, due to inappropriate diet and inactive lifestyle, foretells us overwhelming chronic disease burden in the next 10–20 years if no interventions are done.⁴

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). The WHO defines normal weight as a body mass index (BMI, kg/m²) of ≥ 18.5 to < 25 , overweight as a BMI of ≥ 25 to < 30 , and obesity as a BMI of ≥ 30 .⁵ .College life is an important stage for adolescents, as at this time their behaviors are conducive to change⁶ but they are also exposed to stress and lack of time, posing a barrier to adoption of healthy practices⁷ despite being equipped with knowledge. Hence, this study was undertaken to find out the prevalence of overweight and obesity among the undergraduate medical students of Vardhman Mahavir Medical college & Safdarjung Hospital , New Delhi ,India.

2. MATERIAL AND METHODS

A descriptive cross-sectional survey was conducted in the month of May 2023 in the Department of Biochemistry. The study population consisted of 152 undergraduate medical students (who gave consent to be a part of study out of 163). 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 no stretch 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: $weight (kg)/height (m^2)$. 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

3. RESULTS

Of the 153 students who participated in the study, 86 were male and 66 female students (Table 1). Family History of hypertension and diabetes was present in 86 male and 66 female students, respectively, while the family history of CAD and Thyroid disorder is present in 53 and 58 male students and 53 female students respectively as shown in Table 2. The mean \pm SD height of the students was (1.67 ± 0.09 m), the mean \pm SD weight (62.4 ± 12.32 kg), and the mean \pm SD BMI (22.43 ± 3.46 kg/m²). As depicted in Figure 1, most (65%) of them showed normal BMI, while 20% of them were overweight, 1% obese, and 14% underweight. Overweight were observed more in the male than the female students (Figure 2); this observation was statistically significant ($p = 0.03$).

Table 1: Socio demographic characteristics of students (n = 152)

Gender	Number of students
Male	86
Female	66

Table 2: Positive family history

Factors	Male	Female
F/H of Hypertension	86	66
F/H of Diabetes Mellitus	86	66
F/H of CAD	53	53
F/H of Thyroid Disorder	58	53

Table 3: Descriptive statistics of the study group

Group (152)	Height (Meters)	Weight (Kg.)	BMI (kg/m ²)
Mean	1.66	62.4	22.43
SD	0.09	12.35	3.46
SEM	0.007	1.002	0.281

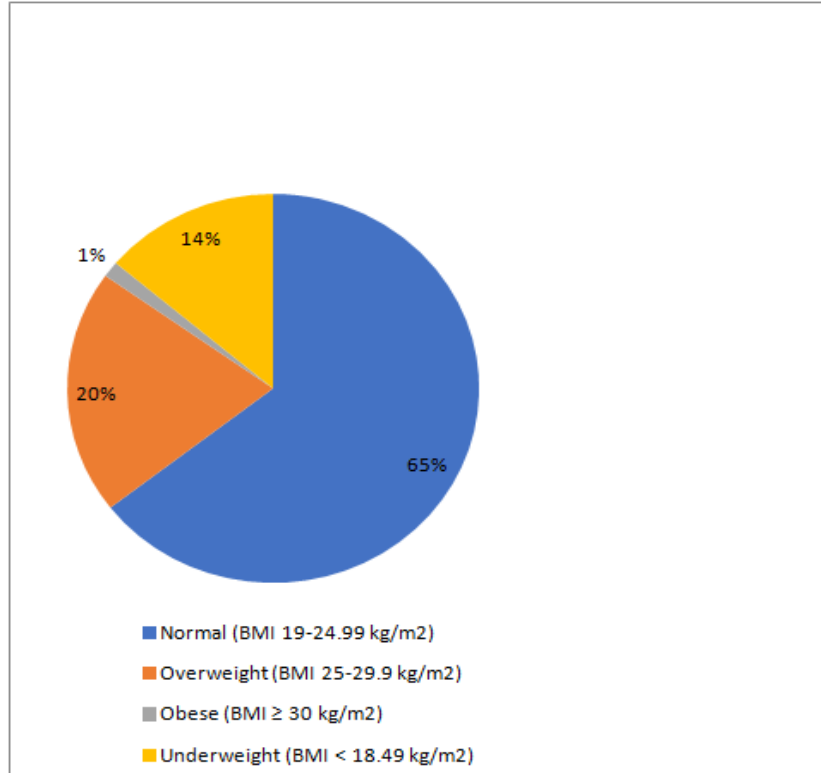


Figure 1: Distribution of the students according to BMI.

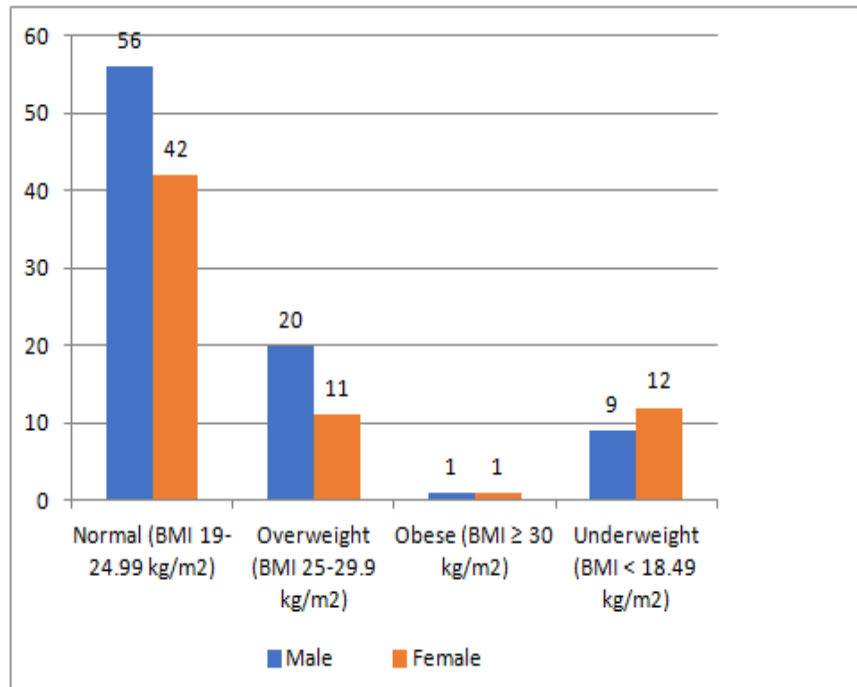


Figure 2: Distribution of the students according to gender and BMI.

4. DISCUSSION

In our study, of 153 undergraduate medical students, 86 were male and 66 female students. The mean \pm SD height of the students was (1.66 ± 0.09 m), the mean weight (62.4 ± 12.3 kg), and the mean \pm SD BMI (22.4 ± 3.46 kg/m²). Most (65%) of them showed normal BMI, while 20% of them were overweight, 1% obese, and 14% underweight.

The study conducted among medical students in Greece revealed a slightly higher prevalence of obesity, which was 22%. This was attributed to lack of regular physical activity and family history of obesity⁸. A significant relation between obesity/overweight and consumption of junk food was established in a study conducted among medical students of Malaysia. In their study, the prevalence of obesity was 15.2% and that of overweight was 21.8%. This increased prevalence was attributed to their increased junk food consumption.⁹ Deshpande et al¹⁰ reported the prevalence of obesity to be 29% among medical undergraduate students of Ujjain. Thakkar et al¹¹ reported that, according to Revised Indian Guidelines, the prevalence of obesity was 23% among college girls in Agra District of Uttar Pradesh however in our study we found that prevalence of over weight is more among of male medical undergraduate students . The study done by Agarwal et al¹² in MMAC, Delhi, also found higher mean \pm SD BMI for the participants. The present study we have found comparatively more students (65%) showing normal BMI and 14% underweight,. Boo et al¹³ in their study on the students from a Malaysian medical college, have reported that 69% of students showed a normal BMI but the prevalence of underweight was very low (1.5%) in their study. In our study we have found that prevalence of overweight and obese was 20% and 1%, respectively, which was similar to the results of the study done by Mani at al¹⁴. Although Gupta et al¹⁵ reported a similar prevalence of obesity through their study, the number of overweight students were fewer. 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.¹⁶ On the contrary the study done by Lakshmi and Devi¹⁷ among the medical students of Tirupati reported no gender difference, while Hamid et al¹⁸ in their study, reported female students being more overweight among the students of Skims Medical College.

Strength and limitations: As the study is conducted in medical college students, who are future physicians it is very important that they be aware of increasing obesity as this may influence the outlook of patients .This study was conducted in 152 medical students. It was recommended to conduct a study with a larger sample size. Recall and non-response bias could have occurred from the students while filling the questionnaire, which warrants further research.

5. CONCLUSION

This study highlights the fact that superior knowledge about healthy dietary habits does not necessarily result into better practices. Programmes focusing on improving time management skills of students are essential. They need to be encouraged to participate in physical exercise, especially sports, athletics, and other outdoor activities. Further studies should be undertaken to identify specific barriers among medical students in practicing healthy dietary habits and come up with workable solutions. Improvement in dietary habits, if made in early years of medical schooling, would produce physicians practicing and promoting healthy dietary habits. Nutrition education is required including counseling on skipping meals and consumption of snacks.

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