

(RESEARCH ARTICLE)



Prevalence of malnutrition in children in Narsingdi district, Bangladesh: An observational study

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Abstract

Background: A pathological condition called malnutrition arises when there is a relative or absolute lack or excess of one or more nutrients. In low-income nations, it is a serious public health issue for children under ten years. Malnutrition is a state of nutritional deficit brought on by insufficient consumption of protein or energy. Primary acute malnutrition in children is a prevalent condition in underdeveloped nations due to insufficient food supply resulting from social, economic, and environmental causes. An underlying illness that results in aberrant nutritional loss, increased energy expenditure, or decreased food intake is typically the cause of secondary acute malnutrition.

Method: This was an observational, descriptive study conducted in Bangladesh's Narsingdi area from September to October 2023. All records of children with complications of malnutrition, between the ages of 2 and 10 were included in the study.

Result: 142 children fall in the category of underweight, 166 children possess suitable BMI and 8 of them were heavyweight with BMI more than 23. Nearly one third of the children faces physical problems some times in their life time. Among all of the children 139 (43.98%) had perfect physical status with good health and diarrhea is the most common problem they caught by 118 respondents.

Conclusion: In the district, its severity and prevalence can be decreased with increased community knowledge and stronger preventive efforts.

Keywords: Malnutrition; Diarrhea; Weight; Children; BMI; Awareness; Bangladesh

1. Introduction

Pediatric malnutrition is described as "an imbalance between nutrient requirement and intake, resulting in cumulative deficits of energy, protein, or micronutrients that may negatively affect growth, development, and other relevant outcomes" by the American Society of Parenteral and Enteral Nutrition (ASPEN) [1]. The etiology of malnutrition can be attributed to either illness-related variables (nutrient imbalance directly induced by one or more diseases or injuries) or environmental/behavioral factors linked to inadequate nutrient intake and/or delivery.

The most prevalent places to see primary acute malnutrition in children are low- and middle-income countries. It is a result of insufficient food availability brought on by socioeconomic, political, and environmental variables [2, 3]. Some of the variables that contribute to this issue are food insecurity within the home, poverty, low birth weight, intrauterine growth restriction, poor nutrition for pregnant women, inadequate supplemental feeding, poor water quality, frequent viral infections, etc. Consequently, primary acute malnutrition is complex and primarily of social rather than biological origin. For instance, it is becoming more and more likely that inadequate sanitation, hygiene, and water quality are the

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root causes of the illness known as "environmental enteropathy," which increases childhood acute malnutrition [4, 5]. 52 million children under the age of five go hungry, 17 million are severely wasted, and 155 million are stunted, according to the World Health Organization (WHO). About 45% of deaths in children under the age of five are caused by undernutrition. The majority of these deaths take place in low- and middle-income nations.

Undernutrition is still a major public health issue in Bangladesh. Overnutrition is still not a major issue, but the number of mothers and children under five who are overweight is rising. 35% of the population remains food insecure [6], Severe acute malnutrition affects 600,000 children [7], Anemia affects 43% of children from six months to five years of age [8]. Particular investigation into the impacts of food patterns variations, morbidity, childcare and feeding practices, health care access, environmental factors, and sociocultural contexts on malnutrition is also important [9]. There are data on severe malnutrition in Bangladesh, hence the interest in this study, which aims to investigate the prevalence of malnutrition in children.

2. Material and method

This was an observational, descriptive study conducted in Bangladesh's Narsingdi area from September to October 2023. All records of children with complications of malnutrition, between the ages of two and ten were included in the study. Data were collected using an individual form from reference sheets, medical records, therapeutic sheets. The following parameters were collected from their parents include: child's age, sex, mother's age, situation, level of education and residence, about 316 children. All data collected were analyzed using Microsoft excel software. Informed consent was given by children's parents and their personal information were kept private.



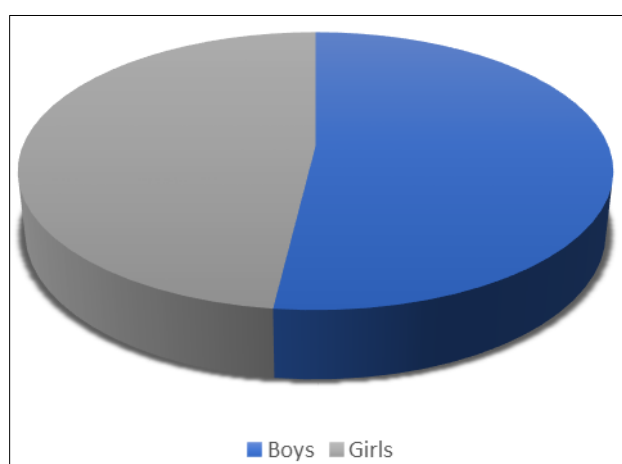
Figure 1 Study location in Bangladesh Map (Narsingdi district)

3. Results

Demographic properties, nutritional status, BMI and their disease history were collected and represented below-

Table 1 Demographic characteristics of children

Variable	Variable	Number	Percent
Gender	Boys	164	51.9%
	Girls	152	48.1%
Age (years)	2 - 4	125	39.55%
	5 - 7	136	43.03%
	8 - 10	55	17.40%
Family residence	Town area	89	28.16%
	Rural area	227	71.84%

**Figure 2** Gender distribution**Table 2** BMI among children

Variable	BMI parameter (Kg/m ²)	Number of children
Underweight	Less than 18	142
Moderate	18 to 22.5	166
Overweight	More than 23	8

Table 3 Health status of children (physical condition)

Variable	Number	Percent
Perfect physical status	139	43.98%
Moderate physical status	147	46.51%
Worst physical status	24	7.6%
No clear indication	6	1.89%

From this study it was found that number of boys slightly higher than girls and their age were between 2 to 10 years. About 227 (71.84%) children come from rural area and 89 (28.16%) children were from town area shown in (Table – 1). By evaluating the weight of children it was found that, 142 children fall in the category of underweight, 166 children

possess suitable BMI and 8 of them were heavyweight with BMI more than 23 shown in (Table – 2). Nearly one third of the children faces physical problems some times in their life time. Among all of the children 139 (43.98%) had perfect physical status with good health. However, 147 (46.51%) children were in moderate health condition, besides this 24 (7.6%) of them had worst physical condition with few clinical features and 6 cases didn't showed any clear reason represented in (Table – 3). Most of the children got different types of diseases now and then and have to seek medical practitioner for treatment. Diarrhea is the most common problem they caught by 118 respondents and abdominal pain is least cause with only 12 frequency (Table – 4) & (Figure – 3).

Table 4 Type of different diseases caught by children frequently

Diseases	Frequency	Percent
Diarrhea	118	37.34%
Fever	97	30.69%
Decreased appetite	58	18.35%
Cough	31	9.81%
Abdominal pain	12	3.79%

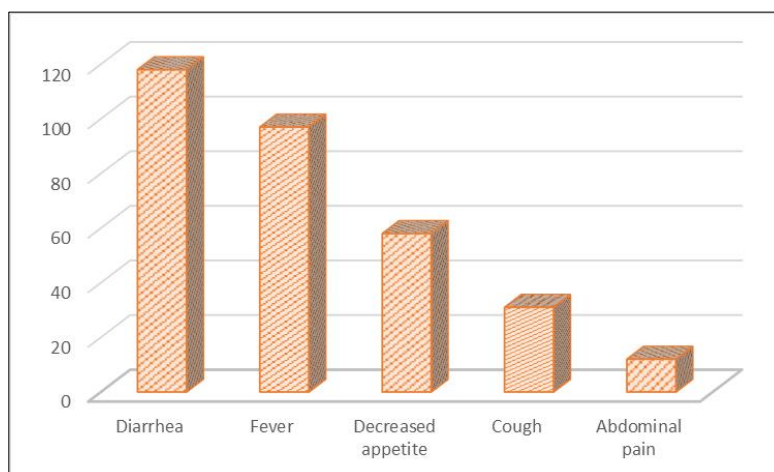


Figure 3 Frequency distribution of diseases among children, (X axis = name of diseases and Y axis = frequency)

4. Discussion

This survey revealed that there were somewhat more males than girls, and that the boys' ages ranged from two to ten years. Approximately 227 children (71.84%) are from rural areas, and 89 children (28.16%) are from town areas. Physical issues affect nearly one-third of kids at some point in their lives. One hundred and thirty-nine children (43.98%) were in excellent physical condition. Six cases had no apparent cause, while 147 children (46.51%) had moderate health. In addition, 24 children (7.6%) had the worst physical state with minimal clinical symptoms. Abdominal pain is the least prevalent cause, with only 12 frequency, while diarrhea is the most common issue, reported by 118 respondents.

A number of studies demonstrated how mothers' nutritional status affects the size and lethal growth of their offspring at birth [10, 11]. Reduced food intake and a tendency toward waste may be linked to malnutrition. In addition, the incidence and duration of infectious infections were caused by inadequate nutrition and hygiene standards [12]. Just 14% of children in Bangladesh who had a fever and 27% who had indications of a cough were brought to a medical institution for treatment. Additionally, children who suffer from respiratory illnesses prefer to avoid eating or eat less frequently and in larger quantities, which can significantly increase the risk of acute malnutrition. Compared to children in households with several children, children living in households with one under-five child were more likely to experience serious weight loss. These kids may be exclusively breastfed or receive the wrong kind of supplements. Their

moms may be novice adolescent mothers as a result of their young marriage, and most of these moms are ignorant of proper diet, vitamins, and child-rearing methods.

In order to improve mothers' health status and the nutrition of their children, interventions should concentrate on supporting and educating mothers as well as the heads of households about affordable but rich in nutrients locally available foods, prenatal care with hospital delivery and childcare, including feeding, immunization practices, and access to health facilities for treatment during illness.

5. Conclusion

Malnutrition remains a real problem in Bangladesh. Raising community awareness and strengthening preventive measures will help to reduce its prevalence and mortality in the district. To diagnose children with acute malnutrition, a clinical examination, precise growth status measurement, and use of standard growth charts are necessary. The majority of children with primary acute malnutrition can be treated at home with ready-to-use therapeutic food; however, children with severe acute malnutrition and sequelae must get care in a hospital.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly. This study was approved by ethical approval committee of Jahangirnagar University.

Statement of informed consent

Informed consent were taken from all the participants in this study.

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