



Nutritional Status and Food Safety of Under Five Children in Flood Affected Areas in Jamalpur

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ABSTRACT: Poverty, gender, age and disability, geographical location and cultural practices are important factors that affect food consumption patterns. Poverty directly influences food consumption due to lack of access to resources, knowledge. Bangladesh Demographic & Health Survey (BDHS) 2014 data show that 36% of children under five are considered short for their age, which is stunted. Objectives of my study were, to assess the socio-demographic status on flood affected areas respondents nutritional status of children one to five yrs. age by anthropometrical measurement assess the food security status of the area. Identify the 1 to 5 years health issues occurs during flood affected areas correlate between socio-economic condition and malnourishment. 400 respondents were selected by multiple sampling techniques in Jamalpur district which areas were more affected in flood period. Most of the family were spending Tk. 3000-5000 for their monthly expenditure for food which has been responded by (55.64 %) followed by Tk. 5001-7500 which has been showed the types of diseases children were suffered in last two weeks from interview date. Out of 252 children's (52.38%) children were suffered from diarrhea followed by (34.92%), 17 (6.72%) and (5.95%) children suffered from fever/cough/common cold, skin diseases and ear problem respectively. Distribution of food utilization status of the households. It is showed that out of 400 respondents (98.58%) respondents stated that in last 1 month they cooked in a day, but (1.41%) respondents stated that they didn't cook in a flood period. Children of some months and 1 year were more risk of malnutrition as children of 4 years it may be the reason community with lower socioeconomic status and less delivery of health services Family size significantly associated with malnutrition status of as family size increases resources become scare and less nutrition and care focused to children. Urban areas children indicated a reduced frequency to be stunted rather than rural area the reason of more appropriate nutrition and access of health services and these findings are supported in the study. In developing countries, children from rural area consider more vulnerable to malnourishment due to differences of limited economic resources, inadequate education access and poor availability of poor health facilities as these findings supported by the studies of .Mother education has significant relation because the educated mothers have more knowledge related to child health, nutrition and usage of health services. The assessment uses a cross-sectional study that includes an interview, anthropometrical measurement and observation checklist. The results can be used by government and other partners & stakeholders for the improvement of the food security and nutritional status of the selected and other flood affected area in 2018.

Keywords: Nutritional status, food safety, flood affected areas, under-five children

INTRODUCTION

Food security is defined as “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (The World Food Summit, 1996). Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. In many countries, health problems related to dietary excess are an ever increasing threat, In fact, malnutrition and food-borne diarrhea are become double burden. Food security is a complex sustainable development issue, linked to health through malnutrition, but also to sustainable economic development, environment and trade. Food security in Bangladesh is characterized by

considerable regional variations. Factors such as tendency to natural disasters, distribution and quality of agricultural land, access to education and health facilities, level of infrastructure development, employment opportunities, and dietary and caring practices provide possible explanations for this. Food consumption behavior, nutritional status, health and food security are affected by socio-cultural factors determining food availability, access and utilization. Food insecurity is significantly correlated with under-nutrition. As a coping strategy during the shocks of 2007-2008, nearly three-quarters of households reduced the size of their meals, 62 per cent reduced the number of meals eaten per day, and 15 percent went for entire days without food, according to the FAO/WFP study.

Poverty, gender, age and disability, geographical location and cultural practices are important factors that affect food consumption patterns. Poverty directly influences food consumption due to lack of access to resources, knowledge and markets. Gender disparities in food distribution can cause malnutrition, especially for pregnant/lactating mothers and children. Lack of incomes is the principal driver of under-consumption and malnutrition for approximately 40 percent of Bangladeshis who live under the poverty line. The household food security and nutrition assessment of 2008-2009 found that households with seasonal or irregular income were more likely than others to have malnourished children. The earth is warming and the climate is changing. In some years before, it was not supposed that climate change will occur so fast. It is fact that, there are several interactions in climate and the change is occurred by human activities (IPCC). Human-regulated production, transportation, marketing, usage of fossil oil & natural resources, utilization of land & forest and other activities produce lot of green house gases; which ultimately create global warming. This global warming creates a lot of natural problems and disasters. Community people perception, awareness, local mitigation process, practice helps them to combat the problems of climate change. But these are not enough to protect them from the risks of different health events. Climate change is a change in the statistical properties of the climate system when considered over periods of decades or longer, regardless of cause (Houghton, 2001).

For the United Nations Framework Convention on Climate Change (2004), climate change is a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Intergovernmental Panel on Climate Change (IPCC), in their recent declaration, does not consider climate change as a factor of future. Because, from the last decades of last century, global warming increases average 0.6 ± 0.2 degree Celsius and average sea level raised from 10 to 20 cm. In this situation island and lower developing countries will suffer much. Bangladesh is one of the most vulnerable countries of this group. 10 percent land of Bangladesh will go underwater if global warming increases one degree Celsius. Climate change will affect all four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. It will have an impact on human health, livelihood assets, food production and distribution channels, as well as changing purchasing power and market flows. Climate change will probably cause a decline in the quantity and quality of drinking water and crop production, which is a pre-requisite for good health. Malnutrition could also be exacerbated due to declining natural resource productivity and food insecurity. Increased salinity in the coastal zone will decrease food production in the area, causing malnutrition for the coastal people.

Bangladesh Demographic & Health Survey (BDHS) 2014 data shows that 36% of children under five are considered short for their age, which is stunted. The prevalence of stunting increases with age from 19% of children fewer than six months, to 54% of children ages 36-47 months. Rural children are more likely to be stunted than urban children 16% of children are wasted and 33% of children are underweight. The proportion of children underweight peaks at age 36-47 months (47%). There were significant linkages between Millennium Development Goals (MDGs) and Climate Change Vulnerability contexts in the perspective of Bangladesh. It is often useful, both for policy and Study purposes, to simplify the food security scale into a small set of categories, each one representing a meaningful range of severity on the underlying scale, and to discuss the percentage of the population in each of these categories.

A household is classified into one of the food security status-level categories on the basis of its core on the food security scale, while the household's scale score is determined by its overall pattern of response to the set of indicator questions. Households with very low scale scores are those that report no, or very limited, food-insecurity or hunger experiences. These households are classified as food secure. At the other extreme, households with very high scale scores are those that have reported a large number of the conditions and are

classified as food insecure with hunger (severe) i.e., with hunger at the most severe level measured in the U.S. The more meaningful separations are those that fall in the middle ranges of the scale. Here, households that affirm at least three of the indicator conditions are classified as food insecure. Most of these are classified "food insecure without hunger," as the presence of enough indicators, of sufficient severity level to establish confidently the presence of hunger among household members, is lacking. A smaller number of the food-insecure households show measured severity levels higher up the scale, and have affirmed at least three of the (usually adult) hunger indicators. The households are deemed to be reporting enough indications of food insecurity and reduced food intake to establish a high probability of hunger among household members, and accordingly are classified "food insecure with hunger." These relationships between the several stages or levels of severity of food insecurity and how they are captured in operational terms are discussed further illustrates graphically the underlying continuum of conditions and experience that characterizes food insecurity and hunger, and the alternative ways in which the two forms of the food security measure the continuous food security scale and the ranges of severity defining the food security status-level categories. HKI/IPHN (1999) study shows that in Bangladesh, newborn mortality rate is 36 per 1,000 live births, infant mortality rate is 54 per 1,000 live births and under-5 mortality rate is 73 per 1,000 live births. A vast majority of these causes, such as, LBW (13,00/ 100,000), Pneumonia (12,50/ 100,000), Diarrhoea (420,000/100,000), drowning (87/100,000) and 60% of them with malnutrition as an underlying association. Prevalence rate for various diseases such as; fever, diarrhoea and acute respiratory infection are 40.2%, 7.5% and 419.3% respectively among the children and treatment seeking rate for these illness were found 18%, for fever, 20 for ARI.

According to United Nations Systems Standing Committee on Nutrition (2004) for diarrhoea related illness the use of oral re-hydration rate is 83.4% while 15.7% seeks medical treatment for such illness. 3.2%-5.6% of the total population seeks treatment from private facilities while 12.5%-14.3% seeks from private facilities. Childhood immunization rate the coverage for BCG, Measles and DPT was is respectively 93.7%, 75.9% and 81.2% while 73.3% of the total children have covered the full basic course. As a report of WHO (1995) illnesses were quite common among 83% of under-2 children in the rural areas covered by National Nutritional Program. Treatment was sought in three-fourths of episodes of illnesses; however, in only 8% of episodes were the children taken to a public healthcare provider. Village quacks and local pharmacies catered to more than 50% of episodes of illnesses for which treatment was sought. Coverage under the Expanded Programme on Immunization was high, which has reflected in the coverage figures of about 85% for OPV-3 (3 doses of oral polio vaccine) and DPT-3 (3 doses of diphtheria, pertussis, tetanus vaccine), about 75% for measles vaccine, and more than 95% for BCG vaccine.

RESEARCH QUESTION

- What is the food security and nutritional status of the children aged 1-5 years in flood affected areas in Jamalpur district?

OBJECTIVES OF THE STUDY

General Objective: To assess the food security and the nutritional status of children of under five years old.

Specific Objectives:

1. To assess the socio-demographic status on flood affected areas respondents.
2. To measure the nutritional status of children under five years age by anthropometrical measurement.
3. To assess the food security status of the area.
4. To identify the under 5 years health issues occurs during flood affected areas
5. To correlate between socio-economic condition and malnourishment.

VARIABLES

a) Dependent Variable:

Nutritional Status (e.g. Height, Weight, etc.)

- Food availability
- Human resource
- Community resource
- Natural resource
- Capital resource

Socio-demographic factors:

1. Gender
2. Education
3. Occupation
4. Income
5. Family size

Nutritional status of children

b) Independent Variable:

- Food Security factors/pillars

c) Confounding Variable:

- Age group

d) Intervening Variable:

- Income
- Household head education
- Child feeding patterns
- Sex
- Occupation
- Family size

METHODOLOGY OF THE STUDY

Type of Study: This study is a Cross-Sectional Study carried out among the children 1-5 years of age.

Study Design: Describe type of cross sectional study.

Study Area: The study was carried out in Islampur upazilla under Jamalpur district. The study was conducted in the different villages of five unions (Kulkandi, Patharshi, Belgacha, Chinaduli, Noapara) Islampur upazilla under Jamalpur district. The Unions were selected by lottery (Simple random Sampling).

Study Population: The study was conducted among the children of flood prone area, which is under the coverage of Climate Change and Health Promotion Unit of Ministry of Health and Family Welfare. After fulfilling the requirements of inclusion and exclusion criteria the 1-5 years old children of different unions of Islampur Upazilla of Jamalpur District were randomly selected.

Selection Criteria

a. Inclusion criteria:

- i. Children between 1-5 years of age were included in the study
- ii. Respondent/Parent of 1-5 yrs old children were included irrespective of sex.

b. Exclusion criteria:

- i. Children who were sick
- ii. Respondents/Parents who refused to take part in the interview

Study Period: The total period of the study was from July 2017 to December 2017. It included total duration of protocol development to final report submission.

Sampling Technique: Systematic sampling method was applied.

Sample Size: Calculating by using the formula

$$n = \frac{z^2 pq}{D^2}$$

n – 400 (n – 400 for Stunting, 216 for Underweight and 184 for Wasting, q = 1-p,

z – 1.96 and d - 0.5)

(P-36% for Stunting, 33% for Underweight and 14% for Wasting)

(Ref: Bangladesh Demographic and Health Survey 2014)

Study Instrument: A pre-designed Questionnaire, a checklist for anthropometrical measurement and a checklist for the physical observation of the child were used as Study instrument. The questionnaire was related to participant's socio-demographic characteristics (Age, Sex, monthly income of the family, Numbers of family member, Occupation, Religion, Marital status, Status of residence etc).

Methods of Data Collection: The questionnaire was filled-up by face to face interviewing method. Check lists were filled-up by physical observation and anthropometrical measurement. Anthropometric measurements of Height, Weight and MUAC were measured following standard procedure.

Data Processing: After collection, the data has been checked & cleaned; followed by editing, coding and categorizing to detect errors or omissions and to maintain consistency and validity. Then these have been entered into computer for analysis.

Data Analysis: All data were analyzed by using the “Statistical Package for Social Sciences (SPSS)” software. For descriptive statistics means, medians, standard deviations & ranges for numerical data and frequencies & proportions for categorical data were calculated as required.

RESULTS

The results from the questionnaire and checklists are shown below in tables and graphs. Total numbers of tables are 19 and graphs are 5.

Table 1: Distribution of age of the children by the respondents

Age group	Frequency	Percentage
12 -24 months	103	25.75
25-36	132	33
37-48	104	26
49-60	61	15.25
Total	400	100

Table 1 showed the distribution of children's age (in month). This table shows that out of 400 children, major group age (33%) were between 25-36 months of age group, (26%) were between 37-48 months of age group and rest (15.25%) were 49-60 months of age group.

Table 2: Distribution of sex of the children by the respondents

Sex	Frequency	Percentage
Male	276	69
Female	124	31
Total	400	100

Table-2 Showed that out of 400 children, 69%) were male and (31%) were female children.

Table 3: Distribution of occupation of respondents

Occupation	Frequency	Percentage
Farmer	131	32.75
Business	31	7.75
Service	57	14.25
Teacher	49	12.25
Daily Labor	76	19.00
Rickshaw Puller	56	14.00
Total	400	100

Table no 3 showed among 400 respondents, the occupation of respondents were farmer that was 32.75% and other (68%) respondents were from various occupations including service, day labor, garments labor and teacher.

Table 4: Distribution of the household head education by the respondents

Educational qualification	Frequency	Percentage
Illiterate	12	3.0
Primary	124	31.0
Secondary	104	26.0
SSC	106	26.5
HSC or Above	54	13.5
Total	400	100

Table 4 showed that educational status among the respondents, primary passed were highest in union which was (31%) out of 400 respondents, SSC level is higher in union which is (26%), illiterate were (3%) out of 400 respondents.

Table 5: Distribution of the Size of the Family

Village Name	Family Members	Frequency	Percentage
Patharshi	Less than 4 members	14	3.5
	4-6 members	23	5.75
	7-9 members	29	7.25
	10 or above	14	3.5
Kulkandi	Less than 4 members	19	4.75
	4-6 members	36	9
	7-9 members	17	4.25
	10 or above	8	2
Chinaduli	Less than 4 members	14	3.5
	4-6 members	34	8.5
	7-9 members	23	5.75
	10 or above	9	2.25
Noyapara	Less than 4 members	6	1.5
	4-6 members	29	7.25
	7-9 members	31	7.75
	10 or above	14	3.5
Belgacha	Less than 4 members	11	2.75
	4-6 members	35	8.75
	7-9 members	27	6.75
	10 or above	7	1.75
Total		400	100

Table 6: Distribution of types of houses by respondents

Types of house	frequency	percentage
Kacha	23	5.75
Tin shade	246	61.50
Semi pacca	80	20.00
Pacca	51	12.75
Total	400	100

Table 6 showed the types of house respondent's are living. Most of the respondents were living in Tin shade types, followed by Semi-Pacca types of house. Out of 400 respondents, 246 (61.5%) & 80 (20%) respondents had Tin-shade type & Semi-pacca type of house.

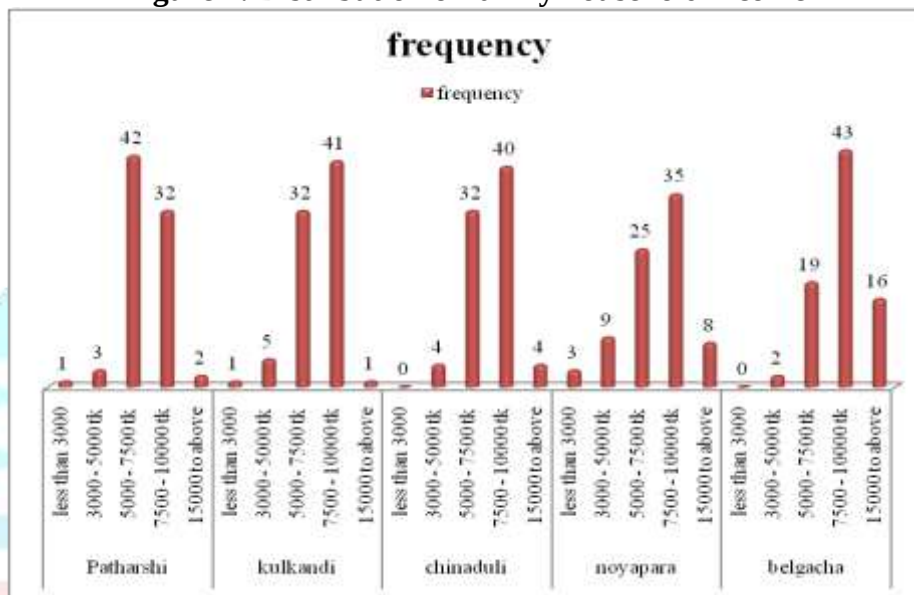
Figure 1: Distribution of family household income

Fig. 1 indicates that most of the family had monthly income within the range of Tk. 5001 to Tk. 10000 that includes out of 400 respondents, 168 (47.45%) and 136 (38.41%) had their monthly income of Tk. 5001-7500 and Tk. 7501-10000 respectively. While 34 (9.60%) and 10 (2.82%) had their income of Tk. 3000-5000 and Tk. 10001-15000 respectively.

Table 7: Distribution of source of drinking water of the respondents

Source of drinking water	Frequency	Percentage
Tube-Well	259	64.75
Tap water	114	28.5
Pond	19	4.75
other (deep tube well, shallow tube well, river)	8	2
Total	400	100

The sources of drinking water have been shown in table 7. A large number which is (64.75%), out of 400 were using the tube well, (28.5%) were using the tap/pipe water and 19(4.80%) were using the pond as the source of their drinking water. It shows that most of the respondents from Kulkandi and Patharsahi union were using the tube-well as their source of drinking water. It also shows that out of 19 pond users, (64.75%) were from union.

Table 8: Distribution of the child participation in feeding program

Participation	Frequency	Percentage
yes- once a month	29	7.25
yes - twice a month	17	4.25
no	354	88.5
Total	400	100

Table 8 showed that distribution of participation of children in feeding program. Only 29 (7.25%) children were participated in the feeding program. Very few 17 (4.25%) were participated in a program twice a month. Only biscuits and oral saline were supplied.

Table 9: Distribution of children by loss of their weight

Loss of weight	Frequency	Percentage
Reducing Weight	123	30.75
Not Reducing Weight	277	69.25
Total	400	100

Table 9 showed that distribution of children by loss of their weight by the respondents. Out of 400 respondents, (30.75%) responded of reducing weight of their children and (69.25%) responded that their children are not reducing weight.

Table 10: Distribution of problem in digestion of the child

Problem of Digestion	Frequency	Percentage
Yes	243	60.75
No	157	39.25
Total	400	100

Table 10 showed the distribution of problem in digestion of the child by the respondents. Out of 400 respondents, (60.75%) responded of having digestion problem of their children and (39.25%) responded that their children are not having any problem of digestion.

Table 11: Distribution of child received Vit. A capsule in last six months

Capsule in last six months Received Vit. a capsule	Frequency	Percentage (%)
Yes	254	57.62
No	133	38.70
Don't know / can't remember	13	3.67
Total	400	100.0

Table no 11 showed that out of 400 respondents, (57.62%) responded that their children Received Vit. A in last 6 months of time period, (38.70%) responded that their children didn't receive and 13 (3.67%) responded that they don't know or can't remember whether children received Vit. A capsule in last 6 months or not.

Figure 2: Distribution of child received Vit. A capsule in last six months

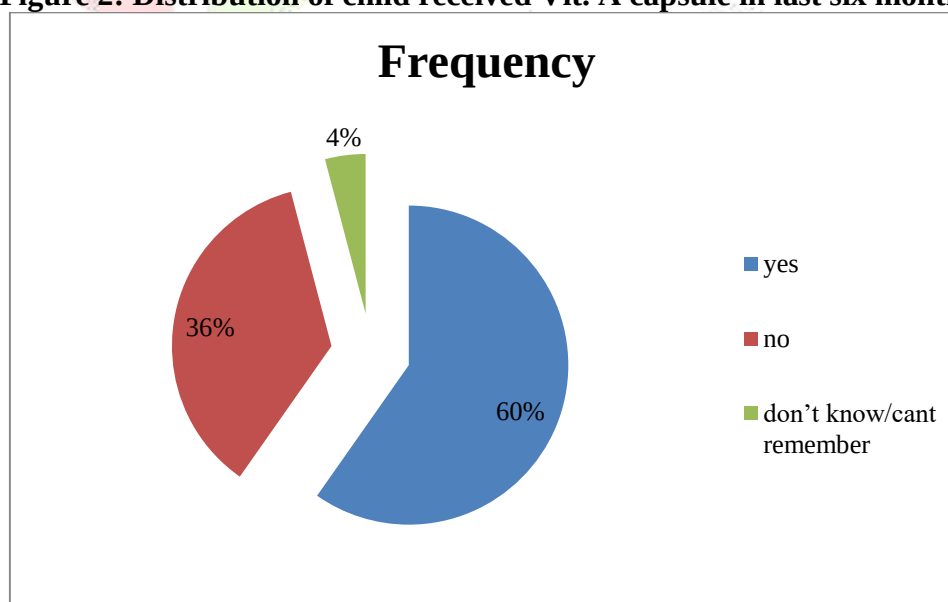


Table 12: Distribution of diseases from which children suffered in last 2 weeks Types of Disease

Disease Name	Frequency	Percentage (%)
Fever/Cough/Common cold	88	34.92
Diarrhea	132	52.38
Ear problem	15	5.95
Skin disease	17	6.74
No disease	148	0.00
Total	400	100.0

Table 12 showed that types of diseases children were suffered in last two weeks from interview date. Out of 252 children, 132 (52.38%) children were suffered from diarrhea followed by 88 (34.92%), 17 (6.72%) and 15 (5.95%) children suffered from fever/cough/common cold, skin diseases and ear problem respectively.

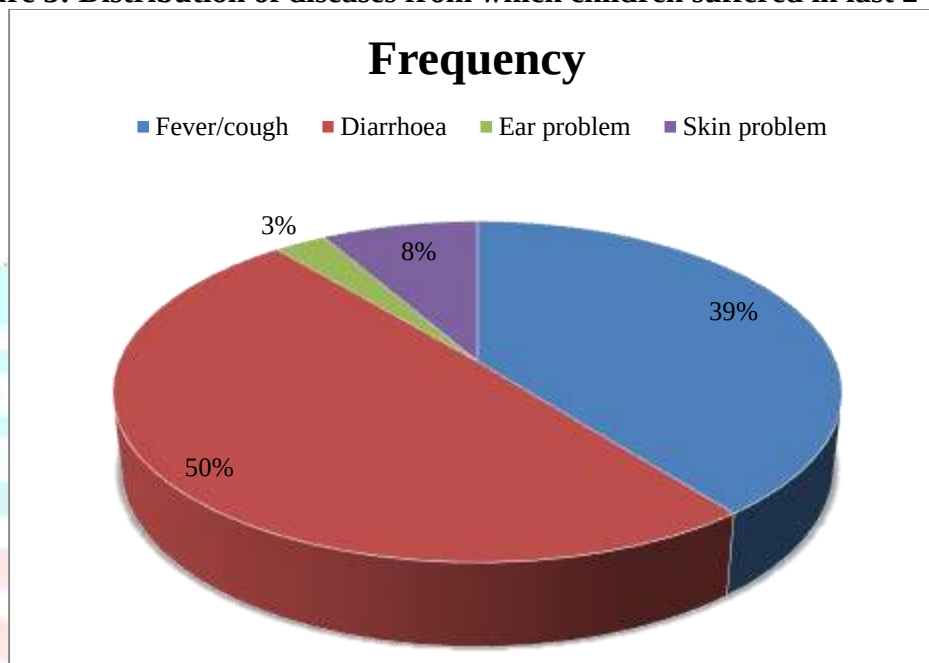
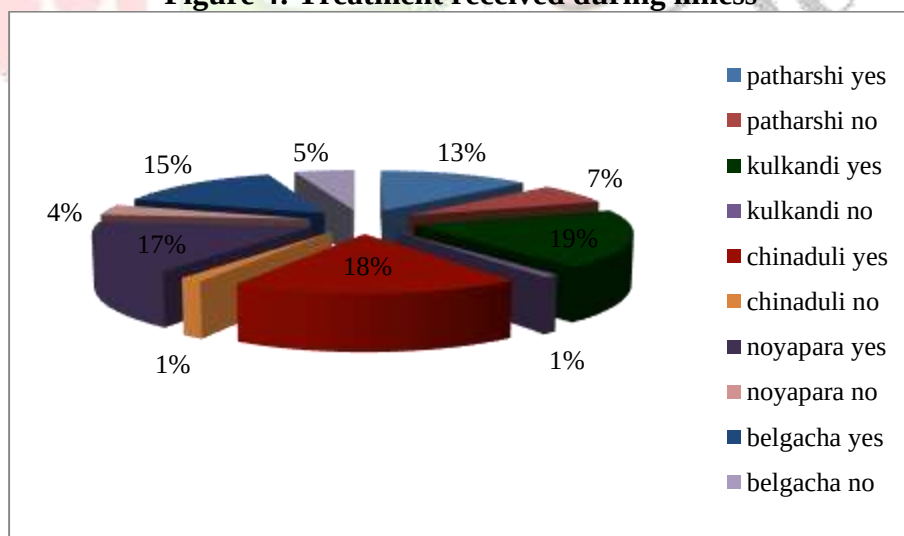
Figure 3: Distribution of diseases from which children suffered in last 2 weeks**Figure 4: Treatment received during illness**

Figure 4 indicates that out of 400 children, 252 (71.18%) received treatment during their illness and 102 (28.81%) didn't receive treatment during their illness. It is shown that the more children from union received treatment which is 92 (82.88%) out of total 111 in numbers and less children received treatment in Koikhali union which is 27 (41.53%) out of total 65 in number.

Table 13: Distribution of number of children completed EPI schedule

Complete EPI schedule	Frequency	Percentage
Yes	323	80.75
No	77	20.25
Total	400	100

Table 13 showed that most of the children completed full EPI schedule. Out of 400 respondents, 323 (80.75%) responded that their children completed full EPI schedule and 77 (20.25%) responded that their children not completed EPI schedule.

Table 14: Distribution of food availability by respondents

a) Ownership of cultivatable land	Frequency	Percentage
Yes	277	69.25
No	123	31.75
b) Homestead garden		
Yes	289	72.25
No	111	28.75

Table 14 showed the distribution of food availability status of the households. It indicates that more than half of the family had their own cultivable land. Out of 400 household, (69.25%) had their cultivable land more than 20 decimals. It also indicates that (72.25%) households have their own homestead garden and remaining (28.75%) didn't have their own homestead garden.

Table 15: Distribution of respondent's food pattern

	Food Pattern	Frequency
Carbohydrate	Rice	353
	Shuji	187
Protein	Egg	94
	Chicken	33
	Meat	12
	Fish	145
	Cereals	293
Vitamins	Fruits	46
	vegetables	79

Table no 15 indicates that most of the child were depend on Carbohydrate.

Table 16: Distribution of food utilization by respondents

Food Utilization	Frequency	Percentage
a) Cook in a Day		
Yes	364	91
No	46	9
b) Less Quantity of Food Provided to the Children Due to Lack of Money		
Yes	329	82.25
No	71	17.75

Table 16 shows the distribution of food utilization status of the households. It is shown that out of (91%) respondents stated that in last 1 month they cooked in a day, but (9%) respondents stated that they didn't cook in a day.

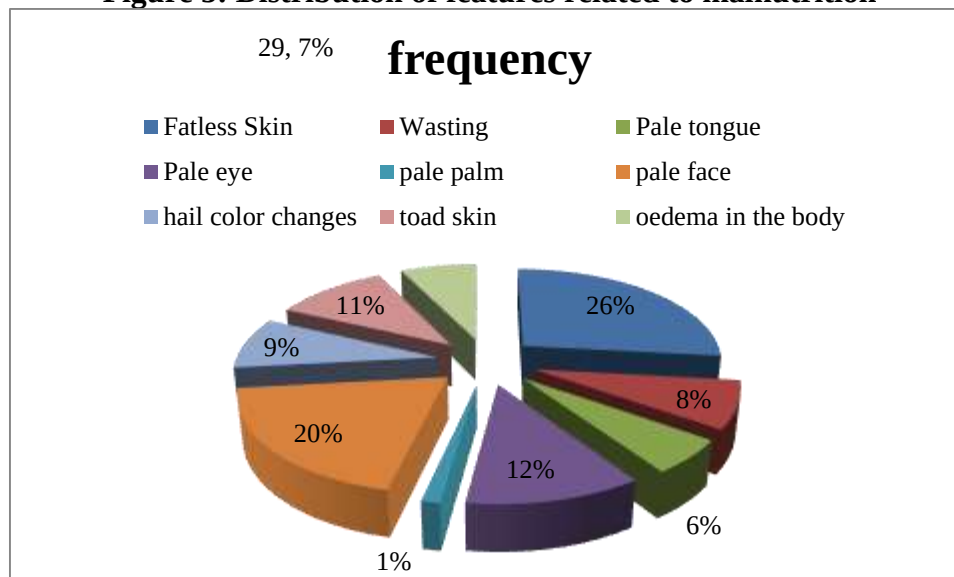
Figure 5: Distribution of features related to malnutrition

Figure 5 describes the distribution of features related to malnutrition of the children by observation. Out of 400 children, 138 children were suffering from some kind of problem those includes fatless skin and wasting of the body. 136 children were suffering from some kind of problem those includes pale face, pale eye, pale tongue and pale palm of the hand and 130 children were suffering from some kind of problem those includes hair color changes, toad skin and oedema in the body.

Table 17: Distribution of respondents Food accessibility

Food Accessibility	Frequency
Carbohydrate	
3 times daily adequate	143
2 times daily adequate	189
Not much enough protein	68
3 times daily adequate	2
2 times daily adequate	63
Not much enough	345
Vitamins	
3 times daily adequate	5
2 times daily adequate	11
Not much enough	384

Table 17 showed that height percentages did not get enough much protein in flood period.

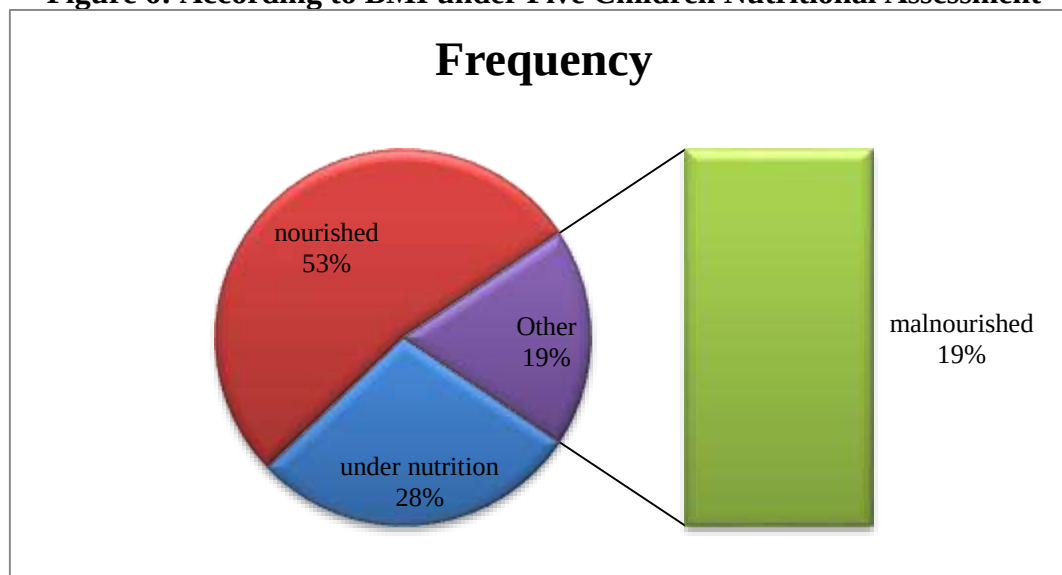
Figure 6: According to BMI under Five Children Nutritional Assessment

Table 18: Correctly knows ORS preparation during diarrhea

Particulars	Frequency	Percentage
Yes	376	94
No	24	16

Economic Factors Contributing to Malnutrition among Under-Fives

Most of the respondents 68% reported poverty as the leading cause of malnutrition among under-fives while 31% reported inadequate knowledge of feeding practices. When asked about how poverty leads to malnutrition, 73% reported inability to buy nutritious food, 14% mentioned lack of access to medical facilities and 12% said it leads to poor housing hence increased risk of infections

Variables	Responses	Frequency	Percentage
Reasons why under-fives get malnourished	Poverty	52	68.42
	Lack of knowledge on feeding	24	31.57
Relationship between poverty and child malnutrition	Poor housing	11	14.47
	Failure to buy nutritious food	56	73.68
	Lack of access to medical facilities	9	11.82

Logistic regression is a statistical method which is widely used in different research areas especially in health sciences when dependent variable is of qualitative nature means variables that are not numerical. Regression with dependent variable having two categories is called binary logistic regression. In this regression, dependent variable is converted into logit function to get maximum likelihood estimation using an iterative technique that returns the 'best explaining values for the population parameters' [36, 39, 40]. The binary logistic regression equation for the model which has to be estimated based on the functional form will be as:

$MSC = \beta_0 + \beta_1 \text{age} + \beta_2 \text{MED} + \beta_3 \text{family size} + \beta_4 \text{area} + \beta_5 \text{family income} + \beta_6 \text{food access} + \beta_7 \text{immunization status} + \beta_8 \text{treated water access} + \beta_{10} \text{sanitation access} + \mu_i$ where MSC = malnutrition status of children 1 or 0. Child who has stunted wasted or underweight or any combination of three is measured as malnutrition. Independent variables are indicated as Age as age of child (in years), Gender as gender status of child (male/female), MED as mother education (in schooling years), FI as family income (various categories), FS as family size, Area as location (rural or urban), food access (yes/no), immunization status (yes/no), treated water access (yes/ no) and sanitation access (yes/no). In this study for statistical analysis of data estimation, SPSS software version.

In developing countries like Bangladesh, child malnutrition is emerging as foremost public issues. Inadequate dietary intake, insufficient caring, infectious disease and household level discriminatory food distribution are major causes of children higher vulnerability to malnutrition [26, 80, 87]. Male children were identified higher risk of malnutrition in this study with higher frequency of wasting, stunting and underweight comparative to female children as could partially explained reasoned of as male consider more vulnerable due to health inequalities to early childhood diseases and health problems rather than female children.

Table: 19 Parameters estimates of logistic regression model and factors affecting malnutrition

Parameters	p value
Age	
1	0.001**
2	0.529
3	0.481
4	0.449
Family size	
1–5	0.003**
6–10	0.729
Area	
Urban	0.002*
Rural	1.374
Mothers education	
Pre-school	0.002*
Primary	0.003*
Secondary	0.374
High	1.88
Food access	
Food shortage	0.021**
Sufficient Food	1
Treated water access	
Yes	0.031**
No	1.04
Immunization status	
Incomplete	0.019**
Complete	0.99
Sanitation access	
Yes	0.001**
No	1.04

Children of some months and 1 year were more risk of malnutrition as children of 4 years it may be the reason community with lower socioeconomic status and less delivery of health services Family size significantly associated with malnutrition status of as family size increases resources become scare and less nutrition and care focused to children. Urban areas children indicated a reduced frequency to be stunted rather than rural area the reason of more appropriate nutrition and access of health services and these findings are supported in the study. In developing countries, children from rural area consider more vulnerable to malnourishment due to differences of limited economic resources, inadequate education access and poor availability of poor health facilities as these findings supported by the studies of .Mother education has significant relation because the educated mothers have more knowledge related to child health, nutrition and usage of health services. Households with food shortage were higher prevalence of malnutrition in children rather than children adequate access of food. Adequate nutrition promotes health and resistance against diseases, while inadequate nutrition causes to increase severity of malnutrition. Children with incomplete immunization status were found more prevalence of malnutrition compared to those children with completed immunization. Incomplete immunization increases risk of diseases among children. Household access of treated water their children was 47–70% less chance of stunting and underweight rather than children not access of treated water. Households access of sanitation facility their children were 80% less prevalence of stunting compared to those children having of access of sanitation facility.

DISCUSSION

Children of some months and 1 year were more risk of malnutrition as children of 4 years it may be the reason community with lower socioeconomic status and less delivery of health services Family size significantly associated with malnutrition status of as family size increases resources become scare and less nutrition and care focused to children. Urban areas children indicated a reduced frequency to be stunted rather than rural area the reason of more appropriate nutrition and access of health services and these findings are supported in the study. In developing countries, children from rural area consider more vulnerable to malnourishment due to differences of limited economic resources, inadequate education access and poor availability of poor health facilities as these findings supported by the studies of .Mother education has significant relation because the educated mothers have more knowledge related to child health, nutrition and usage of health services. Households with food shortage were higher prevalence of malnutrition in children rather than children adequate access of food. Adequate nutrition promotes health and resistance against diseases, while inadequate nutrition causes to increase severity of malnutrition.

Stunting was a common outcome in studies conducted China, Sri Lanka and Bangladesh. There was a greater reduction in the prevalence of stunting in the study from China (43.8%) compared with Sri Lanka (16.5%). Stunting is a consequence of failure to receive adequate nutrition for an extended period. Change in the prevalence of stunting depends on many other proximal factors apart from complementary feeding. Quality and quantity of complementary food, dietary quality, changes in breast milk intake after introduction of complementary food, and associated morbidities are some of the proximal factors. These factors can affect the linear growth of children and need to be addressed by any complementary food intervention. So the exact reason for the difference in the reduction of the prevalence of stunting is unknown, but this proximal factor may have led to the observed difference. Underweight was another common nutritional outcome indicator measured in four of the included studies conducted in Sri Lanka, India, China and Bangladesh. The largest reduction in prevalence of underweight was also observed in the study from Sri-Lanka followed by India and China. As weight is easy to measure, underweight is the indication.

Children with incomplete immunization status were found more prevalence of malnutrition compared to those children with completed immunization. Incomplete immunization increases risk of diseases among children. Household access of treated water their children was 47–70% less chance of stunting and underweight rather than children not access of treated water. Households access of sanitation facility their children were 80% less prevalence of stunting compared to those children having of access of sanitation facility. Pakistan has acute malnutrition rate of 13.1% which is very close to WHO emergency threshold of 15% 9 and the 2010 catastrophe of flood of such a large scale disaster must have significantly increased the mortality and morbidity due to underlying malnutrition in children. Studies following large-scale natural disasters have shown a negative impact on children's nutritional status in general and on schooling outcomes in particular.^{2,3} In the present study three anthropometric indices were used including underweight, wasting and stunting. Wasting or acute malnutrition was calculated as weight for height or GAM thinness which was found to be higher among flood affected children (23.7%) as compared to unaffected (16.5%) but the difference was not significant. Our finding was contrary to other studies that support GAM thinness is higher among flood affected population.

CONCLUSION

From this study it is revealed that the problem of digestion and diarrhoea is common in children among 1-5 years of age. To prevent this problem adequate knowledge education is necessary. The study picture indicates that many children suffered from wasting & fatless skin and many children did not receive treatment during their illness. A large number of children received treatment from Quacks while receiving treatment during illness. In terms of nutritional status, it is also revealed that the children of 37-48 months of age group were suffering more in terms of stunting, wasting and underweight. The study show that, the stunting and wasting value is found in this study is higher than the national data, but the underweight value is found here is within the national data. The age group of the children who are found to be stunted, wasted and underweight through anthropometrical measurement could be the result/impact of flood In the perspective of food security, the study shows that more than half of the parents took loan money from others for purchasing food and many children were provided less quantity of food due to lack of money of their parents. It was shown in the study that socio-demographic factors like cash income and education has an impact on the food accessibility and food utilization.

Further in-depth study could support to investigate to explain the role of these factors related to food security and nutrition among 1-5 years of children in our country.

RECOMMENDATIONS

The following recommendations aim at addressing the gaps of the study:

1. Nutrition information, counseling and services should be established through designated IMCI & Nutrition Corner at all Upazilla Health Complex
2. Nutrition related education & services through Community Clinics should be further strengthened and monitored.
3. Human resource development on nutrition as well as climate related issues should be continued at different levels.
4. Promotion of various income generating activities to the families for the sustainability of food security status as well as nutritional status.
5. Nutrition sensitive interventions must be strengthened to further improve the food security indicators involving multiple and multi-sectoral stakeholders.
6. Nutrition program should be mainstreamed involving different sectors (e.g. food, education, environment, health, information, livestock, children & women affairs, agriculture etc.) where all the sectors can play a role through incorporating the children and/ or their parents in their regular program or any other special program.
7. Awareness on nutrition related issues through community radio should be encouraged.
8. Further elaborate Study (involving follow-up and/or with comparison) should be done on this topic/subject.

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