

## ORIGINAL ARTICLE

**Nutritional Status of School Age Children Attending OPD of Selected Hospitals**Anwar KS<sup>1</sup>, Elham N<sup>2</sup>, Karmakar P<sup>3</sup>, Haque SA<sup>4</sup>**Abstract:**

*School-age is the vital growing phase of a child. Primary school age is a progressive period of physical growth and mental development of the child. Health issues because of poor nutrition in elementary schoolage children are among the foremost common causes of a low level of school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance. Growth monitoring is a global tool to evaluate nutritional status, health and development of individual children, and the overall nutritional status and health of populations. To find out the nutritional status of schoolage children and to signify nutritional deficiencies, a cross-sectional study was undertaken among the 222 registered school age children at the OPD of two selected urban and rural hospital of Bangladesh – Holy Family Red Crescent Medical College Hospital, Dhaka and Dhamrai Upazilla Health Complex, Savar, Dhaka. The data was collected from the parents or attendant accompanying them by non-probability purposive sampling method through semi-structured questionnaire by face to face interview. The children between 5 to 15 years were recruited according to inclusion and exclusion criteria. The age group of 8-10 years constituted the highest portion (31.5%) of the respondents. The mean  $\pm$  SD age of the children was  $9.8 \pm 7.27$  years. Most of the children were Muslims (94.6%). About 62% of them were boys and 38% were girls. Most of the children's mothers completed their primary education (37.4%). The percentage of the illiterate father was 17.12%. Majority of the mothers were labourers (41.32%) and most of the fathers were farmers (31.08%). Most of the respondents had monthly family income Tk 10000-30000 (43%). 44% had low birth weight and about 89% of them were vaccinated following a regular schedule. The mean weight of children was  $22.63 \pm 4.65$  kg and height were  $120.92 \pm 6.54$  cm. According to BMI classification, there were 58% normal, 35% undernourished and 7% obese/overweight. The health and nutrition status of children is one of the crucial elements in the assessment of the quality of life of the people. To prevent nutritional problems and their consequences early diagnosis is necessary. So, it is important to raise awareness regarding the special nutritional needs of the school-age children and regularly monitor and assess the nutritional status of them.*

**Keywords:** School age children, nutritional status

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**Introduction:**

The present scenario of health and nutritional status of the school-age children in Bangladesh is not satisfactory. Child mortality rates are higher in

developing countries due to under nutrition in childhood. Long time undernutrition in childhood is connected to poor cognitive development and serious

health impairments later in life that reduce the quality of life of individuals. Nutritional status is a critical index of this quality. In this respect, understanding the nutritional status of children through growth monitoring has far-reaching implications for the better development of future generations. Growth measurement is a comparatively less expensive, easy to perform and non-invasive process in relation to other tools of health assessment.

Anthropometric measurement is an obvious tool in any research to assess health and nutritional status in children. Physical measurements like body weight, height, arm circumference and calf, triceps skin fold have been largely used to determine health and nutritional status of communities. Based on the age, body weight and height, a number of indices such as height-for-age and weight-for-height have been suggested<sup>1</sup>. The children are classified into three categories: 'underweight' (low weight-for-age), 'stunting' (low height-for-age) or 'wasting' (low weight-for-height). Low anthropometric values are those more than<sup>2</sup> SD away from the CDC 2000 (Centers for Disease Control and Prevention) standards<sup>1-3</sup>.

Presumably malnutrition refers to both under-nutrition and over-nutrition. People are malnourished if the dietary calories and protein intake are not sufficient for their growth and maintenance or due to poor health condition, they are not able to make complete use of the food they eat (under nutrition) or if they consume too many calories (over-nutrition)<sup>2</sup>. The physical and or mental development of children can be impeded by under nutrition during childhood which subsequently may guide to a greater risk of morbidity from contagious diseases or prone to critical infections which eventually creates a bigger economic burden to the society<sup>3,4</sup>. Evidently, malnutrition in childhood unfavorably influence the growth and development in both national and international financial arena as well as health and sustainable developments<sup>5</sup>.

Malnutrition causes 3.5 million deaths worldwide,

and accountable for 35% of the morbidities among the under five children<sup>6</sup> which undoubtedly, detects malnutrition as a prime cause for critical health and development disorders faced by people, mostly children in developing countries<sup>7</sup>. Characteristics of children suffering from malnutrition include stunting or chronic malnutrition (low height for age), wasting or acute malnutrition (Low weight-for-height) or being underweight for their age<sup>8</sup>. 50.6 million under-five children were estimated to be malnourished in developing world and > 20% hospitalized with a critical illness of the extremely malnourished were estimated to endure a case-fatality in the nineties<sup>9</sup>. The prevalence of worldwide stunting and underweight reduced from 34 to 27% and 27 to 22% respectively during 1990–2000<sup>10</sup>. Level of Malnutrition improved meticulously by large declines in Eastern and South-eastern Asia as well as the Latin America and the Caribbean, while Africa or South-central Asia persistently suffered high levels of malnutrition. During this period, the numbers of stunted children in Africa dealt with the increase from 40 million to 45 million, and number of underweight children counted from 25 million to 31 million<sup>11, 12</sup>. Sixteen percent of the under-five children were estimated to be underweight worldwide in 2019<sup>12</sup>. The sloping decrease in the prevalence rate of malnutrition starting from the early 1980s including the fall in the proportions of stunted, wasted and underweight during the years: 1984–1985, 1994–1995, and 2004–2005 evidently indicates that Bangladesh made significant achievements in fighting against child malnutrition in last few decades<sup>9,13</sup>. However, the reality that the high prevalence of malnutrition is even now, one of the main reasons of morbidity and mortality among children, cannot be neglected by the researchers and policymakers<sup>11,12</sup>. A 2012 report by Save the Children in Bangladesh stated that 48.6% of under five children were stunted; 13.3% were wasted and 37.4% were underweight.

The ratio of number of stunted children in the poorest quintile and in the richest quintile of the population was 2:1.14. The prevalence of stunted children in Bangladesh was 41% in 2011, 43.2% in 2007 and 51% in 2004<sup>15-17</sup>. Nonetheless, it is still inadequate to attain the target of the malnutrition prevalence of 34% of the Millennium Development Goal (MDG), 2015<sup>18</sup>. The health and wellbeing of Bangladeshi children are challenged by the miserable nutritional status that delayed the accomplishment of the MDGs. It not only affected maternal and child mortality but also poverty though there was a significant economic growth from the early 1990s<sup>19</sup>. Malnutrition is a time variant multifactorial complex issue and it needs to be studied on a constant basis. Hence, this study was done to outline malnutrition in terms of different indicators, to assess the prevalence, to examine the association of child malnutrition with chosen demographic and socio-economic factors as well as environmental and health-related factors. This study determined the role of the selected factors to a child being stunted, wasted and underweight in Bangladesh based on the latest demographic and health survey data.

#### **Materials and method:**

A cross sectional study was conducted from 1st January to 1st February 2019 to find out the nutritional status to signify nutritional deficiencies among the 222 registered school age children at the OPD of two selected urban and rural hospital of Bangladesh – Holy Family Red Crescent Medical College Hospital, Dhaka and Dhamrai Upazilla Health Complex, Savar, Dhaka. The data was collected from the parents or attendants accompanying them by non-probability purposive sampling method through semi-structured questionnaire by face to face interview. All the subjects during the data collection period who fulfilled the study selection criteria were included in the study. Children aging 5 to 15 years and those who are willing to participate were included. After developing a structured questionnaire, data were

collected through face to face interview. Interview was taken from the parents or attendants accompanying the child. Non probability purposive sampling technique was adopted. Collected data were compiled and analyzed with the help of SPSS Windows version 20.0.

#### **Measurements**

The age was determined according to subject's mother's or attendant's statement. Height in centimeters was taken with the help of a measuring tape. The children were asked to stand with heels together in bare foot and head positioned so that the line of vision was perpendicular to the body. A measurement scale was brought down to the topmost point on the head. Height was recorded to the nearest 1 cm. A bathroom scale was used. Children were instructed to stand on the balance with light clothing without footwear and with feet apart and looking straight. Weight was recorded to the nearest value.

#### **Results:**

The identified sociodemographic characteristics of the respondents were sex, age, residence, religion, level of education and main occupation of mother and father, average monthly family income and family size. In this study the children between 5 to 15 years were recruited. The youngest respondent was 5 years old and the oldest aged 15 years. The age group of 8-10 years constituted the highest portion (31.5%) of the respondents, which was followed by the age group of 11-13 years (29.7%). The mean  $\pm$  SD age of the respondents was  $9.8 \pm 7.27$  years and median age were 10.3 years. Among 222 respondents the most of the children 62% were boys and 38% were girls.

The mean weight of the all respondents was 22.63 Kg  $\pm$  4.65. The Mean weight  $\pm$  SD of the girls were 21.70 Kg  $\pm$  4.35 and that of the boys were 23.56 Kg  $\pm$  4.85. The mean weight of the boys was higher than that of the girls. The Mean height  $\pm$  SD of all the children was 120.92 Kg  $\pm$  6.54. The Mean height  $\pm$  SD of the boys were 124.18 cm  $\pm$  6.12 and that of the girls were 117cm. 66  $\pm$  6.88.

The mean height of the boys was higher than that of the girls (Table-I). Among the children 44% had low birth weight but most of them had birth weight more than 2.5 Kg. According to BMI classification, there were 58% normal, 35% undernourished and 7 % obese/overweight. (Fig. 1)

**Table-I:** Sociodemographic criteria of the Children

Criteria		%	Weight (Kg) Mean ± SD	Height (cm) Mean ± SD	
Age in years	5-7	36 (16.2)	20.35 ± 4.85	115.08 ± 3.46	
	8-10	70 (31.5)	27.66 ± 5.58	130.53 ± 5.57	
	11-13	67 (29.7)	28.54 ± 3.56	132.43 ± 3.35	
	>13	43 (21.6)	30.23 ± 4.67	132.78 ± 4.27	
	Total	222 (100.0)			
	Mean	29.8 ± 7.27 years			
Sex	Boys	138 (62%)	23.56 ± 4.85	117.66 ± 6.88	
	Girls	84 (38%)	21.70 ± 4.35	124.18 ± 6.12	
	Mean	222	22.63 ± 4.65	120.92 ± 6.54	
Family size	<3	11	Family income	<10000	22
	3-5	14		10000-30000	43
				30000-50000	25
	>5	75.2		>50000	10

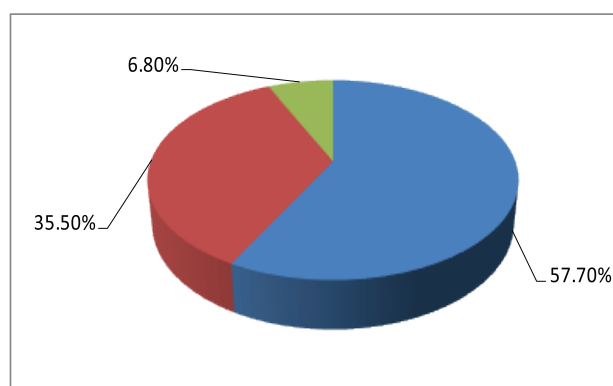


Fig -1: BMI of the Respondats

**Discussion:**

The distribution of mean weight according to age group shows that mean weight of the children was higher in older age groups. The distribution of mean height according to age group shows that mean height of the children was higher in older age groups. The mean weight and height of the boys was higher than that of the girls. A study was done which presented data of height and weight of children which shows height and weight is ascending with

age and boy’s height and weight are a little bit more than those of girls of same age. The findings correspond with the present study<sup>20</sup>. In 2012, in their report Save the Children in a report published in 2012 stated that Bangladesh had 48.6% stunted under five children; 13.3% wasted and 37.4% underweight; the quantity of stunted children in the poorest quintile of the population were two times the same in the richest quintile<sup>15</sup>.

Children were distributed according to their BMI of normal, undernourished and overweight. In this study children were distributed according to their BMI of normal, undernourished and overweight. According to BMI classification, 35% of these children were underweight the total 222 children. A cross sectional study was carried out by Das and Gulshan to investigated the extent of malnutrition and factors associated with malnutrition in Bangladesh using Bangladesh Demographic Health Survey data, 2014. 33% children were underweight. The percentage of underweight corresponds with the present study to some extent<sup>21</sup>. FAO rated Bangladesh as highest malnutrition affected South Asian country in the world. Around 9.5 million preschool-age children i.e. more than 54% children are stunted, 56% are underweight and more than 17% are wasted. It is observed that children from all the divisions in Bangladesh were suffered from malnutrition though differing significantly in the prevalence of the three anthropometric indicators. It ranged from 49.8% in Khulna to 64.0% in Sylhet with the highest prevalence of stunting (61.4%) and wasting (20.9%). Despite the high levels, rates of stunting have declined steadily over the past 10 years<sup>22</sup>.

Among the children 44% had low birth weight but most of them had birth weight more than 2.5 Kg. A study at Dhaka Medical College revealed 78.71% newborn babies weighed 2.5 Kg or more. The rest 21.29% were low birth weight (LBW) babies. These findings don’t correlate with the present study<sup>23</sup>. Another study done on the children of slum area which revealed the percentage of LBW 46.4% which corresponds to the present study<sup>24</sup>.



Most of the children in the present study completed their vaccination schedule. A study analyzed Bangladesh demographic survey data where findings shows, only 61.7% children were fully immunized and 6.1% were not immunized at all<sup>25</sup>. The present study shows 89% of them were vaccinated following regular schedule which is much higher.

When the educational status of the respondent's fathers was categorized, it was revealed that most of them were at least primary passed (34.2%). It has been predicted in some studies that educational status of father may not have significance influence on child's health. but attainment of secondary education by the mothers, polio vaccination significantly reduced the rate of stunting, wasting and underweight. These findings were similar to the research held in 2002<sup>26</sup>.

Some researchers examined the indicators of nutritional status of women and children. It revealed that reproductive women and children were the most endangered to malnutrition. It was also evaluated that household economic status, education of parents, number of prenatal care visits of the mother, child's age, birth order and preceding birth interval are important determinants of child stunting<sup>27</sup>.

The health and nutrition status of children is one of the crucial elements in the assessment of quality of life of the people. The state of interlinking between adequate nutrition and health and survival is well settled. Access to healthy diet and optimum nutrition is the key to good health.

### Conclusion:

This study revealed that the nutritional status of the children was not satisfactory. The mean weight and height of the girls was less than that of boys. The childhealth and nutritional status is one of the major elements in the evaluation of quality of life of the community. Adequate nutrition is a key component of a person's welfare which is trusted in the development. Wide scale comprehensive research on the nutritional status of children has to be conducted in future.

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