

# Exploring the Determinants of Malnutrition among Under-Five Children in the Coastal Area of Bangladesh

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## ABSTRACT

**Background:** This study discusses the issue of malnutrition among children under five in Bangladesh, particularly in the coastal areas where poverty and food insecurity are prevalent. Despite some progress, malnutrition remains a major cause of morbidity and mortality in these regions.

**Materials and methods:** The study presents the results of a cross-sectional study that investigated the nutritional status of children under five and the significance of family income in relation to several socio-demographic aspects that could impact children's nutritional condition.

**Results:** The study found that 40.47% of the children were wasted, 42.85% were stunted, and 50% were underweight. The multivariate analysis found that the mother's education, the socio-economic status of the family and the disease within the last 6 months had a significant association with the nutritional status of under 5 children. The study showed a significant correlation between a mother's education and a child's nutritional status, as well as household socioeconomic status.

**Conclusion:** The research concludes that without taking precautions to address undernutrition and micronutrient deficiencies, human development is not possible and poverty, food insecurity, ignorance, a lack of proper feeding practices, infectious diseases, and poor hygiene and sanitation are the main factors contributing to high rates of maternal and child undernutrition in developing nations.

**Key words:** Coastal area; Malnutrition; Under 5 children.

## Introduction

Malnutrition among under-five children is a serious public health problem in many low- and middle-income countries, including Bangladesh. Despite some progress in recent years, malnutrition remains a major cause of morbidity and mortality among children under five in Bangladesh, particularly in the coastal area where poverty and food insecurity are prevalent.<sup>1</sup> Numerous studies have investigated the determinants of malnutrition among

under-five children in Bangladesh, including socioeconomic status, maternal education, sanitation practices, and dietary intake.<sup>2</sup> Asia has the highest proportion of malnourished children because there are roughly 70% of the world's malnourished children here. From 16% in the People's Republic of China to 64.0% in Bangladesh, around half of the preschoolers are underweight. Underweight and stunting are common, particularly in South Asia, where one in every two preschoolers is stunted. Children in Asia experience micronutrient deficiencies in addition to protein-energy malnutrition.<sup>3</sup> Without taking precautions to address undernutrition and micronutrient deficiencies, human development is not possible. The high rates of maternal and child undernutrition in developing nations are caused by a number of factors, including poverty, food insecurity, ignorance, a lack of proper baby and young child feeding practices, a heavy load of infectious diseases and poor hygiene and sanitation.<sup>4</sup> The study aims to explore the determinants of malnutrition among under five children in the coastal area of Bangladesh.

## Materials and methods

The study uses a cross-sectional design and collects data from a representative sample of households in the coastal area. A total 84 under 5 children were selected from a village of Dacope upazila of Khulna District. The study was carried out during the period of January to March 2023. Face-to-face interviews with mothers of children

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under the age of five using a semi-structured questionnaire. A portable Salter scale with a 125 kg maximum capacity was used to measure weight. For the younger children who were unable to stand properly, a portable Salter hanging scale with a 25 kg maximum capacity was employed. The child's history from the mother and the verification of the EPI card were both used to determine the age. Children between the ages of 2 and 5 had their height measured using a height measuring stick, and children under 2 had their length measured using a length measuring board. The respondents' socioeconomic level was categorized as very poor, poor, lower middle class, middle class, and upper middle class. Indicators for evaluating the nutritional status of children under the age of five were weight for age (Underweight) weight for height (Wasting) and height for age (stunting). According to Gomez classification and WHO standards, nutritional status was categorized. In terms of wasting and stunting, the WHO criteria were applied, where a Z score of 3.00 indicates severe malnutrition, 3.00 to -2.00 indicates moderate malnutrition and 2.00 to 3.00 indicates normal nutritional status<sup>5</sup>. In terms of underweight, the Gomez categorization was applied, with weight for age 60% denoting severe malnutrition, 60%-75% denoting moderate malnutrition, 75%-90% denoting mild malnutrition, and 90% denoting normal nutritional condition<sup>6</sup>. The study examines the association between malnutrition and various social, economic, and environmental factors. □ □

**Results**

**Table I** Age and sex distribution of respondents (n=84)

Age in month □	Frequency (%)
0-11 □	7 (8.33%)
12-23 □	23 (27.38%)
24-35 □	17 (20.24%)
36-47 □	13 (15.48%)
48-59 □	24 (28.57%)
<b>Sex</b> □	
Female □	46 (54.76%)
Male □	38 (45.24%)

This Table showed that the maximum number of children (27.38%) were 12–23-month age group. 54.76% of children were female and 45.24% were male.

**Table II** Socio-economic status of respondents (n=84)

Socio-economic status □	Frequency (%)
Very poor □	7 (8.33%)
Poor □	23 (27.38%)
Lower middle class □	24 (28.57%)
Middle class □	13 (15.48%)
Upper middle class □	17 (20.24%)

Table II showed that the majority of the children are from poor and lower-middle-class families.

**Table III** Nutritional status by wasting and stunting

Indicators □	Severe □ malnutrition □	Moderate □ malnutrition □	Normal □ nutritional status
Wasting □	10 (11.90%) □	24 (28.57%) □	50 (59.52%)
Stunting □	14 (16.66%) □	22 (26.19%) □	48 (57.14%)

Table III revealed that 40.47% of the children were wasted and 42.85% of the children were stunted.

**Table IV** Multivariate analysis of nutritional status

Variable □	Severe □ malnutrition □	Moderate □ malnutrition □	Normal □ nutritional status	Total □	p value
Mother's education □					
Primary □	8 (17.78%) □	17 (37.78%) □	20 (44.44%) □	45 □	p .009
Secondary □	2 (5.13%) □	7 (17.95%) □	30 (76.92%) □	39 □	
Socio-economic status □					
Very poor □	4 (57.14 %) □	2 (28.57%) □	1 (14.6%) □	7 □	p .006
Poor □	6 (26.09%) □	10 (43.48%) □	7 (30.43%) □	23	
Lower middle class □	1 (4.17%) □	8 (33.33%) □	15 (62.5%) □	24 □	
Middle class □	1 (7.69%) □	2 (15.38%) □	10 (76.92%) □	13	
Upper middle class □	2 (11.76%) □	3 (17.65%) □	12 (70.59%) □	17 □	
Presence of disease within last 6 months					
Yes □	14 (23.33%) □	16 (26.67%) □	30 (50%) □	60 □	p .019
No □	2 (8.33%) □	2 (8.33%) □	20 (83.33%) □	24	

Table IV showed maternal educational status and good socio-economic status significantly impact on nutritional status of under-five rural children.

**Discussion**

The findings of this study showed that 40.47% of the children were wasted, 42.85% were stunted and 50% were underweight. Of them, severely wasted, stunted and underweight were 11.90%, 16.66%, and 28% respectively. A study conducted in 2008 in the Gazipur district of Bangladesh found 27.9% of the children were wasted, 72.1% were stunted and 73.3% were underweight.<sup>7</sup> Another study conducted in 2012 found 17% were wasted, 41% were stunted and 39% were underweight.<sup>8</sup> Compared to these two findings the present study showed that nutritional status was nearly similar in terms of wasting, stunting and being underweight. The multivariate analysis found that the mother's education, the socio-economic status of the family, and the disease within the last 6 months had a significant association with the nutritional status of under 5 children (p<.009, p<.006, p<.019 respectively). This study showed a significant association between a mother's education and child nutrition. The mothers with a secondary level of education had children with better nutritional status (p< 0.05). A study found a significant association between mothers' education and the nutritional status of their children.<sup>9</sup> Another study

conducted in 2016 found a significant relationship between a mother's levels of education and a child's nutritional status.<sup>10</sup> This study also found a significant correlation between nutritional status and household socioeconomic status. In this study, more prevalence of underweight children was in the low-income family ( $p < 0.006$ ). This finding is similar to a study conducted in Sri Lanka.<sup>11</sup> Another study found that the nutritional status of children from lower socio-economic classes was poor as compared to their counterparts who came from upper socio-economic classes.<sup>12</sup>

### Conclusion

Importance of this study importance lies in its potential to help policymakers, public health practitioners and other stakeholders better understand the determinants of malnutrition in the coastal area of Bangladesh. By identifying the factors associated with malnutrition, the study provides critical information to guide the development of effective interventions and policies to improve the nutritional status of under-five children in the region. The study's findings also contribute to the broader research on malnutrition in Bangladesh and globally, enhancing the understanding of the complex factors that contribute to this critical public health problem.

### Disclosure

All the authors declared no competing interest.

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