Feeding practices and nutritional status of extreme poor young children in families of working mothers in the slums of Dhaka

Ashraful Kabir

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Abstract:
In Bangladesh, differentials in nutritional status between children living in slum and non-slum families are prevalent: children in families in slums in City Corporations are likely to have poorer nutritional status than their non-slum counterparts. Furthermore, mothers in slum households are more likely to be engaged in cash generating activities, and this impacts upon feeding practices and by implication, the nutritional status of young children. Little attention has been paid to the investigation of feeding practices of young children in families of working mothers in slums. However, understanding the determining factors of feeding practices is important to improve the nutritional outcomes. The aim of this study is to understand the contributing factors of feeding practices of children living in families of working mothers in Dhaka slums. The study adopts a qualitative approach and is informed by In-depth Interviews (IDIs), 5 Key Informant Interviews (KII) and Focus Group Discussions (FGDs) with family members, community leaders and program people. The main findings of the study are that the feeding practices of children in families of working mothers are determined by mothers’ occupation, basis civic facilities and the limited buying capacity of families. Although the mothers have good nutritional knowledge, they are forced to continually negotiate between the demands of work and feeding. Household composition, access to cooking facilities and levels of poverty also were found to be significant determining factors too.

Introduction
In Bangladesh, substantial development progress has been achieved in the past few decades. As far as health is concerned, the reduction of maternal and child mortality rates, the rise of contraceptive use, the supplementation of vitamin-A and deworming, and life expectancy at birth are major successes. Despite these, the persistence of malnutrition and nutrition-related health problems remain a serious concern. Nationally, the number of children under the age of 5 with severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) is estimated to be 600,000 and 1.8 million respectively. The prevalence of chronic malnutrition among children under 5 is 41 percent (Ahmed et al. 2014).

1 Research Officer, DSK
However, the importance of a good nutritional base is crucial for the survival and growth of infants and young children (Watt et al. 2014). Adequate and appropriate feeding contributes to good nutritional status and thus positively correlates to growth, reduced morbidity and increased chances of survival (Butte et al. 2000; Saha et al. 2008; Saito et al. 1997; Wright et al. 2004). Conversely, sustained malnutrition can result in a weak immune system (and thus high vulnerability to diseases), and limited working ability in the long-term. These processes often exacerbate households’ descent into poverty and are some of the factors contributing to inter-generational poverty (Devine et al. 2011). Considering the importance of improving the nutritional outcomes of infant and young children, the Government of Bangladesh (GOB) under the Ministry of Health and Family Welfare (MOHFW) has been delivering a number of nutritional services such as promoting breastfeeding, offering micro-nutrient supplementation, immunization, food safety and diversification, counselling and demonstration about proper feeding and so on (MOHFW 2010). In this aspect, NGOs are also playing imperative role to help address the same problem (Afsana et al. 2014a; Jalal and Frongillo 2013).

However, the existing literature shows that the prevalence of child malnutrition is uneven geographically (Mostafa 2011). For example, Das et al. (2015) found that the prevalence of underweight, stunted and wasted children under 5 to be 46%, 39% and 28% in Dhaka; while the corresponding figures are 39%, 31% and 26% in Matlab (the focus of the Das et al. study). The latest Urban Health Survey (UHS) in 2013 found differentials in key nutritional indicators between the children living in slum and non-slum settings. According to the UHS 2013, the prevalence of stunting, underweight and wasting among children under the age of 5 in city corporation slums was 50%, 43% and 19%; while, the corresponding figures were 33%, 26% and 16% in city corporation non-slums (NIPORT 2014). Only 25% of children between 6 and 23 months of age in city corporation slums were fed according to IYCF practices; whereas the corresponding figure in the same age group in city corporation non-slums was 40%. The differential was also found in breastfeeding and the consumption of supplementary food intake among children aged under six months: the prevalence was 6.9% in city corporation slums and 7.3% in city corporation non-slums. Overall, the unequal nutritional status was reflected in the differential mortality rates of children living in city corporation slum and non-slum settings. The UHS report found that the under-five mortality rate (U5MR), and the Infant Mortality Rate (IMR) were 57 and 49 per 1000 live births in city corporation slum households while nationally it was 41 and 33 (World Bank 2014). The report further indicates that the child feeding practices were inadequate and that inappropriate feeding was the most obvious contributing factor for poor nutritional status of children in slums.
Against this backdrop, the question remains unanswered: what are the factors determining feeding practices of infants and young children in city corporation slums? Although the literature and studies report on nutritional information and statistics in the slums, it does little to explain the processes which explain these specific outcomes. What factors lie behind poor the feeding practices that so influence the (poor) nutritional outcomes found in city corporation slums? Some international studies analyse some of the socio-economic and cultural factors which influence feeding practices within different settings (Bhuiya et al. 1986; Deolalikar 1996; Fotso 2007; NIPORT 2014) but do not focus specifically on the slums. Again, very little attention has been given to an in-depth exploration of intra-urban differentials in nutritional outcomes.

Methodology

This study investigates the contributing factors of feeding practices of young child among DSK-shiree project participant in slum settings. Dushtha Shasthya Kendra (DSK) is a Dhaka based Non-government Organization (NGO) with extensive experience of working in slums. Since 2008, the DSK-Shiree project has been working in the slums of Karail and Kamrangirchar and in some adjacent slums from Mohammadpur, Adabor and Mirpur in Dhaka. The overall aim of the project is to provide livelihood support for 30,000 extreme poor households in Dhaka slums so that they can lift themselves out of extreme poverty. According to the the latest survey (2015) of the project, 56% of female headed households are self-employed indicating that a high proportion of females are engaged in cash generating activities in program interventions (Mascie-Taylor and Goto 2015). Subsequently, many females are more likely to be spending more time at work. Although the project began in 2008, a decision was taken to incorporate nutrition interventions for all 30,000 households in 2012. The intervention included counselling pregnant and breastfeeding mothers around breastfeeding; demonstrating breastfeeding and complementary feeding for children aged 6 months onwards; raising awareness about food hygiene, hand washing, sanitary practice, and dietary diversity; and so on. Micronutrient powder (MNP) supplements were also provided to the children aged between 7 and 23 months.

Data was collected between November 2014 and February 2015 using in-depth interviews (IDIs) with household members (mothers, fathers and relatives) and focus group discussions (FGDs) with Community Nutrition Workers (CPKs) to explore the factors that affect how children in slum households

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2 The acronym “EEP/Shiree” stands for Economic Empowerment of the Poorest/ Stimulating Household Improvements Resulting in Economic Empowerment.
are fed. We also conducted Key Informant Interviews (KII) with community people and Nutrition Officers cum Master Trainers (NOMTs) who assist in the interventions.

When conducting face to face interviews, we followed non-probabilistic sampling which is the most common guiding principle of qualitative research design (Guest et al. 2006). In this principle, there is no common acceptable sample size but a commitment to sample in order to reach a point of ‘data saturation’. The idea of data saturation refers to the point in an empirical investigation where the researcher finds no additional information or themes. Unlike probabilistic sampling, data saturation relies on the predetermined criteria of the research objective. Saturation infers elements of purposive or deliberate respondent selection, maximum variation of respondents, and an incremental selection of participants. The unit of selection relies on the specific purposes of answering specific research questions (Tashakkori and Teddlie 2013). In our study, we conducted 21 interviews with a number of participants including mothers, fathers, grandparents and CBO leaders; and carried out 6 FGDs with NOMTs and CPKs. On top of this we also benefitted from a number of informal observations and discussions with different community members. Table 1 summarises our data collection tools:

<table>
<thead>
<tr>
<th>Methods</th>
<th>Participants</th>
<th>Field Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-depth Interview (16)</td>
<td>Mothers involved in cash earning activities, Fathers and Grandmothers</td>
<td>Kamgangirchar, Korail, Mohammadpur slums</td>
</tr>
<tr>
<td>Key Informant Interview (5)</td>
<td>Community Based Organization (CBO) leaders and Nutrition Officers cum Master Trainers</td>
<td>Kamgangirchar, Korail</td>
</tr>
<tr>
<td>Focus Group Discussion (6)</td>
<td>Community Pusti Kormi (CPK), Household members</td>
<td>Kamgangirchar, Korail, Mohammadpur slums</td>
</tr>
<tr>
<td>Informal Discussion and Observation</td>
<td>Shopkeepers, street vendors,</td>
<td>Kamgangirchar, Korail, Mohammadpur slums</td>
</tr>
</tbody>
</table>

All interviews were conducted in Bangla and were recorded electronically. After verbatim transcriptions, the interviews were then translated in English. Broad recurring themes were identified from the interviews and these were coded to facilitate analysis. Triangulation of data was carried out both during data collection but also in our analysis.
We followed the ethical principles and procedures guiding all Shiree research (see www.shiree.org). The objective, importance and the possible pros and cons of the study were fully explained to the participants. We asked for verbal consent prior to including anyone in our research and reminded participants that they could withdraw their consent at any time. During the course of the research, we asked specifically for ongoing consent. The decision to ask for verbal as opposed to written consent was that signing forms can lead to suspicion among participants – many of whom are not literate or have little formal education. Participants were also informed of their right to information about our study, and we also made clear that we would protect their anonymity.

**Context of the study and demographic analysis**

We conducted the study in two slums of Dhaka city: Korail and Kamrangirchar. Korail is the largest single slum in Dhaka city with approximately 78,000 inhabitants (Progga, 2014). The slum lies on 170 acres of land owned by the state and run by the Bangladesh Telecommunications Company Limited (BTCL) (Kulkarni Kumar 2012). This slum is home to many poor migrants from different parts of the country, and is surrounded by the wealthy neighbourhoods of Banani and Gulshan. As a large slum, Korail faces many challenges including irregular water and gas supply, poor connectivity, overcrowding, a lack of walking space and the strong influence of local touts or mastaans. Unlike Korail, the Kamrangirchar slum is built on land which is under private ownership. The cluster of slums known as Kamrangirchar has almost 400,000 inhabitants (Noor Foundation 2014). It was originally a low-lying dumping ground and as such the slum still has very high levels of pollution. Inhabitants tend to be poor migrants from various parts of the country. Overcrowding in the slum leads to multiple people sharing minimal space. For example, during our research we observed that up to 5-7 people were sharing a 100 sq.ft. room space.

**Results**

Table 2 shows that the combined mean age of participants was slightly higher than 30: nearly 28 in Kamrangirchar and 34 in Korail. Most mothers in both sites had no formal schooling and the mean years of schooling was 1.3 in Kamrangirchar and 4.5 in Korail. The average number of years of schooling of fathers was 2.6 overall, with negligible difference between the two sites. The combined median age of children was relatively close in the two sites and was around 14 months. Nuclear family structures were predominant in both sites (12 out 16) while the remainder were living with extended families. The combined mean family size was relatively similar in both sites, with each family composed of five members on average.
Table 2: Socio-demographic characteristics of the participant (IDI: N=16)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Field Sites</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kamrangirchar</td>
<td>Korail</td>
</tr>
<tr>
<td>Mean of women age (years)</td>
<td>28.6</td>
<td>33.84</td>
</tr>
<tr>
<td>Schooling of women (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal schooling</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>1-5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6-10</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Mean schooling (years)</td>
<td>1.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street plastic vendor</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Housemaid</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Garment workers</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Scavenger</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Widowed</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Median of years living in slum</td>
<td>5.9</td>
<td>6</td>
</tr>
<tr>
<td>Median age of child (months)</td>
<td>14.5</td>
<td>13.33</td>
</tr>
<tr>
<td>Median of No. of living child per household</td>
<td>2.9</td>
<td>2</td>
</tr>
<tr>
<td>Husband schooling (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal schooling</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1-5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mean schooling years</td>
<td>2.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Family type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Extended</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mean of family size</td>
<td>5.1</td>
<td>5</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Hindu</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Mothers’ livelihoods and infants’ feeding patterns

Mothers, CBO leaders, and program personnel including CNWs and NOMTs commonly reported that children aged up to 24 months living in slum households were more likely to have consumed processed food due to their mothers being away for work. The mothers reported that they were engaged in a variety of cash earning activities which made it difficult for them to cook at home. This was the main reason they use processed food. Table 3 shows the kind of processed foods consumed by infants less than 24 months in the 24 hours prior to the interviews taking place.

Table 3: Processed food consumed young children < 24 months

<table>
<thead>
<tr>
<th>Category of Food</th>
<th>Common items</th>
<th>Sources</th>
<th>Explanations for feeding choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquids</td>
<td>Fruit juice(^3), tea with condensed milk, phuchka and chotpoti(^4)</td>
<td>Street vendors, Grocery shops.</td>
<td>Available, cheap, convenient, perceived as healthy</td>
</tr>
<tr>
<td>Semisolid</td>
<td>Chutney, sweetmeat,(^5) pickles</td>
<td>Street vendors, Grocery shops.</td>
<td>Available, cheap, convenient, infants liked eating them</td>
</tr>
<tr>
<td>Solid</td>
<td>Chips, biscuits, flat bread (roti/chapatti), chitaipitha (rice cakes), bhapapitha (steamed rice cake), alur chap jhalmury (Spicy puffed rice), puri, singara, rutiporata, chotpoti (popular snacks), biryani, damaged/leftover fruits. traditional cakes, bread, singara, samosa (popular snacks and fast food items), Bhelpur(^6)</td>
<td>Street vendors, Grocery shops.</td>
<td>Available, cheap, easy to prepare and eat</td>
</tr>
</tbody>
</table>

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\(^3\) Fruit juice includes both processed juices manufactured in local factories and juice produced by street vendors using commonly sugar, water, flavor and low quality fruits such as mango, banana, watermelon and so on. The street vendors prepare juice in highly unhygienic environments.

\(^4\) Phuchka and chotpoti is a common and popular roadside dish in Bangladesh. The most common ingredients of the dish are potatoes, vegetables, boiled eggs and traditional spices, and tamarind sauce. It is hot, spicy and sour in taste. Street vendors prepare it in unhygienic conditions and sell at cheap price in the slums.

\(^5\) Sweetmeat means packaged food items that include Sandesh, Mawa, Malai, Curd, Icecream lolly pops and so on. These products have poor nutritional properties, and quite often are out of date.

\(^6\) Popular snack made of puffed rice, vegetables and a tamarind sauce. Again when sold in slums, the nutritional properties are poor.
Young mothers themselves are generally aware of the nutritional value of different kinds of food, appropriate feeding times and hygiene practices. Many reported that they had learned about these issues through NGO-led training, counselling and demonstration. One participant told us:

“Apa [reference to female NGO worker] has taught me how to feed a child and suggested exclusive breast feeding till the child is 6 months old. She showed me how to give home cooked food to the child after six months using a bati (small bowl). She also gave me a pusti packet (nutrition supplement) which is mixed with rice to increase its nutritional value. I follow her instructions.” (A mother from IDI)

However because mothers have to spend time away from home in order to work, they rely on older siblings (anything between 4 and 10 years of age) to look after the infants or on neighbours or other non-working family members (elderly) to act as ‘carers’. Often, mothers will give cash to ‘carers’ so that they can buy food from local groceries or vendors to feed themselves and their younger siblings. There may be times when there is some home-cooked food at home but the carers then lack the knowledge about children’s nutritional and hygiene needs. This is often the case when grandmothers are asked to take care of infants. Mother-in-laws are perceived to have minimal level of nutritional knowledge and in this sense can ‘neglect’ the child’s needs. Mothers complain that with grandmothers, there is no guarantee the infants are fed properly or on time. Fathers often do not cook for the children. In Bengali culture, males do not generally prepare food at home as it is perceived as women’s duties. Even when mothers work and earn, men will not generally prepare food or care for their young children. In fact we only found one case where one father admitted that he once administered liquids to his infant child with the help of an older sibling. Generally, fathers prefer to buy food from the local groceries or vendors or use whatever home-cooked food was left before the mother went for work. This care pattern was corroborated by numerous respondents:

“My infant was in good health until I started my business as a hawker. Since then, his health has been deteriorating. He is getting smaller and losing weight and getting ill very often. His older sibling is not capable of looking after him properly, since she is also a child. Sometimes, I keep a little money for them to buy, biscuits, bread, chips etc. ... I do not have any other option since I have to be away for long hours due to work” (A mother from one of our IDIs)

One of the CPK (Community Nutrition Worker) explained the situation;

“In many cases, the responsibility of taking care of children, which includes feeding, cooking and bathing, is transferred to an older sibling aged 6-7 years. This is where the
main problem lies since the carer does not have any knowledge about hygiene or nutrition. The young child herself needs care, how can she take care of another baby? The mothers often return home late after a day of strenuous labour and have little energy left to breastfeed”

This is reinforced by the response of one of our participant Nutrition Officers

“How can we expect that such a little child [7-10 years old] to keep proper feeding to the infant and young child? ...many times he himself eats non-family food. How can he then protect the young child from the introduction of cheap, unhygienic and poor nutritional food? ”

In cases where mothers might leave ‘home food’, the situation is equally uncertain and precarious. Quite often the food that is left can be of poor quality. One of our CPKs reported that

“A mother might leave some shuji (semolina) for the child before she leaves for work. She does this because she cannot afford anything else. However Shuji is not appropriate at all for a very young infant. It has no real nutritional value. But what happens? The baby gets used to shuji and starts to eat too regularly.”

Breastfeeding and mothers’ livelihoods

Participants reported that mothers often skip breastfeeding due to their work commitments. This results in infants consuming semi-solid and even solid food before reaching six months of age. Nearly two thirds (9 out of 16) of the mothers we interviewed, told us that they were unable to breastfeed their children adequately and on time because the babies were either asleep when they returned from work or before leaving for work, or simply did not have enough appetite. One of the mothers told us:

“How can I regularly breastfeed my child? I need to go to work so that my family can survive. I had to start working when my child was only four months old. I could not breastfeed and had to choose other options”.

However some of the mothers informed us that they expressed and stored milk before leaving for work. They had been taught how to do this mostly by CPKs. However even in these cases, the carers failed to feed the infants at the right time and in the right way. This was reported by both mothers and CPKs. One CPK for example noted that

“We advise mothers to extract breast milk before leaving for work. However, many mothers are unable to do so as they leave for work in the morning. We notice that infants
then become dependent on artificial cheap food items or suji and milk before reaching six months of age”

Another CPK stated that

“Even when mothers store breast milk at home before leaving for work, the care-giver does not administer it properly. Often the milk is not properly stored, the care-giver can not understand how many times or when to feed the child, or what temperature the milk needs to be before feeding. This happens, of course, because the carers are children themselves and lack adequate knowledge on the matter.”

There are some exceptions to this pattern. One of the mothers reported that she managed to breastfed her child beyond six months of age by reducing her working hours:

“I continued to exclusively breast feed till my child was 6 months of age. Supplementary food/milk was out of the question since I could not afford it. As I work as a street vendor, I tried to work the hours that would give me the minimum income I needed and allowed me to come back home early to breast feed my child.”

As a result most respondents reported that they hardly managed to maintain the minimum number of meals required for their young children, defined by the World Health Organization (2013) as twice for breastfed infants aged between 6 and 8 months, three times for breastfed children aged between 9 and 23 months and four times for non-breastfed children aged between 6 and 23 months. In our discussion so far we have shown that getting this right is a real challenge partly because the carer does not have the right knowledge. However in reality, when mothers go out to work and leave young infants, usually the responsibility for caring is shared between different people at different time periods of the day. This means that there are gaps and inconsistencies in feeding and caring: often feeding patterns reflect not the needs of the infant but the convenience of the carer of the time. And more critically, not all carers are equally reliable. When mothers ask for care support from outside of the immediate home (in this case carers could be neighbours or relatives coming from the mother’s natal rural homes), the risk is that this care can be withdrawn at any time and without notice. One of the nutrition officers told us:

“The child is taken care of sometimes by the older sibling, sometimes by my husband and sometimes by relatives during the day. The relatives are taken from their village home to provide the care during the absence of the mothers. But relatives may go back to the village anytime”
In short, the use of cheap, processed food from local groceries to feed infants is often a cheap and reliable solution. However this option brings three immediate risks: poor nutritional quality, irregular feeding practices, and a lack of required food diversity. Although some participants stated that the children were normally fed some variety of food, depending on availability and cost, the minimum dietary diversity intake requirement (foods that contain proteins, carbohydrates, fat, vitamins and minerals) seemed to be inadequate in most households interviewed. Milk products and non-heme\textsuperscript{7} iron were less likely to be fed in the households. Limited purchasing power and lack of knowledge seem to be the main reasons for this. Food items from local stores are introduced to the children along with home-cooked meals, but it still fails to deliver the necessary dietary variety due to the poor nutritional quality especially of the former. In Kamrangirchar, some internal chicken organs such as gizzards, kidneys, hearts, brains and livers are sold at a cheap price. Restaurants and chain superstores do not use these organs and so street vendors can collect them and sell them at the roadsides. This is a popular food item among slum households in Kamrangirchar (it is however not available at Korail). One of the participants noted

“In slums, you can buy leftover poultry organs at a low price and even cheaper than some vegetables. Many people sell it at the street corners”

\textbf{Services, Facilities and Feeding Patterns}

Approximately two thirds (16 out of 26) of the participants reported that one of the crucial reasons for not attaining minimum nutritional requirements was the lack of facilities in the slum areas. We found that although most of the households had gas connections, the inadequate and irregular supply meant that often households had to skip cooking. In both slums we studied, gas burners are shared and because of this, it was difficult to cook multiple times a day. Normally, the gas pressure is stronger and more regular in later part of nights until the early morning. For this reason, most families try to cook their food in one go, and mothers often wait in queues to get a chance to cook. Women therefore often cook large quantities of food and it is not unusual for women leaving early in the morning to completely miss the chance to cook. The other option for cooking is to use firewood but we found that in both slums, the options are very limited. Firewood is relatively costly and in most circumstances it makes sense to buy food like cheap bread and butter from local vendors rather than cook with firewood. As indicated above, this has an impact on children’s nutrition. One of our participant Nutrition Officer confirmed the above directly:

\textsuperscript{7} Dietary iron is found in two forms in foods: heme and non-heme. Heme iron comes from hemoglobin or animal sources while non-heme iron is found in non-meat sources. The major sources of non-heme iron include fruits, vegetables, grains and nuts.
“Meals are cooked once in a day due to inadequate gas supply in the slums. And those that use firewood to cook tend to avoid cooking from time to time because of the high cost of firewood. This leads to buying processed food items for themselves and their children”

One of the mothers gave us additional important information:

“If you consider the cost of firewood, it is nearly as same as the cost of the food that will be cooked. I bought 40 Kg. of firewood so I need to calculate how many days I will use it. I am able to buy another 40 Kg in this week. But I cannot frequently use firewood randomly. ...Rather, I use it when I really need to cook. ...Perhaps, it is wise to use it once per day at a maximum”

And another mother details the options that are most commonly used:

“5 kg of firewood costs 50 taka. I cannot afford it every day. I can only afford about 3kgs and that is not sufficient to cook once per day. So I buy chewing gums, chocolates and lollipops to feed my child. These products are very cheap and you can feed three or four children with only 10 taka.”

There are other considerations besides cost. After long hours of physical work, mothers are exhausted and have reduced energy to care for and feed their babies. Since they have many other household duties to perform, childcare ends up competing with the routine demands of cooking, washing clothes, dusting, cleaning and socialising. Some participants struggle to care for their infants because there is no one else to look after them at home (quite often the case with young mothers with their first baby), and therefore make other options that can harm the infants. One of our Nutrition Officer participants explained:

“I found a mother who was engaged in heavy construction work at night. She had to take her one month old baby with her to work with her since there was nobody at home to look after child. The new-born thus got a cold and a fever.”

Discussion

This paper has examined some processes and factors influencing feeding practices of children living in the families of working mothers in slum settings. Our data shows that in slums, mothers are aware of the nutritional requirements of their children and of the appropriate feeding practices they need. Yet, their engagement in the market labour, often in contexts where they have no adequate support for childcare, negatively affects the nutritional intake of children. In our study we also found that nutritional outcomes are determined by household composition, access to cooking facilities and levels of poverty.
The information gathered in this study suggests that mothers living in slums have significant knowledge about nutrition, breastfeeding, childcare and early initiation to complementary food. A previous study conducted in rural Chittagong and Dhaka slums (Haider et al. 2010) found that a knowledge gap on good breastfeeding coupled with some common misperceptions about feeding caused delayed or inadequate breastfeeding to infants. The same study reported that 81% of mothers received information on infant feeding through the media. However, in this study, we found that mothers were less exposed to media, and received more information through community-based interventions, especially from the DSK-shirlee project, that included routine visits to young mothers, counselling, demonstrations and follow up. This finding is consistent with some other studies. For example, Afsana et al. (2014b) found that nearly 68% of mothers gained appropriate levels of knowledge about micronutrient powder (MNP) in Bangladesh from community-based message delivery. Our study suggests however that despite having nutrition-related information, regular micronutrient powder supplement and breast feeding opportunities, mothers were not consistent in the way they breastfed and introduced supplementary food.

While work is the most common reason why infant feeding is irregularly or inappropriately managed, we came across other important reasons. One of the other main reasons refers to family composition. Since the nuclear family structure is predominant in the slums, the scope for alternative child care support is limited. Dependency on people outside of the family structure is high, with more distant relatives, neighbours and old woman living in the slums being the most frequent sources of support. Most families in the slums have lower or lower middle incomes. Mascie-Taylor and Goto (2015) for example found that the mean per capita cash income in the households of the slums used in this study, was 78 Taka. The households therefore have smaller networks, less income and of course are desperate to protect their precarious jobs. All of this combined jeopardises efforts to provided adequate food to young children.

Our findings are coherent with globally conducted studies which find that mothers’ employment coupled with inadequate alternative care (provided by other family members or by the work place) negatively impacts the nutritional status of children (Moser et al. 2012; Mostafa 2011; Nair et al. 2014; Nakahara et al. 2006b; Roshita et al. 2013; Ukwuani and Suchindran 2003). For example, a study at Surabaya, Indonesia (Roshita, Schubert, & Whittaker 2013) found the children of working mothers had significantly lower height-for-age Z-score (HAZ) than these of non-working mothers. The weight-for-age z-score (WAZ) was also significantly lower among the children of informal working groups than these of non-working mothers. A study in Mali (Pierre-Louis et al. 2007) found that children aged between 12 and 36 months had lower height-for-age Z-score while their mothers were involved in income generating activities.
However, maternal involvement in cash crop production has been found to be positively associated with children’s weight-for-age z-score (Pierre-Louis, Sanjur, Nesheim, Bowman, & Mohammed 2007). Nakahara et al. (2006a) investigated the association between the availability of childcare support and nutrition outcomes of children aged between 10 and 24 months in a peri-urban setting in Nepal. The lack of availability of adult child care support was linked to an increased risk of malnutrition of children from working and non-working mothers. However the higher risk of malnutrition was found among the children of working mothers. Yeleswarapu et al. investigated the nutritional status of children of employed and unemployed mothers in urban slums in Andhra Pradesh, India. Their study found that children below the age of 5 from households of non-employed mothers had significantly higher levels of weight and height than those of employed mothers. Mothers in work were unlikely to enjoy the full benefit of project interventions because of a lack of reliable care, long working hours, limited capacity of civic facilities, and the lack of nutritional knowledge. Similar findings were revealed in a qualitative study conducted by Nair et al. in rural settings at Dangarpur district of Rajasthan, India (Nair, Ariana, & Webster 2014). Their study indicated that mothers’ employment required compromises in infant care and feeding such as breastfeeding and the timing of feeding. Furthermore they found that when infants are cared other family members, the child had a higher chance of being neglected and that this had a negative impact upon nutritional outcomes. Another study conducted by Mittal et al. (2007) found that the type of occupation carried out by mothers had different impacts upon children’s nutritional status in slum settings in India. In a cross-sectional study conducted in slums they found that when mothers are involved in formal work, their children had higher chances of being underweight (46.15%) and stunted (58.97%) while the corresponding figures households where mothers were not involved in formal work were 37.8% and 44.8%. Mothers’ engagement in cash earning activities resulted in less time spent on food preparation and breastfeeding – a finding that resonates strongly with that of Moser et al. in Germany (Moser, Chen, Jilcott, & Nayga 2012). Another study in a low income peri-urban setting in Kenya (Kamau-Thuita et al. 2002) found the children up to 2 years of age, were more likely to be malnourished (stunted) among households of working mothers.

However, some studies have also indicated that mothers’ participation in income generating activities has positive impacts upon children’s nutritional outcomes. For instance, Lamontagne et al. (1998) found that children aged between 12 and 18 months with employed mothers, had higher levels of weight and height than those of unemployed mothers in low urban communities in Nicaragua. However, the study also showed that proxy-carers in working mothers’ families were found to have and practise key knowledge skills such as hand washing practice during feeding children. In Sri Lanka, Rathnayake et al. (2005) found that socio-economic factors, especially mother’s incomes, had significant positive impacts upon
total caloric intake (CI). Time allocated for child care such as breast feeding, food preparation and feeding were the contributing factors for the nutritional status of children.

These studies might suggest that maternal employment may not be the most important factor driving under-nutrition. This is certainly consistent with the review of 50 published papers looking at the relationship between women’s work and the nutritional status of young children in developing countries, which concluded that there was little evidence on the negative impacts of the former on the latter (Leslie 1988). In fact the study concluded that the impact of women’s engagement in cash income was complex and not systematic and that it could have both positive and negative impacts upon children’s nutrition. Another study carried out by Popkin (1980) in 34 rural barrios in Laguna, Philippines found that children living in households where mothers were engaged in market activities consumed more calories and proteins than the bare minimum. One of the key differences between Popkin’s study and ours is that in Popkin’s study the predominant caregivers were the old aged siblings at home. We might hypothesise therefore that older siblings might provide care in more effective ways than younger ones.

**Conclusion and policy implications**

The objective of this study was to understand the factors that influence infant and child feeding practices in families of working mothers where the adequate alternative child care support is absent. This study shows that there are important trade-off between mothers’ work and infant and child feeding. The need to work coupled with other societal and economic factors mean that mothers cannot take full advantage of project support for nutritional outcomes. The key to this seems to be the lack of knowledgeable carers that working mothers can rely on. We also tried to explore the how this situation could be improved. Based on discussions with participants, we formulated a series of recommendations for households where the mother is working that might help minimise the negative impacts upon children’s nutritional status, namely:

- Establish and maintain home-based day-care centres where the child might be fed according to IYCF
- Promote non-financial support via the creation of linkages with other NGO that operate day care centres, facilitate awareness building and community mobilization activities
- Promote community based working/livelihood options so that the mother can earn but also stay in or around their homes so that they can look after the children
- Improve gas supply to encourage cooking more than once a day
- Conduct epidemiological studies to calculate the differences in nutritional status between children of mothers working and those of non-working mothers
- Include Community Based Organization (CBO) leaders/members in nutrition training sessions

**Abbreviations**

BTCL: Bangladesh Tele-communication Company Limited,
CBO: Community Based Organization,
CI: Caloric Intake,
CPK: Community Pusti (Nutrition) Kormi (Worker),
DSK: Dushtha Shasthya Kendra,
EEP/SHIREE: Economic Empowerment of the Poorest/ Stimulating Households Improvement Resulting in Economic Empowerment,
FGD: Focused Group Discussion,
GOB: Government of Bangladesh,
HAZ: Height-for-age Z-score,
IDI: In-depth Interviews,
IYFC: Infant and Young Child Feeding,
KII: Key Informant Interview,
MAM: Moderate Acute Malnutrition,
MOHFW: Ministry of Health and Family Welfare,
NGO: Non-Government Organization,
NOMT: Nutrition cum Master Trainer,
NIPORT: National Institute of Population Research and training,
SAM: Severe Acute Malnutrition,
WAZ: Weight-for-age z-score,
UHS: Urban Health Survey.

**Conflict of interest:**
The authors declare that they have no competing interest.

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