

Prevalence of Obesity among the Medical Students; A Cross-Sectional Study in Sylhet

Sm. Ashik Faysal¹, Shabbir Abdullah Maruf², Tasaduk Kabir³, Sheikh Hasibur Rahman⁴, Mosaddek Hossain Mondal⁵, Tasmim Akter⁶

¹Manager, Lab operation and Business development, AI khan lab limited

²Student, Masters in Social Science, Bangladesh University of Professionals (BUP)

³Student, Master of Science in Food Engineering, Bangladesh Agricultural University

⁴Assistant Registrar, MAG Osmani Medical college Hospital, Sylhet

⁵Lecturer, Department of Biochemistry, Dhaka National Medical College

⁶Lecturer, Department of International Relations, Bangladesh Military Academy, Bangladesh

ABSTRACT

Objective: The aim of this study was to assess the prevalence of obesity among the medical students in Bangladesh.

Methodology: This descriptive type of Cross-sectional study was carried out at the Department of Biochemistry, Sylhet M.A.G Osmani medical College from July 2018 to June 2019. 850 medical students were the study population. Random sampling was done according to availability of the subjects. Data were collected through interviewing of the subjects. The collected data were entered into the computer and analyzed by using SPSS (version 20.1)

Result: Total numbers of subjects both male and female were 850. It comprised of 433 (50.94%) male and 417 (49.05%) female. 54.94% students within normal BMI. 16.7% students were overweight and 20.82% students were obese according to BMI. Among male students prevalence of generalized obesity was 20.09%. Among female students prevalence of generalized obesity was 21.58%. The prevalence of central obesity among male students was 12.93% & in female students was 33.81% (assessed by waist circumference). The prevalence of central abdominal obesity among in male students was 28.40% & in female students was 43.65% (assessed by waist hip ratio).

Conclusion: In this study, female students were found more obese. Most of them also had history of sedentary life style.

KEYWORDS: Obesity, Medical students, Prevalence

ARTICLE DETAILS

Published On:
07 January 2025

Available on:
<https://ijpbms.com/>

INTRODUCTION

Obesity is considered as an important but neglected public health problem. Rates of obesity are rising alarmingly in many parts of the world. World Health Organization refers to obesity as a global epidemic and declared that obesity is a chronic disease prevailing in both developed and developing countries¹. In obese individuals two distinct phenotypes are apparent: 1) Generalized obesity (assessed by BMI) 2) Central obesity (assessed by WC and WHR). Central obesity is more important indicator for the development of coronary artery disease². Obesity is considered to be the link between insulin resistance and metabolic abnormalities.

Consequences of obesity are hypertension, diabetes mellitus, atherosclerosis, cerebrovascular disease, coronary heart disease, colorectal cancer, gout, osteoarthritis, cholelithiasis and sleep apnea¹. The International Association for the Study of Obesity and the International Obesity Task Force have suggested lower BMI cutoff values for the definitions of overweight (23-24.9 kg/m²) and obesity (25.0 kg/m² or greater) in Asian populations³. The World Health Organization has revised the BMI cut-off for Asian Indians and suggested a BMI of 25 kg/m² or more to define obesity against the 30 kg/m² recommended for Europeans⁴. Abdominal adiposity assessed by using WC is considered to

Prevalence of Obesity among the Medical Students; A Cross-Sectional Study in Sylhet

be more appropriate to predict metabolic disorders than generalized adiposity (assessed by BMI) ⁵. According to International Diabetes Federation (IDF 2006) cut-offs for South Asians are >90 cm for men & >80cm for women ⁶. Waist-hip Ratio (WHR) for men ≥ 0.9 , and for women ≥ 0.8 is considered to represent the central obesity ⁷. Medical students are expected to be conscious about nutrition and healthy active life styles. Increased modernization, westernized diet & lifestyle are associated with an increased prevalence of overweight in many developing countries ⁸.

MATERIALS & METHOD

This descriptive type of Cross-sectional study was carried out at the Department of Biochemistry, Sylhet M.A.G Osmani medical College from July 2018 to June 2019. 100 obese medical students were the study population. Random sampling was done according to availability of the subjects. Data were collected through interviewing of the subjects. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to assess the prevalence of obesity among the medical students in Bangladesh. The study was approved by the institutional ethical committee.

Body weight (in kg) was measured in light clothing and without shoes. The weight was recorded to the nearest kg. Height was measured without shoes with the subjects standing fully erect on a flat surface. Height was taken to the nearest centimeter. Body mass index was calculated by the formula. BMI = weight in kg / (Height x Height) in the meter. Normal BMI 18.5—22.9 Kg/ m², Underweight BMI <18.5 Kg/ m², Overweight BMI 23—24.9 Kg/ m², Obese-I BMI 25—29.9 Kg/ m², Obese-II BMI >30 Kg/ m². WC (in centimeter) was measured at midway between the costal margin & iliac crest (measured at the end of normal expiration). Hip circumference (in centimeter) was taken as the largest circumference at the posterior extension of the buttocks (Transtrochantaric). WHR is the WC divided by the hip circumference. WC & WHR were measured as an index of central obesity.

RESULTS

According to figure 1, total numbers of subjects both male and female were 850. It comprised of 433 (50.94%) male and 417 (49.05%) female.

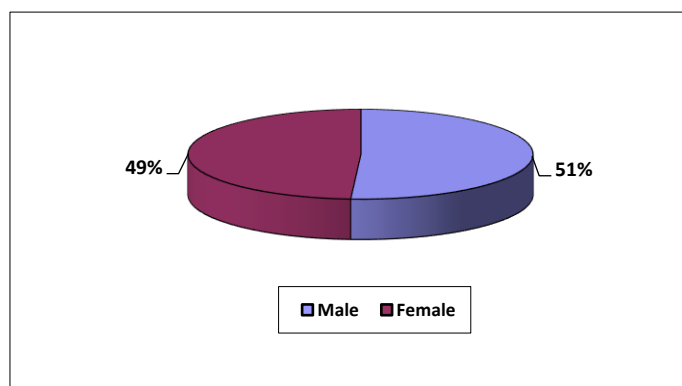


Figure 1: Sex distribution of the study subjects (n=850)

Table I shows the distribution of study subjects on the basis of BMI. 54.94% students within normal BMI. 16.7%

students were overweight and 20.82% students were obese according to BMI.

Table I: Distribution of study subjects on the basis of BMI (n=850)

BMI (Kg/m ²)	Number	Percentage
18.5-22.9 (Normal weight)	467	54.94%
<18.5 (Underweight)	64	7.5%
23-24.9 (Overweight)	142	16.70%
25-29.9 (Obese – I)	136	16.02%
>30 (Obese – II)	40	4.7%
(I + II) (Obese)	177	20.82

Prevalence of Obesity among the Medical Students; A Cross-Sectional Study in Sylhet

Table II shows the prevalence of generalized obesity (as per BMI). Prevalence of generalized obesity among all study subjects were 20.82%. Among male students prevalence of

generalized obesity was 20.09%. Among female students prevalence of generalized obesity was 21.58%.

Table II: Prevalence of generalized obesity

Study subjects	Prevalence	95% CI
Total (n=850, obese 177)	20.82%	18.08 – 23.52%
Male (n=433, obese 87)	20.09%	16.23 – 23.77%
Female (n=417, obese 90)	21.58%	17.87 – 25.74%

Among 433 male students, 377 students (87.07%) had WC <90cm & 56 students (12.93%) had WC >90cm. Among 417 female students, 276 students (66.19%) had WC <80cm &

141 students (33.81%) had WC >80cm. The prevalence of central obesity among male students was 12.93% & in female students was 33.81%.

Table III: Distribution of the subjects on the basis of waist circumference (WC)

Group	WC (Below or equal cut off value %)	WC (Above Cut off value, Central obesity %)
Male(n=433) Cut-off value (90 cm)	377 (87.07%)	56 (12.93%)
Female (417) Cut-off value (80 cm)	276 (66.19%)	141 (33.81%)

Among 433 male students, 310 students (71.59%) had WHR < 0.90 & 123 students (28.40%) had WHR >0.9. Among 417 female students, 235 students (56.35%) had WHR < 0.80

& 182 students (43.65%) had WHR >0.80. The prevalence of central abdominal obesity among in male students was 28.40% & in female students was 43.65%.

Table IV: Distribution of the subjects on the basis waist hip ratio (WHR)

Group	WHR (Below or equal cut off value %)	WHR (Above Cut off value, central obesity %)
Male(n=433) Cut-off value (0.90)	310 (71.59)	123 (28.40%)
Female(n=417) Cut-off value (0.80)	235 (56.35)	182(43.65%)

DISCUSSION

Prevalence of Generalized obesity (using BMI) was 20.82% (male 20.09%, female 21.58%). The prevalence of central obesity among male students was 12.93% & in female students was 33.81% (Assessed by WC). The Prevalence of central obesity among male students was 28.40% and among female was 43.65% (assessed by WHR). Bertias et al (2003) conducted a study in Greek among medical students (A total of 989 third - year medical students, in University of Crete, Greece). In their study they reported that 40% of men & 23% of women were obese (BMI >25 kg/m²). Central obesity (WC> 90 cm, WHR >0.9 for male, and WC>80 cm, WHR >0.8, for female) was found 33.4% in male, 21.7% in female

students respectively ⁷. In a study on students of Lebanese University in Beirut, Yahia et al (2008) reported that, prevalence of overweight and obesity (overweight with BMI 25-29.9, and obese with BMI >30) was more common among male students than females(overweight and obese 37.7% and 12.5%, vs 13.6% and 3.2% respectively in male and females). It was claimed that female students were more conscious about their weight and figure ⁹. High prevalence of grade 1 & grade 2 obesity (Gr 1, BMI >25, and Gr 2, BMI >30) were also reported in Kuwait University students. Among 842 students, the prevalence of Gr1 and Gr 2 obesity was 32% & 8.9 respectively (Al-Isa 1999). In United Arab Emirates, a cross - sectional survey conducted among 300 male students,

Prevalence of Obesity among the Medical Students; A Cross-Sectional Study in Sylhet

prevalence rate of obesity was 35.7% with BMI cut off value for obesity ≥ 25 or more¹⁰. In a study in North India, during 1999—2002, among 2051 subjects, Gupta et al (2009) reported that in Asian Indians, prevalence of obesity was 13.4% (males 12.4% & females 14.3%) (BMI >25 kg/m²). High WC, 13.3% (male 11.9%, females 14.7%), high WHR in 21.2% (males 13.7% & females 28.4%).¹¹ According to WHO (2008), prevalence of obesity in Bangladesh were 9% among males, 10.2% among females & 9.4% in both sexes (BMI >25 kg/m²).¹²

CONCLUSION

In our study the prevalence of obesity was considerably higher in medical students. There is female predominance in the prevalence of obesity. In this study, the prevalence of abdominal obesity (defined by WC and WHR) was higher than the prevalence of generalized obesity (defined by BMI). Increased WC is considered to be a better cardiovascular risk indicator than BMI. Students should be aware of harmful consequence of obesity in their future lives. Dietary & life style modifications can be adopted to reduce obesity

ACKNOWLEDGEMENTS

The authors are grateful to the entire staff of department of Biochemistry at Sylhet M.A.G Osmani medical College, Sylhet during the study period.

CONFLICT OF INTEREST

Authors declare no conflict of Interest.

AUTHORS CONTRIBUTIONS:

Data Gathering and idea owner of this study:

Study design:

Data gathering:

Writing and submitting manuscript:

Editing and approval of final draft:

REFERENCES

- I. Khan MH, Khan HU, Sarwar G, Iftikhar B, Jan A, Naimat-Ullah M, et al. 2008, 'Study of obese persons profile at D.I.Khan, NWFP, Pakistan'. *Gomal journal of medical sciences*. 6 (2):pp77-80.
- II. Summerton C, Shetty P, Sandle LN, Watt S. 2002, 'Nutritional, metabolic and environmental disease'. In Davidson's principles and practice of Medicine, 19th edn. Christopher H, Edwin RC, Nicholas AB, Nicki RC (eds), Churchill Livingstone, London, pp. 301-306.
- III. Jafar TH, Chaturvedi N and Pappas G. 2006, 'prevalence of overweight & obesity and their association with hypertension and diabetes mellitus in an Indo-Asians population' *CMAJ*, 175(9): pp1071-1077.
- IV. Mohan V and Deep R. 2006, obesity and abdominal obesity is Asian Indians.' *Indian J med res*, 123: pp593-596.
- V. Wittchen HU, Balkau B, Massien C, Richard A, Haffner S, Despres JP, et al. 2006, International Day for the Evaluation of Abdominal obesity: rationale and design of a primary care study on the prevalence of abdominal obesity and associated factors in 63 countries. *European Heart Journal*, pp. 26-33.
- VI. Cheong KC, Jamaiyah H, Noor Safiza MN, Geeta A, Khor GL, Suzana S et al. 2006, 'Abdominal obesity in Malaysian adult. National Health and morbidity survey III'. *Mal J Nutr*, 14(2):pp 125-135.
- VII. Bertias G, Mammias I, Linardakis M, Kafatos A. 2003, 'Overweight and obesity in relation to cardiovascular disease risk factors among medical students in crete, Greece.' *BMC Public Health*, 3:3.
- VIII. Flegal KM, Carroll MD, Kuczmarski RJ, Johnson CL. 1998. 'Overweight & obesity in the United States: prevalence and trends, 1960-1994'. *International journal of obesity*, 22:pp 39-47.
- IX. Yahia N, Achkar A, Abdallah A, & Rizk S. 2008, 'Eating habits & obesity among Lebanese University'. *Nutr J*, 7(32):pp1-9.
- X. Musaiger AO, Lloyd OL, Al-Neyadi SM, Bener AB. 2003, 'Lifestyle factors associated with obesity of University students in the united Arab Emirates'. *Nutrition & Foods science*, 33(4) : pp145-151.
- XI. Gupta R, Misra A, Vikram NK, Kondal D, Gupta SS, Agrawal A et al 2009, 'Younger age of escalation of cardiovascular risk factors in Asian Indian subjects'. *BMC Cardiovascular Disorder*, 9(28).
- XII. WHO(2008), WHO Global Info Base : Bangladesh All data[online]available from: [http://www.who.int/infobase/reportviewer.aspx?rptcode=ALL&unicode=50&dm=5\[31/03/2009\]](http://www.who.int/infobase/reportviewer.aspx?rptcode=ALL&unicode=50&dm=5[31/03/2009])