

Estimation of Body Mass Index (BMI) in First Year Medical Students of Skims Medical College, Bemina

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Abstract: Introduction: The body mass index (BMI) is a measure of relative size based on the mass and height of an individual. Aim: As Overweight and obese individuals are at an increased risk for many diseases and health conditions and also as a measure of underweight, owing to advocacy on behalf of those suffering with eating disorders, such as anorexia nervosa and bulimia nervosa our aim of study is to determine the BMI status of undergraduate first year medical students of SKIMS Medical college Methodology: Body weight and height of 100 first year MBBS students measured and body mass index (BMI) values were calculated by dividing weight with (height). Under weight, normal weight, overweight and obesity were defined using WHO international standard BMI cut-offs. Additional information including gender and age were obtained using a structured proforma. The data obtained was compiled and analyzed using SPSS 11.5 for Windows version. Mean \pm standard deviation were calculated. Data was presented in the form of graphs and described in numbers and percentages. Results: The First year MBBS students were in the age group of 18 -22 years and male: female was in a ratio of 1:1.(i.e;50 males & 50 females). The mean height of the male students was 173.6 cms (SD= 5.0) and females 156. 24 cms (SD= 7. 1). The mean weight of the Male students was 63.5 kg (SD=7.3); and females 56.8 kg (SD=7.6). Overall, 81% of students were within the normal weight range. Around 10% males and 20% female students were overweight. Obesity was found only in 1% of students. The 3% students were underweight and included all the male students. Conclusion: Being overweight is a rising problem of male and female medical students. Both obesity and underweight issues are seen common in students. Carrying excess body fat, not muscle, puts you at greater risk for health problems such as heart disease, cancer, diabetes and stroke.

Keywords: BMI, medical students, underweight, overweight, obesity

1. Introduction

Body fat is an essential part of the body. It provides an important energy source, acts as a heat insulator and shock absorber, is the source of estradiol in women and produces numerous hormones such as adiponectin, resistin and leptin. Determining your percent body fat is very important because the amount of fat in your body is related to health as well as fitness and sports performance. Too much or too little fat in the body poses problems. Body fat can be divided into two categories: Essential fat and storage fat. As its name implies, essential fat is necessary for normal, healthy functioning. It is stored in small amounts in your bone marrow, organs, central nervous system and muscles. In men, essential fat is approximately 3% of body weight. Women, however, have a higher percentage of essential fat — about 12%. This is because their essential fat also includes some sex-specific fat found in the breasts, pelvis, hips and thighs. This sex-specific fat is believed to be critical for normal reproductive function.

Storage fat is the other type of body fat. This is the fat we accumulate beneath our skin, in certain specific areas inside our body, and in our muscles. It also includes the deep fat that protects our internal organs from injury. Men and women have similar amounts of storage fat. It is desirable to have some storage fat due to the protective role it plays in our body. However, most storage fat is considered to be

"expendable". Storage fat increases: a) when we gain weight & b) is what we want to lose when we lose weight.

Obesity has been found to closely correlate with the level of body fat.[1,2] Obesity and its associated morbidities are leading causes of cardiovascular disease, type II diabetes, hypertension, osteoarthritis, anesthesia risks, menstrual abnormalities as well as some types of cancers including those of colon and breast.[3,4,5,6] BMI describes relative weight for height, is not gender specific and is significantly correlated with total body fat content. It is also the most widely accepted means of assessing obesity measured by dividing weight by height.[2] Among the many indices used to assess obesity, BMI has shown strongest correlation with continuous hypertension in both genders.[3] Based on the World Health Organization (WHO) BMI cut-offs for the international classification of body weight, a BMI < 18.5 kg/m² is categorized as underweight, 18.5–24.9 kg/m² as normal, and \geq 25.0 kg/m² as overweight, which is further classified as pre-obese (25.0–29.9 kg/m²), obese Class I (30.0–35.9 kg/m²), obese Class II (36.0–39.9 kg/m²), and obese Class III (\geq 40 kg/m²).⁷ The data regarding the BMI status of adolescent and young adults is scanty, therefore a study has been undertaken to determine the BMI of first year students of SKIMS Medical college.

2. Methodology

A descriptive cross-sectional survey was conducted in department of anatomy SKIMS Medical college, Bemina. The study population consisted of all 100 first year MBBS students. A structured proforma was used to collect and record information on age, sex, height in centimeters and weight in kilograms, of each subject. Body Mass Index (BMI) was calculated using the formula $\text{weight (kg)}/\text{height}^2 (\text{m}^2)$. Using cut off points modified from WHO criteria, [7] BMI less than 18.49 was considered underweight, 19-24.99 normal, 25-29.9 was overweight and 30 or above obese. The data obtained was compiled and analyzed using SPSS 11.5 for Windows version. Mean \pm standard deviation were calculated. Data was presented in the form of graphs. Descriptive statistics was used in terms of numbers and percentages.

3. Results

All the 100 study participants were in the age group 18 - 22 years of age. Out of 100 students, 50(50%) were males and 50(50%) were females (M: F = 1:1). As shown in Fig. 1 the mean height of males was 173.6 cms (SD= 5.0) and their mean weight was 63.5kg (SD=7.3). The mean height of females was 156.24 cms (SD= 7.2) and their mean weight was 56.8 (SD=7.6) (Fig. 2). Overall, 81% of students were within the normal weight range. Around 10% males and 20% female students were overweight. Obesity was found only in 1% of students (1 female only). The 3% students were underweight and included all the male students . When classified according to gender, the average BMI of male students was 21.0 (SD 2.2.) and female students was 23.2 (SD 2.5).(Fig.3, Fig4 Fig.5, Fig.6)

4. Discussion

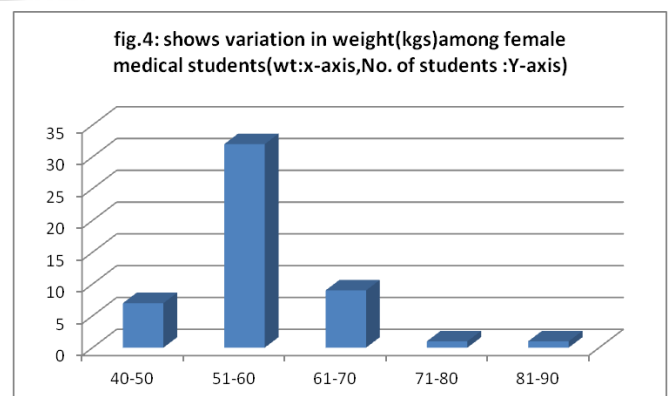
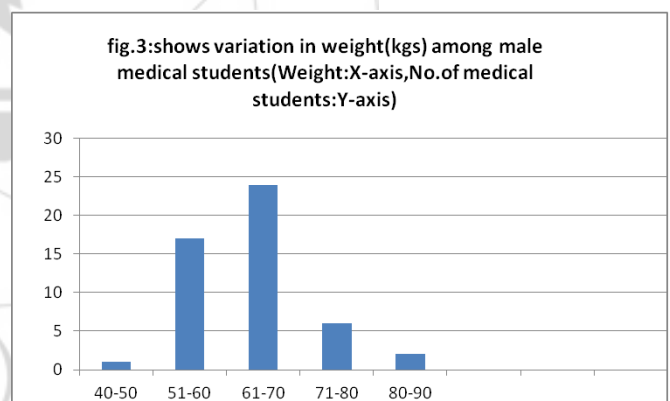
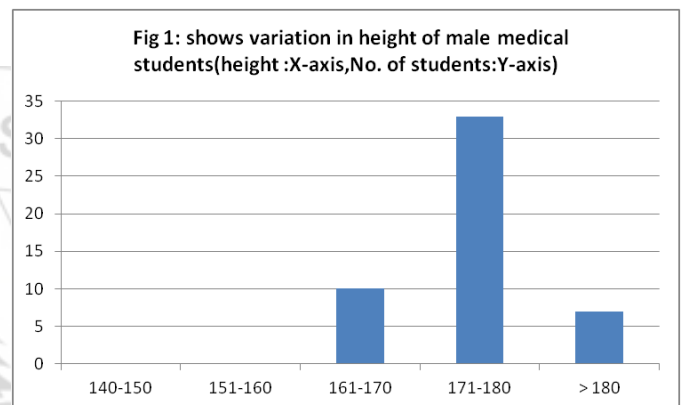
In the present study most students (81%) had a normal BMI. A study conducted at Dow medical college [8] showed 59% of students having normal BMI. Reporting from a Malaysian medical college, Boo et al. reported that 69% of students had a normal BMI. [9]

In the present study, Obesity was only found among 1% of students (2% of females). A similar study from Malaysia reported medical students' obesity to be around 8% (5% in males and 2% in females).[9] Two comparable studies conducted in Karachi elicited obesity at about 3% among public sector medical students [8] and 13% in a private sector medical school.[10] Gupta et al. reported 3% obesity among medical students of Kolkata [11] while Chhabra et al. reported obesity to be 2% among medical students of Delhi.[12] Abdalla and Mohamed in their study on medical students of Ribat University, Khartoum, reported obesity to be 9%.[13]

In our study, the problem of being over weight was double in females(20%) in comparison to males(10%). In similar studies, frequency of overweight medical students were reported by Gupta et al. to be 17.5%[11] according to

Chhabra et al. [12] it was 12% and Abdalla and Mohamed stated it to be 18%[13].

In the current study, underweight students were around 6% in males and no females. This is in contradiction to some other earlier studies. Recent studies in Britain have indicated that females between the ages 12 and 16 have a higher BMI than males of the same age by 1.0 kg/m^2 on average.[14] And most of the first year medical students fall around the same age group. However earlier studies like Boo et al. in a Malaysian study, 15% of medical students were underweight (7% males and 24% females).[9] This trend was also highlighted by Minhas et al. in a similar study Dow medical college Karachi. [8] Being under weight has many important medical implications as it has been reported that it could lead to psychological and physical disorders [15,16,17,18]



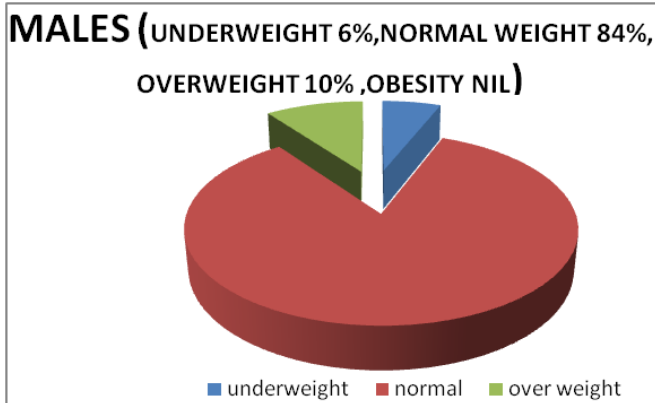


Figure 5: shows percentage of males under various categories of BMI as per WHO Classification

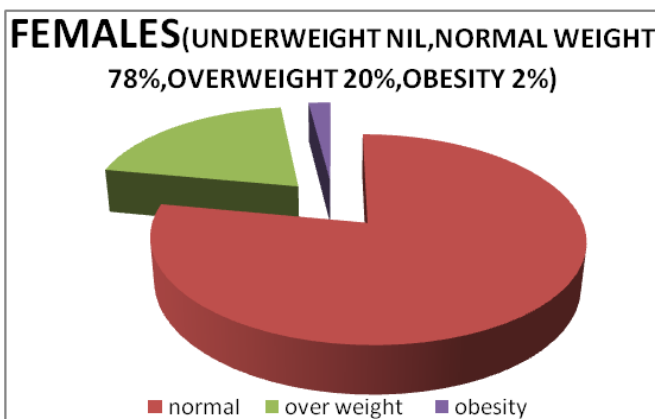


Figure 6: shows percentage of females under various categories of BMI as per WHO Classification

5. Conclusion

The study highlights the fact that obesity is not a major problem among the medical students but being over-weight is coming up as a significant problem in both male and female students. However, more female students were obese. Keeping in view these findings it is right time for better education and awareness among this group of population.

6. Recommendations

The best method for losing weight is to follow a program that helps you to maintain hydration, lose more storage fat, and lose as little lean body mass as possible. Such programs promote a balanced eating pattern and a well rounded program of physical activity that includes some strength training to build or preserve muscle. Important recommendations underlined;

- 1) Emphasis should be on promoting low intensity long duration physical activity that can be conveniently incorporated into daily life. Formal exercise should be encouraged, but at the same time, activities should be enjoyable in order to encourage regular participation and discourage sedentary lifestyle.
- 2) Advice about dietary intake should include guidance about avoiding the over-consumption of energy dense diets rich in fat and refined products and low in fiber.

- 3) Health education should incorporate all the above-mentioned points in an understandable and appealing way in order to maximize its impact in the community.
- 4) More broad based studies should be conducted in medical colleges and in the general population so as to establish guidelines on nutrition and weight status.

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References

- [1] Neovius M, Rasmussen F. Evaluation of BMI-based classification of adolescent Overweight and obesity: Choice of percentage body fat cutoffs exerts a large influence. The COMPASS study. *Eur J Clin Nutr* 2008;62:1201-1207.
- [2] Carroll JF, Chiapa AL, Rodriguez M, Phelps DR, Cardarelli KM, Vishwanatha JK, et al. Visceral fat, waist circumference, and BMI: Impact of race/ethnicity. *Obesity (Silver Spring)* 2008;16:600-607.
- [3] Zhou Z, Hu D, Chen J. Association between obesity indices and blood pressure or hypertension: Which index is the best? *Public Health Nutr* 2008;11-11.
- [4] van den Berg E, Kloppenborg RP, Kessels RP, Kappelle LJ, Biessels GJ. Type 2 diabetes mellitus, hypertension, dyslipidemia and obesity: A systematic comparison of their impact on cognition. *Biochim Biophys Acta* 2008;1792:470-481.
- [5] Bloomgarden ZT. Gut hormones, obesity, polycystic ovarian syndrome, malignancy, and lipodystrophy syndromes. *Diabetes Care* 2007;30:1934-1939.
- [6] Overweight, obesity, and health risk. National Task Force on the Prevention and Treatment of Obesity. *Arch Intern Med* 2000;160:898-904.
- [7] Aziz J, Siddiqui NA, Siddiqui IA, Omair A. Relation of body mass index with lipid profile and blood pressure in young healthy students at Ziauddin Medical University. *J Ayub Med Coll Abbottabad* 2003;15:57-59.
- [8] Minhas HT, Anis D, Jawaid A, Naeem H, Naz M, Zuberi BF. Estimation of body mass index in students of a public sector medical college in Pakistan. *Pak J Med Sci* 2010;26(4):918-22.
- [9] Boo NY, Chia GJQ, Wong LC, Chew RM, Chong W, Loo RCN. The prevalence of obesity among clinical students in a Malaysian medical school. *Singapore Med J* 2010; 51(2) : 126-32.
- [10] Aziz J, Siddiqui NA, Siddiqui IA, Omair A. Relation of body mass index with lipid profile and blood pressure in young healthy students at Ziauddin Medical University. *J Ayub Med Coll Abbottabad* 2003;15:57-9.
- [11] Gupta S, Ray1 TG, Saha I. Overweight, Obesity and Influence of Stress on Body Weight Among Undergraduate Medical Students. *Ind J Comm Med* 2009; 34(3): 255-7.
- [12] "Health Survey for England: The Health of Children and Young People". *Archive2.official-documents.co.uk*. Retrieved 16 December 2013.

- [15] Chhabra P, Grover VL, Aggarwal K, Kanan AT. Nutritional Status and Blood Pressure of Medical Students in Delhi. *Ind J Comm Med* 2006;31:248-51.
- [16] Abdalla SM, Mohamed EY. Obesity Among Medical Students of The National Ribat
- [17] University, Khartoum 2008. *Sudan J Pub Heal.* 2010; 5(2):16-9.
- [18] Sairenchi T, Iso H, Irie F, Fukasawa N, Ota H, Muto T. Underweight as a predictor of diabetes in older adults: A large cohort study. *Diabetes Care* 2008;31:583-584.

Author Profile



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