

Assessment of Nutritional Status and Hygiene Practices of Primary School Children at Rural Areas (Haor) in Sylhet

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Received December 11, 2018; Revised January 15, 2019; Accepted January 21, 2019

Abstract To assess the nutritional status and hygiene practices of primary school children in rural areas (haor) in sylhet division by anthropometric methods. Measure the height, weight and calculate BMI of school aged children. To assess the prevalence of underweight, stunting and wasting of primary school children at Haor areas in sylhet. Make a statistical analysis of the scenario and a comparative discussion for rural living children. This was a cross-sectional study conducted among 300 primary school children aged between 7 to 12 years at Haor areas in Sylhet, Bangladesh. The samples were selected by using simple random method and face to face interview adopted through semi structured questionnaire. Nutritional status was determined by according to WHO classification. Collected data were analyzed by using SPSS version of computer technology. Among 300 primary school children at haor areas, 46.67% that means 140 students has normal height, weight and age which calculated as normal condition. On the other hand, in rural school going 45.67% students are underweight, over weight in rural school going students is 6% and obese is 1.66%. In case of WAZ, 19% were below normal, 78.33% were normal, 1.33% over the normal and 1.33% were obese. In case of HAZ, 10% were below the normal, 87.33% were the normal, 1.66% were over the normal and 1% were obese. And in case of WHZ 18% under the normal, 81% were normal and .66% were over the normal. This study showed that malnutrition is widely prevalent among primary school children. Appropriate screening in school health program and proper nutrition education program may be recommended as early as possible.

Keywords: nutritional status, hygiene practice, primary school children, Haor areas, Sylhet

Cite This Article: Joton Chandra Nath, Iftexhar Ahmad, Abdur Razzak, and Wahidu Zzaman, "Assessment of Nutritional Status and Hygiene Practices of Primary School Children at Rural Areas (Haor) in Sylhet." *World Journal of Nutrition and Health*, vol. 7, no. 1 (2019): 1-5. doi: 10.12691/jnh-7-1-1.

1. Introduction

Nutrition is a dynamic process involving food values, food processing, digestion and assimilation of food for nourishing the body. Malnutrition results from inadequate food intake, increased nutrients need decreased nutrient absorption and increased nutrient losses. In the modern age malnutrition continues to be a serious public health problem [1]. Despite the economic growth observed in the developing countries, malnutrition and particularly under-nutrition is still highly prevalent [2].

Malnutrition is usually the result of combination of inadequate dietary intake and infection. In the children, malnutrition is synonymous with growth failure. Malnourished children are shorter and lighter in weight than they should be for their age [3]. With the high incidence of property and HIV/AIDS prevalence of malnutrition is also high [4]. Malnutrition needs to be viewed as an indication of inadequate provision of some

of most basic of all human rights. It is also a reflection of inadequate investment and progress in arrange of issues related to human capital development of a country [5]. Some studies are now highlighting the problem of micronutrient deficiencies among school children in particular [6,7].

The school age is a dynamic period of growth and development. During this period physical, mental, social development of child takes place [8]. Poor health and malnutrition may impair both the growth and cognitive development of primary school children. School children are dramatically affected by anemia [7], vitamin A deficiency [9] and parasitic infections [10] with adverse impact on their nutritional status [10,11] as well as on their cognitive development and school performance also [12,13,14,15]. There is a growing evidence of considerable burden of morbidity and mortality due to infectious diseases and malnutrition in school children in developing countries. Studies in different countries identified the following in primary school children: respiratory problems, diarrheal disease, nutritional disorders, anemia, parasitic infestations, pediculosis, caries teeth,

refractive errors skin diseases, ear and throat problems, tic disorders, sleeping disorders etc. [15-27].

Stunting and wasting are wide spread among school age children in developing countries [28-32]. High levels of stunting among children unable to take maximum advantage of learning opportunities in schools. Epidemiological evidence suggests a strong link between maternal and early childhood under nutrition and increased adult risk of various chronic diseases [33]. According to WHO criteria, 52% of school going children in under developed countries are considered normal, where 48% of them are malnourished and 10% of them are severely malnourished [34]. More than 200 million school children are stunted and if no action is taken and at this rate, about 1 billion stunted school age children will be growing up by 2020 with impaired physical and mental development [35]. Bangladesh is also facing high poverty and child under-nutrition rates [36]. More than 54% of school age children, equivalent to more than 9.5 million children, are stunted, 56% are underweight and more than 17% are wasted [37]. Almost same condition will found when these children starts to go school. Whereas 36% are stunted, 33% are under weight and 14% are wasted under 5 year children in Bangladesh. In Sylhet division it was also high from national level except wasting which was 50% are stunted, 40% are under weight and 12% are wasted under 5 year children in Bangladesh [38].

In developing countries like Bangladesh, due to poor hygiene practices the school age children are often experience increased burden of communicable diseases that decreases their ability to attend school regularly and to learn their full potential. A large fraction of the world's illness and death is attributable to communicable diseases [39]. Sixty-two percent and 31% of all death in Africa and South East Asia, respectively, are caused by infectious disease [40]. The level of malnutrition and hygiene practices in rural and urban areas varies in our country specially Sylhet. Sylhet is a major city that lies on the banks of Surma River in north-east Bangladesh. The population of Sylhet within the city corporation, was approximately 427,265 as of 2007 and estimated 463,198 in 2008 (density population is 17479 per km²) [41]. The aim of this study was to assess the nutritional status and hygiene practices among the primary school children at rural areas (haor) in Sylhet.

2. Methodology

2.1. Study Design

This was a cross-sectional study conducted among 300 primary school children class among 3-5 Sunamganj district, Bangladesh from ten governments primary school. The samples were selected by using simple random method and face to face interview adopted through semi structured questionnaire. Nutritional status was determined by according to WHO classification. Collected data were analyzed by using anthropometric method.

2.2. Study Areas and Duration

The premises of the Derai Model Govt. Primary School, Rajanagar Govt. Primary School, Fatema Nagar Govt.

Primary School, Gobindaganj Govt. Primary School, MondaliBhog Govt. Primary School, Bagbari Model Govt. Primary School, Satrumardan Govt. Primary School, Pagla Govt. Primary School, Sarifpur Govt. Primary School, Dowara Bazar Model Govt. Primary School Government Primary School of Sunamganj district in Bangladesh. The study was conducted from January 2018 to May 2018.

2.3. Study Population

Population means the number of total school age children from the rural areas of Sylhet. There were taken a total of 300 school children sorting the boys and girls in the ratio of 5:5 from each class of the selected primary schools at Sunamganj district.

Through random sampling method to conduct this study about 300 children was assigned randomly to collect data. Boys and Girls will select both equally according to class (3-5). We select 10 students randomly both boys and girls from each class.

2.4. Data Aggregating Techniques

A questionnaire was formed containing both the open and closed ended questions with a view to aggregate the relative query on hygiene behavior, anthropometric, social, economic and demographic assessment. The school children, their guardians and teachers were the questionnaire answer providers. Age of the subjects under study was determined by respond itself. The body weight was recorded in kilogram using standard weighing machine. The study participants were in bare footed with light cloths during weight taking period.

2.5. Anthropometric Methods

Anthropometric examination is an almost mandatory tool in any research to assess health and nutritional condition in childhood. Physical measurements like body weight, height, circumference of arm and head. The anthropometric data were measured applying the following procedure.

2.6. Body Weight Measurement

The body weight was recorded in kilogram using standard weighing machine. The study participants were in bare footed with light cloths during weight taking period, possible to ensure approximate age by asking their parents and national incidence occurred at that period.

2.7. Body Height Measurement

Modified tape was used to record the height of the study respondents in miter. The participants were positioned to stand on a platform, bare footed with their head upright, looking straight forward at the time of taking height.

2.8. Measurement of Z score for Nutritional Status

Z-score (or SD-score) = (observed value - median value of the reference population) / standard deviation value of reference population.

Table 1. Z score value according to WHO classification for Nutritional assessment

Weight for age Z score	Classification
-1<WAZ<0	Normal weight
-2<WAZ<-1	Mild underweight
-3<WAZ<-2	Moderate Underweight
WAZ<-3	Normal weight
Height for age Z score	
-1<HAZ<0	Normal stunted
-2<HAZ<-1	Marginally Stunted
-3<HAZ<-2	Moderate Stunted
HAZ<-3	Sever stunted
Weight for Height Z score	
-1<WHZ<0	Normal
-2<WHZ<-1	Marginally wasted
-3<WHZ<-2	Moderately wasted
WHZ<-3	Severely wasted

2.9. Data Verification and Analysis:

The data was first checked, cleaned and entered into the computer technology. The data was edited if there were any discrepancy sighted. The frequency distribution of the variables was checked by using SPSS 16 for windows program. The new variables gained were recorded on the spur of age, sex and educational background. Microsoft Word and Microsoft Excel were in widespread application to form the tabular and chart icon.

2.10. Ethical Issues

Initially explain the purpose and objective of the study to the headmistress/Headmaster and they permit us to conduct this. Verbal consent was taken from children who are able to understand.

3. Results

Table 2 shows that among 300 students 50% were boys and 50% were girls. In the age distribution, 10% (30) children were boys and 6.66% (20) were girls whose age was 7 years old.

About 10% (30) were boys and 10% (30) were girls whose age was 8 years. Similarly, 13.33% (40) and 6.66% (20) were boys and girls in the age of 9 years. 6.66% (20) and 13.33% (40) were boys and girls in the age of 10 years. About 6.66% (20) and 6.66% (20) were boys and girls in the age of 11 years and 3.33% (10) and 6.66% (20) were boys and girls in the age of 12 years. In case father's occupations of school children, 66.66% (200) were Farmer/Laborer, 30% (90) were in private job and 3.33% (10) were govt. service. In case of mother's occupation, 10% (30) mothers engaged job and 90% (270) mothers were housewife.

Table 3 denotes Nutritional status of rural areas of school age children. We properly calculate age, height and weight combination of each and every respondent of our study. We used BMI software to calculate the variable. The children are classified using four categories: underweight, normal overweight and obese to find out

Nutritional condition of the children. The figure express that in rural primary school out of 300 students 46.67% that means 140 students has normal height, weight and age which calculated as normal condition. On the hand in rural school going 45.67% students are underweight, over weight in rural school going students is 6% and obese is 1.66%.

Table 2. Socio –Demographic profile of primary school children at haor areas in Sylhet (n=300)

Age(years)	Boys	Girls	Boys	Girls
7	30	20	10	6.66
8	30	30	10	10
9	40	20	13.33	6.66
10	20	40	6.66	13.33
11	20	20	6.66	6.66
12	10	20	3.33	6.66
Fathers Occupation				
Farmer/ Laborer	200		66.66	
Govt. Service	10		3.33	
Private Service	90		30.00	
Mothers Occupation				
Housewife	270		90	
Laborer	10		3.33	
Service	20		6.67	

Table 3. Nutritional status of rural areas of school age children

Status	Frequency	Percent
Normal	140	46.67
Underweight	137	45.67
Overweight	18	6
Obese	5	1.66
Total	300	100

Table 4. Distribution of weight for age, height for age and weight for height Z score (n=300)

Range	Frequency	Percent
WAZ		
<-2.00SD	57	19
-2.00 to <-1.00SD	235	78.33
-1.00 to +1.00SD	4	1.33
>=+1.00SD	4	1.33
Total	300	100
HAZ		
<-2.00SD	30	10
-2.00 to <-1.00SD	262	87.33
-1 to +1.00SD	5	1.66
>=+1.00SD	3	1
Total	300	100
WHZ		
Valid <-2.00SD	54	18
-2.00 to <-1.00SD	243	81
-1.00 to +1.00SD	1	.33
>=+1.00SD	2	.66
Total	300	100

From Table 4 we show that in case of WAZ 19 percent children are underweight, 78.33% children are Normal weight, 1.33% children over weight and 1.33% children are obese. In case of HAZ 10% children were stunted, 87.33% children were normal height 1.66% children had over the normal height and 1% children had obese. In case of WHZ 18% children were wasted 81% children were normal weight .33% children were over the normal and .66% children were obese.

Table 5. Summary of Nutritional status of primary school children at Haor areas (n=300)

Nutritional Status	Students (%)			
	BMI	WAZ	HAZ	WHZ
Under the Normal	45.67	19	10	18
Normal	46.67	78.33	87.33	81
Over the Normal	6	1.33	1.66	.33
Obese	1.66	1.33	1	.66

BMI: Body Mass Index; WAZ: Weight for age; HAZ: Height for age, WHZ: Weight for height

WAZ: Weight for age; HAZ: Height for age; WHZ: Weight for height.

Table 5 showed that 45.67% children had BMI below normal and 46.67% had normal BMI, 6% had over the normal and 1.66% had obese has found. In case of WAZ, 19% were below normal, 78.33% were normal, 1.33% over the normal and 1.33% were obese. In case of HAZ, 10% were below the normal, 87.33% were the normal, 1.66% were over the normal and 1% were obese. And in case of WHZ 18% under the normal, 81% were normal and .66% were over the normal.

Table 6: Distribution of Hygiene practices

Category	Wash Hand (%)	Do Not Wash Hand (%)	Irregularly Wash Hand (%)
Before and after meal	100 (300)	0.00	0.00
After toilet with soap	100 (300)	0.00	0.00
After coming home from outside	93.33 (280)	6.67 (20)	0.00
Brushing teeth Practice			
Sex	Frequency of Brushing teeth		Total
	One	Two	Three
Boy	50 (33.33%)	100 (66.66%)	0
Girl	70 (46.66%)	80 (53.34%)	0
Total	120 (40%)	180 (60%)	0
Using sandal all Day long			
Sex	Use sandal	Don't use sandal	Total
Boys	140(93.33%)	10(6.66%)	150
Girls	145(96.66%)	5(3.33%)	150
Total	285(95.00%)	15(5%)	300

Hygiene Practices of primary school Children at Haor areas:

Table 6 is denoting the basic hygiene practice every day among the school kids. 100% respondents practice washed hand before and after taking meal and after toilet with soap. About 93.33% (n=280) washed hand returning home from outside and 6.67% don't wash hand. In case of brushing teeth, 66.66% (n=100) and 33.33% (n=50) boys brushed their teeth two and one times a day respectively and on the other hand 53.34% (n=80) and 46.66% (n=70) girls brushed teeth two and one times a day respectively. There were 93.33% (n=140) boys and 96.66% (n=145) girls used sandal all the day and 6.66% boys and 3.33% girls don't use sandal all day long.

4. Discussion

The nutritional status among 7-12 years' children at haor areas of Sylhet in Bangladesh was assessed by the anthropometric Process. Nutritional status is the condition of health of the individual as influenced by the utilization of the nutrients. Study showed that 45.67% primary school children were suffering from underweight and 46.67% had normal BMI. Similar studies had found in the study done by Haque et al. that 93.6% Of school children were suffering from under weight (BMI) and very few (6.4%) of them had normal BMI [25].

According to the WHO 48% of children were malnourished [34]. In case of WAZ, 19% were below normal, 78.33% were normal, 1.33% over the normal and 1.33% were obese. In case of HAZ, 10% were below the normal, 87.33% were the normal, 1.66% were over the normal and 1% were obese. And in case of WHZ 18% under the normal, 81% were normal and .66% were over the normal. According to Sereebutraet al. (2006), 34.4% of rural children in Guatemala were stunted and the reason that they found that cause this condition was caregiver educational status [28].

Study found that almost all children (100%) children washed hand before and after taking meal and after toilet with soap. 93.33% (n=280) washed hand returning home from outside and 6.67% don't wash hand. In case of brushing teeth, 66.66% (n=100) and 33.33% (n=50) boys brushed their teeth two and one times a day respectively and on the other hand 53.34% (n=80) and 46.66% (n=70) girls brushed teeth two and one times a day respectively. There were 93.33% (n=140) boys and 96.66% (n=145) girls used sandal all the day and 6.66% boys and 3.33% girls don't use sandal all day long. These findings showed the improvement of hygiene practice among the primary children in Bangladesh.

5. Conclusion

This study provides that malnutrition among the primary school children is still high. Hence, screening for common health problems with assessment of nutritional status is essential for school health program. Although the findings of this study can't be generalize but still it represents the similar findings of other studies. However, early detection and appropriate treatment for malnourished

children must be done prior to school entry, otherwise this will create huge burden for the nation.

Abbreviation

BMI: Body Mass Index, WAZ: Weight for age Z Score, HAZ: Height for age Z Score, WHZ: Weight for Height Z Score, SD: Standard Deviation, WHO: World Health Organization

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