

# A Descriptive Analysis of Children's Nutritional Status and its Associated Factors in Bangladesh: Insights from Demographic and Health Survey Data

**S.M. Ashraf Hossain**

Lecturer, Department of Economics, Varendra University, Rajshahi, **BANGLADESH**

\*(ashrafhossain29@gmail.com)

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## Abstract

This study was designed to close the gaps in presenting and exploring the nutritional trends and status of children in Bangladesh since there are only a few studies that can be found on the subject matter. For this, secondary data from the 2017-2018 Bangladesh Demographic and Health Survey (BDHS) were used. Analyses were conducted using tabular and graphical analysis. This study has found that all of the significant indicators of children's nutritional status such as stunting, wasting, underweight and mortality status in Bangladesh have improved during the last few decades though the pace of this improvement in case of wasting is somewhat slow. The study has also found variations in children's nutritional status when the factors, such as children's age, gender, residential location, mother's education level, and household wealth are considered. Regarding childcare practices, there are massive improvements in terms of vaccinations compilation, ORS treatment of children with Diarrhea but the improvement in terms of feeding practices is slightly slower than satisfactory. Therefore, this study suggests that the government and non-government agencies should take proper measures to increase the pace of improvement in children's nutritional status in Bangladesh.

## Keywords

Children Nutrition, Stunting, Wasting, Underweight.

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## INTRODUCTION

With more than 1,200 people living per square kilometer, Bangladesh has the highest population density of any country in the world. Due to the country's persistent poverty and excessive population, Bangladesh's people are at risk of suffering from malnutrition. Children aged less than five years, in particular, are naturally innocent, dependent, and fragile, and therefore they frequently suffer from malnutrition. The state of children's health in Bangladesh is a multi-faceted and complicated phenomenon that serves as both an outcome and a trigger for the country's health challenges. Practical solutions to the issues surrounding children's health are made more challenging as a result of the presence of a large number of causative factors that are intricately connected with each another. Nutrition is vital to general health, not only

because it is a direct health concern; in point of fact, the nutritional status of children and women is likely the strongest predictor of the level of qualitative well-being. In this study, both the nutritional trends in Bangladesh as well as some of the most important elements associated with nutritional status are explored.

## LITERATURE REVIEW

Only a handful of studies have focused on reflecting children's nutritional status at a national level. (Rahman et al., 2009) used Demographic and Health survey data during the 1999-2000 period to document the specific level of severe and moderate wasting of children aged within five years in Bangladesh. They found the profound existence of both types of wasting among children attributable to the factors such as child's size at birth, child's age, media exposure of mother and their body mass index, etc. (Faruque et al., 2008) discussed about the nutritional trends in Bangladesh and highlighted some critical issues for deficient nutritional status of the under-five children. Though there were slow improvements in overall nutrition indicators of the country, they found malnutrition to be the principal cause of 60% childhood deaths in Bangladesh. They suggested a proper referral system to be built between Community Nutrition Center and the nearest healthcare centers run either by the government or NGOs.

Correspondingly, (Ahmed et al., 2012) explored the trends and directions of children's nutrition in Bangladesh. They found the prevalence of underweight to be very high and the prevalence of anemia to be at an alarming level. Consequently, they recommended that the entire health system of the country should be reformed to tackle the obstacles present in policy making, governance over health organizations and delivery of medical and health services. Moreover, (Dancer et al., 2008) tried to examine whether there exists dependence between infant mortality and child nutrition in Bangladesh when gender discrimination is put into consideration.

They found that male children had lower prevalence of stunting status if they survived the first year of infancy. Likewise, (Bhagowalia et al., 2010) attempted to analyze the correlations between women's empowerment and long-term indicator of children's nutritional status in Bangladesh. They found significantly very high prevalence (40%) of stunting status among the study children but the nutritional status can be improved with the betterment of women's empowerment. Furthermore, (Zongrone et al., 2012) estimated the relationship between feeding practices and different sides of children's nutritional status in Bangladesh. They found that feeding practices such as exclusive breastfeeding, age-specific supplementary feeding, etc. sufficiently improved nutrition of infants and young children in Bangladesh. Additionally, (Alom et al., 2012) also investigated the possible determinants of undernutrition of under-five children in Bangladesh using the 2007 Demographic and Health Survey data.

They found significant levels of stunting, wasting and underweight in under-five children attributed to factors such as the child's age, education level of both parents, household wealth, different feeding practices, and place of delivery. The objective of this study is to examine overall children's nutritional status and its associated factors using the most recent data from demographic and health survey. Since the previous studies have focused on children's nutritional status using data from earlier surveys, this study will therefore address the research gap in exploring children's nutritional status in recent times.

## RESEARCH METHODOLOGY

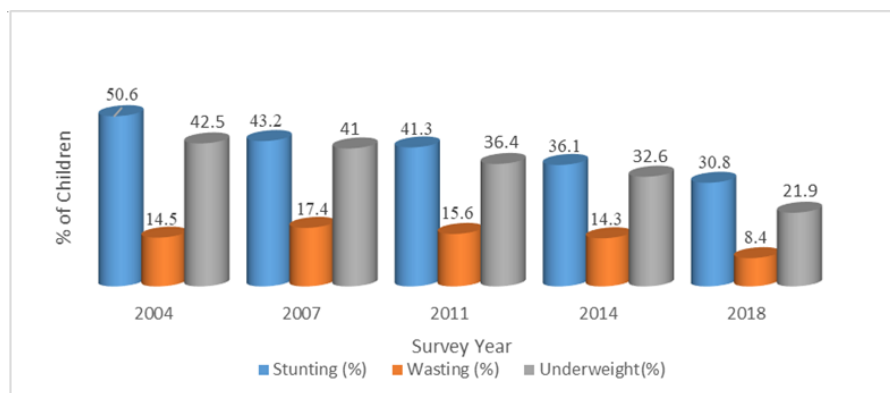
This study is based on secondary data and has used quantitative and descriptive research design because it allows to explore the relevant topics efficiently when there are time and budget constraints. Secondary data have been collected from previous research studies on the subject matter, international and nationally published reports, newspapers and various online sources. Notably, data from Demographic and Health Survey during the 2017-2018 period have been

carefully collected and evaluated. The collected data have been studied and represented through graphical and tabular methods. Microsoft Excel 16 has been used for conducting this study.

## RESULTS

### *The nutritional status of children in Bangladesh aged 0-5 years at different periods*

A person's immune system is hampered in its ability to function correctly and their metabolic processes are slowed down by inadequate nutrients. The nutritional state of the children is an essential and sensitive indication of the health and nutritional status of the country. For a considerable amount of time, Bangladesh's population under the age of five has been hampered by the burden of malnutrition. In Figure 1, trends in nutritional status of children under five years of age are shown. According to Bangladesh Demographic and Health Survey (2017-2018), 22.1% children were suffering from severe stunting whereas 50.6% of them were moderately stunted in 2004. Both severe and moderate stunting rates decreased in the years following 2004. In 2018, severe stunting reduced to 8.9% whereas 30.8% children were moderately stunted. In terms of wasting status, 3.4% children were suffering from severe wasting whereas 14.5% of them were moderately wasted in 2004. However, severe and moderate wasting rates fluctuate in the years following 2004. In 2018, severe wasting reduced to 1.5% whereas 8.4% children were moderately wasted. In case of the underweight status of children, 13.6% children were suffering from severe underweight whereas 42.5% of them were moderately underweight in 2004. Both severe and moderate underweight rates decreased in the years following 2004. In 2018, severe underweight reduced to 4.1% whereas 21.9% children were found to be moderately underweight.



**Figure 1:** Changing Trends in the Nutritional Status of Children in Bangladesh

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

As Figure 1 shows, both stunting and underweight rates were relatively high in 2004 as compared to wasting. However, in the years following 2004, stunting and underweight began to reduce where wasting remained high. Sharp consistent decreases occurred in stunting and underweight rates and both eventually reduced nearly to half in 2018 compared to what their rates had been in 2004. Nevertheless, in case of wasting status, the rate increased in 2007 and then decreased in the following years but in a prolonged fashion. However, it took a massive leap in terms of reduction in 2018 when the rate of underweight children was found to be 8.4%, much less than that of 2014 (14.3%).

### *The Childhood Mortality Status in Bangladesh*

Income inequality and poverty, which often go hand in hand with food insecurity in the community, are significant contributors to poor child health. The prevalence of sickness among

children is directly related to the state of the water supply and the cleanliness of the surrounding community. The childhood mortality trends in Bangladesh are shown in Table 1.

	2004	2007	2011	2014	2017-2018
Neonatal mortality rate	41	37	32	28	30
Postnatal mortality rate	24	15	10	10	8
Infant mortality rate	65	52	43	38	38
Child mortality rate	24	14	11	8	7
Under-5 mortality rate	88	65	53	46	45

**Table 1:** Childhood mortality status in Bangladesh, (%).

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

In 2004, 41% of childhood mortality occurred in the neonatal period. Then, childhood mortality in this aspect began to reduce gradually as shown by the table but increased again in recent years (2017-2018). Though postnatal mortality rates were identical in 2011 and 2014, the condition has improved in general as the rate in recent years is only 8% whereas it was 24% in 2004. The most remarkable improvement occurred in terms of infant mortality rate where the rate was 65% in 2004 but then reduced sharply and ultimately to 38% in the 2017-2018 period. The same scenario observed in context of child mortality rate which now stands at only 7%, much lower than what it had been in 2004 (24%). Under-five mortality rates sharply reduced from 2004 to 2007 but since then the reduction has been relatively slow.

### ***The nutritional status of children according to children's age in Bangladesh***

It is generally agreed that a child's age is the most crucial aspect that determines their nutritional health. This is due to the fact that a child's level of physical development and their immune system are both in a state of flux throughout the first five years of their lives. Table 2 agrees with the aforementioned statement. The highest rate of stunting status among children under five years of age was found among the 18-23 months of age group whereas lowest rates were found among children under eight months. However, stunting rates remain high among the 24-35 months of age group and even among the 36-47 months of age group but reduced to 28.8% for the 48-59 months of age group.

Age in Months	Stunting	Wasting	Underweight
<6	19.7	9.5	15.8
6-8	19.8	5.8	13.3
9-11	20.2	7.1	14.7
12-17	29.9	9.6	18.3
18-23	39.2	6.8	19.1
24-35	38.8	8.4	24.5
36-47	33.1	8.4	25
48-59	28.8	9.1	27

**Table 2:** The Nutritional Status of Children according to age (%), 2018

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

However, wasting status remains to be almost identical across all age groups, with the lowest rate accounting at 6.8% for the 18-23 months of age group. Underweight status rates were pretty low in early periods of child's age as shown in the table but began to increase sharply in the later periods with the highest rate found among the 48-59 months of age group.

### ***The nutritional status of children according to divisions and residence in Bangladesh***

Geography can affect the national picture of children's nutrition. Geographic disaggregation indicates pockets of high stunting in distant, marginal, and persistently poor areas like the Chars, Haors, and Chittagong Hill Tracts. (BDHS, 2017-2018). Table 3 displays the nutritional status of children of eight administrative divisions in Bangladesh.

Divisions	Stunting	Wasting	Underweight
Barishal	32.5	9.0	22.5
Chattogram	32.8	7.9	21.3
Dhaka	25.6	8.8	18.5
Khulna	25.5	8.0	19.2
Mymensingh	35.6	9.0	25.9
Rajshahi	30.6	8.0	23.0
Rangpur	30.4	7.3	20.6
Sylhet	42.7	10.4	32.7

**Table 3:** The nutritional status of children according to divisions (%), 2018

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

As shown in the table stunting rate is around 30% among the divisions Barishal (32.5%), Chattogram (32.8%), Rajshahi (30.6%) and Rangpur (30.4%). However, the lowest rates were found in the two divisions Khulna (25.5%) and Dhaka (25.6%). On the contrary to these rates, the highest stunting rate was found in Sylhet division as nearly half of its children are reportedly stunted (42.7%). In terms of wasting status, the rates are pretty similar among most divisions with the lowest rate found in Rangpur (7.3%). However, the highest wasting rate among the divisions was again found in Sylhet where it was more than 10%. The highest rate of underweight was also found in Sylhet (32.7%) whereas the rates are lower than 20% in Dhaka (18.5%) and Khulna (19.2%). In terms of residence, the nutritional status of under-five children can be shown in Table 4.

Residence	Stunting	Wasting	Underweight
Urban	25.4	8.9	19.2
Rural	32.8	8.2	22.9

**Table 4:** The Nutritional Status of Children according to residence

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

The stunting rate is highly prevalent in rural areas (32.8%) compared to urban areas but urban rates are still very high (25.4%) implying persistent impoverished conditions for the urban poor. The wasting rates between rural and urban children are almost identical. Regarding underweight status, the urban rates (19.2%) appear to be lower than that of rural areas (22.9%).

### ***The nutritional status of children according to children's gender in Bangladesh***

Unfortunately, children's gender can also play a significant role in their nutritional health, which is not ideal because it suggests that discrimination based on gender exists even in the youngest age groups. The nutritional status of children in terms of gender in 2018 is shown in Table 5.

<b>Nutritional Status of children: Male (%), 2018</b>			
Degree	Severe	Moderate	Well-nourished
Stunted	9.0	30.8	-
Wasting	1.6	9.2	2.6
Underweight	3.9	21.7	0.9
<b>Nutritional Status of children: Female (%), 2018</b>			
Degree	Severe	Moderate	Well-nourished
Stunted	8.8	30.9	-
Wasting	1.3	7.6	1.8
Underweight	4.2	22.1	0.5

**Table 5:** Nutritional Status of Children according to gender

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

In terms of stunting status between male and female children, almost same proportions of them suffer from severe and moderate stunting. However, female children suffer less in terms of

wasting status than male children. As shown in the table, 1.6% and 9.2% male children suffer from severe and moderate wasting whereas these percentages are lower for female children (1.3% and 7.6% respectively). In contrast to this, male children suffer less from underweight problems than female children. 4.2% female children and 22.1% female children suffer from severe and moderately underweight problems respectively but these percentages are lower for male children (3.9% and 21.7%).

### ***The nutritional status of children according to mother's education level in Bangladesh***

The distribution of children according to mother's education level is shown in Table 6.

Education Level	Stunting	Wasting	Underweight
No Education	43.0	12.0	36.0
Primary Incomplete	39.3	8.7	26.6
Primary Complete	37.7	9.5	26.8
Secondary Incomplete	29.6	8.2	20.5
Secondary Complete or Higher	17.8	7.0	13.1

**Table 6:** The nutritional status of children according to mother's education level (%)

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

Among the mothers that have no education, 43% and 36% of their children appeared as stunted and underweight whereas 12% of their children are wasted as well. The stunting, wasting and underweight rates are similar among children whose mothers either have complete or incomplete primary education. For mothers who did not complete secondary level of education, the nutritional status of their children is lower in all three indicators than those with mothers having lower education. However, the nutritional status of children improves in terms of all three indicators for children whose mother has completed secondary or have higher level of education.

### ***The nutritional status of children according to wealth quintile in Bangladesh***

Table 7 shows that the decreases in nutritional status of children are associated with improvements in household wealth.

Condition	Stunting	Wasted	Underweight
Lowest	40.2	10.0	28.9
Second	37.3	7.9	25.6
Middle	30.2	7.9	20.2
Fourth	26.9	8.8	20.7
Highest	17.1	7.2	12.5

**Table 7:** The nutritional status of children aged 0-5 years according to Wealth Quintile (%)

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

As shown, the highest level of stunting (40.2%) is associated with the lowest wealth quintile whereas the households with highest wealth quintile have only 17.1% rate of stunting. Highest level of wasted (10.0%) and underweight (28.9%) are also found with the lowest wealth quintile although there are fluctuations in terms of these two indicators across different wealth quintiles. Households with middle wealth quintile have both lower rates of wasted and underweight than those with fourth wealth quintile. But again, lowest rates of wasted and underweight are also found among households with highest wealth quintile.

### ***The breastfeeding and complementary feeding practices of children in Bangladesh***

In order to establish and maintain healthy eating habits throughout life, it is crucial to implement them in infancy and early childhood. Increased rates of malnutrition in

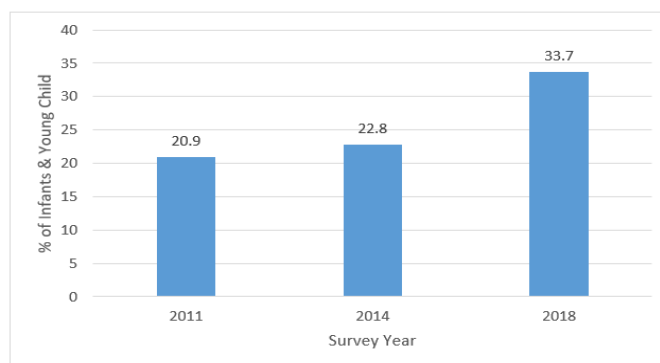
underdeveloped nations can be a result of inadequate feeding habits, especially after six months of age when breastmilk alone is not enough to meet the increasing dietary needs for growth. This situation is examined in Table 8. Although breastfeeding is common in Bangladesh, only 40% of children below six months are exclusively breastfed. Again, despite the positive effects of breastfeeding up to two years of a child's life, more than 10% of children in Bangladesh aged between 18-23 months of age are not breastfed. Moreover, complementary food is initiated too early in Bangladesh as shown in the table. More than 4% children aged below five months are given complementary food. The percentage increased to 22.9% for children aged between 4-5 months.

Age in months	Not breastfeeding	Exclusively breastfeeding	Breastfeeding and consuming complementary foods
0-1	0.0	84.9	0.0
2-3	0.8	66.1	4.1
4-5	1.0	40.1	22.9
6-8	1.7	5.8	77.1
9-11	2.7	1.1	94.1
12-17	5.6	0.1	91.9
18-23	10.8	0.0	88.5

**Table 8:** The Proportion of children breastfed according to age (2018)

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

Moreover, more than 75% of children are fed complementary food after six months of age which is the correct time to introduce complementary feeding. The proportions of infants and young child feeding practices (IYCF) in Bangladesh can be shown in Figure 2.



**Figure 2:** The Proportion of Infants & Young Child Fed with Appropriate IYCF Practices

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

As shown in Figure 2, only 21% children were appropriately fed in 2011. This was improved very slightly in 2014 as 22.8% children were found to be appropriately fed. However, the improvement in this aspect took a massive leap in 2018 when 33.7% children appeared to be appropriately fed.

### ***The immunization status of the children in Bangladesh***

Immunization can be achieved through the completion of all the required vaccines at appropriate age. In Bangladesh, this scenario seemingly appeared to be satisfactory as shown in Table 9. More than 90% of children have received Bacille Calmette-Guérin (BCG) vaccines since 2004. This condition has further improved in the following years with almost 98% of children have received BCG vaccines in 2018.

The proportional rates of receiving both pentavalent and polio vaccines have also increased over the years with the highest proportional rates accounted in the most recent year. The receiving status of measles vaccines however fluctuated slightly over the period 2007 to 2014.

However, the highest rate has been found again in the most recent year accounting more than 87%.

Vaccines	2004	2007	2011	2014	2017-2018
BCG	93.3	96.8	97.8	97.8	97.9
Pentavalent	80.3	90	93.2	90.9	95.6
Polio	81.6	89.7	93.2	91.1	94.1
Measles	70.3	77.2	84.0	79.9	87.9

**Table 9:** The Proportion of Children Who Received Specific Vaccines by 12 Months

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

### ***The antenatal care (ANC) condition in Bangladesh***

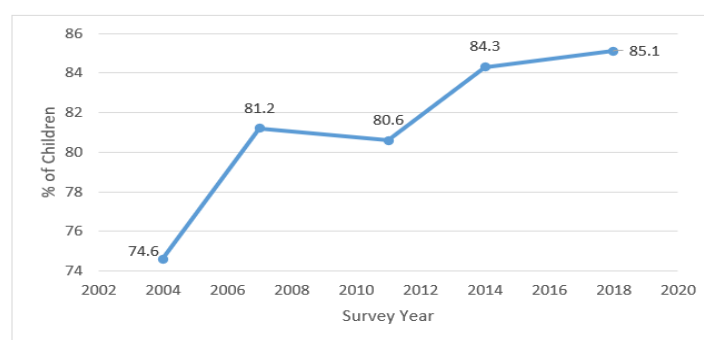
Antenatal care is routine medical treatment provided to pregnant women during pregnancy to identify diseases or complicating unfavorable circumstances and to provide knowledge on pregnancy, delivery, and lifestyle. Pregnant women should be routinely checked by a medically competent health provider to identify and avoid harmful conditions. According to Bangladesh demographic and health survey (2017-2018), approximately 82% of women with a live birth have received antenatal care at least once from a medically trained health worker, that is, either a qualified doctor, nurse or paramedic. The number of antenatal care visits per residence is shown in Table 10:

Residence	Number of ANC Visits				
	None	1	2	3	4 or More
Urban	5.2	9.6	12.7	13.7	58.7
Rural	9.0	14.4	17.8	16.1	42.7
Total	8.0	13.1	16.4	15.5	47

**Table 10:** The Percentage Distribution of Women by Number of ANC Visits in Accordance with Residence

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

Overall, 47% women have made four or more ANC visits and only 8% women have made no such visit. More than 58% of urban women have made four or more ANC visits during their pregnancy and only 5% of urban women have not made ANC visits during their pregnancy. On the other hand, more than 42% of rural women have made four or more ANC visits during their pregnancy but 8% have made no such visits. Hence, not only are urban women more likely to have made four or more ANC visits than rural women, but the proportion of urban women who have not made any ANC visits are also lower than that of rural women.



**Figure 3:** The Proportion of Children with Diarrhea Treated with ORS or Homemade Solution

\*Source: Bangladesh Demographic and Health Survey, 2017-2018

### ***The proportion of children with diarrhea treated with ORS or homemade solution in Bangladesh***

In impoverished nations, diarrhea is a significant contributor to undernourishment. The inadequate distribution of Oral Rehydration Salts (ORS) saline for the treatment of sick



children is a substantial contributor to the epidemic of diarrhea. However, this situation has become better in Bangladesh which can be shown in Figure 3.

As shown in the figure, 74.6% of children who suffered from diarrhea were given ORS saline for treatment purposes. The condition improved in 2007 as showed by the line accounted for 81.2%. However, it dropped slightly in 2011 to 80.65%. Nevertheless, improvements in this aspect occurred sharply in 2014 (84.3%) and then slightly improved again in 2018 (85.1%).

## CONCLUSION

The nutritional status of children in Bangladesh has improved as shown by the declining rates of stunting, wasting and underweight though the rates of these declines are slow. Moreover, the undernourished children of Bangladesh are mostly aged between 18 to 35 months and the most undernourished children are found in Sylhet in terms of all three indicators. However, no high level of discrepancy is found in terms of undernourishment between male and female children in Bangladesh. Finally, lowest rates of undernourished children are found among those whose mothers have completed at least secondary level of education and among those who belong to the highest wealth quintile group. Childcare practices such as feeding practices have not improved up to the mark but most children in Bangladesh have taken all the necessary vaccines and most of them while suffering from diarrhea have been treated with ORS saline as well. This study therefore recommends that the government and non-government organizations can introduce effective intervention programs such as maternal counseling and supply of supplementary feeding to improve the nutritional status condition in Bangladesh.

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