A Cross-Sectional Study to Assess the Prevalence of Obesity among Second Professional MBBS Students of One of the Medical Colleges of Indore, Madhya Pradesh Sudha Patel¹, Anjali Kushwah², Sapna More³, Pallav Hetawal¹, Ankit Sharma¹, Avina Kharat¹

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Abstract:

Introduction: Obesity is a complex multifactorial preventable disease. The problem of obesity is important to discuss because it is closely associated with an increasing risk to many diseases. **Objective:** To assess the prevalence of obesity among Second MBBS students and find the anthropometric parameters of obesity. **Method:** This was a cross-sectional, observational study conducted among 100 second MBBS students. Demographic data and anthropometric measures, such as Height, Weight, Body mass index, Waist circumference, and Waist/Hip ratio of the students were collected. **Results:** BMI was < 18.5 in 17.34% of male and 28% of female students. Around 18.67% of male and 24% of female students had BMI of more than 25 and where as student shaving BMI of more than 30 were 6.66% and 4% in male and female students, respectively. According to the *Waist/Hip ratio*,16% male (>0.95) and16% female (>0.86) students were categorized as at risk for obesity (p-value 0.86). **Conclusion:** Almost half of the male and female students were having normal BMI. More number of female students had BMI lower than normal. Students falling in the category of overweight were higher as compared to obese students. Such students were advised for non-pharmacological measures of weight reduction through proper exercise, consuming a healthy balanced diet, and role of physical activity, so as to maintain proper bodyweight and to prevent future complications of obesity were advised to the students.

Keywords: Body mass index, Obesity, Prevalence

Introduction:

Overweight and obesity, as well as their related non communicable diseases are largely preventable and the fastest growing public health problems in developed and developing countries.^[1] It is a "New world syndrome" which affects all age groups.The problem of obesity has tripled in the past decade, and it currently affects approximately 30-35% of the general population in the USA and 25% in the UK,by 2030 an estimated 38% of the world adult population will be overweight, and another 20% will be obese.^[2] Currently, the global prevalence of obesity in children and adolescents is 7-10% and is speculated to double by 2025. Obesity is associated with an increasing risk of mortality and morbidity as compared to those who have an ideal body weight.^[3] Even a moderate weight reduction in the range of 5-10% of the initial body weight improves overall health.^[4] The problem of obesity is important to discuss because it is closely associated with increasing risk of cardiovascular disease, dyslipidemia, hypertension, diabetes type

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org DOI : 10.51957/Healthline_447_2022	Patel S, Kushwah A, More S,Hetawal P, Sharma A, Kharat A. A Cross-Sectional Study to Assess the Prevalence of Obesity among Second Professional MBBS Students of One of the Medical Colleges of Indore, Madhya Pradesh. Healthline. 2023; 14(1):69-73

II,stroke,PCOD, obstructive sleep apnea, thyroid, etc. The burden is increasing due to increasing economic growth, industrialization, transportation facilities, urbanization, sedentary lifestyle and nutritional transition to high calories processed diet. It is a complex disease which also have genetic, behavioral, socioeconomic, and environmental factors. It is also associated with a psychosocial stigma which is added by economic costs when coupled with comorbidity.

Several indirect methods widely used to measure obesity are anthropometric measures such as Body mass index (BMI), waist circumference (WC), Waist/Hip ratio(W/H ratio).BMI is a measure of weight corrected for height and which reflects the total body fat and has been the most accepted parameter for defining overweight.^[5]Obesity is defined as BMI of >30 kg/m² and is largely due to an imbalance between, calories intake and expenditure. (According to WHO overweight is a BMI >25 and obesity is a >30).^[1]

A waist circumference >102 cm in men and > 88 cm in women is an estimate for central obesity.The waist –hip ratio is the dimensionless ratio of the circumference of the waist to that of the hips.This is calculated as the waist measurement divided by the hip measurement.The normal W/H ratio is<0.90 in male and < 0.85 in females.^[6]

Medical students being future doctors are role models for society for reflectinga healthy lifestyle. Many researcharticles suggest that obesity is increasing among them due to unhealthy eatinghabits,lack of physical activity and stress.^[7]Moreover, due to COVID -19 pandemic, they had to remain indoors, due to imposed lockdowns. Also, they were bound to study through e-learning while sitting in their homes. So, this study was planned when they resume their offline learning in the institute to assess prevalence of obesity among them. Authors also tried to create awareness regarding obesity and its complications as to maintain a healthy body.

Method:

A cross-sectional observational study was conducted during September to November 2021.The second professional MBBS students of the 2019 batch of MGM Medical College, Indore were selected purposively for the study. Those who consented to participate in study were requested to fill the questionnaire having basic demographic details of the students. Only one student, who was prescribed an antipsychotic drug, was excluded from the study. A total of 100 students were recruited for the study according to convenient sampling method. Assessment of obesity was carried out by using the BMI formula: BMI = Weight (kg)/height(m²), Normal range for BMI is 18.5-24.9 kg/m² (as per WHO).^[8]

The weight of the students was measured by using a calibrated weighing machine, wearing light weight cloths, and removing heavy items from the pockets and weight was recorded to the nearest kilograms. For recording the height of subjects, a vertical measuring scale was fixed to wall and students were asked to remove shoes and stand on flat floor in front of measuring scale with the feet parallel and heels, buttock, shoulder and back of head touching vertical scale. The head was held completely erect with lower border of orbit in the same horizontal plane as the external auditory meatus. The arms were kept hanging by the sides in natural manner. The horizontal bar of the measuring scale was lowered to touch the head. The height was recorded to the nearest centimeter (cm).

Grading of BMI was done according to WHO grading, in which individuals with BMI below 18.5kg/m² are underweight, individuals with BMI ranging from 18.5-24.9 kg/m² are considered normal,those with BMI ranging from 25-29.9 kg/m²are overweight and those with BMI above 30 are considered obese.

For waist circumference measurements the students were made to stand with feet 25-30 cm apart, weight evenly distributed. Measurement was

taken midway between the inferior margin of the last rib and the crest of the ileum in a horizontal plane.Waist circumference was measured to the widest part of the buttocks.

The authors also recorded about the physical activity, dietary preference, addiction history and history regarding hypertension, diabetes, and thyroid disorder in the structured proforma.All data was entered into a Microsoft excel sheet and statistical analysis was done using SPSS version 21,p>0.05 was considered statistically significant. The association between overweight/obesity and various factors was done using the Chi-square test.Ethics clearance was obtained from the institutional ethics committee.

Results:

Out of total 100 students enrolled in the study, there were 75 male and 25 female students. Around 17% male and in 28% female students had BMI< 18.5.BMI was normal in 57% male and 40% female students, where as 19% male and 24% female students were overweight and 7% male and 8% female students were obese.But these findings were statistically insignificant on performing chi-square test(p value 0.48)(Figure 1).

As shown in Figure 2, Waist /Hip ratio was excellent (<0.85) in 18(24%) male and 6(24%) female students (<0.75). W/H ratio is at risk of obesity in12 (16%) male (>0.95) and 4(16%) female students (0.86). These results are also found insignificant statistically using chi-square test (p value 0.97).

Various contributory factors associated with obesity were also assessed using questionnaire. Out of total 100 students 48% male and 84% female students were vegetarian while and 36% male and 16% female students were non-vegetarian.

When authors inquired about their physical activity, it was found that 76% male and 56% female students were havingmoderate physically activity. This result also not found statistically significant. (p value 0.158)(Figure 3)

Out of total participants, only one male student having hemophilia taking factor VIII and one female student having anxiety disorder was on etizolam and desvenlafaxine.Family history revealed history of Diabetesin student's parents of 28%, Hypertension in 29.33%, Hyperthyroidismin 12% and Hemophilia in 1%.



Figure 1 : Distribution of students according to BMI (N=100)



Figure 2 : Distribution of students according to Waist/Hip ratio (N=100)

*Students have been categorized using WHO waist/hip ratio^[5]





Discussion:

This study was done for the assessment of obesity in medical students.Out of total 100 students participated; prevalence of obesity was found more among male as compared to female students. Thehigher prevalence of obesity found among boys may be due to the fact that being more outdoors,they tend to eat more junk food such as fried snacks, and fast-food items. Girls consume less calories as they perceive more about body image correctly and try to change their body weight towards normal. Also, girls perform more household activities as compared to boys. While some previous studies indicate an increased prevalence of obesity/overweight among female students. ^[9-11]During COVID, students were confined in their homes andspent many hours watching television, mobiles, and computers. This extra screen time was also due to online teachinglearning. This also added to their less physical activity leading to overweight.

In current study, it was found that females had higher waist circumference as compare to that of males. This may be due to hormonal imbalance among them or consumption of extra-calories. Abdominal obesity which occur because of visceral fat deposition is associated with cardiovascular risk such as Hypertension, Type II Diabetes and Dyslipidemia.^[12]In a study from north Chennai,India found that less physical activity, consuming junk food and watching television are associated with higher prevalence of obesity.^[13]A study done by Debnath at almentioned about positive correlation between waist circumference and BP (systolic, diastolic and mean) among female students aged 16-22 years.^[14]The overweight students are more at risk of developing obesity and related co-morbidities.^[15-17]

Present study also revealed a large number of students to be underweight. These nutritionally deficient students may suffer from anemia, lack of concentration toward studies, weakness. This might result in decreased academic performance of students.

Limitation of the study:

Only second MBBS students were selected for the study so the findings cannot be generalized.

Conclusion:

Almost half of the male and female students were having normal BMI. More number of female students had BMI lower than the normal. Students falling in the category of overweight were higher as compared to obese students. Such students were advised for non-pharmacological measures of weight reduction through proper exercise, consuming healthy balanced diet and role of physical activity, so as to maintain proper body weight and to prevent future complications of obesity were advised to the students.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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