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Distribution and Risk Factors of Child Malnutrition in Bangladesh based on Bangladesh Demographic and Health Survey-2014 Data

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Abstract

Background: Malnutrition is the root causes of morbidity and mortality amongst pre-school and school going children in Bangladesh. In addition, malnutrition not only affects individuals but its effects are passed from generation to generation. Hence, the study aimed to investigate the latest nutritional status of under-five children and identify the risk factors of child malnutrition in Bangladesh using Bangladesh Demographic and Health Survey-2014 along with its distribution and composition.

Data and methodology: The data used for the present study has been derived from Bangladesh Demographic and Health Survey (BDHS-2014). Sample of size 6965 has been used in this study extracted from 7886 kids' record of BDHS-2014 with information on height and weight. Descriptive analysis has been performed to know the characteristics of the study subjects. Distribution of the z-scores is investigated, too. Then nutritional status has been clustered to gender, residence and division. And finally, binary logistic regression analysis has been used to identify influential factors that are significant to child malnutrition.

Results: It has been found that 12.2% of under-five children are severely stunted and 24.91% are moderately stunted. It has been also found that 3.19% of under-five children are severely wasted, 11.74% are moderately wasted, 8.34% are severely underweighted and 24.69% are moderately underweighted. The malnutrition status (stunted) does not differ significantly to gender (p-value=0.239), but does significantly differ to residence (p-value<0.001) and to division (p-value<0.001). When adjusted to all the factors, children of age group 18-23 months are significantly and about 7 times more likely to be stunted than children of less than 6 months age (adjusted odds ratio, AOR=6.72, 95% confidence interval (CI)=4.94, 9.14). It has been found that Female children are less likely to be stunted than male (AOR=0.89, 95% CI=0.80, 0.99). Birth interval less than 24 months is another correlates of child malnutrition (AOR=1.37, 95% CI=1.10, 1.70). Underweighted mothers are more likely to have stunted child. Children of educated parents are less likely to be stunted. Children of Sylhet division are most likely to be stunted. Children of rural areas are 16% less likely to be stunted than urban area (AOR=0.84, 95% CI=0.74, 0.96). Children of richest families are 60% less likely to be stunted than poorest group (AOR=0.40, 95% CI=0.32, 0.50). However, job of parents is not found to have significant association with nutritional status of under-five children in Bangladesh.

Conclusion: In conclusion, it can be said that increasing educational facilities for mothers and fathers can improve the child nutrition. Government and policymakers may take comprehensive and concrete challenge to overcome wealth inequities. Therefore, immediate actions are required to address all these issues to improve the nutritional status of children in Bangladesh.

Keywords: Child malnutrition; Risk factors; Logistic regression; Odds ratio

Introduction

Child nutrition status is an important indicator of economic status of a population. Malnutrition is an underlying cause of the death of 2.6 million children each year contributing one third of the global total of children's deaths [1]. Child malnutrition is a major public health concern in Bangladesh. Rates of malnutrition in Bangladesh are among the top most countries in the world [2]. It has been found that poverty; malnutrition and disease are interlinked with each other [3]. Malnutrition is referred as the utmost single threat to the world's public health, especially for the developing countries [4]. In Bangladesh the child mortality rate is about 60% due to only nutrition related problem [5]. Survivors are left vulnerable to illnesses, stunted growth and intellectual impairment. However, researchers and policymakers cannot neglect the fact that the high prevalence of malnutrition is, even now, is the root causes of morbidity and mortality amongst pre-school and school going children in Bangladesh [6]. Malnutrition not only affects individuals but its effects are passed from generation to generation. If these malnourished children are girls, they often grow up to become malnourished mothers themselves and give birth to infants who scrap to develop and thrive. Despite a decline in the prevalence of chronic malnutrition among children under five from 60% in 1997 to 41% in 2011, that trend is now decelerating. The numbers of malnourished children under age 5 are staggering: more than five million children have stunted growth while around 450,000 children suffer from potentially deadly severe acute malnutrition. Currently wasting, or acute malnutrition, affects 14% of Bangladeshi children, while one-third of children are also underweight, which is a composite of stunting and wasting. Low birth weight is an important risk factor for subsequent malnutrition. The average annual rate of reduction

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(AARR) of stunting in Bangladesh is 2.7, which is much less than the required 3.3 AARR to reach the global World Health Assembly (WHA) target. Thus, Bangladesh is not likely to achieve the WHA target for reducing childhood stunting [7].

However, many researches have been conducted on child malnutrition to oversee this national burden [4,8-33]. Many researches are also related to the risk factors of child malnutrition [4,10-15,20,27,28,30]. The current study will disclose the latest nutritional status of children and identify the risk factors of child malnutrition in Bangladesh using Bangladesh Demographic and Health Survey-2014 along with its distribution and composition.

Data and Methodology

The data used for the present study has been derived from Bangladesh Demographic and Health Survey-2014 [7]. The BDHS-2014 survey was conducted under the authority of the National Institute for Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. The survey was implemented by Mitra and Associates, a Bangladeshi research firm located in Dhaka. Macro International Inc., a private research firm located in Calverton, Maryland, USA, provided technical assistance to the survey as part of its international Demographic and Health Surveys program. The U.S. Agency for International Development (USAID)/Bangladesh provided financial assistance.

The BDHS-2014 collected data on the nutritional status of children by measuring the height and weight of all children of age under 5 years in the selected households. The sample for the BDHS-2014 is nationally representative and covers the entire population residing in non-institutional dwelling units in the country. The survey used a sampling frame from the list of enumeration areas (EAs) of the 2011 Population and Housing Census of the People's Republic of Bangladesh, provided by the Bangladesh Bureau of Statistics (BBS). The primary sampling unit (PSU) for the survey is an EA created to have an average of about 120 households. With the design, the survey selected 18,000 residential households, which were expected to result in completed interviews with about 18,000 ever-married women of age 15-49 years. A total of 17,863 ever-married women of age 15-49 years were interviewed, for a response rate of 98 percent (Figure 1). The present study uses sample of size 6965 from the child data that are extracted from 7886 kids' record of BDHS-2014 who has information on height and weight (Figure 2). Details about the survey can be found in literature (NIPORT, 2014) [7].

The nutritional status of children in the survey population is compared with the World Health Organization (WHO) Child Growth Standards to create z-scores resulting in the indicators as stunting (height-for-age), wasting (weight-for-age) and underweight (weight-for-height). Stunting, which is considered as indicator of acute malnutrition is a composition of wasting and underweight. Therefore, stunting has been used as the target variable for advanced analysis in

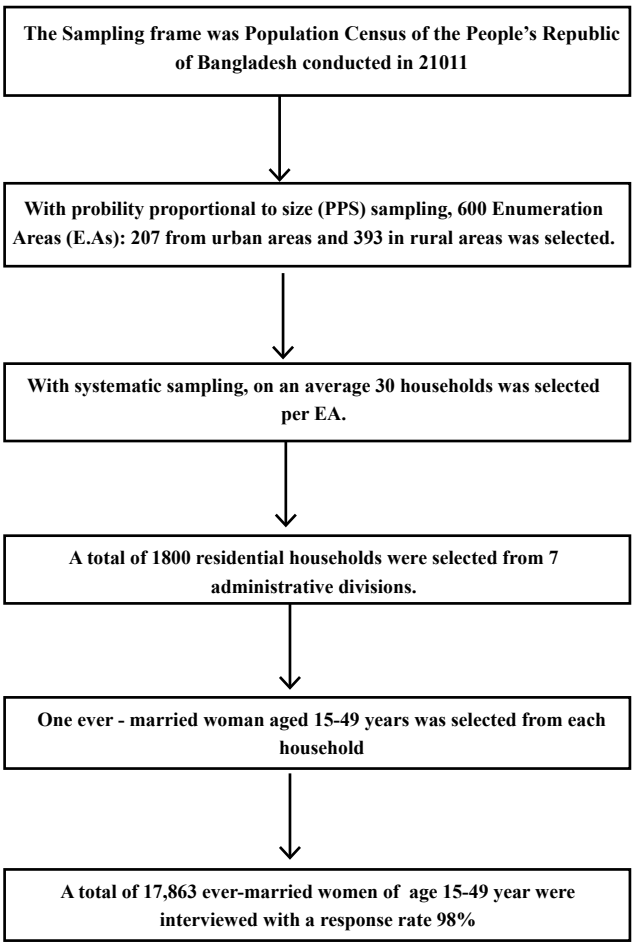

Figure 1: Survey design of Bangladesh Demographic and Health Survey-2014 [32].

this study and various socio-demographic and economic variables are used as the explanatory variable. 'Live birth between births' with most of missing information has been excluded from the advanced analysis.

Various statistical methodologies have been used to analyze the data. First, descriptive analysis has been performed to know the characteristics of the study subjects. Distribution of the z-scores is also investigated. Then nutritional status of children is clustered to confounding factors, e.g., gender, residence and division. *p* values are obtained from chi-square (Pearson or Likelihood Ratio) test, and finally, binary logistic regression analysis has been used to identify factors that are significant to child malnutrition (stunting) [34].

Results

Results of descriptive analysis have been summarized in Table 1.

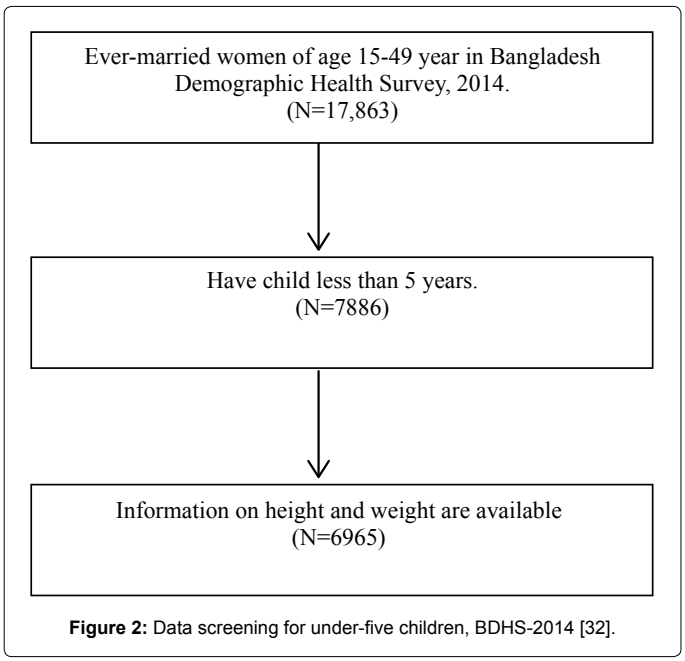

Figure 2: Data screening for under-five children, BDHS-2014 [32].

Characteristic	Frequency (Percentage)
Age in months	
<6	558 (8.01)
6-8	388 (5.57)
9-11	398 (5.71)
12-17	770 (11.06)
18-23	686 (9.85)
24-35	1405 (20.17)
36-47	1377 (19.77)
48-59	1383 (19.86)
Sex of child	
Male	3571 (51.27)
Female	3394 (48.73)
Size of child at birth	
Very large	96 (1.38)
Larger than average	456 (6.55)
Average	2849 (40.90)
Smaller than average	544 (7.81)
Very small	260 (3.73)
Missing	2760 (39.63)
Live birth between births	
Yes	4 (0.06)
No	4261 (61.18)
First birth	2700 (38.77)
Preceding birth interval (months)	
First birth	2700 (38.77)
<24	476 (6.83)
24-47	1388 (19.93)
48+	2387 (34.27)
missing	14 (0.20)
Age of mother at 1st birth (years)	
<20	5085 (73.01)
20-30	1838 (26.39)
30+	42 (0.60)
Mother's BMI	
Underweight	1556 (22.34)
Normal	4067 (58.39)
Overweight	1097 (15.75)
Obese	220 (3.16)
Missing	25 (0.36)
Frequency of antenatal visits during pregnancy	
No antenatal care visits	848 (12.17)
Antenatal visits	3196 (45.89)
Don't know	4 (0.06)
Missing	2917 (41.88)
Duration of breast-feeding	
Ever breastfed	535 (7.68)
Never breastfed	46 (0.66)
Still breastfeeding	3481 (49.98)
Don't know	5 (0.07)
Missing	2898 (41.61)
Mother's educational level	
No education	1076 (15.45)
Primary incomplete	1105 (15.87)
Primary complete	829 (11.90)
Secondary incomplete	2762 (39.66)
Secondary complete	457 (6.56)
Higher	736 (10.57)
Mother's employment status	
Yes	1747 (25.08)
No	5217 (74.90)
Missing	1 (0.01)
Father's educational level	
No education	1736 (24.92)
Primary incomplete	1168 (16.77)
Primary complete	932 (13.38)
Secondary incomplete	1653 (23.73)
Secondary complete	465 (6.68)
Higher	1009 (14.49)
Missing	2 (0.03)
Father's occupation	
Did not work	37 (0.53)
Professional	651 (9.34)
Sales	1384 (19.87)
Agricultural-self employed	642 (9.22)
Agricultural-employee	1046 (15.02)
Household and domestic	8 (0.12)
Services	583 (8.37)
Skilled manual	2460 (35.32)
Unskilled manual	124 (1.78)
Don't know	7 (0.10)

Missing	23 (0.33)
Division	
Barisal	812 (11.66)
Chittagong	1320 (18.95)
Dhaka	1213 (17.42)
Khulna	774 (11.11)
Rajshahi	875 (12.56)
Rangpur	865 (12.42)
Sylhet	1106 (15.88)
Place of residence	
Urban	2188 (31.41)
Rural	4777 (68.59)
Wealth index	
Poorest	1515 (21.75)
Poorer	1307 (18.77)
Middle	1379 (19.80)
Richer	1420 (20.39)
Richest	1344 (19.30)

Table 1: Characteristics of the study subjects (N=6965).

Category	Height for age (Stunted) Frequency (%)	Weight for height (Wasted) Frequency (%)	Weight for age (Underweighted) Frequency (%)
Severely malnourished	850 (12.20)	222 (3.19)	581 (8.34)
Moderately malnourished	1735 (24.91)	818 (11.74)	1720 (24.69)
Normal (well-nourished)	4380 (62.89)	5925 (85.07)	4664 (66.96)

Table 2: Stunting, wasting and underweight status of under-five children in Bangladesh.

It has been found that among the children 8.01% are of age less than 6 months, 5.57% are of age group 6-8 months, 5.71% are of age group 9-11 months, 11.06% are of age group 12-17 months, 9.85% are of age group 18-23 months, 20.34% are of age group 24-35 months, 19.77% are of age group 36-47 months and 19.86% are of age group 48-59 months. The numbers of male and female children are approximately equal (51.50% male and 48.50% female). About 11.54% children are of bellow average size at birth. A significant percentage (6.83%) have preceding birth interval less than 24 months. Most of the mothers (73.04%) age at first birth are less than 20 years. A significant percentage (22.34%) of mothers is underweighted. Only 45.89% mothers have antenatal visits during pregnancy. Among the children 68.59% belong to rural area and 21.75% belongs to families with poorest wealth index.

Table 2 summarizes the results of child malnutrition in Bangladesh (BDH-2014) [7]. It has been found that 12.2% of under-five children are severely stunted and 24.91% are moderately stunted. It has been also found that 3.19% of under-five children are severely wasted, 11.74% are moderately wasted, 8.34% are severely underweighted and 24.69% are moderately underweighted. The overall distribution z-scores for stunting, wasting and underweight of children are given in Figure 3 and the nutritional status of children by age is graphically presented in Figure 4.

Malnutrition of under-five children is also analyzed clustering to common confounding variables-gender, residence and division (Tables 3-5). The malnutrition status (stunted) does not differ significantly to gender (p-value=0.239), but does significantly differ to residence (p-value<0.001) and to division (p-value<0.001). It has been found that children are more stunted in rural area (severe: 13.02% and moderate: 26.15%) and the most in Sylhet division (severe: 20.43% and moderate: 29.57%).

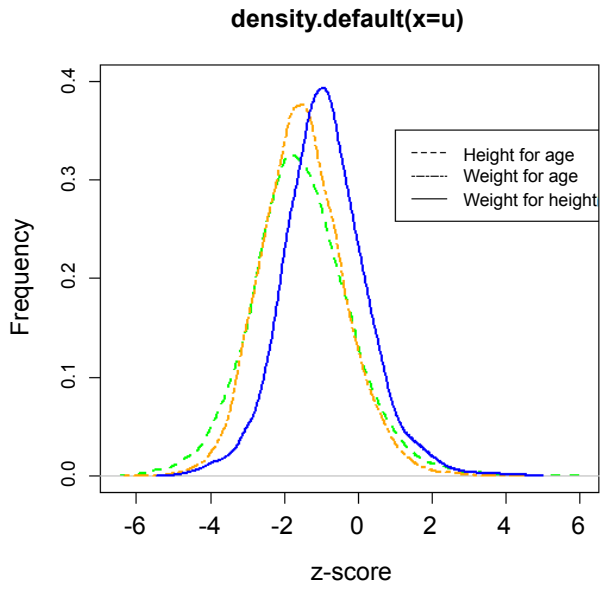

Figure 3: Distribution of z-scores for nutritional status of under-five children in Bangladesh, BDHS-2014.

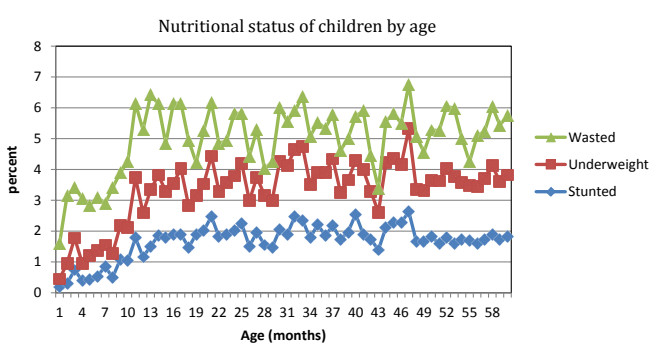

Figure 4: Nutritional status of children by age, BDHS-2014.

Unadjusted and adjusted relationships of socio-economic and demographic variables to stunting status have been analyzed using logistic regression model (Table 6). Odds Ratio with 95% confidence interval has been reported. It has been found that children become more stunted as grow up. When adjusted to all the factors, children of age group 18-23 months are significantly and about 7 times more likely to be stunted than children of less than 6 months age (adjusted odds ratio, AOR=6.72, 95% CI=4.94, 9.14). After adjusting with covariates, it has been found that female children are less likely to be stunted than male (AOR=0.89, 95% CI=0.80, 0.99). Birth interval less than 24 months is another correlates of child malnutrition (AOR=1.37, 95% CI=1.10, 1.70). Underweighted mothers are more likely to have stunted child. Children of educated parents are less likely to be stunted. Children of Sylhet division are most likely to be stunted. After adjusting with covariates, surprisingly we found that children of rural areas are 16% less likely to be stunted than urban area (AOR=0.84, 95% CI=0.74, 0.96). Children of richest families are 60% less likely to be stunted than poorest group (AOR=0.40, 95% CI=0.32, 0.50). However, job of parents is not found to have significant association with nutritional status of under-five children in Bangladesh.

Category	Height for age (Stunted)			Weight for height (Wasted)			Weight for age (Underweight)		
	Male Frequency (%)	Female Frequency (%)	*p*-value	Male Frequency (%)	Female Frequency (%)	*p*-value	Male Frequency (%)	Female Frequency (%)	*p*-value
Severely malnourished	450 (12.60)	400 (11.79)	0.239	138 (3.86)	84 (2.47)	0.004	285 (7.98)	296 (8.72)	0.535
Moderately malnourished	909 (25.46)	826 (24.34)		422 (11.82)	396 (11.67)		884 (24.75)	836 (24.63)	
Well-nourished	2212 (61.94)	2168 (63.88)		3011 (84.32)	2914 (85.86)		2402 (67.26)	2262 (66.65)	

Table 3: Clustering nutritional status of under-five children to gender, Bangladesh.

Category	Height for age (Stunted)			Weight for height (Wasted)			Weight for age (Underweight)		
	Urban Frequency (%)	Rural Frequency (%)	*p*-value	Urban Frequency (%)	Rural Frequency (%)	*p*-value	Urban Frequency (%)	Rural Frequency (%)	*p*-value
Severely malnourished	228 (10.42)	622 (13.02)	<0.001	63 (2.88)	159 (3.33)	<0.001	151 (6.90)	430 (9.00)	<0.001
Moderately malnourished	486 (22.21)	1249 (26.15)		202 (9.23)	616 (12.90)		443 (20.25)	1277 (26.73)	
well-nourished	1474 (67.73)	2906 (60.83)		1923 (87.89)	4002 (83.78)		1594 (72.85)	3070 (64.27)	

Table 4: Clustering nutritional status of under-five children to residence, Bangladesh.

Category	Barisal Frequency (%)	Chittagong Frequency (%)	Dhaka Frequency (%)	Khulna Frequency (%)	Rajshahi Frequency (%)	Rangpur Frequency (%)	Sylhet Frequency (%)	*p*-value
Height for age (Stunted)								
Severely Stunted	84 (10.34)	187 (14.17)	123 (10.14)	54 (6.98)	83 (9.49)	93 (10.75)	226 (20.43)	<0.001
Moderately Stunted	226 (27.83)	323 (24.47)	289 (23.83)	169 (21.83)	186 (21.26)	215 (24.86)	327 (29.57)	
Normal (well-nourished)	502 (61.82)	810 (61.36)	801 (66.03)	551 (71.19)	606 (69.26)	557 (64.39)	553 (50.00)	
Weight for height (Wasted)								
Severely Wasted	37 (4.56)	44 (3.33)	28 (2.31)	24 (3.10)	32 (3.66)	34 (3.93)	23 (2.08)	0.006
Moderately Wasted	105 (12.93)	156 (11.82)	129 (10.63)	82 (10.59)	125 (14.29)	107 (12.37)	114 (10.31)	
Normal (well-nourished)	670 (82.51)	1120 (84.85)	1056 (87.06)	668 (86.30)	718 (82.06)	724 (83.70)	969 (87.61)	
Weight for age (Underweight)								
Severely Underweight	67 (8.25)	110 (8.33)	88 (7.25)	40 (5.17)	61 (6.97)	79 (9.13)	136 (12.30)	<0.001
Moderately Underweight	213 (26.23)	345 (26.14)	251 (20.69)	169 (21.83)	219 (25.03)	208 (24.05)	315 (28.48)	
Normal (well-nourished)	532 (65.52)	865 (65.53)	874 (72.05)	565 (73.00)	595 (68.00)	578 (66.82)	655 (59.22)	

Table 5: Clustering nutritional status of under-five children to division, Bangladesh.

Discussion

In the last few decades, a lot of policies and intervention program have been implemented by government of Bangladesh and non-government organizations to improve the nutritional status of under-five children. But, it is obligatory to work more with child malnutrition to fulfil the target of Sustainable Development Goal (SDG) which directed in reduction of malnutrition among young children by integrating child malnutrition and related strategies.

Based on BDSH-2014 data this study reveals that about one in every three children is stunted and underweighted; whereas about one in every seven children is wasted in Bangladesh. Coherent with other studies [4,10,12-15,20,27,28,30], male children and children of age 12-59 months are on high risk to be stunted. Parents may monitor the level of physical mobility of their children and may provide supplement food in proper proportion according to their level of physical mobility.

Birth interval of less than 24 months is found to be a risk factor for children to be stunted. Earlier surveys also identified this as a risk factor [4,10-15,20,27,28,30]; only the level of risk has been lower down. Media may play a good role to make parents aware of it. This study has found that underweighted mothers are more likely to produce stunted children than healthy mothers, which is obvious and understandable.

Many studies, in Bangladesh and as well as in other countries, suggest that parent's educational level is directly linked with child health outcomes [13,28,35-47]. This study also finds that parent's education is preventive factor to child malnutrition. Educated parents are aware of good child care and good health. Besides men, women with higher education as compared to lower education are more likely to raise their family income, which helps the families to provide more quality diets and better healthcare to their children. Additionally, educated mothers can efficiently use limited household resources and available healthcare facilities, limit their family size, and maintain better health promoting behaviors to their [40,46]. All these factors effectively contribute to prevent child malnutrition.

It has been also found that children of Sylhet division are most likely to be stunted among the administrative divisions. Social and cultural disparities may exist in Sylhet division. Also there might be lack of health care facilities in this division. Literacy rate is also found to be lowest in Sylhet division [48].

Rural-urban disparity always plays an important role in public health and generally, health situation in urban area is better than rural area. A study in Vietnam also reports similar scenario [40]. But, our study found that children of urban area are more likely to be malnourished than rural area. In urban area, prevalence of unique family is higher than rural area and both working parents go outside for work leaving their children under illiterate maid at home. This makes their children more prone to be malnourished.

The relationship between economic inequality and child malnutrition is investigated in many studies [36,42,45,49,50] and the greater degree of economic disparity is strongly associated with higher morbidity and mortality [51]. Current study has found that children from poorer family are more likely to be malnourished than children from wealthier family. This can be attributed to the fact that rich families have more ability to allocate essential resources for their

Variable	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age in months		
<6 (RC)	1	1
6-8	1.39 (0.96, 2.02)	1.32 (0.90, 1.93)
9-11	2.59 (1.85, 3.64)	2.71 (1.90, 3.85)
12-17	3.93 (2.93, 5.29)	4.13 (3.04, 5.61)
18-23	6.15 (4.57, 8.27)	6.72 (4.94, 9.14)
24-35	5.53 (4.19, 7.28)	5.90 (4.44, 7.86)
36-47	6.22 (4.72, 8.20)	6.58 (4.94, 8.77)
48-59	4.61 (3.49, 6.08)	4.44 (3.33, 5.92)
p-value for trend	<0.001	<0.001
Gender		
Male (RC)	1	1
Female	0.92 (0.84, 1.01)	0.89 (0.80, 0.99)
Preceding birth interval (months)		
First birth (RC)	1	1
<24	1.86 (1.53, 2.26)	1.37 (1.10, 1.70)
24-47	1.67 (1.47, 1.91)	1.15 (0.99, 1.33)
48+	1.05 (0.94, 1.18)	0.89 (0.78, 1.02)
p-value for trend	0.084	0.105
Mother's BMI		
Underweighted (RC)	1	1
Normal	0.71 (0.63, 0.80)	0.85 (0.74, 0.96)
Overweight	0.39 (0.33, 0.46)	0.61 (0.51, 0.74)
Obese	0.35 (0.25, 0.49)	0.66 (0.46, 0.95)
p-value for trend	<0.001	<0.001
Mothers educational level		
Primary incomplete	0.81 (0.68, 0.96)	0.95 (0.79, 1.14)
Primary complete	0.81 (0.68, 0.97)	1.02 (0.84, 1.25)
Secondary incomplete	0.50 (0.43, 0.58)	0.82 (0.69, 0.98)
Secondary complete	0.20 (0.16, 0.27)	0.47 (0.34, 0.64)
Higher	0.25 (0.20, 0.31)	0.74 (0.55, 1.00)
p-value for trend	<0.001	<0.001
Mother's employment status		
No (RC)	1	1
Yes	1.24 (1.11, 1.39)	1.10 (0.98, 1.25)
Father's educational level		
No education (RC)	1	1
Primary incomplete	0.78 (0.67, 0.90)	0.92 (0.79, 1.09)
Primary complete	0.64 (0.55, 0.75)	0.83 (0.69, 0.99)
Secondary incomplete	0.46 (0.40, 0.53)	0.74 (0.63, 0.87)
Secondary complete	0.26 (0.21, 0.34)	0.58 (0.44, 0.77)
Higher	0.25 (0.21, 0.30)	0.64 (0.49, 0.84)
p-value for trend	<0.001	<0.001
Father's occupation		
Professional (RC)	1	1
Sales	1.82 (1.47, 2.27)	1.05 (0.81, 1.35)
Agricultural-self employ	3.02 (2.37, 3.85)	1.04 (0.77, 1.41)
Agricultural-employ	2.54 (2.04, 3.18)	1.05 (0.80, 1.39)
Services	2.50 (1.95, 3.20)	1.23 (0.92, 1.66)
Skilled manual	2.28 (1.86, 2.80)	1.07 (0.84, 1.38)
Household and domestic	1.57 (1.04, 2.38)	0.78 (0.49, 1.24)
Don't work	2.07 (1.09, 3.93)	1.11 (0.55, 2.25)
p-value for trend	<0.001	0.399
Division		
Barisal (RC)	1	1
Chittagong	1.02 (0.85, 1.22)	1.13 (0.93, 1.38)
Dhaka	0.83 (0.69, 1.00)	0.92 (0.75, 1.13)
Khulna	0.66 (0.53, 0.81)	0.68 (0.54, 0.86)
Rajshahi	0.72 (0.59, 0.88)	0.66 (0.53, 0.82)
Rangpur	0.90 (0.73, 1.09)	0.81 (0.65, 1.00)
Sylhet	1.62 (1.35, 1.95)	1.42 (1.15, 1.74)
p-value for trend	<0.001	0.602
Place of residence		
Urban (RC)	1	1
Rural	1.33 (1.19, 1.48)	0.84 (0.74, 0.96)
Wealth index		
Poorest (RC)	1	1
Poorer	0.68 (0.59, 0.79)	0.80 (0.68, 0.95)
Middle	0.59 (0.51, 0.69)	0.76 (0.65, 0.91)
Richer	0.45 (0.38, 0.52)	0.59 (0.49, 0.71)
Richest	0.24 (0.21, 0.29)	0.40 (0.32, 0.50)
p -value for trend	<0.001	<0.001
Hosmer-Lemeshow goodness of fit test (*p*-value):		0.1065
ROC analysis (AUC)*		0.7233
*Area Under ROC Curve (AUC) has been calculated for prediction accuracy of the model		

Table 6: Adjusted and unadjusted OR of socio-demographic and economic factor using logistic regression to child malnutrition (stunted) in Bangladesh.

children than poor families. In addition, access of safe drinking water and hygienic toilet are plausible to assure more by rich families than poorer families which protect them from incidence of various water-borne illnesses. Also, comprehensibly distribution of more resources to their children improves their health conditions by reducing multiple health risks.

Strength and Limitation

This study has several strengths. The use of nationally representative data covering rural-urban and large sample make the findings reliable and general. However, this study is not free from limitation. All intrinsic limitations associated with the cross-sectional data are true here. Some important regional and cultural variables are absent in the data which could be significant predictors [32,38,52-54].

Conclusion

In conclusion, it can be said that increasing educational facilities for mothers and fathers can improve the child nutrition. Government and policymakers may take comprehensive and concrete challenge to overcome wealth inequities. Involvements for sufficient breastfeeding, balancing feeding, supplementation of micronutrients to children and mother should be implemented to improve child nutrition. Other strategies such as relief programs for the unable and disadvantaged groups are important to reduce child malnutrition. Social infrastructure needs to be reformed in urban area by encouraging people to live with parents and other relatives together. Government may also take initiative to establish childcare center with proper infrastructure and skilled manpower for working parents with under-five children. Addressing inequity and general deficiency and implementation of other health programs are also necessary to reduce child malnutrition. Government and policymaker should keep in mind that adequate nutrition of children is a precondition to build a healthy and creative nation. In addition, to achieve the sustainable development goal of child nutrition, Bangladesh needs to scale up target-oriented programmes such as poverty-reduction income generating poor population and disadvantaged regions. Therefore, immediate actions are required to address all these issues to improve the nutritional status of children in Bangladesh.

Conflicts of Interest

We declare that we have no conflicts of interest.

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