International Journal of Advances in Medicine
Kumar SS et al. Int J Adv Med. 2018 Oct;5(5):1124-1127
http://www.ijmedicine.com
pISSN 2349-3925 | eISSN 2349-3933
DOI: http://dx.doi.org/10.18203/2349-3933.ijam20183820

Original Research Article

Measures of generalized and central obesity among medical students in a tertiary care teaching hospital

S. Senthil Kumar*, S. Vithiavathi, P. Parameswaran, S. Rakesh Kumar

Department of Medicine, Aarupadai Veedu Medical College Hospital and Research Center, Kirumampakkam, Puducherry, India

Received: 25 June 2018
Revised: 08 August 2018
Accepted: 18 August 2018

***Correspondence:**
Dr. S. Senthil Kumar,
E-mail: drsenthil77@yahoo.com

ABSTRACT

Background: Obesity is a disease process characterized by excessive body fat accumulation which is associated with a large number of debilitating and life-threatening disorders. It is necessary to curb obesity when its beginning in late childhood or adolescence and youngsters. Hence this study is aimed to determine the prevalence of obesity among medical college students.
Methods: This is an observational cross-sectional study conducted at Aarupadai Veedu Medical College and Hospital, Puducherry. Height, weight, waist and hip circumference were measured, and BMI and Waist Hip ratio has been calculated according to WHO standards to determine obesity level in students.
Results: Out of the total 94 students included in the study 56.4% students were in normal weight, 26.6% overweight, 6.4% were obese and shockingly 10.6 % were in the underweight category. Nearly 81.8% and 79.5% of female and male students respectively were in the substantially increased risk category showing insignificant difference between genders.
Conclusions: This study shows that overweight and obesity is prevalent among medical students without much difference in gender basis. Frequent screening might create awareness among students and help them become more self-conscious regarding overweight and obesity.

Keywords: Central obesity, Medical students, Overweight

INTRODUCTION

Obesity is a complex multifactorial chronic disease that develops from an interaction of social, behavioral, cultural, psychological, metabolic and genetic factors. Obesity is a state of excess adipose tissue mass resulting in increase of body weight.[1] The prevalence of obesity is increasing rapidly worldwide. Body mass index (BMI; in kg/m^2) is widely used for the classification of overweight (BMI ≥25) and obesity (BMI ≥30) in men and women.[2] Many studies have reported that body fat distribution is a more powerful predictor than is BMI for risk factors, diseases, and mortality.[3,4] Increased visceral or abdominal adipose tissue in particular have been shown to be more strongly associated with metabolic and cardiovascular disease risk and a variety of chronic diseases.[5] In recent years occurrence of overweight and obesity are very high affecting both developed and developing countries like India.[6] These are mainly due to changes in lifestyle pattern and sedentary and stressful work patterns of people.

Obesity can be noted as the initial wave of a defined group of non-communicable disease called "New World Syndrome", generating a huge socioeconomic and public health burden in the country forecasting India to have the

second highest number of obese children in the world [Indianexpress.com]. Children and adolescents are becoming more obese, indicating that this will accelerate over time. Obesity may lead to heart disease and other chronic disease including hyperlipidaemia, hyperinsulinaemia, hypertension, and early atherosclerosis.

The most widely used method to gauge obesity is the Body Mass Index (BMI), other methods to measure body fat is by anthropometry, densitometry, CT, MRI, DEXA Scans. WHO grades BMI <18.5 as underweight, 18.5 - 24.9 as normal, 25.0 - 29.99 as pre-obese and >30.0 as obese.[7] Excess amount of abdominal fat is independently associated with a higher risk for diabetes mellitus and cardiovascular disease. Both generalized and abdominal obesity are associated with increased risk of morbidity and mortality. Stress is also one of the factors contributing to obesity which leads to irregularity in diet, exercise, and regular activities.

College life is a vital period with loads of responsibilities, decision making and varied expectations. Medical education is stressful throughout the whole course of training. The amount of materials to be absorbed, social interaction, pressure of examination, discrepancies between expectation and reality all can be anticipated to bring psychological stress. Even though many universities and colleges have effective programmes and guidance related to healthy lifestyle programmes the issue on overweight and obesity is rising widely. Hence this study aims to look for the prevalence of obesity and central obesity among medical college students of Aarupadai Veedu Medical College and Hospital, Puducherry, so that better strategies could be developed for students in the college regarding healthy lifestyle.

METHODS

This is an observational cross-sectional study conducted at Aarupadai Veedu Medical College and Hospital, Puducherry among final year medical students of part I and part II. A total of 94 students of both genders participated in the study of which 43 and 51 students were from pre-final and final year respectively. Written consent was obtained from every student before the study. A brief history was taken regarding any metabolic or endocrine disorder and any history of drug intake. Students taking steroids, anti-obesity drugs and with metabolic disorders like hypothyroidism and diabetes were excluded from the study.

Data collection

The detailed demographic information was collected from the students based on questionnaire. Physical activity and dietary habits were assessed by documenting time spent on doing physical activity and average daily calorie intake. After filling the questionnaire anthropometric measurements such as weight, height, waist and hip circumference was measured using a measuring tape according to WHO standard. Waist circumference was measured at the midpoint between the lower margin of the last palpable ribs and the iliac crest. Hip circumference was measured around the widest portion of the buttocks. Height and weight were recorded using a standardized height measuring scale and weighing machine under the supervision of the investigator. Using this data BMI and Waist/Hip ratio was calculated employing the formula weight in kilogram/ height in meter square (wt in kg/ ht in m²) proposed by WHO (2000). The students were classified according to their obesity level based on WHO Standards. The data collected was analyzed further using SPSS statistical package (version 15.0).

RESULTS

The study was conducted in a total of 94 students doing the final year of medicine.

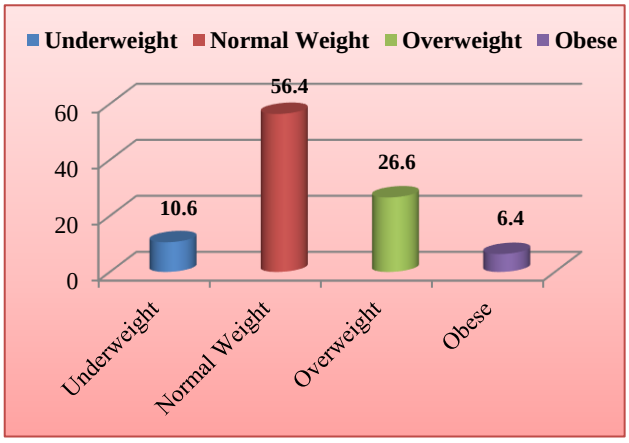

Figure 1: Distribution of students according to their BMI.

The result shows that 51 students (54.3%) were from final year and 43 students (45.7%) were from the pre-final year. Among the total 94 students 58.5% (55) were females and 41.5% (39) were males.

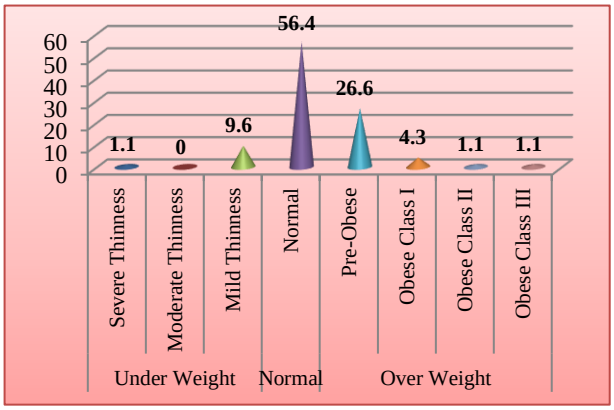

Figure 2: Distribution of students according to their obesity level.

Figure 1 shows the distribution of students according to their BMI. It shows that majority of about 56.4% (53) students were normal weight and nearly 26.6% of students were overweight. Only 6.4% of student were obese, it was noted that 10.6% of students were underweight.

Figure 2 shows the distribution of students according to their obesity level. It shows that 56.4% of students were normal, 26.6% of students were pre-obese. Of the 6.4% obese majority of 4.3% of students were of class I obese. Also 1.1% of students were class II and class III obese respectively. Regarding 10.6% underweight most of them (9.6%) were in mild thinness category.

Table 1: Mean and SD of parameters.

Parameters	Mean±SD
Weight (Kg)	63.83±13.013
Height (cm)	163.106±9.812
BMI	23.953±4.331
Waist (cm)	86.266±12.878
Hip (cm)	91.83±14.476
Waist to Hip Ratio	0.957±0.158

The Table 1 shows the mean and SD of parameters. The mean weight of students was 63.83±13.013 and mean height of students was 163.106±9.812. Similarly, the mean waist circumference of students was 86.266±12.878 and mean hip circumference of students was 91.83±14.476. The mean BMI was 23.953±4.331 and mean waist to hip ratio was 0.957±14.476.

Table 2: Distribution of students according to their BMI with respect to gender.

BMI	Gender	
	Male	Female
Underweight	2 (5.1%)	8 (14.5%)
Normal Weight	20 (51.3%)	33 (60%)
Overweight	16 (41%)	9 (16.4%)
Obese	1 (2.6%)	5 (9.1%)
Total	39 (100%)	55 (100%)

Chi-Square = 8.951; P Value = 0.03 Significant

Table 2 shows that obesity level was greater in females of about 9.1% (6) than males of only 2.6%.

Table 3: Distribution of students according to the risk of metabolic complications with respect to gender.

Risk of metabolic complications	Gender	
	Male	Female
Normal	8 (20.5%)	7 (12.7%)
Increased	0 (0%)	3 (5.5%)
Substantially increased	31 (79.5%)	45 (81.8%)
Total	39 (100%)	55 (100%)

This remains the same in case of underweight also where females were 14.5% and males were 5.1%. On the contrary majority of 41% of males were overweight than the females who were 16.4% which shows that males are at greater risk.

Table 3 shows the risk of metabolic complications analyzed using waist to hip ratio with respect to gender where 81.8% of females and 79.5% of males are in the substantially increased risk category. This shows that there is no significant difference in risk factors in regard to gender factor.

DISCUSSION

Overweight and obesity in medical students is gradually emerging as a health problem. College going period is highly important and timely identification and correction of food habits along with regular physical activity should be recommended to prevent obesity. BMI is the most commonly used parameter internationally to calculate adipose tissue using anthropometric data and is an effective way to screen obesity. In this study 26.6% students were overweight, and 6.4% students were obese which is similar to study conducted among medical students studying in Midnapore Medical College, India, overall prevalence of 17.5% and 3.4% for overweight and obesity respectively was found.

Similarly, in a study conducted by Tiwari et al, among medical students, the prevalence of overweight was 9.9 % and obesity was 1.53% proving that obesity is prevalent among medical students.[8] Also study by Chhabra et al, reported prevalence of 11.7% overweight and 2% obesity among medical students in Delhi.[9]

In another study conducted in Malaysia, 29.2% were found to be overweight comprising 13.7% males and 15.5% females which was contrary to this present study were 41% males and 16.4% females were overweight indicating that males percentage was higher than females.[10]

Selvaraj K et al, in their study found that the waist to hip ratio among females and males were high implying that they are at greater risk which is similar to present study findings.[11] The present study shows that nearly 81.8% and 79.5% of female and male students respectively were in the substantially increased risk category indicating no gender differences which was statistically not significant. Such results were also stated in other studies, Aggarwal et al, reported the prevalence of obesity to be 3.4% in their study group with no significant difference between boys and girls.[12]

Also, Kevin et al, stated that overweight in female students was 16.6% and male students was 10.75% and this gender difference, however was not found to be statistically significant.[13] Obesity is a global problem. Prevention and management strategies applicable to all

regions of the world should be developed.[14,15] From the study it is obvious that obesity and overweight is prevalent in medical students and shockingly underweight also exist hand in hand with obesity among students.

CONCLUSION

This study states that obesity and overweight is common among medical students. Their curriculum examination pressure, responsibilities of patients, lack of time management may all be a contributing factor for stress which leads to unhealthy practices leading to obesity in students. Regular screening for obesity should be undertaken to create awareness and prevent obesity among students. Measures to increase physical activities and imparting knowledge regarding dietary habits should be implemented.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Harrison's Principles of Internal Medicine, 19th Edition, Mc Graw Hill Education Publications; April 2015.
2. World Health Organization -Obesity, preventing and managing the global epidemic-report of a WHO consultation on obesity. Geneva: WHO; 1997.
3. Albrink MJ, Meigs JW. Interrelationship between skinfold thickness, serum lipids and blood sugar in normal men. Am J Clin Nutr. 1964 Nov 1;15(5):255-61.
4. Kissebah AH, Vydelingum N, Murray R, Evans DJ, Kalkhoff RK, Adams PW. Relation of body fat distribution to metabolic complications of obesity. J Clin Endocrinol Metabolism. 1982 Feb 1;54(2):254-60.
5. Stevens J, Keil JE, Rust PF, Tyroler HA, Davis CE, Gazes PC. Body mass index and body girths as predictors of mortality in black and white women. Arch Internal Med. 1992 Jun 1;152(6):1257-62.
6. Berenson GS, Srinivasan SR, Wattigney WA, Harsha DW. Obesity and Cardiovascular Risk in Children a. Ann N Y Acad Sci. 1993 Oct;699(1):93-103.
7. WHO.BMI Classification: Geneva WHO; 2011. Available at: http://www.who.int/bmi/index.jsp?introPage=intro_3.html
8. Tiwari R, Jain V, Rajput AS, Bhagwat AK, Goyal M, Tiwari S. A study to assess prevalence of obesity among medical students of GR medical college, Gwalior, MP, India. Int J Res Med Sci. 2017 Jan 26;2(4):1412-6.
9. Chhabra P, Grover VL, Aggarwal K, Kanan AT. Nutritional status and blood pressure of medical students in Delhi. Indian J Community Med. 2006 Oct 1;31(4):248-51.
10. Gopalakrishnan S, Ganeshkumar P, Prakash MV, Amalraj V. Prevalence of overweight/obesity among the medical students, Malaysia. Med J Malaysia. 2012 Aug;67(4):442-4.
11. Selvaraj K, Sivaprakasam P. A study on the prevalence of overweight and obesity among medical students of Kanchipuram District. Natl J Res Community Med. 2013 July;2:140-4.
12. Aggarwal T, Bhatia RC, Singh D, Sobti PC. Prevalence of obesity and overweight in affluent adolescents from Ludhiana, Punjab. Indian Pediatr. 2008 Jun 17;45(6):500.
13. Fernandez K, Singru SA, Kshirsagar M, Pathan Y. Study regarding overweight/obesity among medical students of a teaching hospital in Pune, India. Med J Dr. DY Patil Uni. 2014 May 1;7(3):279.
14. 14. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. Geneva: WHO, 1998, 3-5 June.
15. World Health Organization, Obesity: preventing and managing the global epidemic. Technical Report Series No. 894, Geneva: WHO; 2000.

Cite this article as: Kumar SS, Vithiavathi S, Parameswaran P, Kumar SS. Measures of generalized and central obesity among medical students in a tertiary care teaching hospital. Int J Adv Med 2018;5:1124-7.