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Address of Correspondence
Executive Editor
TMSS Medical College Journal
TMSS Medical College
Rangpur Road
Thengamara, Bogra, Bangladesh.
Phone: 051-61830
Fax : 051-61830
e-mail: editortmcjournal@gmail.com
Web: www.tmssmedicalcollege.com

Nutritional status, physical activity and food habit of children

Mohammad UAK[1*], Mohimenul MA[2], Abdus S[3]

1. Dr. Md. Uzire Azom Khan, Associate Professor, Department of Physiology, Abdul Malek Ukil Medical College, Noakhali.
2. Dr. Md. Mohimenul Abedin, Lecturer, Department of Physiology, Abdul Malek Ukil Medical College, Noakhali.
3. Dr. Abdus Salam, Professor, Department of Physiology, Abdul Malek Ukil Medical College, Noakhali.

* Corresponding Author

Abstract

Background: Increase in childhood overweight and obesity have become a major public health problem in industrialized nation. It is also increasing in developing countries. School going children of this country is suffering from malnutrition rather than obesity. The national nutrition survey (1995-96) report shows that about 62% of the children aged 6-9 years are malnourished. The nutritional status, physical activity and food habit of school going children of Bangladesh is not known. **Objectives:** To know the nutritional status, physical activity and food habit of children of a selected government-run primary school at a coastal as well as peripheral district town of Bangladesh. **Method:** This cross-sectional descriptive study was conducted in the Department of Physiology, Abdul Malek Ukil Medical College, Noakhali, Bangladesh during the period of April, 2012- June, 2012. Two hundred and twenty students of a selected government-run primary school of a district town of Bangladesh were enrolled for the study by using convenient sampling. Data on diet, physical activity, height (cm) and weight (kg) were collected using a structured questionnaire. Permission was taken from concerned authorities consent from participants. BMI <5, 5-85, >85, and >95 percentile were considered under-weight, normal, overweight, and obese respectively. Data were analyzed by using SPSS (version 12) for windows and web-based "Excel BMI calculator". Result: There were 41.4 percent boys. The mean age was 9.3±1.6 years. The main diet was rice or bread made of wheat-flour (85.5%) in breakfast, rice with meat, fish, egg, or vegetables for lunch (95.45%) and same menu for dinner (98.64%). Forty-six percent students drank cow's milk and 22.7% soft drinks. Ninety-nine percent students participated in games for a mean period of 2.81±1.25 hours. The mean±SD period of playing outdoor-game, indoor-game and game-at-school was 1.35±0.58, 1.04±0.45, and 0.76±0.31 hours respectively. Eighty-three percent students did household work for a mean period of 1.03±0.65 hours. The mean±SD height, weight and BMI of the students were 126.6±9.9 cm, 22.01±5.07 kg and 13.56±1.60 respectively. **Conclusion:** Sixty-five percent students were underweight, 34.55% normal weight and 0.45% obese. The prevalence of under-weight was alarmingly high and that of overweight and obesity was extremely low among the students of a government-run primary school in a peripheral district town of Bangladesh. Ninety-nine percent students participated in physical activity. The menu of diet contained all kinds of food but the quantity of food was not measured.

Introduction

Malnutrition is a condition in which lack of one or more nutrients for a long time retards physical growth, mental development and causes clinical disorders like low birth weight, wasting, stunting, underweight, vitamin A deficiency, iodine deficiency disorder and iron deficiency anemia.[1] School age is the active growing phase of childhood; it represents a dynamic period of child's physical growth and mental development.[2,3] The nutritional status of school-aged children impacts their health, cognition, and subsequently their educational achievement.[4] Protein energy malnutrition has been a common health problem of the third world. It is of much serious concern among children of school-going age who are deprived of good and ample nutrition due to their poor socio-economic status, ignorance and lack of health promotional facilities.[5] More than 90% of the global burden of malnutrition is attributable to 36 countries of the world, and Bangladesh is one of them.[6] The national nutrition survey (1995-96) report shows that 65.2% of the children aged 6-9 years are

malnourished, 5.8% stunted but not underweight, 12.7% underweight but not stunted, 46.7% both stunted and underweight and about 35% of the children are normal in all the parameters.[7] Malnutrition among school age children is a major public health concern. More than 200 million school age children are stunted and underweight; about one billion school children will be growing up by 2020 with impaired physical and mental development.[8] The Government of Bangladesh is committed to fulfilling children's rights to nutrition through its ratification of the Convention on the Rights of the Child and the Millennium Development Goals, many of which are closely linked with nutrition and it has made good progress towards the eradication of extreme poverty and hunger.

Some studies have been carried out among the slum children and school children of Dhaka to assess their nutritional status. However, little is known about the state of nutrition, physical activity and food habit of primary school children in a coastal as well as peripheral district of town of Bangladesh. The aim of this study was to assess the nutritional status and physical activity and food habit of the children of a public primary school in a peripheral district down of Bangladesh.

Materials and Methods

This cross sectional study was conducted in the Department of Physiology, Abdul Malek Ukil Medical College, Noakhali, Bangladesh during the period of April, 2012- June, 2012. Noakhali is a southern coastal district town lies 160 Km away from the capital city, Dhaka and near the Bay of Bengal.

Two hundred and twenty students of a selected government-run primary school of a district town of Bangladesh were enrolled for the study by using convenient sampling. Data on diet, physical activity, height (cm) and weight (kg) were collected using a structured questionnaire. Permission was taken from concerned authorities and written accent were taken from participants. The information obtained from the participants was not divulged and was held in confidence.

Anthropometry is a noninvasive universally applicable method used for the assessment of growth in the children. World Health Organization has recommended various indices based on anthropometry to evaluate the nutritional status of the school aged children. It is now well established that Body Mass Index (BMI) is most appropriate variable for the assessment of nutritional status for adult and children of age 2-19 years.[9] After calculation of BMI for children, the BMI value is plotted on the CDC growth charts to obtain a percentile ranking. The percentile position of a child rank his/her nutritional status underweight, normal, overweight and obese. BMI <5, 5-85, >85, and >95 percentile were considered under-weight, normal, overweight, and obese respectively.

Body weight was determined to the nearest 0.1 kg on a medical digital scale with participants wearing minimum cloth and shoes off. Height was measured to the nearest 0.1 cm using standard medical techniques with a tape measure. The 24 hour recall was used to obtain the foods consumed for breakfast, lunch and dinner. Participants were asked about their physical activity including outdoor, indoor game and game at school.

Data were analyzed by using SPSS (version 12) for windows and web-based "Excel BMI calculator". Categorical variables were expressed as frequencies and percentages and continuous variables as mean±Sd.

Results

Table-I: Gender distribution of the students (n=220)

Gender	Frequency	Percent
Male	91	41.4
Female	129	58.6

Ninety one (41.4%) boys and 129(58.6%) girls participated in the study. (Table-I)

Table-II: Age, height, weight and BMI distribution of students (n=220)

	Mean	SD
Age (Years)	9.3	1.6
Height (Cm)	126.6	9.9
Weight (Kg)	22.01	5.07
BMI	13.56	1.60

The mean age was 9.3±1.6 years. The mean±SD height, weight and BMI of the students were 126.6±9.9 cm, 22.01±5.07 kg and 13.56±1.60 respectively. (Table-II)

Table-III: Nutritional status of students (n=220)

Nutritional status (BMI percentile)	Frequency	Percent
Underweight (<5 percentile)	143	65.00
Normal weight (5-85 percentile)	76	34.55
Over-weight (>85 percentile)	1	0.45

One hundred forty three (65%) students were underweight, 76(34.55%) had normal weight and 1(0.45%) wereover-weight. (Table-III)

Table-IV: Dietary habit of students (n=220)

Food taken	Frequency	Percent
In breakfast		
Rice or wheat flour made bread	188	85.5
Others	32	14.5
In lunch		
Rice with meat, fish, egg, or vegetables	210	95.45
Others	10	4.55
In dinner		
Rice with meat, fish, egg, or vegetables	217	98.64
Others	3	1.36
Drink Cows milk		
Yes	101	45.9
No	119	54.1
Take soft drink		
Yes	50	22.70
No	170	87.30

One hundred eighty eight (85.5%) students took rice or bread made of wheat-flour in breakfast. Two hundred ten (95.45%) students took their lunch with rice, meat, fish, egg and vegetables and 217 (98.64%) students took same menu for dinner. One hundred one (45.9%) students drank cow's milk and 50(22.7%) drank soft drinks. (Table-IV)

Table-V: Physical activity habit (n=220)

Physical activity		Frequency (%)	Mean (hour)	Sd
Playing game	Total	218(99%)	2.81	1.25
	Out-door game		1.35	0.58
	In-door game		1.04	0.45
	Game at school		0.76	0.31
House hold work	Domestic work	182(82.7%)	1.03	0.65

One hundred eighteen (99%) students participated in games for a mean period of 2.81±1.25 hours. The mean±SD period of playing outdoor-game, indoor-game and game-at-school was 1.35±0.58, 1.04±0.45, and 0.76±0.31 hours respectively. One hundred eighty two (82.7%) students did household work for a mean period of 1.03±0.65 hours. (Table-V)

Discussion

This study provides nutritional status (weight, height and BMI) of the students of a public primary school in Noakhali, a coastal and peripheral district down of Bangladesh.

The present study revealed that more girls were enrolled in public primary school (58.6% vs 41.4%) than boys. This finding may be a indicator of advancement of women empowerment in Bangladesh. Our finding was not consistent with the finding of Haque et al (2014).[10] They conducted a study in the Nilkhet High School, situated in Nilkhet area of Dhaka metropolitan city of Bangladesh. They found that there were 66.40% boys and 33.60% girls. Boys were double than the girls. This may indicate that girls of Dhaka city get themselves admitted into private girls' school rather than public schools.

The present study found that the mean±SD height, weight and BMI of the students were 126.6±9.9 cm, 22.01±5.07 kg and 13.56±1.60 respectively.

Almost two-thirds of the participants (65%) were underweight,one-third(34.55%) had normal weight and 1(0.45%) were over-weight. (Table-II and III).

These findings are consistent with the finding of Shariff et al (2000)[11] and Nowsin et al (2014)[12]. Shariff et al. (2000)[11] conducted a study in Kua Malaysiafound that approximately 52%, 50% and 30% of the children were found to be underweight, stunted and wasted respectively. Although, in their study, the prevalence of mild malnutrition (underweight, stunting and wasting) was higher than the prevalence of severe malnutrition, the former cannot be ignored as it has its implications on the child's consequent development. As stunting reflects past nutrition, the finding indicates that these children may have had experiences with poor diets and infections during their early childhood and perhaps were continuously living with similar continuously living with similar conditions as a consequence of poverty.

Nowsin et al. (2014)[12] conducted a descriptive type of cross-sectional study was among the school children of two secondary schools located in Savar upazilla during January-March 2013. From these selected schools, a total number of 340 students aged 5-14 yrs were enrolled in the study. They found that the mean height of the children was 136.9cm (SD±8.57cm). Among 340 students, 81.8% of the students were found to be under nourished. Underweight, stunting and wasting were present in 38.8%, 55.9%, and 25.9% of school children respectively. Underweight was associated with lower household wealth ($p < .005$). The mean weight was 27.18 Kg (SD± 6.78 Kg). The study concluded that high percentage of rural school children was malnourished. The study result also revealed the urgent need for initiation of school health programme with specific emphasis on, improvement of nutritional status, personal hygiene and prevention of diseases with the collaboration of governmental and non-governmental institutions.

This findings are not in agreement with the finding of Haque et al (2014)[10] and Abdelaziz et al (2015)[13]. Haque et al (2014)[10] conducted a study in a School, in Nilkhet area of Dhaka city. They found that 93.6% respondents were underweight, 6.4% were normal and no overweight had found. Underweight children were more in their study. It may indicate that the children of low income people of this area usually get admitted in public school of Dhaka city.

Abdelaziz et al (2015)[13] Conducted a community based cross-sectional survey to evaluate nutritional status of students aged (5-19 years) in Beni-Suef Governorate, Egypt, during September-December 2013. A two-stage sampling technique was done; 22 government schools were selected in the first stage. They found that 10%students were underweight and 53.2% students were stunted. They also recommended that child's nutritional status is strongly associated with the literacy of both parents and family size.

Gopaldas, Patel and Bakshi (1998)[14] described that there are many factors that directly or indirectly cause malnutrition among children. Women's educational and social status, national per capita income, food availability, and access to safe water are important underlying determinants of child malnutrition. The present study shows highly significant association of maternal literacy, occupation, income on child malnutrition.

Conclusion

Sixty-five percent students were underweight, 34.55% normal weight and 0.45% obese. The prevalence of under-weight was alarmingly high and that of overweight and obesity was extremely low among the students of a government-run primary school in a peripheral district town of Bangladesh. Ninety-nine percent students participated in physical activity. The menu of diet contained all kinds of food but the quantity of food was not measured.

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