

Mother's knowledge regarding effect of malnutrition under five children at slum area in Khulna city, Khulna

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ABSTRACT

Mothers' understanding of child nutrition strongly influences under-5 children's health. Poor knowledge raises risks of stunting, infections, and impaired development, while education about breastfeeding, diverse diets, hygiene, and early detection of malnutrition often delivered by health workers helps improve children's nutrition and reduce severe complication. The aim of this study was to assess the level of knowledge among mothers of under-five children at Slum area in Khulna City, Khulna. A descriptive type of cross-sectional study design was used to conduct the study. Total 195 samples were selected by using non-probability sampling techniques followed those who meet the inclusion criteria. A pre-tested modified self-administered structured questionnaire was used to collect data. The study was conducted at slum area in Khulna City, Bangladesh. The study place was selected purposively. The study was conducted from January 2025 to December 2025. The data were collected through self-administered set of questionnaires. Among the participant majority mothers was age 21-30 years Muslim's, married, housewife and their educational qualification was secondary 41.5%, monthly income 10000 - 20000tk. 47.7% respondents had two children and highest respondents birth spacing was 2- 3 years 39.5%. Concept about malnutrition 96.4%, breast feeding after birth within 1 hour 81.0%, only breast feeding up to 6 months 90.8%, causes of malnutrition 81.0%, identify sign symptoms 96.9% and the knows how to prevent malnutrition 89.2%. The maximum 77 respondent's birth spacing was 2-3 years. The overall finding showed that maximum respondents 77 (39.5%) had good knowledge. The findings indicate that most respondents demonstrated a good to very good level of knowledge regarding malnutrition in under-five children, with only a small proportion showing below-average understanding. This overall positive knowledge level suggests that awareness efforts are having an impact, though continued education is needed to further improve knowledge among those with average or below-average understanding.

1. Introduction

Malnutrition is a condition resulting from an imbalance in nutrient intake, either too much or too little of essential nutrients, leading to adverse effects on the body's form, function, and overall health. Malnutrition remains one of the most pressing global public health challenges, particularly affecting children under the age of five. It refers to the condition that results from an imbalanced intake of nutrients either a deficiency or excess and can manifest in several forms, including undernutrition (wasting, stunting, and underweight), micronutrient deficiencies, and overweight or obesity. Among children under five, and under nutrition is especially concerning, as it compromises physical and cognitive development, increases vulnerability to infections, and contributes significantly to child mortality. Morales, F (2023).

Global estimates, millions of children in this age group suffer from stunting and wasting, primarily

due to poverty, inadequate breast-feeding practices, poor dietary diversity, and limited access to clean water and health care services. The first 1,000 days of life, from conception to two years of age, are particularly critical in determining a child's long-term health and development. Failure to address malnutrition during this window can have irreversible consequences.

Malnutrition prevails everywhere around the world and both the developed and developing countries are suffering from malnourishment. The effect of malnutrition brings devastation in individual, community and nation standard of living. Among the malnourished, most frequently women, children and elderly are observed to have malnutrition whereas among the children preschool age is an important stage of life where nutrition plays an important role and has long lasting effects in the later years of life (Wong, et al., 2014).

Worldwide, over 10 million children under the age of 5 years die every year from preventable and

treatable illnesses despite effective health interventions (Ahmad, et al., 2000). At least half of these deaths are caused by malnutrition. Malnourished children have lowered resistance to infection; therefore, they are more likely to die from common childhood ailments such as diarrheal diseases and respiratory infections. In addition, malnourished children that survive are likely to suffer from frequent illnesses, which adversely affects their nutritional status and locks them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability. In developing countries, malnutrition is a major health problem (Caulfield, et al., 2004).

Malnutrition in children is a worldwide public health problem that stunts development and has negative health repercussions. Malnutrition is connected to nearly half of all fatalities in children under the age of five, since it raises the risk of mortality from common diseases, increases the number of episodes and intensity of such infections, and prolongs recovery. In 2019, there were 144 million stunted children under the age of five in the globe, 47 million wasted children, 14.3 million of them were severely wasted, and 38.3 million overweight children (Development Initiatives, editor. 2018). In a developing country like India, the high prevalence of under-nutrition, iodine deficiency, iron deficiency, and inadequate cognitive stimulation are important risk factors for sub-optimal development. Yet, health care providers at the primary level are mostly unaware of the importance of the timely acquisition of developmental milestones by children under their care (Dabar, et al., 2016).

Malnutrition is a condition that develops when the body does not get the required food nutrients in their right proportions. Such food nutrients include vitamins, minerals, proteins, carbohydrate and fat and lipids it needs to maintain healthy tissues and organ functions (Anderson, et al., 2012). Malnutrition can also occur when an individual's diet does not provide him/her with adequate calories and proteins needed for maintenance and growth or they cannot fully utilize the food they eat due to illness (under nutrition), while those who suffer from over nutrition consumes too many calories (Hossain, et al., 2009). During neonatal development, there are some nutritional needs such as high needs for some vitamins and minerals, and children are advised to follow up their daily food plan for months to meet most of these increased

needs for important nutrients like folic acid and iron (Henri Josserand, et al., 2008).

Children are the future of society and mothers are the guardian of that future; Knowledge of mothers has an important role in the maintenance of nutritional status of the children. Hence to ensure sound foundation and secure future of any society health and nutrition of their children need protection (Singh, G. C. P., Nair, M., Grubestic, R. B., & Connell, F. A. (2009).).

Malnutrition is considered as one of the major causes of morbidity and mortality in children under five years of age. It has both short-and long-term effects that are detrimental to growth and development of children (Ahmed, et al., 2009). For instance, malnourished children are physically, emotionally and intellectually less productive than well-nourished children and are at an increased risk of suffering from chronic illnesses and disabilities (Khanam, et al., 2011). According to 2014 regional estimates, prevalence of malnutrition is highest in South Asian countries and particularly high in India, Pakistan and Bangladesh. Although Bangladesh has made rapid progress over the last decade in meeting most of the millennium development goals, there has been very slow progress in improving the state of child nutrition (Das, et al., 2009). The malnutrition rate in Bangladesh remains unacceptably high compared to the developed world despite more than a decade of interventions aimed at improving it. According to the recent national health survey (Islam, et al., 2013), the prevalence of stunting (low height for age) reduced from 51% in 2004 to 41% in 2011 while the prevalence of underweight (low weight for age) reduced from 43% in 2004 to 36% in 2011. During the same periods, the prevalence of wasting (low weight for height) remained constant at around 16%, exceeding the WHO emergency threshold level of 15%. These trends suggest that new interventions are required to bring significant improvements in nutritional status of children fewer than five in Bangladesh.

Bangladeshi children are challenged by their meager nutritional status which in turn delays the growth towards accomplishment of the millennium development goals not only on maternal and child mortality but also on poverty (Ali, M. I. 2024).

As a consequence, the researchers would like to explore Mother's Knowledge Regarding Effect of Malnutrition under 5 Children at Slum area in

Khulna City, Khulna in Bangladesh. This study will help the nursing administrator or as well as nurse manager to identify the level of Mother's Knowledge Regarding Effect of Malnutrition under 5 Children.

2. Materials and methods

2.1. Study design

A descriptive type of cross-sectional study was used to assess Mother's Knowledge Regarding Effect of Malnutrition under 5 Children at Slum area in Khulna City in Bangladesh. The study was conducted for the one (01) year duration from January to December 2025. The selected place was slum area (Mitali colony, Taltola colony & Rupsha 7 no Ghat slum) in Khulna City, Khulna. Researchers select the study place purposively.

Mothers who have under-5 year's children living at Slum area (Mitali colony, Taltola colony & Rupsha 7 no Ghat slum) in Khulna City, Khulna.

2.2. Sampling technique & sample size

A non-probability purposive sampling technique was applied to select the sample.

Cochran's formula was used to select the sample size of this study. The formula was

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

Where,

n = desired sample size

z = Standard normal deviate (it is set at 1.96 when confidence interval is 95%)

p = Prevalence of nutritional status which will be taken 50%

Here, p = 0.5 (unknown)

q = 1 – p = 1 – 0.5 = 0.5

d = degree of precision –usually set at 5% (0.05 acceptable error)

$$\begin{aligned} n &= \frac{\{z^2 p q\}}{d^2} \\ &= \frac{\{(1.96)^2 \times (0.5) \times (0.5)\}}{\{(0.05)^2\}} \\ &= \frac{\{3.84 \times 0.25\}}{0.0025} \\ &= \frac{0.96}{0.0025} \end{aligned}$$

= 384 sample

The total calculated sample size is 384.

But due to time limitation it was not possible to collect data from 384 mothers. Within schedule time frame researchers collect data from 195 respondents. So, our collected sample size was 195.

2.3. Data collection instruments and technique

A pre-tested modified self-administered structured questionnaire was used to collect data. The questionnaire was divided into 2 sections including socio-demographic questionnaire and knowledge-related questionnaire. The questionnaire was pre-tested on 15 respondents Mothers at Slum Area in Khulna City.

2.4. Validity and reliability

Validity of the instrument was examined by a panel of experts in academic field. The researcher has modified the instruments based on expert recommendations. And reliability of the instrument ensures after pre-testing of the questionnaire. The questionnaire was refined or removed confusing or ambiguous questions and other necessary corrections were made for finalizing of data collection procedure by the researchers.

2.5. Grading criteria

In this study, there were total 15 questions and total marks were estimated to be 15. Here 01 (one) question carried 01 (one) marks. Each question was 04 (four) option, and 01(one) option was considered as correct answer. 01 (One) marks were allocated for each correct answer. Respondent who gives 01 (one) correct answer carries 01 (one) marks.

Total marks were (15 x 1)-15 and grading was done within 100%.

Five level knowledge grading scheme was used for grading:

SL No	Level of Knowledge	Percentage
01	Excellent	95 – 100%
02	Very Good	85 – 94%
03	Good	70 – 84%
04	Average	60 – 69%
05	Below Average	<60%

2.6. Ethical consideration

Ethical clearance for this study was obtained from the Institutional Review Board (IRB) of Khulna Nursing college, Khulna, Bangladesh. Permission was taken from the administrative authority. Informed written consent was taken from each participant. Privacy and confidentiality were maintained strictly.

3. Result

3.1. Socio-demographic information

In this study total 195 participants, including majority-51.3% of respondents, had age group 21-30 years. The mean age of the respondents was 28.38. Among the respondents, 83.1% were Muslim and 16.9% were Hindu. Maximum respondents, 98.5% were Married, the educational qualifications of the respondents were 41.5% secondary, 39.5% higher Secondary, 15.9% Primary Education and 3.1% were illiterate. Participant had different professionals 93.8% Housewife, 1.0% were farmer and .5% were teacher and 4.6% were other professionals.

Table 1: Distribution of the respondents by their socio demographic information.

Variables	Categories	n	%
Age of the respondents	<21 Years	57	29
	21-30 years	100	51.3
	31-40 years	24	17.4
	> 40 years	4	2.1
Religions	Muslim	162	83.1
	Hindu	33	16.9
Marital status	Married	192	98.5
	Divorce	2	1
	Widow	1	0.5
Educational status	Illiterate	6	3.1
	Primary	31	15.9
	Secondary	81	41.5
	Higher secondary	77	39.5
Profession	Teachers	1	0.5
	Farmer	2	1
	House wife	183	93.8
	Others	9	4.6
Monthly income	<5000	12	6.2
	5000-10000	54	27.7
	10001-20000	69	35.4
	>20000	60	30.8
		60	30.8
No. of Children	one	24	12.3
	Two	93	47.7

Type of family	Three	73	37.4
	Four and above	5	2.6
	Nuclear family	83	42.6
	Joint family	109	55.9
	Single parents	2	1
Birth spacing	Others	1	0.5
	0-1 years	69	35.4
	2-3 years	77	39.5
	≥4 years	49	25.1
Family status	Poor	34	17.4
	Lower Middle	71	36.4
	Middle	87	44.6
	Rich	3	1.5

The number of the children of the respondents was 47.7% had two children, 37.4% had three children, 12.3% had one child and 2.6% had four and above four children. Monthly income of the participant was 35.4% had 10001-20000 taka, 30.8% had >20000 taka, 27.7% had 5000-10000 taka and 6.2% had income <5000 taka. This study explores birth spacing majority respondents 39.5% were 2-3 years, 35.4% were 0-1 years, 25.1% were ≥4 years. Family status of the respondents was 44.6% belong Middle class, 36.4% lower middle class, 17.4% poor and 1.5% had Rich classes.

Table 2: Distribution of the respondents by their knowledge related information

Variables	Categories	n	%
Malnutrition means	Lack of Nutrition	188	96.4
	Too much nutrition	2	1
	Excess food intake	3	1.5
	Excessive hunger	2	1
Type of food respondents consumed	Low protein	32	16.4
	High carbohydrate	32	16.4
	Balance diet	97	49.7
	Others	34	17.4
Child malnutrition is crisis	Yes	163	83.6
	No	32	16.4
Idea about Iron deficiency anaemia	Yes	123	63.1
	No	72	36.9
Weight of LBW baby's	<2500gm	130	66.6
	2500gm-3499	40	20.5
	≥3500gm	25	12.8
Breast feeding start	Within 1 hours	158	81
	1-3 hours	17	8.7
	After 3 hours	7	3.6
	I don't know	13	6.7
Exclusive breast feeding means	Only breast feeding up to six months	177	90.8

	Accept other food within six months	4	2.1
	Not start feeding until six month	3	1.5
	Breast feeding more than six Month	11	5.6
Causes of malnutrition	Inadequate intake of food	158	81
	Avoid exclusive breast feeding	28	14.4
	Taking right amount of food	9	4.6
Sign and symptoms of Malnutrition	Weight loss	189	96.9
	Taking high amount of food	4	2.1
	Over weight	2	1
Received advice from HCW	Yes	115	59
	No	80	41
Prevention of Malnutrition	Provide balanced diet	174	89.2
	Provide vegetables and fruits	16	8.2
	Eat plenty of meat and fish	5	2.6
Start supplementary food	After 6 months of age	189	96.9
	Before 6 months of age	3	1.5
	After 1 year	3	1.5
Balanced diet means	Contains all Nutrients	142	72.8
	Does not contain all nutrients	28	14.4
	Eat animal proteins	23	11.8
	Eat vegetables	2	1
Idea about menu planning	Yes	130	66.7
	No	65	33.3

3.2. Knowledge-related information

Researchers explore mother knowledge about malnutrition. In this study 96.4% of respondents' concept about malnutrition were lack of nutrition, 1.5% were excess food intake, 1.0% were too much nutrition. Here only 1.0% were mentioned that excessive hunger is also a means of malnutrition. Researchers explore types of foods consumed by respondents are 49.7% consumed Balance diet, 17.4% consumed different (others) types of food. 16.4% consumed Low protein, 16.4% consumed high carbohydrate diet. Childhood malnutrition is health crisis or not here 83.6% respondents think yes that it is a health crisis. 63.1% mothers had idea about iron deficiency of anaemia. Mothers also express their opinion about low birth weight of babies. Here 66.6% said babies' weight was <2500gm. In this study 81.0% respondents told breast feeding should be started within 1 hour after childbirth.

This study also found maximum mother's 90.8% expressed only breast feeding up to six months of age of child is called exclusive breast feeding. Here 96.9% mothers had knowledge about sign & symptoms of malnutrition. Among 195 respondents, 89.2% think by providing a healthy, balanced diet malnutrition can be prevented.

96.9% had positive knowledge that supplementary can be started after 6 months of age. This study found 72.8% of mothers know that a balanced diet contains all types of nutrients. Majority 66.7% of respondents had knowledge about menu planning.

Table 3: Overall knowledge level of the participant

Categories	Grading criteria	n	%
Excellent	95-100	18	9.2
Very good	85-94	58	29.7
Good	70-84	77	39.5
Average	60-69	25	12.8
Below average	<60%	17	8.7

The final findings of the total respondents were 39.5% had good knowledge. 29.7% had very good knowledge, 12.8% had average knowledge, 9.2% had excellent knowledge level and 8.7% had knowledge below average.

4. Discussion

The present study included 195 mothers; their mean age was 28.38. In this study highest 51.3% age range in between 21-30 years, similarly another study was conducted by Kavitha, 2015, the analysis revealed that the highest percentage (43%) of the mothers their age were 21 to 25 years. Kavitha m, (2015)

In this study majority respondents are 41.5% secondary, 39.5% higher Secondary, 15.9% Primary Education and 3.1% illiterate. In another characteristics researcher found 93.8% Housewife, 4.6% others, Farmer 1.0%, and .5% Teacher. Another study conducted in Al-Sabeen Hospital, Sana City-Yemen they revealed 37.7% of the mothers had primary school education and 5.7% had a university education, and almost 93.4% of mothers were a housewife and 52.8% came from an urban area. (Alwsaby, S. A., & Al-Rabeei, N. A. (2019).

Monthly incomes of the respondents were 35.4% had 10001-20000 taka, 30.8% above 20000 taka,

27.7% 5000-10000 taka and 6.2% has less than 5000-taka monthly income. Kavitha M, 2015, showed that the half 51% of the mothers their monthly income ranged from 15000 to 36000 YR. Kavitha M, (2015).

This study showed that among the respondents 96.4% had correct answers about malnutrition. 1.5% gave answers to excess food intake, 1.0% gave answers to too much nutrition and another 1.0% gave answer excessive hunger. Another study was conducted in Muea Health Area Cameroon found that out of 120 mothers, 69 (57.5%) had adequate knowledge, 36 (30%) had somewhat adequate knowledge, and 15(12.5%) had inadequate knowledge. (Cumber et al., 2016).

In this study the majority respondents 81.0% answered inadequate food intake can lead to causes of malnutrition, 14.4% gave answered Infants who are not exclusively breast feed may cause malnourished, 4.6% gave answer eating the right amount of food. Manohar et al revealed 62.8% know that a lack of nutrients in the body causes malnutrition. (Manohar et al., 2018)

In this study the majority of the respondents 89.2% gave the correct answer providing a healthy, balanced diet, 8.2% answered by giving more vegetables and fruits, and 2.6% answered eating plenty of meat and fish. A similar study in Muea Health Area Cameroon found that the majority 56% of mothers had moderately adequate knowledge and moderately adequate practice 58% regarding dietary practices in prevention of malnutrition. (Cumber et al., 2016).

The overall knowledge level of 195 respondents was, 39.5% were knowledge level good, 29.7% were knowledge level very good, 12.8% were average, 9.2% were excellent and 8.7% were below average. Similar findings were noted by Kavitha M, 2015, 46.6% of mothers had average knowledge about malnutrition and 36.6% of mothers had poor knowledge. Kavitha M, (2015).

Overall, the results of the current study are partially consistent with previous studies, but in terms of the level of knowledge, it paints a more positive picture than some studies.

5. Conclusion

The study was most respondents demonstrated a good to very good level of knowledge regarding

malnutrition in under-five children, with only a small proportion showing below-average understanding. This overall positive knowledge level suggests that awareness efforts are having an impact, though continued education is needed to further improve knowledge among those with average or below-average understanding. This study is concluded that, to improve the knowledge a continuous extensive special health education program, nutritional program and workshops regarding malnutrition among mothers of under-five children should be design and implement at Khulna to enhance the mother's knowledge in regard to this major issue and several nutrition related educational program should be arrange for mothers to improve their knowledge from good/average to excellent for better performance in future.

Recommendation of study

- Health education sessions can be arranged to improve the mothers' knowledge regarding effect of malnutrition.
- Research should be conduct on different slum area in Bangladesh regarding malnutrition.

Limitation of the study

- The study was conducted only Mitali Colony, Rupsha Ghat no-7 & Taltola, Colony Taltola, Colony, Khulna. Bangladesh So the finding cannot be generalized to all the settings in Bangladesh.
- This study only focused on the assessment of knowledge level but not the practice and attitude of mothers.
- Due to time constraint, the study involved only 195 respondents. So the results may not coincide with large scale survey.
- A non-probability purposive sampling technique was applied to select the sample this was inconsistent with Cochran's formula.
- This was a simple descriptive cross-sectional study, that why researcher did not used any inferential statistics.

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