

## Original Article

# Nutritional Status Among Students of a Private Medical College of Bangladesh

Akhter M<sup>1</sup>, Biswas SN<sup>2</sup>, Ansari MH<sup>3</sup>

### Abstract

*Nutritional status of Medical College students is an indicator of health & wellbeing at both the individual & the population level. This cross sectional study was carried out to assess the overweight and obesity as well as underweight among the students of Khwaja Yunus Ali Medical College, Enayetpur, Sirajgonj. All the students aged 18 -23 years reading in KYAMC were included in this study. Body weight, height and waist-hip ratio were measured and their relative information was collected with a self- administered, predesigned and pretested questionnaire. A total of 239 students data were found correct. Body mass index (BMI) was computed and categorized it into normal, overweight and obese according to WHO (1997) classification and analyzed for age, sex, waist-hip ratio and BMI category for assessing the nutritional status. In this study, 157 (65.7%) students [male:53.5% & female:46.5%] were found in normal group, 38 students (15.9%) were overweight [male:44.7% and female:55.3%] and 44 students (18.4%) were in underweight group [male:50% and female:50%]. On splitting the data, the prevalence of underweight in different age groups decreases as the age advances but no such trend is observed in the case of overweight group and the proportion of overweight among the female students were more than that of male [18.1% vs 13.8%]. Waist-hip ratio was categorized into normal and overweight category and the prevalence of overweight is higher in female students than the male [80.8% vs 19.2%]. The results indicate the presence of a dual burden, underweight as well as overweight among the Medical College students in our country. Additional nutritional education, regular physical exercise and outdoor game facilities are recommended to overcome the problems.*

**Key words:** Nutritional status, Body mass index, Waist-hip ratio.

### Introduction

The nutritional status depends on a lot of factors including genetic, environmental, socio-economic conditions & psychological factors besides lifestyle habits, daily food intake & habits related to food<sup>1,2,3</sup>. Epidemiologic studies suggest that these factors may have long term health implications during young adulthood. Adolescence is a significant period of growth and maturation and proximity to biological maturity may provide final opportunities for preventing health problems<sup>4,5</sup>. But malnutrition of young adults have received much less attention than that of the child<sup>6</sup>. Most nutrition research in the developing world focused

on undernutrition in under five children. Many of the developing countries are facing the dual burden of undernutrition and overnutrition<sup>7,8</sup>. Data from national family health survey 2 (NFHS) has identified that significant proportion of over- weight coexists with high rates of malnutrition in India<sup>9</sup>. Balanced nutritional intake is essential for human development and healthy life but the food intake of young adults is not as nutritionally sound as desired that would have a direct effect on both their general physical & mental health and university performance<sup>10,11</sup>. Besides undernutrition, the emergence of obesity and its sequel as public health problems has renewed interest in the adolescent

1.\*Dr. Marufa Akhter, Associate Professor & HOD, Department of Biochemistry, Ad-din Sakina Medical College, Jessore.

2. Dr. Sailendra N Biswas, Associate Professor, Department of Community Medicine, Khwaja Yunus Ali Madical College, Enayetpur Sharif, Sirajgonj.

3. Professor M H Ansari, Professor and HOD, Department of Community Medicine, Khwaja Yunus Ali Madical College, Enayetpur Sharif, Sirajgonj.

**Correspondence:** Dr. Marufa Akhter, Associate Professor & HOD, Department of Biochemistry, Ad-din Sakina Medical College, Jessore, E-mail: drmarufabio@gmail.com

anthropometry. Obesity is considered a global epidemic and the most rapidly growing form of malnutrition in the developed world as well as developing countries that has been observed during the last decades<sup>12,13,14</sup>. Numerous studies conducted worldwide demonstrated that obesity is associated with many chronic diseases including coronary heart disease (CHD), hypertension, type-2 diabetes mellitus, gall bladder disease, osteoarthritis, dyslipidemia and certain types of cancer<sup>15,16,17</sup>. Irregular meals and frequent snacking as well as sedentary life style, lack of physical exercise, reduced facilities for outdoor games, over use of electronic media like internet chatting, computer games, television have been shown to give effects on body weight<sup>18</sup>. This descriptive study was conducted at Khwaja Yunus Ali Medical College (KYAMC) among all students to assess their nutritional status so that future intervention can be planned to improve the nutritional status and to give nutrition education to medical college students.

**Methods & Materials**

This study was descriptive cross-sectional one & conducted from august 2011-july 2012. All the students reading in KYAMC were included in this study. They were advised to attend at the Biochemistry department of KYAMC at their convenient time. Body weight, height and waist-hip ratio were measured and their relative information were collected with self-administered predesigned and pretested questionnaire. The collected data were computed and analyzed by using SPSS 16.0 version software. A total of 239 students data were found correct and analyzed by splitting for age, sex, waist-hip ratio and BMI category for assessing the nutritional status in the respective sections and to convert the study as a surrogate for longitudinal descriptive study.

**Results**

The study sample included a total of 239 students, of this number 125 (51.5%) were male and 114 (48.5%) were female students. The age of the students ranges from 18 -23 years. The mean age was 20.76 ± 1.29 years [Male: 20.79± 1.23 years & female: 20.72±1.37 years]; mean body weight 58.6 ± 9.7 [male: 62.7 ± 9.4 kg & female: 54.3± 8.1kg], mean height 1.64 ± 0.08 metre [male: 1.70 ± 0.07 meter & female: 1.58 ± 0.05 metre]. Table 1 shows the distribution of study sample according to age, height, weight & BMI. There is a trend of rise of BMI with the advancement of age.

**Table 1:** Distribution of study sample according to age, height, weight & BMI

Age group	Mean Height with SD (Meter)	Mean body Wt with SD (Kg)	Mean BMI with SD
18	1.57 ± 0.06	50.03 ± 5.32	20.25 ± 1.98
19	1.64 ± 0.10	59.73 ± 1.12	22.00 ± 3.48
20	1.66 ± 0.08	59.66 ± 1.00	21.67 ± 2.97
21	1.65 ± 0.09	57.37 ± 8.21	21.09 ± 2.97
22	1.64 ± 0.08	60.58 ± 1.01	22.68 ± 3.53
23	1.66 ± 0.07	60.52 ± 1.09	21.80 ± 2.86

In this study though 157 (65.7%) students [male: 53.5% & female: 46.5 %] were found in normal weight group, 38 (15.9 %) [male: 44.7% & female: 55.3%] were in overweight group & 44 (18.4 %) [male: 50% & female 50%] were in underweight group (Table-2)

**Table 2:** Distribution of study sample according to Body Mass Index (BMI)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Underweight	44	18.4	18.4	18.4
Normal weight	157	65.7	65.7	84.1
Overweight	38	15.9	15.9	100.0
Total	239	100.0	100.0	

The proportion of overweight among the female students was more than that of male [18.1 % vs 13.8 %] but that of underweight in male & female were almost equal [19.0 % vs 17.9%] (Table -3).

**Table 3:** BMI categorized Cross tabulation

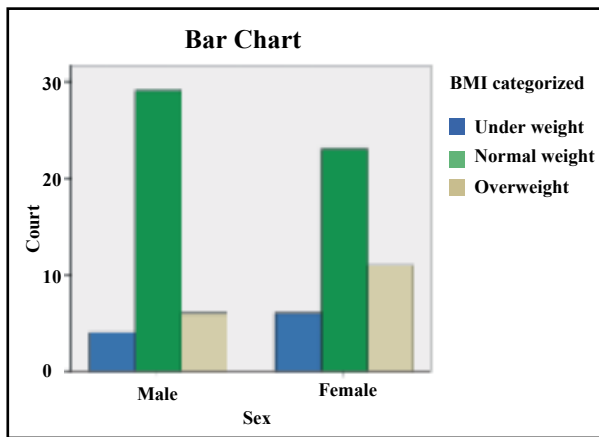
			BMI categorized			Total
			Under weight	Normal weight	Over weight	
Sex	Male	Count	22	84	17	123
		% within Sex	17.9%	68.3%	13.8%	100.0%
		% within BMI categorized	50.0%	53.5%	44.7%	51.5%
	Female	Count	22	73	21	116
% within Sex		19.0%	62.9%	18.1%	100.0%	
% within BMI categorized		50.0%	46.5%	55.3%	48.5%	

It was remarkable that on splitting the data the prevalence of underweight in different age groups decreases as the age advances but no such trend is observed in case of overweight group (Table 4). Waist-hip ratio was categorized into normal and overweight

category and the prevalence of overweight is higher in female students than the male [80.8% vs 19.2%] students.

**Table 4:** Distribution of study sample according to age, sex & BMI

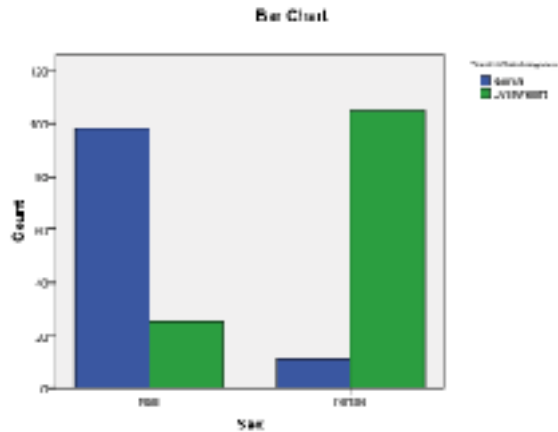
Age group	Number of students		Under weight			Normal			Over weight		
	Male	Female	Male	Female	Total	Male	Female	Total	Male	Female	Total
18 yrs (14 students)	2	12	1	3	4	1	9	10	0	0	0
	14.3%	85.7%	25%	75%	28.6%	10%	90%	71.4%	0%	0%	0%
19 yrs (26 students)	16	10	4	1	5	8	6	14	3	3	7
	61.6%	38.4%	80%	20%	19.2%	57.1%	42.9%	53.8%	57.1%	42.9%	26.9%
20 yrs (54 students)	34	20	8	3	11	23	13	36	3	4	7
	63.0%	37.0%	72.7%	27.3%	20.4%	63.9%	36.1%	66.7%	42.9%	57.1%	13.0%
21 yrs (76 students)	38	38	6	8	14	29	23	52	3	7	10
	50.0%	50.0%	42.9%	57.1%	18.4%	55.8%	44.2%	68.4%	30.0%	70.0%	13.2%
22 yrs (48 students)	19	29	2	4	6	12	19	31	5	6	11
	39.6%	60.4%	33.3%	66.7%	12.5%	38.7%	61.3%	64.6%	45.5%	54.5%	22.9%
23 yrs (21 students)	14	7	1	3	4	11	3	14	2	1	3
	66.7%	33.3%	25.0%	75.0%	19.0%	78.6%	21.4%	66.7%	66.7%	33.3%	14.3%



**Figure 1.** Bar chart: BMI distribution of study sample according to sex

**Table 5:** Waist -Hip Ratio Categorized Cross tabulation of study sample according to sex

			Waist-Hip Ratio Categorized		Total
			Normal	Overweight	
Sex	Male	Count	98	25	123
		% within Sex	79.7%	20.3%	100.0%
	% within Waist-Hip Ratio Categorized	89.9%	19.2%	51.5%	
Sex	Female	Count	11	105	116
		% within Sex	9.5%	90.5%	100.0%
	% within Waist-Hip ratio Categorized	10.1%	80.8%	48.5%	
Total	Count		109	130	239
		% within Sex	45.6%	54.4%	100.0%
	% within WaistHipRatioCategorized	100.0%	100.0%	100.0%	



**Figure 2.** Bar Chart: Waist-Hip ratio according to sex

**Discussion:**

Data obtained from medical college students was utilized to assess their health and nutritional status. The WHO Expert Committee has recommended that routine measures of height and weight provide useful assessment of growth status<sup>19</sup>. In this descriptive study 15.9 % of the students were in overweight with female predominance & 18.4% were in underweight group with equal proportion of male & female students. There is a wide agreement that physical inactivity and unhealthy dietary pattern like frequent snacking, intake of fatty food, frequent eating of fried food, increased intake of refined sugar products including soft drinks may leads to obesity. In this study a significant proportion of female students had higher waist-hip ratio, which is an alarm for future development of insulin resistance and type II diabetes mellitus. The prevalence of underweight decreases with the increasing age group & no such trend is observed in overweight category. Overweight and obesity increases with age which are in agreement with several studies conducted elsewhere<sup>20</sup>. The weight of the medical students in this college was satisfactory as most of the students came from financially solvent family. This reflection has been also observed as the higher proportion of students in normal weight group & also relatively higher number in the overweight group. In this study it was observed that the prevalence of underweight was more in early age group that gradually decreases in the higher. A higher proportion of female students were underweight in this study. This may be due to their poor eating habits like irregular intake of three main meals, skipping the breakfast and also having a desire to be thinner which may leads to several illness like anaemia and also diminishing their medical college performance.

## Conclusion

The nutritional status of medical college students was found satisfactory. The shifting of under nutrition group towards the normal weight group was a good trend but the prevalence of overweight remaining almost unchanged in all age group was an alarming signal. Probably the senior students used to confine in the room and abstain from outdoor games and physical activities.

## Recommendation

1. The students should be given proper health education regarding their nutritional status, food selection and proper physical activities.
2. Special attention on fooding, recreation and exercise should be given to both the underweight and overweight category.

## Acknowledgement

Thanks to all the students who participated in the study and the college authority for their permission and support to carry out this research work.

## Reference

1. World Health Organization(WHO), 1998. Obesity; preventing and managing the global epidemic.Report of WHO Consultation, Geneva, June 3-5, 1997. WHO, Geneva.
2. Fouad, M.F, S. Rastam, K.D. Ward and W. Maziak, 2006. Prevalence of obesity and its associated factors in Aleppo, Syria. *Prev.Control*, 2:85-94.
3. Al-Tawi, N.G., M.M. Abdullah and A.J. Abdul-Ameer,2007. Prevalence of and factors associated with overweight & obesity among a group of Iraqi women. *East. Meditern. HealthJ J.*,13; 420-429
4. Health needs of adolescents.Report of a WHO expert committee. Geneva,World Health Organization 1977 (WHO Technical Report Series, No.609)
5. Tanner JM. Growth at adolescents, with a general consideration of the effects of hereditary and environmental factors upon growth and maturation from birth to maturity, 2nd ed. Oxford, Blackwell, 1962
6. K.V Baily, Ferro-Luzzi 1995. *Bulletin of the World Health Organization*, 73 (5) : 673-680
7. Ke-You G, Da-Wei F. The magnitude and trends of under and over-nutrition in Asian countries . *Biomed Environ sci* 2001; 14: 53-60
- 8.Swaya AL etal. Obesity and malnutrition in a Shantytown population in the city of Sao Paulo, Brazil. *Obes Res* 1995; Suppl 2 : 107-115s.
9. Griffiths PL Bentley ME, The nutrition transition is underway in India *J Nutr* 2001: 131: 2692-700.
10. Keim,K.S, B. Stewartand J.Voichick,1997.Vegetable and fruit intake and perceptions of selected young adults.*J Nutr.Edu.*29;80-85.
11. Labib, F.A.,Rashwan,N.M.and Abou-El-magd, A. (2001): The influence of parent's education and occupation on nutritional status in education college in Islamia . *The Med. J.of Cairo Univ. Vol.9.,No.1.*
12. Popkin, B.M., 2004. The nutrition transition : An overview of world patterns of change .*Nutr.Rev.*, 62:SI 40-SI 43.
13. Prentice, A.M.,2006 . The emerging epidemic of obesity in developing countries.*Int.J. Epidemiol*, 35:93-99.
14. Madanat,H.N.,K.P Troutman and B. Al -Madi,2008. The nutrition transition in Jordan: the political, economic and food consumption contexts. *PROMOT.educate.*,15: 6-10.
15. Manson,J.E., P. J. Skerrette, P. Greenland and T.B. Vanltallie, 2004.The escalating pandemics of obesity and sedentary lifestyle a call to action for clinicians. *Arch.Intern.Med.*,164:249-258.
16. Visscher,T.L.S. and J.C. Seidell , 2001. The public health impact of obesity .*Annu.Rev.Public Health*, 22:355-375.
17. World Health Organization(WHO), 2000 Obesity: Preventing and managing the global epidemic. WHO Technical Report Series No.894. WHO , Geneva.
18. Song, W.O., O.K. Chun, S.Obayashi, S. Cho and C.E. Chung, 2005. Is consumption of breakfast associated with body mass index in US adults ? *J. Am. Diabetic Assoc.*, 105: 1373-1382.
19. Physical status: The Use and Interpretation of Anthropometry-Report of a WHO Expert Committee, Geneva, World Health Organization 1995; pp 263- 308.
20. Mataix J, M.L.Frias, E.M. Victoria, M.L. Juardo,P.Aranda and J.Liopis, 2005.Factors associated with obesity in an adult Mediterranean population; Influence on plasma lipid profile. *J. Am.Coll .Nutr.*, 24:456-465.