Original Research Article

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A study on prevalence of obesity and life-style behaviour among medical students

Anupama M., Krishna Iyengar, Rajesh S. S.*, Rajanna M. S., Venkatesh P., Ganesh Pillai

Department of Community Medicine, Sri Siddhartha Medical College, Tumkur, Karnataka, India

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*Correspondence: Dr. Rajesh S. S.,

E-mail: rajeshss_cm@rediffmail.com

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ABSTRACT

Background: The incidence of obesity is increasing dramatically worldwide. Overweight/obesity is the fifth leading risk factor for global death. At least 2-8 million adults die each year as a result of being overweight or obese. Studies on medical students and health personnel in many countries suggested that obesity is a problem among these population groups.

Methods: A cross- sectional study was conducted at a medical college in Tumkur district of Karnataka. A pre-tested questionnaire was used to collect data from 200 medical students after taking their written consent.

Results: Prevalence of overweight/obesity among the students was found to be 16% as per BMI cut-off. 39% of the female and 80% of the male students had normal waist-hip ratio while 61% of the female students and 20% of the male students had a higher waist-hip ratio where the risk of developing the metabolic complications was substantially increased. However, apart from breakfast skipping, no other Life-style behaviour was found to have any significant effect on obesity in the study.

Conclusions: Prevalence of overweight and obesity according to WHO classification was 14.5% and 1.5%. The study reinforces the need to encourage healthy lifestyle, healthy food habits and a physically active daily routine among medical students.

Keywords: Prevalence, Medical students, Obesity, Life-style, Body mass index, Waist-hip ratio

INTRODUCTION

The incidence of obesity is increasing dramatically worldwide. Overall 23% world adult population is overweight and 9.8% obese. By 2030, the number of overweight and obese adults is projected to be 2.16 and 1.12 billion, (38% and 20%), respectively. Overweight/obesity is the fifth leading risk factor for global death. At least 2-8 million adults die each year as a result of being overweight or obese. A variety of factors including faulty diet, genetic predisposition, physical inactivity and behavioural factors are implicated as contributing factors to obesity.

Overweight and obesity are defined as abnormal or excessive fat accumulation in the body that may impair health. Body mass index (BMI) is commonly used to classify overweight and obesity among adults.² Raised BMI is an important risk factor for chronic diseases such as hypertension, type II diabetes mellitus, infertility, hyperlipidaemia and coronary disease.⁴

44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7% & 41% of certain cancer burdens are attributable to overweight and obesity.²

"Lifestyle", in the context of preventive health care, indicates the behavioural patterns which we routinely adopt and the way we tend to live our daily life involuntarily, unless coerced to change by some external stimulus. Lifestyle is thus mainly dependent on psychosocial and environmental factors and, to a smaller extent, on genetic influences. Lifestyle is developed in the form of a set pattern of behaviour gradually over many years in the way we eat, drink, exercise and use intoxicants and take own health care and personal protection, follow sexual practices and so on. The major components of unhealthy lifestyle are lack of physical activity, faulty dietary habits, tobacco use, excessive alcohol intake, mental Stress, disregard to personal safety regarding accidents, promiscuous sex, insect vectors of diseases and neglect of personal hygiene.⁵

Medical students are exposed to various factors, known and unknown for overweight/obesity. Therefore, this study was undertaken with the objective to find the prevalence of overweight/obesity among medical students, to study their lifestyle behaviour and its association with overweight/obesity.

METHODS

A cross- sectional study was conducted among undergraduate students of the Sri Siddhartha medical college, Tumkur. The study was conducted during October – November 2016 after obtaining Institutional ethical clearance. 25 female and 25 male students from each year (1st to 4th) present in the class were selected by systematic random sampling. A written consent was taken. A pretested semi-structured questionnaire was used, basic general information from the participants was obtained, questions related to their life-style in a typical week were asked and their anthropometric measurements were taken. A weighing machine was used to record weight and stadeiometer for height, a measuring tape for waist and hip circumference.

Table 1: WHO classification of BMI.

| BMI | Result | | | |
|------------|-------------|--|--|--|
| <18.5 | Underweight | | | |
| 18.5-24.9 | Normal | | | |
| ≥25.0–29.9 | Overwieght | | | |
| ≥30 | Obese | | | |

WHO cut off points of waist-hip ratio (WHR), is 0.9 for males and 0.85 for females, values above these cut-off points increase the risk of metabolic complications. Fruits and vegetable consumption of at least 5 portions (80 gm per one portion) of fruits and vegetables (400 g) per day was considered adequate. Physical activity was considered adequate if the students engage for atleast, 150 minutes of moderate-intensity physical activity per week e.g. brisk walking or 75 minutes of vigorous-intensity physical activity per week e.g. running, fast-cycling, aerobics. The state of the stat

The data was entered in MS excel and analyzed using SPSS. Results were described in percentages, mean and standard deviation. Chi-square test was applied to find the association between various lifestyle factors and obesity.

RESULTS

A total of 200 students were interviewed. Mean age of the participants was 19.91±1.573 years. Majority 145 (73.5%) were Hindus, 18 (9%) were Muslims, 14 (7%) were Christians and 21 (10.5%) belonged to other religions. Most of them 138 (69%) stayed in Hostel, 34 (17%) were day scholars and 28 (14%) stayed in near-by flats.

The mean height and weight measurements of boys were higher than girls but mean waist circumference and hip circumference was lower than that of girls (Table 2).

154 (77%) of the students had normal BMI, 14 were (7%) underweight, 29 (14.5%) were overweight and 3 (1.5%) were obese (Figure 1).

When the waist-hip ratio of the participants was studied, it was found that, 61% of the female students had waist-hip ratio \geq 0.85 and 20% of the male students \geq 0.9 where the risk of developing the metabolic complications was substantially increased (Figure 2).

Family history was found to be significantly associated with obesity (Table 3).

Majority (147) of the participants (73.5%) follow mixed diet, out of them 20 (13.6%) consume non-veg food daily, 50 (34%) consume weekly once, 50 (34%) consume twice a month, 16 (10.9%) consume once a month, 11 (7.48%) consume occasionally.

132 (66%) students consumed less than 5 standard portions of fruits and vegetables per day.

32 (16%) students skipped breakfast daily, 48 (24%) skipped 4-5 times a week, 42 (21%) skipped 2-3 times a week, 26 (13%) skipped occasionally and 52 (26%) never skipped their breakfast. There was a significant association between frequency of skipping breakfast and overweight / obesity with p value 0.025.

7 (3.5%) students skipped dinner daily, 34 (17%) skipped 4-5 times a week, 18 (9%) skipped 2-3 times a week, 62 (31%) skipped occasionally and 79 (39.5%) never skipped their dinner.

13 (6.5%) students had the junk food daily, 65 (32.5%) had 4-5 times a week, 45 (22.5%) had 2-3 times a week, 62 (31%) had occasionally and 15 (7.5%) never had junk food. The association between frequency of eating junk food and obesity was not significant (p value 0.22).

Table 2: Anthropometric measurements of the study participants.

| Measurement | Mean | Mean of male students | Mean of female students | |
|--------------------------|--------------|-----------------------|-------------------------|--|
| Height (cm) | 164±8.737 | 170.11±6.921 | 158.65±6.261 | |
| Weight (kg) | 61.23±10.064 | 64.9±9.704 | 57.57±9.07 | |
| Waist circumference (cm) | 81.93±8.978 | 81.25±8.168 | 82.6±9.715 | |
| Hip circumference (cm) | 93.91±7.33 | 92.44±6.325 | 95.39±7.975 | |

Table 3: Association between various factors and overweight/obesity.

| Variables | Response | Overweight/ob | Overweight/obesity | | Darahaa |
|-----------------------------------|-------------|---------------|--------------------|-------|---------|
| | | Yes (%) | No (%) | Total | P value |
| Gender | Male | 11 (11) | 89 (89) | 100 | 0.054 |
| | Female | 21 (21) | 79 (79) | 100 | 0.034 |
| Place of stay | Day scholar | 2 (5.9) | 32 (94.1) | 34 | 0.077 |
| | Hostel/flat | 30 (18.1) | 136 (81.9) | 166 | 0.077 |
| Family history of obesity | Yes | 18 (62.1) | 11 (37.9) | 29 | < 0.001 |
| | No | 14 (8.2) | 157 (91.8) | 171 | <0.001 |
| Fruits and vegetables consumption | >400 gms | 11 (16.2) | 57 (83.8) | 68 | 0.961 |
| | <400 gms | 21 (15.9) | 111 (84.1) | 132 | 0.901 |
| Physical activity | Adequate | 8 (11) | 65 (89) | 73 | 0.14 |
| | Inadequate | 24 (18.9) | 103 (81.1) | 127 | 0.14 |
| Alcohol consumption | Yes | 20 (41.6) | 28 (58.4) | 48 | 0.051 |
| | No | 12 (7.9) | 140 (92.1) | 152 | 0.031 |
| Type of diet | Vegetarian | 7 (12.7) | 48 (87.3) | 55 | 0.437 |
| | Mixed | 25 (17.2) | 120 (82.8) | 145 | 0.437 |
| Total | | 32 | 168 | 200 | |

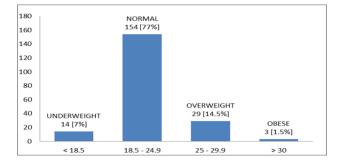


Figure 1: Distribution of the study participants according to BMI.

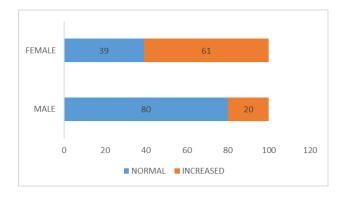


Figure 2: Distribution of participants according to WHO waist-hip ratio cut-off.

20 (10%) students drank sweetened fruit drinks/carbonated drinks daily, 53 (26.5%) drank 4-5 times a week, 55 (27.5%) drank 2-3 times a week, 61 (30.5%) drank occasionally and11 (5.5%) never drank sweetened fruit drinks/carbonated drink. The association with obesity was not significant (p value 0.45).

19 (9.5%) students drank >4 cups of coffee a day, 55 (27.5%) drank 2-4 cups, 43 (21.5%) drank <2 cups a day, 25 (12.5%) drank occasionally, 58 (29%) never drank coffee and the association with obesity was not significant (p value 0.731).

78 (39%) students took meals while watching television daily, 86 (43%) took occasionally and 36 (18%) never took meals while watching television but the association with obesity was not significant (p value 0.93).

3 (1.5%) students had the habit of eating chocolate/sweets after food daily, 109 (54.5%) occasionally and 88 (44%) students never had the habit.

79 (39.5%) students had the habit of munching between meals daily, 72 (36%) occasionally, 49 (24.5%) never had the habit.

61 (30%) students slept for <6 hours, 112 (56%) slept for 6-8 hours and 28 (14%) slept for >8 hours.

Out of 200 participants 23 (11.5%) were smokers. Out of them 14 smoked 3-4 cigarettes per day.

DISCUSSION

Medical students are more prone to obesity due to their lifestyle with less physical activity and disordered eating habits and thereby prone to obesity related health hazards. 'Medical students' was the target group of particular interest for this study as they are future physicians and if they are overweight or obese they would carry wrong impression on general population.⁴

In our study the prevalence of over-weight was 14.5% and obesity 1.5%, according to WHO classification. A study done in Gwalior by Tiwari et al showed the prevalence of overweight was 9.93% and the prevalence of obesity 1.53%.2 In another study by Deotale et al in Grant medical college, Mumbai the Prevalence of overweight and obesity was 14.33% and 3.34% respectively.³ Fernandez conducted a study in a medical college in Pune where the proportion of overweight/obesity was 13.2%.8 Khan in a study, carried out in Lahore observed that approximately 30.5% males and 16% females had BMI ≥25.0 kg/m², overall affecting 21% of total medical students, central obesity was seen in 46% of males (WHR ≥0.90) and 31% of female (WHR \geq 0.85), where as in our study 61% of female students and 20% of male students had central obesity, which is in contrast. This difference may be due to variation in dietary practices sedentary life-style etc.

Family history was significantly associated with overweight/obesity in the present study; same association was found in the study done in Pune.

No association was found between place of stay and overweight/obesity in this study. Similarly, no association was seen with hostel stay in the study from Pune. 8

In the study no association was found between the type of diet consumed and overweight/obesity. In a similar study from Pune no significant association seen between the type of diet (whether mixed or pure vegetarian) and also with the amount of non-vegetarian items consumed (as calculated by once/twice/thrice or more non-vegetarian items) with overweight/obesity.⁸

In the study done in Pune, the proportion of students not undertaking adequate physical activity was 47.7% and statistically significant association of decreased physical activity with overweight/obesity was found. In our study 63.5% of the students were found to have inadequate physical activity, however, the association between inadequate physical activity and overweight/obesity was not significant, similarly in the study done in Mumbai no significant association was found.

No statistical association was found between frequency of consumption of coffee/sugar sweetened fruit

juice/carbonated soft drinks and overweight/obesity in the present study. However, in the study done in Pune significant statistical association of daily consumption of tea/coffee/ fruit juice with the overweight/obesity was found. Students consuming these items on more than five total items daily were having significantly more BMI, The study pointed that the busy schedule of college hours with less time for lunch/breakfast contributes to the habit of drinking tea/coffee/fruit juices more frequently throughout the day. These items contribute significantly to the daily calorie consumption. Hence, there is a need to educate students regarding consumption of fresh fruits rather than fruit juices and limiting the frequency of tea/ coffee. The role of tea/coffee/fruit juice/ soda based soft drinks as found out by systematic review by Malik et al. shows strong evidence for weight gain. BMI was significantly associated with carbonated drink, drinking coffee in a study conducted in Mumbai.³

A significant association between frequency of skipping breakfast and overweight / obesity in our study, similar observation was found in the study carried out in Mumbai.³

In our study no association was found between eating junk food, taking meals while watching TV and overweight/obesity, but study from Mumbai showed association between BMI and eating junk food, taking meals while watching TV.³

No association between fruits and vegetable consumption, alcohol consumption and overweight/obesity was found statistically significant in the present study.

CONCLUSION

Prevalence of overweight and obesity according to WHO classification was 14.5% and 1.5%. It can be concluded that obesity and overweight are quite prevalent in the medical students. BMI is a simple and effective way to screen them so that timely measures could be taken to prevent their progression and complications. Persons with BMI >24.99 kg/m² should be motivated for regular physical activity. The study reinforces the need to encourage healthy lifestyle, healthy food habits and a physically active daily routine among medical students. Students, having family history of obesity, should be aggressively counselled on life-style and diet modification.

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Institutional Ethics Committee

REFERENCES

- 1. Khan ZN, Assir MZK, Shafiq M, Chaudhary A, Jabeen A. High prevalence of preobesity and obesity among medical students of Lahore and its relation with dietary habits and physical activity. Indian J Endocrinol Metabolism. 2016;20(2):206-10.
- Tiwari R, Jain V, Rajput AS, Bhagwat AK, Goyal M, Tiwari S. A study to assess prevalence of obesity among medical students of G.R. medical college, Gwalior, M. P., India. Int J Res Med Sci. 2014;2:1412-6.
- 3. Deotale MK, Ranganathan U, Akarte SV. Prevalence of overweight and obesity among medical students and their knowledge, attitude and practices about obesity. Int J Sci Reports. 2015;1(1):74-9.
- 4. Kamath S, D'Souza J. Prevalence of obesity among the medical students: a cross sectional study in a south Indian medical college. Al Ameen J Med Sci. 2013;6(1):93-5.
- 5. Bhalwar R, Gupta RK, Kunte R, Tilak R, Vaidya R. Textbook of public health and community medicine.

- Armed Forces Medical College, Pune. In Collaboration with WHO India Office; 2009.
- 6. Waist circumference and waist–hip ratio, Report of a WHO expert consultation, Geneva; 2008: 8-11.
- Surveillance and Population-Based Prevention; Prevention of Non-communicable Diseases Department, World Health Organization; Global Physical Activity Questionnaire (GPAQ) Analysis Guide: 7.
- 8. 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. D.Y. Patil University. 2014;7(3):279-83.
- 9. Malik VS, Schulze MB, Hu FB. Intake of sugarsweetened beverages and weight gain: A systematic review. Am J Clin Nutr. 2006;84:274-88.

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