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## **Socio-economic status and feeding practices among the mothers of under-five children in an urban slum of Bangladesh: a cross-sectional study**

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**Abstract:** Poor socio-economic conditions and inappropriate feeding practices in slum dwelling mothers can have adverse consequences for the health and nutritional status of their under-five children. The present study was to assess the feeding practices and socio-economic status mothers of under-five children. A cross-sectional study was conducted from January 2015 to December 2015 in four urban slums of Bangladesh. Two hundred and fifty five mother-child pairs were selected by non-random convenience sampling and were interviewed using a pre-tested questionnaire. Anthropometric measurements were taken from under-five children aged 6-59 months. In the present study, boys (54.0%) were predominant over girls (46.0%). The prevalence of initiation of breastfeeding after delivery, prelacteal feeds, exclusive breastfeeding and bottle-feeding were 34.5%, 43.5%, 39.6% and 30.6%, respectively. Out of 255 children studied, more than half (57.6%) of the children received complementary feeds at the appropriate time whereas 45.9% children received with appropriate consistency. Meal frequency was 40.4% and minimum dietary diversity was given to only 39.6% of the children. Minimum dietary diversity means feeding the child food from at least four food groups. Feeding practices improve as mother's education levels and household income status increases while maximum slum dwelling mothers are illiterate and primary level completed and household income status are not static. Data showed that overall 14.0% of under-five children were suffering from malnutrition. In terms of severity, 11.3% were moderately malnourished-MAM and 2.7% were severely malnourished-SAM. Various inappropriate feeding practices are more prevalent among urban slum mothers. From this study, it was evident that mothers of low socio-economic group have poor knowledge regarding the feeding practices of their under-five children. There is an urgent need to bridge the "knowledge gap" and "practice gap" of mother's from urban slum and lower socio economic strata of the community by further strengthening the on-going breastfeeding programme, breastfeeding knowledge and practice of mothers in urban slum areas.

**Keywords:** socio-economic status; feeding practices; under-five children; urban slum

### **1. Introduction**

Optimal nutrition and proper feeding practices are imperative for healthy growth and development of infants and young children (Black *et al.*, 2013; UNICEF, 2009). The time from womb to first 2 years of age (1000 days) regarded as 'critical window period/windows of opportunity' owing to rapid growth and brain development that

occurs in children during this period (WHO, 2008). Any damage to physical growth and brain development that occurs during this period is likely to be extensive and, if not corrected, irreversible (Hoddinott *et al.*, 2013; Alderman *et al.*, 2013). Hence, infant and young child feeding practices (IYCF) during this period play a critical role. Faulty breastfeeding and poor complementary feeding can lead to undernutrition (Srivastava and Sandhu, 2007; Garg and Chadha, 2009; Ma *et al.*, 2012).

Bangladesh has made remarkable progress in many areas during the last two decades however there are still lagging when it comes to urban areas especially in terms of feeding practices and malnutrition among under-five children. Urban populations are diverse and varied, both economically and in terms of living conditions that affect health negatively (BUHS, 2013).

Urban slum dwellers are exposed to poor environmental conditions. In the Census of Slum Areas and Floating Population 2014 covering all city corporations revealed that the number of slums, households and population in the Khulna City Corporation which contains 1,134 slums, 20536 households and 79827 population in which 6669 were under-five children (BBS, 2015). Ignorance and difficult conditions of life in the slums are likely to result in improper food habits, low health care use and hygiene awareness and lack of knowledge of the origin of sickness and proper measures for the cure (Zunaid *et al.*, 2017; Huq and Tasnim, 2008). Children living under such conditions are at especially high risk for health and nutritional problems. Inadequate knowledge about appropriate food and feeding practices is often a greater determinant of malnutrition than the lack of food (UN, 2014; Huq and Tasnim, 2008).

Bangladesh Demographic and Health Survey 2014 revealed that 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 (BDHS, 2014). The rates are equally debauched for urban Bangladesh, where half of the under-five children in slums were stunted, which is around one-third for non-slums. Underweight among under-five children in slums (43%) is considerably higher in non-slums (26%) and rest urban areas (30%) (BUHS, 2013). This high proportion of malnutrition poses a threat to the overall progress of the country.

Appropriate feeding practice ranks first among the most effective interventions to improve child health and nutrition. However, some inappropriate breast feeding practices do exist both in rural and urban area of Bangladesh (Fakir and Khan, 2015). A slum dwelling mothers are generally not well educated; do not have better socioeconomic status and difficulty in accessing information regarding breast feeding as compared to their urban counter parts (Mittal *et al.*, 2007; Fauveau *et al.*, 1992). Those mother needs knowledge regarding these in order to practice them and that depends on the mother's education, her socioeconomic status, her access to information regarding breast feeding, feeding taboos, and so on (Srivastava *et al.*, 2012; Mittal *et al.*, 2007).

As there is a paucity of literature on the appropriate feeding practices in the slum area. Therefore, the present study was undertaken to assess the socio-economic status and feeding practices of slum dwelling mothers and the nutritional status of under-five children.

## **2. Materials and Methods**

### **2.1. Study design and settings**

This cross sectional study was conducted in urban slum areas of Khulna City Corporation (KCC) with an aim to assess the socio-economic status and child feeding practices among the mothers in urban slum areas during the period of January to December 2015. For this study, 3 slums (Railway line, Daulatpur and Khalishpur) were selected randomly from the urban areas of KCC.

### **2.2. Study participants and inclusion criteria**

All the mothers who had children aged 6 to 59 months included in the study based on the following criteria: willingness of mother to participate in the study, healthy children aged 6-59 months and children who were found to be ill or suffered from any illness in the previous three months were not included in this study. Two hundred and fifty five mother-child pairs aged 6 to 59 months who met the inclusion criteria were included in the study.

### **2.3. Sample size and sampling**

A total of 255 mother's with their under-five children (6 to 59 months) who lived in three slums of KCC areas and who available during data collection period, were included as the sample of this study. Participants were selected through door-to-door visits using simple random sampling method.

#### 2.4. Data collection technique

Data were collected with data collection instruments with the help from pre-designed and semi-structured questionnaire. Two instruments were used: a semi-structured questionnaire besides anthropometric measurements. Initially mothers were informed about the study goals and verbal consent was obtained to take their child's anthropometric measurements. The questionnaire was used to interview the study participants to elicit the socio-economic information like religion, educational and occupational of the mothers, household members and income, family size and type, housing conditions, sanitary facilities, source of drinking water as well as information on age, gender and child's current feeding practices.

#### 2.5. Anthropometric measurements

Mid-upper arm circumference (MUAC) was measured to the nearest 0.1 cm using a flexible, non-stretchable measuring tape. The MUAC is a quick and reliable method for screening children to identify those who are acutely malnourished (Velzrboer *et al.*, 1983; Kaur *et al.*, 2005). The MUAC cut-off score  $\geq 12.5$  cm was considered as 'Normally Nourished',  $\geq 11.5$ - $<12.5$  cm was considered as 'Moderate Acute malnutrition (MAM)' and  $<11.5$  cm was considered as 'Severe Acute malnutrition (SAM)'. There are several practical and theoretical advantages of using MUAC rather than weight-for-height for the determination of nutritional status of the under-five children (Myatt *et al.*, 2006).

#### 2.6. Data processing and analysis

Data were collected on the paper forms simultaneously entered into SPSS version 20. Data were checked and cleaned for completeness and consistencies thereafter coded, recoded according to the aim and objective of the study. The results were organized, summarized and presented using appropriate descriptive measures such as text, tables, graphs, frequencies and percentage.

#### 2.7. Ethical issues

Ethical clearance taken from ethical committee of State University of Bangladesh. Informed verbal consent obtained from each of the study participant after explaining the aims of the study. Individual participant records were coded on each respective questionnaire and confidentiality was maintained at all levels of the study.

### 3. Results

#### 3.1. Sample characteristics of the study

In the present study, maximum (66.0%) of the children belong to 24-59 months followed by 21.0% between 12-23 months and 13.0% between 6-11 months. More than half (54.0%) of the children were boys whereas 46.0% children were girls (Table 1).

Table 2 showed the socio-economic status of the mothers. About half (47.5%) of the mother's had single under-five child while 52.5% mother had more than two under-five children. The maximum of the mothers belongs to Muslims religion (73.4%) as compared to Hindus (14.1%). Among the total 255 mothers, about one-third (32.2%) mothers were illiterate while 44.3% of mothers had attended primary education, 19.2% mothers had attended secondary level education and only 4.3% slum dwelling mothers were passed SSC and above. However, only few mother were the working (13.7%) mother and the maximum (86.3%) were homemakers. More than half (59.2%) of the mothers belonged to the income group of BDT 6001-12000 whereas only 9.4% mothers belonged to BDT  $\geq 12000$  (Table 2).

Out of 255 mothers, about two-third (65.5%) belonged to the nuclear family and the highest percentage of the mothers were living in Kutcha/Tin-built (66.3%) followed by Semi-pucca (24.7%), Jhupri (4.7%) and Pucca (4.3%). About three-fourth (65.5%) of the households were getting their drinking water from tap water and the rest (34.5%) of the households were getting from tube-well. The present study revealed that the one-fourth (24.3%) of the households were using sanitary latrine whereas the maximum (75.7%) were not using sanitary latrine (Table 2).

#### 3.2. Nutritional status

The present study analyzed the nutritional status of the under-five children based on MUAC classification. The maximum (86.0%) study children normally nourished whereas 11.0% were moderately malnourished (MAM) and 2.7% children severely malnourished (SAM) (Table 3).

### 3.3. Feeding Practices of mothers of under-five children

The current study analyzed different indicators of child feeding practices. In this study about one-third (34.5%) of the mothers breastfed their child within 1 hour after birth whereas 43.5% mothers have given prelacteal feeds to their child during the first three days of life. The prevalence of exclusive breastfeeding of infants up to age 6 months was 60.4% hence the prevalence of bottle-feeding practice was 30.6% (Table 4).

Among the total 255 participants, more than half (57.6%) of the mothers have initiated complementary foods at appropriate time in which 39.6% of mothers have given complementary foods of appropriate diversity of food, 45.9% have given at appropriate consistency, 40.4% have given appropriate frequency and 38.0% of mothers have given complementary foods at appropriate quantity.

The present study found that more than half (51.8%) of the mothers practiced 'responsive feeding' whereas about one-third (36.5%) of mothers feed their child forcibly followed by 27.8% rewarding their child for feeding (Table 4).

**Table 1. Profile of the under-five children [n=255].**

Variables	n	%
<b>Age group</b>		
6-11 months	34	13.0
12-23 months	54	21.0
24-59 months	167	66.0
<b>Gender</b>		
Boys	139	54.0
Girls	116	46.0

**Table 2. Socio-economic status of the mothers [n=255].**

Variables	n	%
<b>No of under 5 children</b>		
Single	121	47.5
≥Two	134	52.5
<b>Religion</b>		
Muslim	219	85.9
Hindus	36	14.1
<b>Educational status</b>		
Illiterate	82	32.2
Primary (I-V)	113	44.3
Secondary (VI-X)	49	19.2
SSC and above	11	4.3
<b>Working status</b>		
Nonworking (Homemakers)	177	69.4
Working (Maid/servant)	78	30.6
<b>Household income (in Taka)</b>		
≤ 6000	80	31.4
6001-12000	151	59.2
≥ 12000	24	9.4
<b>Family types</b>		
Nuclear	167	65.5
Joint	88	34.5
<b>Housing conditions</b>		
Jhupri	12	4.7
Katcha/Tin-built	169	66.3
Semi-pucca	63	24.7
Pucca	11	4.3
<b>Sanitation facilities</b>		
Sanitary latrine	62	24.3
Non sanitary latrine	193	75.7
<b>Drinking water source</b>		
Tube-well water	88	34.5
Tap water	167	65.5

**Table 3. Nutritional status of the children by MUAC classification [n=255].**

MUAC (cm)	n	%
Normal (≥ 12.5 cm)	219	86.0
Moderate Acute malnutrition (MAM) (≥ 11.5 - <12.5 cm)	29	11.3
Severe Acute malnutrition (SAM) (<11.5 cm)	7	2.7
<b>Total</b>	<b>255</b>	<b>100.0</b>

**Table 4. Feeding Practices of mothers of under-five children [n=255].**

Variables	n	%
<b>Early initiation of breastfeeding</b>		
Yes	88	34.5
No	167	65.5
<b>Prelacteal feeds</b>		
Yes	111	43.5
No	144	56.5
<b>Exclusive breastfeeding</b>		
Yes	101	39.6
No	154	60.4
<b>Bottle feeding</b>		
Yes	78	30.6
No	177	69.4
<b>Timely initiation of complementary feeding</b>		
Yes	147	57.6
No	108	42.4
<b>Diversity of food</b>		
Yes	101	39.6
No	154	60.4
<b>Consistency of food</b>		
Yes	117	45.9
No	138	54.1
<b>Frequency of feeding</b>		
Yes	103	40.4
No	152	59.6
<b>Quantity of food</b>		
Yes	97	38.0
No	158	62.0
<b>Responsive/ demand feeding</b>		
Yes	132	51.8
No	123	48.2
<b>Force feeding</b>		
Yes	93	36.5
No	162	63.5
<b>Apprehension for feeding</b>		
Yes	71	27.8
No	184	72.2

### 3.4. Discussion

The current cross-sectional study was conducted with an aim to determine the socio-economic status and child feeding practices among the mothers of under-five children. Mothers having children of age 6 to 59 months residing in low socioeconomic area and urban slum areas of Khulna City Corporation (KCC) city were included in the study.

The present study revealed that 66.0% of the children belonged to group of 24-59 months, 21.0% to 12-23 months and only 13.0% of the children belonged to group of 6-11 months. These findings were consistent with the study done in Bangladesh by Hoque *et al.*, 2016. Halder, 2000 conducted a study in Bangladesh in which boys and girls were 59.0% and 41.0%. According to Census of Slum Areas and Floating Population 2014, the

male and female were 51.2% and 48.0%, which was almost similar to our present study where the percentage of male and female were 54.0% and 46.0%.

The present study stated that the maximum of the mothers belongs to Muslims religion (73.4%) as compared to Hindus (14.1%). Information on religious affiliations of slum dwellers was collected in the Census of Slum Areas and Floating Population 2014. The percentage of Muslim people was the highest (92.7%) in comparison with other religions. These findings are comparable to the current study where Muslim slum dwellers also dominant over other religions.

The present cross-sectional study stated that 44.3% of slum dwelling mothers had attended primary education while 32.2% mothers were illiterate, 19.2% mothers had attended secondary level education and only 4.3% slum dwelling mothers were passed SSC and above. Mothers or caregivers in slums are less likely to have higher levels of education and our finding was similar to an earlier observation (Hoque *et al.*, 2016). However, 30.6% mothers were belonging to the maidservant and the maximum (69.4%) were homemakers/housewife. The above findings are consistent with the Census of Slum Areas and Floating Population 2014 in which 25.0% mothers were belonging to maidservants.

The present study concluded that about two-third (65.5%) belonged to the nuclear family and the highest percentage of the mothers were living in Kutcha/Tin-built (66.3%) followed by Semi-pucca (24.7%), Jhupri (4.7%) and Pucca (4.3%). It was evident from the slum census 2014 that the highest percentage of dwelling units are Kutcha/Tin-built (62.45%) followed by semi-pucca 26.4% and Jhupri (6.5%). The socio-economic development of a country has direct bearing on housing condition and household facilities of the people. The housing structures within slum areas are made of relatively cheaper materials like straw, leaves, polythene sheets, wood, bamboo, coarse papers etc.

In our present study about three-fourth (65.5%) of the households were getting their drinking water from tap water and the rest (34.5%) of the households were getting from tube-well. There was a discrepancy between our findings and the slum census 2014.

The present study revealed that the one-fourth (24.3%) of the households were using sanitary latrine whereas the maximum (75.7%) were not using sanitary latrine. Our findings are very most consistent with Census of Slum Areas and Floating Population 2014 wherein the highest percentage of households using non-sanitary latrine (75.7%) followed by sanitary latrine (26.3%), hanging/Kutcha (8.6%) and other/open space (1.8%) at the national level.

The current study assessed the nutritional status of 255 under-five children with standard anthropometric indices based on MUAC classification. The results of this study showed a quiet high level of undernutrition (14.0%) among under-five children living in urban slums, and this finding coincides with other studies in Bangladesh (BDHS, 2014; Sadler *et al.*, 2011). The present study findings are similar to another study conducted by Dasgupta *et al.*, 2015 among under-five children in a slum of West Bengal, India.

In the present study, initiation of breastfeeding within one hour after delivery occurred only in one-third of the children. This observation is supported by a study carried out by Gupta *et al.*, 2010 in urban slum of Lucknow which revealed that only 36.6% mothers initiated breast feeding within one hour after of delivery and most common reasons given for delayed initiation were family custom/belief, no secretion of breast milk, and discomfort in the mother. A study from Mumbai (Parekh *et al.*, 2004) showed that 82.3% of infants were breast-fed within four hours of birth that is much more higher compared to our study. The current study observed that about 43.5% mothers in a slum area gave prelacteal feeds. On the contrary, in a study done by Qiu *et al.*, 2008 as many as 62.0% mothers in urban area and 39.0% mothers in rural area gave prelacteal feeds.

The present study identified that the prevalence of exclusive breastfeeding is about 40.0%. However, the prevalence of exclusive breastfeeding recorded in this study was lower compared to the national prevalence reported in the BDHS, 2014. This difference might be due to variations in socio cultural aspects among study participants. This is in contrast to the study done by Aggarwal *et al.*, 2006 at Delhi where in 50.0% of the mothers had practiced exclusive breastfeeding till 6 months. This difference may be due to the good educational status in the above study whereas in this study there were 32.2% of the mothers who were illiterate. A study done in urban slum of Kolkata by Roy *et al.*, 2009 found that exclusive breastfeeding rate at 4 months was 61.3%. Data from urban slums and resettlement colonies repeatedly documented that although the breastfeeding was very common, exclusive breastfeeding was practiced only in 30-40% of infants younger than 4 months of age (Aneja *et al.*, 2001).

The proportion of bottle-feeding (30.6%) in the present study was comparable with results of a study by Wamani *et al.*, 2005 however, less than the reported by Pandey *et al.*, 1995 from rural West Bengal, India. The present study revealed that 57.6% mothers have complementary feeding whereas 39.6%, 45.9%, 40.4% and

38.0% of mothers have practiced with appropriate diversity, consistency, frequency and quantity, respectively. Responsive and force-feeding practiced by 51.8% and 36.5% of mothers, respectively.

A study in Bangladesh documented that the frequency, amount, energy density, and diversity of food remained important issues in complementary feeding. Though demand feeding which actively involves the infant in controlling the breast-milk intake is desirable, only 51.8% of slum dwelling mothers practiced it. A study on infant feeding practices by Parekh *et al.* 2004 in India showed that feeds were given on demand by as many as 73.7% mothers and yet another study by Panda *et al.*, 2008 in Cuttack showed that 90.1% of mothers fed their infants on demand. It has been observed that slum mothers were more active and working hard compared to the others. Hence, probably it was not possible for them to practice scheduled feeding as done by slum mothers. Apprehension among the slum mothers regarding the growth of their child may also be the reason for their time bound feeding.

#### 4. Conclusions

The findings of the present study confirm that various inappropriate breast-feeding practices are more prevalent among mothers of urban slum. Many persons around the mothers/caregivers influence them a lot. Educational qualification of parents especially mothers has little positive role. Early and late initiations are due to some misconceptions. Bottle feeding, fast foods and lack of proper family support are the most important barriers of appropriate complementary feeding practices followed by pre-lacteal feeding, formula feeding, commercial cereal, feeding during sleep and negative attitude of mothers/caregivers. This study advocates the need for future research that focuses on slum areas on a larger scale to the usefulness of appropriate feeding practices of mothers of under-five children. Repeated counseling starting from antenatal visits must change attitude of mothers/caregivers. Whole slum community should be motivated and involved actively. Government organizations and NGOs along with mass media should be utilized more vigorously for awareness building.

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#### Conflict of interest

None of declare.

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