Nutritional assessment of primary school children at Mathbaria upazila in Pirojpur district, Bangladesh

Sushanta Kumer Mazumder[1], Bithika Rani[1], A. F. M. Mamun[2], Md. Aminul Islam[1] and Tamal Patra Suvo[1]

[1]Department of Biochemistry and Food Analysis, Patuakhali Science and Technology University, Dumki, Patuakhali, Bangladesh
[2]Soil Resource Development Institute, District Office, Patuakhali, Bangladesh

✉For any information: ask.author@journalbinet.com

ABSTRACT

To assess the nutritional status of primary school children at Mathbaria upazila in Pirojpur district of Bangladesh the study conducted during July-November 2014. The anthropometric results of the present study were interpreted using the WHO 2009 and CDC 2000 Z-score classifications. In this study, 46%, 40%, 24% and 56% of the children were found to be underweight, stunted wasted and thin respectively. Although the majority of the children were either mildly underweight (22%), mildly stunted (19%) mildly wasted (10%) or mildly thin (30%). Among underweight children boys (48%) were found to be higher than girls (43.2%), among stunted children girls (48%) were found to be higher than boys (31.2%), among wasted children girls (24.7%) were found to be higher than boys (22.4%) and among thin children boys (55.2%) were found to be higher than girls (44%). The students were more stunted (40%) than wasted (24%).The present study also found that the prevalence of overweight is 4% and 4% on the basis of WAZ and BMI for age z score respectively. In case of WAZ more boys (5.6%) were overweight than girls (2.4%) children but regarding BMI for age z score both boys and girls were same (4%) in overweight category. Besides, in case of WHZ 6.8% students were over height and more girls (9.6%) were over height than boys (4%). Finally, it can be concluded that, thinness (56%) was the most prevalent form of malnutrition and boys were more underweight and thin than girls and girls were more stunted and wasted than boys.

Key Words: *Nutrition, Children, Stunting, Underweight, BMI, WAZ and School*

I. Introduction

Children are the building blocks of a country but they are at high nutritional risk. Primary school age of children is a dynamic period of physical growth and mental development. Nutrition is one of the

foundations of health and development, and specifically in Bangladesh, malnutrition is one of the major causes of childhood illness and mortality (WB, 2006). Evidence of high malnutrition and disease morbidity among school age children raises concern that the progress made in child survival and basic education programs could be retarded. This group is faced by nutritional problems mainly stunting, underweight, anemia, iodine deficiency and vitamin A deficiency. In countries experiencing the 'nutrition transition', however, overweight and obesity are increasing problems among the school-age children (Drake et al., 2002). There is increasing evidence, with resulting international concern, that the high level of nutritional deprivation combined with the heavy burden of disease in the adolescence age group has negative consequences for a child's long term overall development. This has prompted an increased focus on the diverse needs of the school-age child. An understanding and awareness of the heavy burden of malnutrition and disease among school-age children is growing although until recently there have been relatively few large scale surveys that document levels of morbidity is not in detail. While a better picture of the health and nutrition status of this age group is being built, the true extent of the burden of ill health and malnutrition is still not fully known (PCD, 1998). Although good nutrition status is central to the achievement of most of the MDGs, set by the UN, the importance of nutrition as a foundation for health and economic development is often under estimated. In 2000, the SCN working group emphasized the need to promote more research and operational work on the nutrition of school-age children (Drake et al., 2002).

Well-nourished children perform better in school, enroll in school earlier, and stay in school longer. Over the long term, this results in more children reaching and completing higher education, leading to higher wages and greater productivity for the economy as a whole. As such, eradicating malnutrition is one of the best investments a government can make (FANTA, 2012). If malnutrition rates were reduced significantly, the returns on improved health, well-being, and productivity would be significant, and there would be a concurrent substantial reduction in the child mortality rate. A well-nourished Bangladeshi population will be more capable of fulfilling its aspirations in education, health, and economic well-being. Thus, to understand the realistic view of nutritional status of school going children in the selected area of the present study was undertaken. The general objective of the study is to assess the nutritional status of primary school children at Mathbaria upazila in Pirojpur district of Bangladesh and the specific objectives are to measure height, weight and other anthropometric indices of the primary school children and to investigate the prevalence of under nutrition of the primary school children.

II. Materials and Methods

Study Design: This study was descriptive cross-sectional study conducted during July-November 2014 to asses' nutritional status among Mathbaria upazila of Pirojpur district of Bangladesh.

Study Population: For the purpose of this study, the target population was the children age between 6-10 years old who attend primary school at Mathbaria upazila in Pirojpur district of southern Bangladesh.

Sample Size: All the boys and girls of class ɪ, ɪɪ, ɪɪɪ, ɪᴠ and ᴠ willing to participate were enrolled as study subject. In every class 50 students were included of which there are 25 boys and 25 and 250 students were total participant of the study.

Sampling Technique: Sampling procedure consisted of the following three steps.
1. Five (5) primary school at Mathbaria were Selected by random sampling of in Pirojpur district,
2. Five (5) class rooms were selected according to class level 1, 2, 3, 4 and 5 by simple sampling.
3. Five (5) boy students and Five (5) 5 girl students were taken who were attending to the selected class rooms.

Research Instrument and Data Collection: Data collection was done on one to one interview basis using a predetermined and pretested questionnaire. A structured questionnaire was used for the work.

Anthropometrical Measurements: Height was measured to the nearest 0.1 cm by using a portable stadiometer, standing upright on a flat surface without shoes. Body weight was measured barefoot with light clothing to the nearest 0.1 Kg with balance placed on a hard flat surface and checked and adjusted for zero. Anthropometrical status indices can be expressed as weight-for-age, height-for-age, weight-for-height and Body mass index (BMI) for age z-scores. WHO growth reference for children and adolescents 2007 (WHO, 2007) and the NCHS/CDC revised reference growth charts 2000 (CDC, 2000). Determination of height-for-age z-score (HAZ), weight for age z-score (WAZ) and BMI for age z-score was done using WHO AnthroPlus Software. The Z-score (SD score) of weight for height (WHZ) was calculated as follows:

Z-score = (individual value- median value of reference population)/SD value of reference population.

Data was compiled, analyzed and presented in proportions and percentages. The statistical analyses were performed with SPSS 11.5 for windows.

III. Results and Discussion

Nutritional Status According to Weight for Age
Statistically analyzed frequency distribution showed, 6.4%, 17.2% and 22% of the students were severely, moderately and mildly underweight respectively based on weight for age z score (WAZ) and it also showed that, 6.4% of each group (boys and girls) of students were under weight. 19.2% of boys and 15.2% of girls were moderately underweight comparing with their age category and 22.4% of boys and 21.60% of girls were found mildly underweight. On the other hand, 4% of the students were overweight and 7 (5.6%) boys and 3 (2.40%) girls were observed overweight on the basis of WAZ (Table 01).

Table 01. Frequency distribution of respondent based on weight for age z score (WAZ)

Nutritional status (WAZ))	Boys no. (%)	Girls no. (%)	Total no. (%)
Severe underweight (< -3)	8 (6.4)	8 (6.4)	16 (6.4)
Moderate underweight (-3 to-2)	24 (19.2)	19 (15.2)	43 (17.2)
Mildly underweight (-2 to -1)	28 (22.4)	27 (21.6)	55 (22)
Normal weight (-1 to +1)	58 (46.4)	68 (54.4)	126 (50.4)
Over weight (+1 to +2)	7 (5.6)	3 (2.4)	10 (4)

Nutritional Status According to Height for Age
In the study it was seen that 6%, 14.4% and 19.2% students were severely, moderately and mildly stunted respectively based on height for age z score (HAZ) and 5.6% of boys are severely stunted and out of the total girls' screened 6.4% were found severely stunted, 11.2% of boys and 17.6% of girls were moderately stunted and 14.4% of boys and 24.0% of girls were mildly stunted. Besides, 5.6% of the students were over height and 8% boys and 5.6% girls were in over height on the basis of HAZ. (Table 02).

Table 02. Frequency distribution of respondent based on height for age z score (HAZ)

Nutritional status (HAZ)	Boys no. (%)	Girls no. (%)	Total no. (%)
Severe stunting (< -3)	7 (5.6)	8 (6.4)	15 (6)
Moderate stunting (-3 to-2)	14 (11.2)	22 (17.6)	36 (14.4)
Mildly stunting (-2 to -1)	18 (14.4)	30 (24.0)	48 (19.2)
Normal height (-1 to +1)	76 (60.8)	61 (48.8)	137 (54.8)
Over height (+1 to +2)	10 (8.0)	4 (3.2)	5.6)

Nutritional Status According to Weight for Height
In this study it was found that 5.6% of the students severely wasted, whereas 8.4% and 9.6% students are moderately and mildly wasted and equal number (5 .6%) of boys and girls were severely wasted, 8.8% and 8% of boys were moderately and mildly wasted which was 8.0% and 11.2% in case of girls

following weight height z score (WHZ). However, 6.8% students were found over weight and 4% of boys were overweight that is higher (9.6%) in case of girls following WHZ (Table 03).

Table 03. Frequency distribution of respondent based on weight for height z score (WHZ)

Nutritional status (WHZ)	Boys no. (%)	Girls no. (%)	Total no. (%)
Severe wasted (< -3)	7(5.6)	7(5.6)	14(5.6)
Moderate wasted (-3 to-2)	11(8.8)	10(8.0)	21(8.4)
Mildly wasted (-2 to -1)	10(8.0)	14(11.2)	24(9.6)
Normal weight (-1 to +1)	92(73.6)	82(65.6)	174(69.6)
Over weight (+1 to +2)	5(4.0)	12(9.6)	17(6.8)

Nutritional Status According to Weight for Height

The study also revealed that 8%, 12% and 29.6% of the students were severely, moderately and mildly thin respectively and 8.8% of boys and 7.20% of girls were severely thin, 18.4% of boys were in moderate thinness, whereas it was 5.6% in case of girls on the basis of Body Mass Index (BMI) for age Z score. Moreover, 4% of the students were overweight 4.0% of both boys and girls felt in over weight regarding BMI for age z score (Table 04).

Table 04. Frequency distribution of respondent based on BMI for age z score

Nutritional status (BMI for age z score)	Boys no. (%)	Girls no. (%)	Total no. (%)
Severe thinness (< -3)	11 (8.8)	9 (7.2)	20 (8)
Moderate thinness (-3 to-2)	23 (18.4)	7 (5.6)	30 (12)
Mildly thinness (-2 to -1)	35 (28.0)	39 (31.2)	74 (29.6)
Normal weight (-1 to +1)	51 (40.8)	65 (52.0)	116 (46.4)
Over weight (+1 to +2)	5 (4.0)	5 (4.0)	(4)

In this study, approximately 46%, 40%, 24% and 56% of the children were found to be underweight, stunted wasted and thin respectively. Among underweight children boys (48%) were found to be higher than girls (43.2%), among stunted children girls (48%) were found to be higher than boys (31.2%), among wasted children girls (24.7%) were found to be higher than boys (22.4%) and among thin children boys (55.2%) were found to be higher than girls (44%). Boys were more underweight and thin than girls and girls were more stunted and wasted than boys. The students were more stunted (40%) than wasted (24%). Although thinness (56%) was the most prevalent form of malnutrition, the majority of the children were either mildly underweight (22%), mildly stunted (19%) mildly wasted (10%) or mildly thin (30%). A recent study in Savar upazila of Bangladesh, where the prevalence of underweight, stunting and wasting were 38.8%, 55.9% and 25.9% of children respectively and among underweight children girls (50.3%) were found to be higher than boys (28.73%). The students were more stunted (55.9%) than wasted (25.9%) (Nowsin *et al.,* 2014). Comparing this area with Savar the prevalence of underweight is slightly higher, the prevalence of stunting is lower and wasting prevalence is almost same and in this study underweight boys (48%) were found to be higher than girls (43.2%) but it is dissimilar in Savar, underweight girls (50.3%) were found to be higher than boys (28.73%). Another cross sectional survey of the nutritional status of adolescent boys and girls in Bangladesh found that 67% of adolescents were thin and 48% were stunted (Shahabuddin, 2000) that is almost similar to this study 56% thin and 40% stunted. One of the largest studies of anthropometric status of rural school children in low income countries (Ghana, Tanzania, Indonesia, Vietnam and India) found the overall prevalence of stunting and underweight to be high in all five countries, ranging from 48 to 56% for stunting and from 34 to 62% for underweight and the boys in most countries tended to be more stunted than girls and in all countries boys were more underweight than girls (PCD, 1998). The stunting range of the study is higher than this study percentage (40%) and underweight range is not beyond this study percentage (46%), the study is dissimilar to this study, girls were more stunted than boys, and similar, boys were more underweight than girls. A study in Brazil of the gender differences in growth of school-age children found that 21% of school-age children were stunted and 13% were underweight (Parraga, 1996) that were lower with the prevalence of stunting (40%) and underweight (46%) of current study.

The present study also found that the prevalence of overweight is 4%, 6.8% and 4% on the basis of WAZ, WHZ and BMI for age z score respectively. This is higher than the prevalence among 7-year-old children (3.6%) in Kuala Lumpur found by the school Health Service Unit of the Health Department of the City hall of Kuala Lumpur (City Hall Kuala Lumpur, 1990) and lower the prevalence of child overweight ranged from 10.5% to 25.6% (weight-for-height at or above the 85th percentile) in four countries undergoing the nutrition transition (Russia, China, Brazil and South Africa) (Popkin *et al.,* 1996). In case of WAZ more boys (5.6%) than girls (2.4%) children were overweight but in case of WHZ more girls (9.6%) were overweight than boys (4%). Besides, regarding BMI for age Z score both boys and girls students were same (4%) in overweight category. In a study of nutritional status of Kuwaiti elementary school children (6-10 years old) the level of obesity was significantly higher for boys (15.7%) than girls (13.8%) (Al-Isa and Moussa, 2000) that is similar to WAZ observation in this study, more boys (5.6%) than girls (2.4%) children were overweight. In this study among stunted children girls (48%) were found to be higher than boys (31.2%) and in case of WHZ more girls (9.6%) were overweight than boys (4%) that is similar to a study of an urban low-income population in Brazil, adolescent girls had stunting levels of 11% and an obesity rate of 5.5%. Girls suffered more from stunting and overweight/obesity than boys did (Florecio, 2001).

IV. Conclusion

This study demonstrated that a large number of the children were either moderately or mildly malnourished (stunted, underweight, thin or wasted) and the majority of the students were found to be vulnerable to malnutrition, although the prevalence of mild malnutrition was higher than the prevalence of severe malnutrition. In this study it was also observed that female children more malnourished than the male children, where male children had higher chance of being malnourished than the female children. The present study findings amply revealed that school children in rural sectors suffer different grades of malnutrition although the study was conducted in a small area with a distinct time taking some random sample in a wide range of population which may not represent the exact situation of the nutritional condition of school going children of this area. So that there is a limited scope to make suggestion for elimination malnutrition and overweight problem exist in the described area.

V. References

[1]. Al-Isa, A. N. & Moussa, A. A. (2000). Nutritional status of Kuwaiti elementary school children aged 6-10 years: comparison with the NCHS/CDC reference population. *International Journal of Food Sciences and Nutrition*, 51, 221-228. https://doi.org/10.1080/09637480050077103

[2]. CDC (Centers for Disease Control and Prevention) growth charts. (2000). Available: http://www.cdc.gov/growthcharts/Default.htm [Accessed: 31.10.2010].

[3]. City Hall Kuala Lumpur. (1990). Annual report Department of Health 199. City Hall, Kuala Lumpur.

[4]. Drake, L., Maier, C., Jukes, M., Patrikos, A., Bundy, D., Gardner, A. & Dolan, C. (2002). School-age children: their nutrition and health. Partnership for child development. Available: http://www. Child development.org// PCD% [Accessed: 21.9.2014].

[5]. Florecio, T. M. (2001). Obesity and under nutrition in a very-low-income population in the city of Maceio, northeastern Brazil. *British Journal of Nutrition*, 86, 177-283.

[6]. Food and Nutrition Technical Assistance (FANTA). (2012). The Analysis of the Nutrition Situation in Uganda. USAID, Washington D.C.

[7]. Nowsin, I., Begum, N., Akber, E. B., & Alam, M. M. (2014). Study on nutritional status of rural school children of Bangladesh. *Bangladesh Journal of* Physiology *and Pharmacology*, 30(1), 6-10. https://doi.org/10.3329/bjpp.v30i1.20780

[8]. Parraga, I. M. (1996). Gender differences in growth of school-age children with schistosomiasis and geohelminth infection. *American Journal of Tropical Medicine and Hygiene*, 55, 150-156. https://doi.org/10.4269/ajtmh.1996.55.150

[9]. Partnership for Child Development (PCD). (1998). The anthropometric status of school children in five countries in the Partnership for Child Development. *Proceedings of the Nutrition Society*, 57: 149-158. https://doi.org/10.1079/PNS19980021

[10]. Popkin, B M., Richards, M. K. & Montiero, A. (1996). Stunting is associated with overweight in children of four nations that are undergoing the Nutrition Transition. *Journal of Nutrition*, 126, 3009-3016. https://doi.org/10.1093/jn/126.12.3009

[11]. Shahabuddin, A. K. M. (2000). Adolescent nutrition in a rural community in Bangladesh. *Indian Journal of Pediatrics*, 67(2), 93 98. https://doi.org/10.1007/BF02726173

[12]. WHO. (2009). AnthroPlus for Personal Computers Manual: Software for Assessing Growth of the World's Children and Adolescents [computer program], version. Geneva: WHO, 2009. Available: http://www.who.int/childgrowth/software/en/ [Accessed: 21.9.2014].

[13]. World Bank (WB). (2006). Repositioning nutrition as central to development: a strategy for large scale action. World Bank Nutrition Strategy Paper. Washington, DC: World Bank.

HOW TO CITE THIS ARTICLE?

Crossref: https://doi.org/10.18801/jbar.180118.183

MLA

Mazumder et al. "Nutritional Assessment of Primary School Children at Mathbaria Upazila in Pirojpur District, Bangladesh." *International Journal of Business, Management and Social Research* 5 (1) (2018): 283-88.

APA

Mazumder, S. K., Rani, B., Mamun, A. F. M., Islam, M. A., & Suvo, T. P. (2018). Nutritional assessment of primary school children at Mathbaria upazila in Pirojpur district, Bangladesh. *International Journal of Business, Management and Social Research, 5*(1), 283-288.

Chicago

Mazumder, Sushanta Kumer, Bithika Rani, A. F. M. Mamun, Md. Aminul Islam, and Tamal Patra Suvo "Nutritional assessment of primary school children at Mathbaria upazila in Pirojpur district, Bangladesh." *International Journal of Business, Management and Social Research*, 5 (1) (2018): 283-288.

Harvard

Mazumder, S. K., Rani, B., Mamun, A. F. M., Islam, M. A. and Suvo, T. P. 2018. Nutritional assessment of primary school children at Mathbaria upazila in Pirojpur district, Bangladesh. *International Journal of Business, Management and Social Research,* 5(01)**,** pp. 283-288.

Vancouver

Mazumder SK, Rani B, Mamun AFM, Islam MA, Suvo TP. Nutritional assessment of primary school children at Mathbaria upazila in Pirojpur district, Bangladesh. International Journal of Business, Management and Social Research. 2018; 5(1):283-8.

Access by Smart Phone

Journal BiNET | Scientific Publication

✓ Faster processing & peer review
✓ International editorial board
✓ 29 business days publication
✓ Greater audience readership
✓ Indexing & bibliographic integration
✓ Social sharing enabled

Submission or email to submit@journalbinet.com

www.journalbinet.com/article-submission-form.html