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A qualitative assessment of mothers' knowledge and perception regarding food for under five children in rural areas of Bangladesh

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Abstract

Introduction: It is estimated that worldwide 165 million or 26% children under-five years of age stunted, 101 million or 16% were underweight and 52 million or 8% were wasted. Each year about 7.6 million under five children die because of this preventable malnutrition and about 60% deaths occurring among children in developing countries, whereas 90% stunted children living in Asia and Africa. In Bangladesh the rates of malnutrition were highest in the world. About 9.5 million children or 54% of preschool-age children were stunted, 56% are underweight and more than 17% are wasted. Children are the future of a nation and mothers are the guardian who build for healthy nation. So if the mother or the care giver of the infant and young children are nutritionally educated can bring up their children in a healthier way. Malnutrition is being a multi-causal problem needs to be addressed through multidisciplinary approach. **Objective:** This study aiming to assess mother's knowledge and perception regarding infant and young child food in rural areas. **Methods:** It was a cross sectional study and qualitative in design followed by six focus group discussions (FGD) and 12 in-depth interview in Barisal, Faridpur, and Jessore districts to assess basic knowledge about food, diet and consumption, etc. **Results:** All most all the mothers or caregivers mentioned that green and yellow vegetables, small fish, fruits, etc. are useful for eye sight development and prevention of night blindness, whereas no responses found for in taking fishes to their children. The mothers from Barisal and Jessore perceived the need to feed animal foods to keep their children well. Maximum participants from Barisal and few from Jessore opined that child should be fed a balanced diet which would help for baby's sound health. Most of these they knew mainly from mass and print media. Some participants also mentioned that they knew from books, doctors, teachers, family members and own experiences. **Conclusion:** Proper nutrition contributes significantly to declines in under-five mortality rates. Improving nutritional status is essential for achieving the Millennium Development Goals (MDGs)

Introduction

Poor infant feeding practices is one of the major causes of malnutrition during the first five years of life for a human being. It is estimated that worldwide 165 million or 26% children under-five years of age stunted, 101 million or 16% were underweight and 52 million or 8% were wasted (WHO 2015). Each year about 7.6 million under five children die because of this preventable malnutrition and about 60% deaths occurring among children in developing countries, whereas 90% stunted children living in Asia and Africa (WHO 2015; Yin SA, *et al* 2009).

Due to acute under nutrition 20% under five children in India suffer from wasting which was more than one-third of the world's children, 43% were underweight and 48% (i.e., 61 million children) were stunted (Ghosh S 2002, Park K 2005). In India the status of under nutrition was significantly higher in rural than in urban areas which also accounts for more than three of every ten stunted children in the world (Srivatsava N & Sandhu A 2007). Considering Bangladesh the rates of malnutrition were highest in the world. About 9.5 million children or 54% of preschool-age children were stunted, 56% are underweight and more than 17% are wasted (Faruque AS, *et al* 2008).

Children are the future hope of society and mothers are caretaker of that future and due to malnourished, they could suffer permanent physical and cognitive damage, impacting their future health, economic well-being and welfare as well and this consequences passed on to the next generation. Under nutrition is caused by a poor dietary intake, insufficient nutrients, common infectious diseases like; diarrhea (Roy SK, *et al* 2005). Malnutrition among under five preschool children has been recognized as a major public health problem in many developing countries.

Many common health problems can be prevented with a healthy diet. Nutrients are organic and in organic complexes contained in food with major six classes named; carbohydrates, fats, minerals, protein, vitamins and water. These nutrient classes can be categorized as either macronutrients (needed in relatively large amounts) or micronutrients (needed in smaller quantities). The macronutrients contain carbohydrates, fats, protein and water. The micronutrients are minerals and vitamins. The macronutrients (excluding water) provide structural material, energy. Vitamins, minerals, fiber and water do not provide energy, but are required for other reasons. Again fiber is also required for both mechanical and biochemical reasons (Sule SS, *et al* 2009; Pramod Singh GC, *et al* 2009)

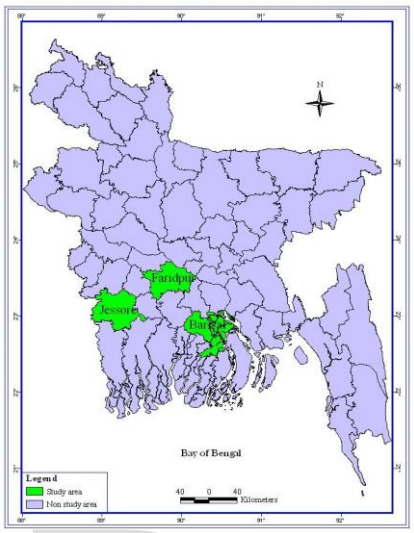
From the very beginning of childhood healthy consumption and physical activity are vital for growth and development as well as balanced diet is crucial for healthy life though children are exposed to suffer from nutritional deficiencies. So if the mother or the care giver of the infant and young children are nutritionally educated can bring up their children in a healthier way. Malnutrition and micronutrient deficiencies during this period can be prevented by adequate number of complementary feeding practices and it depend on mothers knowledge and perception

on food for their under five children. Again according to a study among 47 developing countries showed that, there are significant differences in rural-urban areas considering the nutritional status where urban areas were better than the rural areas (Van De Paul, et al 2007). And our study rational is stand on that issue to assess the current status is rural Bangladesh.

Methodology

Study Settings

It was a cross sectional study and qualitative in design. We selected three districts from the southern part of Bangladesh named Barisal, Faridpur, and Jessore, from where 6 focus group discussion and 12 in-depth interview was conducted. To conducting the study, at first collected the detailed household's information from the women who have less than 5 years old child, and/or caregivers to elicited their knowledge and practices on food consumption, health etc. Thematic analysis method was used for qualitative data analysis.



Map of the selected areas of Bangladesh

Study population

The mothers were selected as primary respondents in addition caregivers and/or fathers were also selected where necessary to get the information.

Participant eligibility

Inclusion criteria: Mothers having under-five children

Exclusion criteria: Visibly ill and/or uncomfortable to participate in the interview

Data collection tools

A semi-structured questionnaire was used to conduct in-depth interview and FGDs to explore the barriers and perceptions of participants on their knowledge and perception on food for their under-five year's children.

The following issues were covered to conduct the in-depth interviews:

- Socioeconomic status of key informants,
- Knowledge and perception on balanced diet and its effectiveness
- Knowledge and perception on nutrient food and its effectiveness

Guidelines for in-depth interview were developed and finalized after pre-test. Trained anthropologists carried out the interviews.

The following issues were covered to conduct FGDs:

- Socioeconomic status of the respondents,
- Knowledge and perception on balanced diet and its effectiveness
- Knowledge and perception on nutrient food and its effectiveness

FGDs were conducted by trained anthropologists following a checklist and considering the rules and regulations. FGDs played a triangulation role of information in addition to in-depth interview. This helped elicit the respondents' perceptions including knowledge and practices and identify their felt need to overcome the existing barriers, etc.

Data collection process

At first all the respondents involved in this research were informed of the study rationale, procedures, potential risks and benefits and their right to withdraw from the study at any time. It was also informed very clearly that participation is completely voluntary and they had the right to refused to answered questions if they wish. All participants were encouraged to ask questions at any time during the research, then in a Checklist form were provided to gather their some information and taken their sign if they agreed to involve.

An exploratory approach, utilizing focus group discussions (FGDs), as a means of methodological triangulation, which helped the investigators to look for union among multiple sources of information in order to categories in a study (Creswell & Miller, 2000), and also provide a richness of data at a reasonable cost and also helped to understand complex issues by observing how participants debate and respond to one another (Krueger & Casey, 2009).

Data Management and Analysis

All the recorded data were transcribed followed by record and field note for ensure quality by research assistants (All were anthropologist) in Bangla and also ensured that no information was misinterpreted or omitted. For analysis thematic analysis module were followed. During the initial data reduction phase, we identified broad themes using thematic content analysis, then in second stages coding transcripts into sub-themes and then we coded up, allowing categories to emerge from the data rather than coding down sub-themes onto the data. This procedure help not only ensured consistent coding but also drew consideration for any errors and omissions, and differences in cultural interpretations (Huberman and Miles 2002). All data were coded manually. The interpretation of data conducted based on a combination of coding summaries, contextual field notes, and descriptive data provided by direct quotes from participants. Principle investigator monitored and supervised all through the research process.

Ethical issues

To protect the rights of research participants several key ethical precautions were considered in this study. The interview was conducted after having a written consent from each of the respondents informing them about the confidentiality of their responses and no external ethical approval or review committee was consulted.

Results

Participants' Socio-demographic characteristics

A total of 189 mothers and/or caregivers participated by the in-depth-interview and FGDs from the districts of Barisal, Faridpur and Jessore. Among the participants, in addition to the mother, 24

were caregivers and 13 were adolescent mothers in the age group of 17-19 years. Average ages of the participants were 32, 36 and 30 years of Barisal, Faridpur and Jessore districts respectively. Most of the participants were Muslim, some were Hindu and very few were Christians and had 5-6 members in each family. Their average schooling was 5 year, where the ranges were 6-7, 3-5 and 5-6 years in Barisal, Faridpur and Jessore respectively.

Household head, primarily husbands were main earning members, in some cases sons contributed to the household income, of a particular participant and had average income per family was Tk. 7,000/- in Barisal, 11,000/- in Faridpur and 8500/- in Jessore. Main occupation of the household earners were small business, carpenter, rickshaw-van-auto driver, day labor and migrant worker in home and abroad. They were involved in farming in own land or as tenant farmers and some of them leased out their cultivable land. Some had poultry, duck and cattle considered as the alternative/complementary sources household income.

Mostly the participants were housewives and they were involved in agricultural activities. Few of them from Barisal were engaged in their own battle leaf garden along with agriculture. All the participants had at least their homestead garden where they produces vegetables for required family needs and their husbands or other family members helped them to bought seeds, dig the soil, weed out, etc. In addition vast majority informed that they had sources of own product either from tenant or from renter land. Among the respondents, educational status of the mothers was mostly primary level passed. Fathers were mostly at secondary level, where some mothers and fathers were found to be illiterate.

Basic knowledge about food and balanced diet

Knowledge on balanced diet

Maximum participants from Barisal and few from Jessore opined that child should be fed a balanced diet which would help for baby's sound health. All most all the participants mentioned that balanced diet like; arum, green banana, potato, gourd, pumpkin, lady's finger, parbal, milk, egg, rice, bread, pulse, hilsha, shrimp, salmon, barbell fish, little fish, climbing fish, yellow tail fish, cat fish, etc. were the combination of balanced diet. Children were also very fond of tomato. They fed it like fruit. A mother from Faridpur told that…

> *"Tomato is the best vegetable among others, and for that the children liked it very much."*

In addition to that many participants from Barisal and Faridpur added that any kind of leafy and non-leafy vegetables, fruits are important for child's cognitive development. Some mothers from all the areas mentioned that they fed *Horlicks* (chocolate powder) to their children as balanced diet. They perceived it from media advertisement. A mother from Barisal told that…

> *"All kind of fruits, vegetables, pulse, meat, fish, egg are nutritious foods which make the baby healthy and keep them free from diseases. These help in developing their brain, improve their, including mothers', eyesight. We all know that and tried to feed our babies."*

Some mothers from Barisal were also concern about food adulteration and formalin used in fishes and fruits.

Benefit of balanced diet

Most of the participants from all areas mentioned that balanced diet was essential for health especially for the children. Because of eating more vegetables, blood circulation would be smooth and clean. Vegetables provided vitamins that made the babies' body healthy and wealthy. Some participants from Barisal and Faridpur mentioned that balanced diet made the body strong, improved ability to protect body from disease, and met up body's all requirements. Few mothers from Barisal told that consumption of balanced diet could protect from rheumatic fever (*kala jor*), helped to develop brain and cognitive ability and reduced possibility of night blindness.

Knowledge on nutritious food

Some participants from all areas agreed that the nutritious foods contained more vitamins like A, B, C, calcium, etc. which kept the body well. These types of foods were, fish, egg, milk, rice, bread, pulse, vegetables, fruits, etc. Mothers from Barisal mentioned the name of the nutritious foods were any kind of fishes and meats, apple, banana, grape, gourd, cabbage, cauli flower, potato, milk, rice, bread, and all other vegetables. Very few mothers from Faridpur and Jessore also mentioned that liver, mutton and all types of yellow fruits belonged to nutritious foods. Very few mothers considered horlicks as a nutritious food. A mother from Barisal told that…

> *"Horlicks contains all kind of vitamins, which make the baby taller, sharper and stronger"*

Benefit of nutritious food

Mostly they told that this type of nutritious foods made the body healthy. These also helped to produce enough blood and cognitive development. Most of these they knew mainly from mass and print media. Some participants also mentioned that they knew from books, doctors, teachers, family members and own experiences.

Table-1: Different food intake for different purposes, according to participants' opinion

Food group	Energetic purpose	Body development and recovery purpose	Disease protection purpose	Blood formation	Eye sight development	Cognitive development
Leafy and non-leafy vegetables	Aram leafy, Gourd leafy, red leafy, kolmi, basil potato, arum, loti,	Aram, red leafy, spinach, all leafy, green pepper, parbal, potato, pumpkin, papaw,	arum leafy, red leafy, spinach leafy, bind weed , thankuni, balacha, green banana, lemon, potato,	arum, red leafy, spinach leafy, thankuni pata, bitter gourd, green banana, carrot,	arum leafy, spinach, red leafy, bind weed, Malabar night shade, parbal, green papaw, green banana, bath sponge, pumpkin green vegetables,	Malabar night shade green papaw, green banana, green vegetable
Fish		Sea fish,	Big and small fish	All type of fish like-Climbing fish, Snakehead murrel, Spotted snakehead, cat fish,,barbel, snakehead	little fish, Yellowtail mullet, Mola carplet, surma, hilsha, barble, cat fish	
Fruits	Banana, all kind of ripe fruit,	jackfruit, apple, orange, guava, pine-apple, pear, badana, mango, grape, papaw, yellow fruits	vitamin C fruit-orange, apple, grape, pine-apple, litchi, mango, Carambola, Indian Goose Berry, banana,	grape, apple, orange, fruits	yellow fruits help to eye sight development	banana, apple, orange, sobri banana grape, pine-apple, local season fruits
Animal Foods	chicken, pigeon, beef, liver,	Liver, cow's leg, goat's leg, bone	Meat	pigeon, chicken,		cow, chicken and goat's liver, meat,
	Egg(deshi)	Egg	Egg	Egg		egg,
	Milk	Milk, sweet	Milk	Milk		Milk, sweetmeat,
		saline, All kind of carbohydrate and calcium	Salt-iodized	Iron sources food	salt-iodize	
	Ghee, Bread	comlpan, Horlicks, Tin milk like dano, cerelac, suji, crystalline cube				

Pulses	Pulse	Pulse, hotchpotch

In the case of age-specific food, majority of the mothers were enabled to mention about the quantity of food, because they knew from the BRAC health program and got a measuring bowl to feed their babies appropriately, but in Faridpur areas the mothers couldn't mention it properly. The reasons for providing complementary feeding (CF) were mainly for cognitive development and get proper nutrition mentioned by the mothers of Barisal and Jessore areas. For CF they mainly preferred rice, vegetables, egg and fish by all areas. Almost all the mothers told that they did not have any first food to their children.

Mother's knowledge and perception on providing food from animal sources

We also tried to find out mothers' perception on animal food. Most of the mothers' responses that they felt to provide food to the children from animal sources, while they started complementary feeding. Rest of the mothers did not feel like that. The mothers from Barisal and Jessore perceived the need to feed animal foods to keep their children well. The other reasons for providing animal foods as mentioned were for proper growth, to meet nutrient requirements, for cognitive development, etc.

Food taken for different nutritious value purposes

All most all the mothers or caregivers mentioned that green and yellow vegetables, small fish, fruits, etc. are useful for eye sight development and prevention of night blindness, whereas mothers from Barisal added iodized salt to those. Most of the participants from Barisal told that green and yellow leafy and non-leafy vegetables were seasonal and other fruits, milk, egg, meat and liver, sweet, etc. are good for cognitive development. No responses found for in taking fishes. They consumed arum, red leafy vegetable, spinach, potato, green pepper, liver, suji, pulse, meat, etc. for health development. For disease protection, they consumed vegetables and fruits, milk, egg, meat, iodized salt, etc. While mothers from Barisal mentioned that some specific fruits like litchi, carambola, goose berry, orange, and some leafy and non-leafy vegetables protected from diseases.

Foods for blood formation, many participants from Barisal and Jessore mentioned names of the fishes, fruits, and meat and some vegetables name, whereas participants from Faridpur mentioned vegetables name only. A mother from Jessore said that…

> *"Vegetables and leafy vegetables are helpful for blood formation"*

Discussion

Food is the main factor contributing to children's physical growth, cognitive development and overall health improvement. Dietary intakes among children in the study areas were found to be diversified, but the food was basically cereal i.e., rice dependent. Consumption of food was not at satisfactory level. This indicates that the diet might be of better quality, but the quantity was compromised. Food consumption from animal sources was seemed to be lower in the age group 6-8 months compared to other age groups. It is reflected in the individual nutrient intakes. Food intakes in the intervention areas were better compared to the areas, but the gap was narrow.

Animal foods are the main sources of quality protein required to make its provision in complementary diet for the child. Among the respondents, the main animal food sources for the child were meat/liver, fish and egg. Therefore, dietary diversity could meet nutrient requirements, but due to limitation in quantity might hinder nutrient availability. It was found that food such as cereals, vegetables, and pulses only provided more energy to the children aged below 8 months, though pulses are considered as good source of plant protein complementary to that of cereal. Protein-rich foods such as milk, meat, eggs, and fish, which also contain micro-nutrients (calcium, iron, zinc, etc.), are given the highest value category (Cranney A, *et al* 2007; Odunayo SI, *et al* 2006).

They mostly preferred shop foods like *cerelac* (formula baby food), which were readily available and easy to prepare. In some places mothers were yet to be aware about the importance of animal foods and disadvantages of processed foods. In addition, motivational activities need to be strengthened in favor of providing animal foods as complementary to the children instead of shop/processed foods that might cause of appetite loss or sickness.

Conclusions and recommendations

The study made an effort to assess the perception of mothers or caregivers on food, dietary patterns, diversity influence of child and mother nutrition. It was found that mothers/care givers had limited knowledge about food and nutrition including infant and young child feeding (IYCF) practices. There were differences in knowledge gap among the participants even in locations. They believed on some traditional myths. It was found that misconceptions hampered food diversity and dietary balances. Household crop production, including livestock and fisheries and availability of seasonal food influenced on dietary patterns in the study areas. It is necessary to demonstrate balanced food intake system by using available low cost food and vegetables at household and community level. The study has emphasized for strengthening homestead gardening for vegetable production in order to provide micro-nutrients rich foods. An integrated information dissemination program that composed of the complementary disciplines, like food, nutrition, health supported by the agricultural production may be useful as the mitigation measure of malnutrition.

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Conflict of interest

Authors declare no conflict of interest

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