

Nutritional Status and Morbidity Pattern of Girls Residing at Selected Female Halls in Tangail District, Bangladesh

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Abstract

Health and nutritional status of the hostel girls were observed during the January 2014 to December 2014 as a cross sectional study. A total number of 350 girls at the age of 18-25 years old were taken from the university girls' hostel for the assessment of health, nutritional and morbidity status. A semi structured questionnaire was used to collect relevant information. In this study it was observed that 35.7% girls were under-nourished ($BMI \leq 18.5$). 18.0, 5.4 and 1.1% girls were suffering from chronic energy deficiency grade I, II and III respectively. Only 11.1% was found to be overweight and 0.6% of the girls were found to be obese. In the case of morbidity status it was observed that about 42.6% girls were sick in the last 15 days, 31.1% were suffered from fever, 42.9% were having cold/cough, 27.9% were suffering from dental problem, 39.4% had skin diseases, 49.1% were suffering from gastro intestinal diseases, 47.7% had allergy, 42.9% had eye problem, 10.3% were having URT problem, 6.3% had reproductive problem, 15.7% had ENT problem and 12% were having urinary tract problem. The present study calls for health education and nutrition interventions to reduce the serious health problem on priority basis.

Keywords: BMI, thinness, under-nutrition, hostel girls, morbidity pattern

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INTRODUCTION

Bangladesh is one of the poorest countries of the world with a population of 160 million and large number of people living below the poverty line (50%)^[1]. Bangladeshi women have high mortality rates, particularly during childhood and in their reproductive years. The maternal mortality rates in rural areas are among the world's highest. Research into women's status in society has found that the contributions women make to families are often overlooked. They typically have little autonomy, living first under the control of their fathers, then their husbands, and finally their sons which have negative impact on the health status

of women. Women in poor health are more likely to give birth to low weight infants. They are less likely to be able to provide food and adequate care for their children. Finally, a woman's health affects the household's economic wellbeing because a woman in poor health will be less productive in the labor force. In rural areas where women are less educated and economically deprived, their health condition is worse^[2].

Adolescence is a significant period of growth and maturation when unique changes occur and many adult patterns are established. Proximity to biological maturity may provide final opportunities

for preventing health problems^[3]. Most nutrition research in the developing world is focused on under-nutrition in under-five children. Studies have shown that many of the developing countries including Bangladesh are facing the dual burden of under-nutrition and over-nutrition. The emergence of obesity and its sequel as public health problems has renewed interest in the adolescent anthropometry. Overweight and obesity during this period are associated with risk factors for obesity related diseases^[4].

Diet and nutrition are important factors in the promotion and maintenance of good health throughout the life cycle. Income, prices, individual preferences and beliefs, cultural traditions, as well as geographical, environmental, social and economic factors all interact in a complex manner to shape dietary consumption patterns and affect the morbidity and clinical status of women. A normal balanced diet must include daily foods from the various food groups in sufficient amounts to meet the needs of an individual and to increase immunity.

Nutrition plays a vital role in the girls' health residing in the university hostel. Nutritional status of a population is an important tool to study health of any population and it largely depends on the consumption of food in relation to the need and requirement. In the university hostel normally girls of different age groups reside who came from different areas of Bangladesh. Due to this phenomenon, their nutritional status and food intake pattern is undoubtedly measureable which significantly influences the quality of human life. Nutritional status is an important health indicator to assess a country's health status and morbidity pattern and food intake pattern reveals the condition of household food security, income, expenditure on foods and knowledge about foods. A detailed food intake history and physical examination

permit an assessment of prevalence of malnutrition and risk. Health is a prerequisite for human development and is an essential component for the well-being of the mankind. The health problems of any community are influenced by interplay of various factors including social, economic, biological and political ones.

METHOD MATERIALS

Cross sectional study was conducted from January 2014 to December 2014 among 350 girls aged between 18-25 years residing in two halls at Mawlana Bhashani Science and Technology University (MBSTU), Tangail, Bangladesh. A questionnaire was developed, containing both closed and open ended questions, to obtain relevant information on age, height, weight, morbidity status, nutritional knowledge. Food frequency was collected on a pre-tested questionnaire following interview and examination. The age of girls were recorded by interviewer with the university identity card. All questions were designed, pretested, modified and resettled to obtain and record information easily. All study protocol was approved by the institutional ethical committee and informed consent was obtained from the provost of hostel. Any modification necessary were then made and a final recoded, pretested questionnaire was drawn up.

Anthropometric measurements (i.e. height and weight) were performed in all subjects according to the standard procedures. The weight was measured by using digital scale to the nearest 0.1 kg; with the subjects, shoeless and in light clothing. Age was established from birth certificates. Height was measured using anthropometric to the nearest of 0.1 cm, respectively. BMI was calculated using the following standard equation: $BMI = \text{Weight (kg)} / \text{height (m}^2\text{)}$. Nutritional status such as thinness and overweight was evaluated following the recently published international BMI cut-off points. Those

having BMI value higher than or equal to the age and sex specific grade-I thinness value and lower than to the age and sex specific cutoff value passing through adult BMI 25 kg/m² at age 18 years were considered normal. While BMI value higher than the age specific cutoff value passing through adult BMI 25 kg/m² at age 18 years was considered overweight. Morbidity pattern was assessed by the presence of illness during the study period and disease occurred since the last three months. The data set were first checked, cleaned and entered into the computer from the numerical codes on the form. The data was edited if there is any discrepancy and then cleaned it. The frequency distributions of the entire variables were checked by using SPSS 20.0 windows program. For tabular, charts and graphical representation Microsoft word and Microsoft excel were used.

RESULTS AND DISCUSSION

The underfed still outnumber the overfed in the developing world among Asian, African and Latin American populations. In spite of the economic development in the region, undernutrition remains an important public problem in many Asian countries^[5]. Undernutrition is a significant problem and continues to be a cause of morbidity and mortality among children in developing countries like Bangladesh^[6]. In his recent study Cole *et al.* has stated that

undernutrition is better assessed as thinness (low body mass index for age) than as wasting (low weight for height)^[7]. Total 350 samples were collected from two ladies halls at MBSTU campus. Their age range was 18 to 25 years. The socio-demographic status, blood pressure, morbidity status, food preference and frequency of girls were also revealed.

Table 1: Details Age Wise Distribution of Study Sample.

Age in Years	Frequency	Percentage (%)
18.0	18	5.2
19.0	52	14.9
20.0	84	24.0
21.0	83	23.7
22.0	53	15.1
23.0	29	8.3
24.0	20	5.7
25.0	11	3.2
Total	350	100.0

Table 1 shows the details of age wise distribution of the girls living in the MBSTU campus reside in Tangail district, Bangladesh. The age group 20 years contains highest (24%) number of population and the age group 25 years contains the lowest number (3.2%) population. About 23.7% girls are age group 21 years and 15.1% are age group 22 years. 4.6, 14.9, 8.3 and 5.7% girls were 18, 19, 20, 23 and 24 years old respectively.

Table 2: Mean and Standard Deviation of Weight, Height and BMI of Study Population.

Age in Years	N	Indicators					
		Weight (Kg)		Height(cm)		BMI	
		Mean	Standard Deviation (±)	Mean	Standard Deviation (±)	Mean	Standard Deviation (±)
18.00	18	47.61	4.50	156.5	3.73	19.8	1.86
19.00	52	48.4	5.48	157.8	4.65	19.4	2.54
20.00	84	49.5	6.69	154.3	7.47	20.4	2.82
21.00	83	50.81	8.43	154.7	13.48	20.8	3.39
22.00	53	51.8	6.77	155.4	5.00	20.9	2.56
23.00	29	51.3	6.09	156.7	4.38	20.6	2.33
24.00	20	50.5	6.20	155.1	7.10	21.4	3.63
25.00	11	49.8	7.06	154.45	5.50	20.2	2.04
Total	350	50.1	6.90	155.4	8.37	20.4	2.87

Table 2 illustrates that the mean weight, height and BMI of the girls who live in two ladies halls. Among the total study sample, 22 years old girls had highest mean weight and the 18 years old had the lowest. On the other hand in case of mean height, highest mean height was 157.8 cm

(age group 19 years) and the lowest mean weight was 154.1 cm (age group 19 years). According to BMI for age the highest BMI (21.4) were found in age group 24 years and the lowest were found in 19 year (19.4).

Table 3a: Nutritional Status of Study Population According to WHO International Classification of Underweight, Overweight and Obesity Based on BMI.

WHO Standard*			
BMI Cutoff Value	Kg/m2	No. of Girls	Percentage (%)
Grade 3 Thinness	<16	4	1.1
Grade 2 Thinness	16.0-16.99	19	5.4
Grade 1 Thinness	17-18.49	63	18.0
Normal	18.5-24.99	223	63.7
Overweight	25-29.99	39	11.1
Obese	>30	2	0.6
Total		350	100.0

Table 3b: Details BMI Wise Distribution of Study Sample as Bangladeshi Standar

BMI Cutoff Value	Kg/m2	No. of Girls	Percentage (%)
Underweight	<18.5	86	24.6
Normal	18.5-22.9	200	57.1
Overweight	23 and Above	64	18.3

In the present study, according to WHO reference standards, 35.7% girls were under-nourished ($BMI \leq 18.5$). The Girls suffering from chronic energy deficiency grade I, II and III were 18.0, 5.4 and 1.1% respectively. 11.1% were found to be overweight and 0.6% of the girls were found to be obese. According to the new guidelines by the Government of Bangladesh as per the diagnostic cut-off values the 24.6% were found to be undernourished while 18.3% were found to be overweight ($BMI > 23.5 \text{ kg/m}^2$).

The study of urban slum girls in Dhaka reported prevalence of thinness 17%^[8]. Various authors have reported the prevalence of thinness among girls to be 14.7%^[8], 30.1%^[9] and 41.3%^[10]. In a study among girls in Rajasthan, 6.5% of the girls were found to have a BMI of more than 18.5^[11]. Alam et al. found out that 26% of the girls were thin, with body mass index (BMI for age < 15th percentile), 0.3% obese (BMI-for age > 95th percentile), and 32% stunted (height-for-age $\leq 2 \text{ SD}$)^[12].

According to Lazzeri et al., the prevalence of thinness declined from 9.8 to 8.7%, and the prevalence of normal weight from 77.0 to 71.6%, while the prevalence of overweight rose from 13.3 to 19.7%^[13]. In a study by Bovet et al. prevalence of thinness was 21.4, 6.4 and 2.0% based on the three IS cut-offs and 27.7, 6.7 and 1.2% based on the WHO cut-offs^[14]. Reports from India, Bangladesh, Nepal and Myanmar show that 32, 48, 47 and 39% girls respectively are stunted and 53, 67, 36, and 32% girls from these countries are thin^[15].

Table 4 shows that the morbidity status of the girls residing in the university hostel. About 31.1% suffered from fever, 42.9% had cold/cough, 27.4% were having dental problem, 39.4% were suffering from skin diseases, 49.1% had gastro intestinal diseases, 47.7% were having allergy, 42.9% had defective vision, 10.3% were having UTI, 6.3% suffered from reproductive problem, 15.7% had ENT

problem and 12% had urinary tract problem.

Table 4: Details of Morbidity Status of Study Sample.

Indicators	Frequency	Percent (%)
Fever	109	31.1
Cold/cough	150	42.9
Dental problem	96	27.4
Skin problem	138	39.4
Gastro intestinal disease	172	49.1
Allergy	167	47.7
Eye problem	150	42.9
Reproductive problem	22	6.3
ENT problem	55	15.7
Urinary tract problem	42	12.0

The health problems of adolescent girls vary from place to place and several studies conducted in Bangladesh and abroad revealed that the main morbidity conditions include malnutrition, dental caries, and diseases of skin, problem of eye, ear and reproductive problems. In our study, morbidity due to skin diseases is 39.4%. In the study by Srinivasan, scabies accounted for 29.9%^[16]. According to a study by Singh *et al.*, scabies accounted for 16.2%^[17]. In the present study, the prevalence of dental caries is found to be 27.9%. 13.33% of dental caries was seen in the study conducted by Choudhary *et al.*, in adolescent girls of rural area of Varanasi^[18].

The high prevalence of dental caries in the present study may be due to poor oral hygiene. In the present study defective vision was 42.9%, whereas in other studies the prevalence of defective vision was 4.7 and 4.5% respectively^[16-17]. Study by Rema found that common deficiency diseases prevalent among the school going children were anemia and skin infections 10.6 and 67%. The chief cause of anemia could be contributed to the lack of proper

iron, vitamin B12 and folic acid in the diets of these children^[19].

CONCLUSION

The present study is an attempt to assess the nutritional status of the girls residing in two female halls at MBSTU campus, Tangail district. The prevalence of underweight and overweight among the girls was high. This may partly be due to financial problem, food habit, lifestyle and lack of awareness of students. There is an urgent need to increase the level of awareness among students of the ill effects of either overweight or underweight. Moreover regular periodic medical examination and facilities for treatment should be organized and monitored systematically for reducing the high prevalence and incidence of morbidity among adolescent girls in the hostels. In addition, health education programs on hygiene and common diseases have to be carried out on a regular basis in consultation with concern health authorities.

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