Nutritional Status and Complementary Feeding Practices of 6-11 months Children Attending in ICDDR,B Hospital

Md. Mezanur Rahman[1]*, Mir Shafi Uddin Ahmed[1], Muhammad Abu Bakr Siddique[1], Mahnaz Hossain[2] Sabina Khan[2], A.M.M. Mokarram Hossain[1] and Md. Aminul Haque Bhuyan[1].

Institute of Nutrition and Food Science, Dhaka University, Dhaka[1], Bangladesh Home Economics College, Dhaka[2].

Abstract:

A cross sectional study was carried out among 120 mother-infant pairs to determine nutritional status and complementary feeding practices of 6-11 months children attending ICDDR,B, hospital. Data were collected with pre-tested and well designed questionnaires during November 2007 to February 2008.Sample size (n=120) was determined using a statistical formula which is applicable to closed population. Mean education level of the mothers and fathers were 6.94% and 7.64%. About 95.8% of mother fed colostrums to their babies. The prevalence of exclusive breast feeding was 16.67%. Seventy percent (69.2%) of the mothers started complementary feeding before 6 months and during the data collection period 90% of the mothers were still breastfeeding their children. Suji was the most common complementary food (40.8%) followed by khichuri (22.5%), milk (16.7%) and mashed rice (13.3%). Lactating mothers are nutritionally vulnerable and it was observed that 17.5% and 10.8% mothers were deficient in CED-I and II respectively. The prevalence of underweight, stunting and wasting was 40%, 22.5% and 10.9% respectively. It was found that 75% mothers feed cereal to their child every day in last week of observation. Regarding treatment facilities 43.3% infants received treatment from private doctors and 23.3% infants received treatment of their disease from hospitals/ dispensary. Again 15% children remained untreated during their illness.

Key Words: Nutritional status, Complementary Feeding Practices, ICDDR,B hospital

* Author for Correspondence

Introduction:

Most of the children suffer from malnutrition during their first five years of life in Bangladesh; children fed breast milk during first six months of life and the next 54 months spend with poor complementary feeding practices with insufficient complementary foods. After five years, the malnourished children begin to stabilize their rate of growth, but by then it is already too late, because some of the damages become permanent and nearly impossible to reverse. Some fortunate children recover some of their weights, but this takes time. [1]Proper nutrition is most important in the infant's life, during which development process rate is very high and maturation continues rapidly. Therefore, by four to six months of age a child requires supplement with breast milk. [2]

According to the WHO, 30-40% of all children under 5 years of age are malnourished in less developed countries [3]. In many developing countries the prevalence of growth retardation increases with age during infancy and early childhood. [4]

Infant feeding is obviously a determining factor in growth and development of children. Child nutrition includes breast feeding, maternal nutrition and supplementary infant feeding [5]

No nutritional benefit results from the introduction of complementary feeding prior to four to six months of age as claimed by the American Academy of Pediatrics [6] Around or from this period, most infants require supplementary food to meet their energy and nutrient needs. Infant growth may begin to falter at about six months without having supplementary food [7]. Also in Bangladesh growth faltering of infants start after six months of age. [8]

The present study was designed to determine the complementary feeding pattern and practice as well as nutritional status of the infants (six to eleven months) in ICDDR,B Hospital.

Materials and methods:

Nature of the study: It was a cross sectional study.
Study area: The study was conducted at the treatment centre of ICDDR, B, which is one of the larger diarrhoeal research centers in the world. It is based in Mohakhali, Dhaka-1212.
Study population: Children between the ages of 6-11months attending in ICDDR, B with their diseases duration of only 2 days.
Study variables: Socio-economic status, Breast feeding, Complementary feeding, Food preparation and hygiene practices, Anthropometry of the mothers and children, Selective diseases and Access to treatment facilities.

Study instruments

1. Questionnaire

A pre-coded questionnaire was prepared considering all variables mentioned above. It was pre-tested in children clinic at Dhanmondi and later on duly modified.

2. Others instrument

For measuring anthropometric parameter we used the following instruments.

a. Wooden measuring board: Length measurement
b. Pediatric scale: Weight measurement (child)
c. Weighing machine: Weight measurement (mother)
d. Height scale: Height measurement (mother)

Consent

The purpose and nature of the study was explained to each participant and after getting their verbal consent, they were included in the study.

Development of the Questionnaire: A standard questionnaire was developed to obtain the relevant information.

Conduct of the Study

A lever balance (Detecto-Medic, Detecto scales, USA) was used to record body weight. The length of infant is measured by length board. This board is applicable for the infants who can not stand. Height of the subjects were measured with a standard scale (Detecto-Medic, Detecto scales inc, USA) to the nearest 0.1 cm in standing up-straight without assistance, with bared heels close together, legs straight, arms at the sides and shoulders relaxed, looking straight ahead. During measurement of height the person was allowed to take a deep breath and stature at maximum inspiration was recorded. In the dietary section, the respondents were asked about the dietary pattern of their infants. A seven days food frequency questionnaire was collected individually. Moreover, food intake pattern, number of meals and snacks taken per day were recorded. Questionnaires were checked each day after interviewing and again these were carefully checked after completion of all data collection and coded before entering into the computer. To minimize the errors, after entering the data set into the computer, these we checked and resolved by appropriate corrections.

Data Analysis: All the statistical analysis and all other data processing were done by using SPSS 12.0 windows program. Descriptive statistics was mainly used. Data were analyzed in terms of frequency distribution, percentage means and standard deviation.

For tabular, charts and graphical representations Microsoft word and Microsoft excel were used.

Anthropometric data were compared with data from National Centre for Health Statistics (NCHS) standard, U.S.A.

Results:

The Table 1 shows the father's and mother's educational level. It was found that the highest percentage (50%) of mother's and father's (38.3%) education was secondary education. Illiteracy rate for mothers and fathers was same (17.5%). More fathers (10.8%) were graduates whereas the corresponding figure of mothers was 8.3%.

The Figure 1 shows that highest percentage (40.8%) of mothers gave suji to their children as current complementary food while 22.5%, 16.7%, and 13.3% of mothers gave khichuri, milk and mashed rice respectively.

According to the Figure-2, colostrum feeding practice was very good (95.8%) among the mothers studied. Only 3.3% mothers did not give colostrum to their child.

Table 2 shows that in case of wasting 89.1% were normal and 10.9% were wasted. In terms of stunting 77.5% were normal and 22.5% were stunted and incase of underweight 60% were normal and 40% were underweight.

Figure 3 shows the distribution of the mother's nutritional status according to Body Mass Index (BMI). It is indicated that more than fifty percent (56.7%) of the mothers were normal and a considerable number (17.5%) of mothers were deficient in chronic energy –I and 10.8% were deficient in chronic energy –II. However, it was markedly highlighted that 11.7% of the mothers were overweight.

According to Table 3, it was found that 75% mothers fed cereal to their child every day in last week of observation whereas 8.3% of mothers didn't feed cereals to their child. Regular dairy consumption was found to be good (64.2%). Only few mothers gave regular animal protein (6.7%) and plant protein (15.8%) in last week to their child. Similarly 9.2%, 16.7% and 10% mothers gave their child green leafy vegetables, other vegetables and fruits respectively. It was also found that 31.7% children didn't get direct fat during last week of observation.

Table 4 shows that 43.33% infants received treatment from private doctors. And 23.33% infants received treatment for their disease from hospital/ Dispensary. Again 15% children remained untreated during their illness.

Discussion:

From the study, it was found that mean educational level of mothers and fathers were 6.94±4.23 and 7.64±4.85 respectively. Illiteracy rate for mothers and fathers was same (17.5%). Majority of parents had completed secondary education. The study showed that 50% of mothers and 38.3% of fathers had completed secondary education. Female education rate was satisfactory in that level but higher education level was achieved by their counterpart (Table-1). Income and maternal education are influencing socio-demographic factors explaining infant health status [9, 10]

Education has emerged as an important factor for child nutrition. Better educated women are more likely to breast feed exclusively.

According to WHO, the complementary foods are defined as those nonhuman-milk food-based sources of nutrients that are offered during complementary feeding period and the period of complementary feeding is defined as the period when foods other than human milk are provided to infants and young children who are still under breast-feeding. This study revealed that 70% mothers initiated complementary feeding with either cow's milk or goat's milk or formula milk. But considering present complementary feeding practices, it has been found that most of the mothers used suji (40.8%), kichuri (22.5%), milk (16.7%) and then 13.3% mashed rice (Figure 1).

The recommended duration of exclusive breast-feeding, defined as human milk being the only source of infant food and liquid, is 6 months. [11] When considering the breast feeding practices it has been found that the colostrums feeding practices were very high (95.8%) (Figure 2) and 3.3 % mothers did not give colostrums to their children. Although the colostrums feeding practices were high, yet for all the children colostrums was not their first milk. A higher proportion of mothers used honey (12.5%) and 10.8% sweetened water. There may have been an effect of taboos. Giving sweet pre-lacteal food like honey or sweetened water is associated with the belief that these will ensure a pleasant personality [12].

According to Z-score classification of nutritional status of all children aged 6-11 months, it shows that 5.8% children were severely stunted and 16.7% were moderately stunted; 6.7% children were severely under weight and 33.3% were moderately under weight, where as 1.7% children were severely wasted and 9.2% were moderately wasted (Table-2). According to BDHS-2007 the stunting rate of under five children is 48.2, underweight rate is 57.2% and wasting rate is 17.4% respectively. [13] In this study, it is found the stunting rate is 22.5%, underweight rate is 40% and the wasting rate is10.9%.The dissimilarity in the malnutrition rate may be for several reasons. At first, the studied children were only 6 to 11 months and the BDHS-2007 data is for under 5 years. Moreover the data was collected from only one place, ICDDRB hospital and it may not be the representative of the whole children of that age.

The average Body Mass Index (BMI) of the mothers were 21.14 with SD score 3.81. This results is consistent with the Child and Mother Nutrition Survey of Bangladesh-2005.One study in Bangladesh [14] has shown that the CED (Grade I, II, and III) rate of Bangladeshi rural women was 38.8% and in the urban the rate was 27.9%. In this study we found that the CED (Grade I, II, and III) of the mothers was 29.1 % (Figure 3). So the urban CED (Grade I, II, and III) is almost equal with this study result.

From the study it was found that 24.2 % mothers did not give dairy product to their child in last week whereas 4.2%, 0.8%, 2.5%, 1.7%, 2.5%, and 64.2% mothers gave

dairy product to their children for one day, two days, three days, four days, five days and more than five days respectively. It was observed that 56.7% and 31.7% mothers did not give animal protein and fat to their infants respectively in last week. It is also found that 74% mothers gave cereal to their infants more than 5 days in last week. It is very common picture in context of Bangladesh, because production and availability of carbohydrate rich product is higher than other products.

Table 1: Distribution of parents by their level of education.

Educational Level	Mother's Education		Father's Education	
	Frequency	Percent	Frequency	Percent
Illiterate	21	17.5	21	17.5
Primary Education	23	19.2	22	18.3
Secondary Education	60	50	46	38.3
Higher Secondary Education	6	5	18	15
Graduate and above	10	8.3	13	10.8
Total	**120**	**100**	**120**	**100**

Figure 1: Distribution of infants by the types of present complementary food.
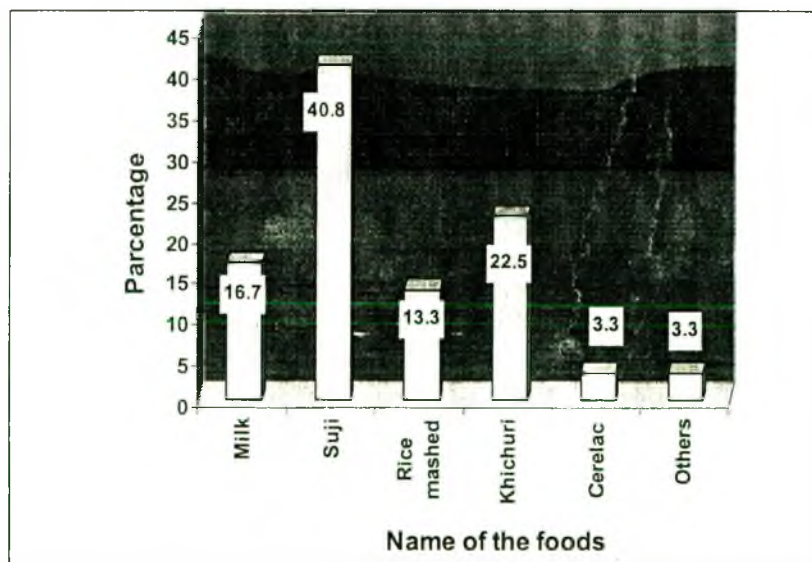

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Figure 2: Percent distribution of the respondent's by their opinion of colostrum feeding.
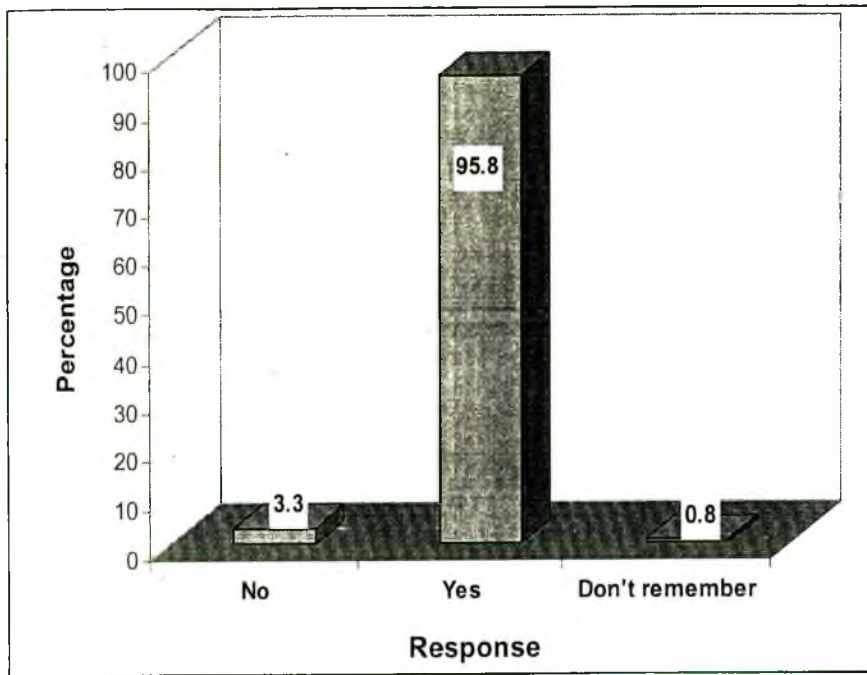

Table 2: Number of children and percentage of wasting, stunting, and underweight.

Indicators (n=120)	Severe (Z-score < -3.00)		Moderate (Z-score -3.00 to -2.01)		Total (Z-score < -2.00)		Normal (Z-score>=2.00)	
	No.	%	No.	%	No.	%	No.	%
Wasting	2	1.7	11	9.2	13	10.9	107	89.1
Stunting	7	5.8	20	16.7	27	22.5	93	77.5
Underweight	8	6.7	40	33.3	48	40.0	72	60.0

Figure 3: Distribution of the mother's nutritional status according to Body Mass Index (BMI)
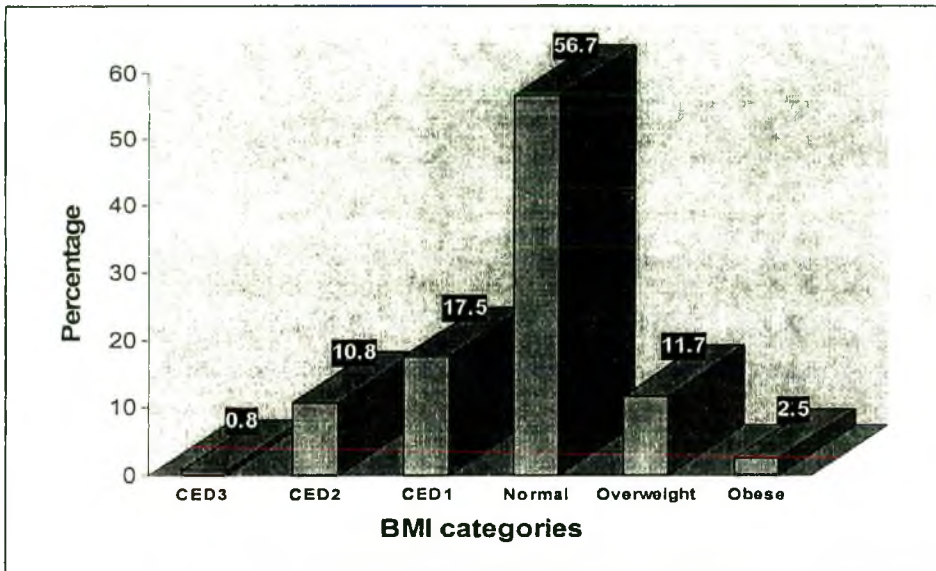
Table 3: Distribution of infant by different types of food frequency (last week).

No. of Days	Cereal	Protein (animal)	Protein (plant)	GLVs	Other vegetables.	Fruits	Dairy product	Fat
0	10 (8.3)	68 (56.7)	49 (40.8)	56 (46.7)	51 (42.5)	29 (24.2)	29 (24.2)	38 (31.7)
1	3 (2.5)	16 (13.3)	10 (8.3)	11 (9.2)	9 (7.5)	27 (22.5)	5 (4.2)	8 (6.7)
2	3 (2.5)	14 (11.7)	15 (12.5)	18 (15)	14 (11.7)	26 (21.7)	1 (0.8)	20 (16.7)
3	6 (5.0)	6 (5)	18 (15)	16 (13.3)	12 (10)	13 (10.8)	3 (2.5)	13 (10.8)
4	7 (5.8)	6 (5)	6 (5)	7 (5.8)	14 (11.7)	8 (6.7)	2 (1.7)	7 (5.8)
5	1 (0.8)	2 (1.7)	3 (2.5)	1 (0.8)	0	5 (4.2)	3 (2.5)	3 (2.5)
>5	90 (75)	8 (6.7)	19 (15.8)	11 (9.2)	20 (16.7)	12 (10)	77 (64.2)	31 (25.8)

The parentheses figures represent percentage.

Table 4: Distribution of infants by their access to treatment facilities.

Indicators	Number	Percentage
Private doctor	52	43.33
Hospital/Dispensary	28	23.33
Homeopathic	12	10
Ayurvedic	7	5.9
Pani para	3	2.5
Untreated	18	15
Total	120	100

The study reveals that the highest percentage (35%) of infants suffered from fever and Common cold. And the next dominating disease is Diarrhea (29.17%).Among them 43.33% infants received treatment from Doctors. And 23.33% infants received treatment for their disease from hospital/ Dispensary. Again 15% children remained untreated during their illness (Table-4).

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