Operations Research Project
Health and Population Extension Division

Working Paper No. 146

Infant Feeding Practices in Rural Bangladesh: Policy Implications

Shameem Ahmed
Ariful Islam
Sadia D Parveen

ICDDR,B
CENTRE
FOR HEALTH AND
POPULATION RESEARCH

1998

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Ariful Islam
Sadia D Parveen

International Centre for Diarrhoeal Disease Research, Bangladesh
Mohakhali, Dhaka-1212, Bangladesh

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Contents

Summary

Although breastfeeding is almost universal in Bangladesh, proper breastfeeding is on the decline due to several factors. To assess the knowledge and practice of mothers regarding breastfeeding, data were collected from 2,105 mothers during May-August 1996 in four rural sub-districts of Bangladesh. The findings of the study show that mothers' knowledge regarding proper breastfeeding is poor. Among all the women interviewed, only 12 percent stated that the first food for the newborns should be colostrum, and 27 percent knew that exclusive breastfeeding should be given for at least five months. In practice, of the 1,878 women who had live-births, 10 percent gave colostrum only, while the rest gave pre-lacteal feeds to their infants. Only 15 percent of the infants were exclusively breastfed at five months of age. A significant relationship was found to exist between knowledge and practice of giving colostrum. Also, women aged between 20-24 years were more likely to give colostrum as well as breastfeed exclusively for the first five months. Women who had their deliveries attended by medically trained personnel and those who already knew about the appropriate duration of exclusive breastfeeding were also more likely to practise exclusive breastfeeding for the first five months. The results of the study suggest that steps should be taken to further strengthen the on-going breastfeeding programme for improving breastfeeding knowledge and practice of mothers in rural Bangladesh.

Introduction

Breastfeeding is the best and safest way of feeding infants for the first 4-6 months of life. It provides the perfect nutrition for infants and lays the foundation for their healthy psycho-social development [1]. Besides, it also 'immunizes' the child against common infections [2]. In countries with a moderate or high infant mortality rate, artificially fed infants are at least 14 times more likely to die from diarrhoea than are breastfed children, and four times more likely to die from pneumonia [3]. In communities with a high prevalence of malnutrition, breastfeeding may substantially enhance child survival up to three years of age [4]. In addition to its direct nutritional value for the infant and young child, breastfeeding contributes to women's health by reducing the risk of breast cancer [3]. Lactational anovulation, associated with amenorrhoea resulting from exclusive breastfeeding, represents an important child-spacing mechanism [5]. Breastfeeding also facilitates the establishment of a strong relationship between the mother and her infant and leads to better neurodevelopment [6] in the child.

In Bangladesh, 94 percent of all children under 5 years suffer from various degrees of malnutrition, and 47 percent of children aged 6-71 months suffer from moderate malnutrition [7]. Following the Innocenti Declaration [8], the present day recommendation for Bangladesh is exclusive breastfeeding for the first five months, continued for up to two years or more, with the addition of home-cooked foods [9]. However, although Bangladesh is a country with a high prevalence of breastfeeding [10], this recommendation is not widely followed. Das *et al.* [11] reported exclusive breastfeeding to be 20 percent at five months, and that 16 percent of the infants in the study were given bottle-feeds by the age of one month. In another study, conducted in a rural area of Bangladesh, 85 percent of the children at one month of age, and 30 percent at six months were breastfed predominantly [12]. Also, the median duration of exclusive breastfeeding is low, and has been reported to be 1.5 months in rural Bangladesh [10].

Delayed initiation of breastfeeding is common in Bangladesh. A study conducted in Matlab, Bangladesh, reported that only 60 percent of the infants were given colostrum [13]. An earlier report [14] showed that 69 percent of the

women initiated breastfeeding on the third day. Ahmed [12] in 1988 showed that only 29 percent of the infants were put to the breast as soon as they were born. The BDHS [10] reported in 1997 that only 8.4 percent of the infants in rural Bangladesh were put to the breast within one hour of birth, and only 48 percent within the first day of life.

A national campaign for the protection and promotion of breastfeeding (CPPBF) was launched in 1989 to improve the breastfeeding situation in the country. Workshops were conducted in the different Medical College Hospitals in the country, to create awareness about the importance and benefits of breastfeeding, and to suggest the introduction of breastfeeding policies in hospitals. In November 1991, the Honourable President of Bangladesh, the Honourable Prime Minister, and the Minister for Health and Family Welfare signed the "Dhaka Declaration", pledging to protect, promote, and support breastfeeding [9].

In 1992, UNICEF launched the Baby Friendly Hospital Initiative (BFHI) [15]. A sub-committee of the CPPBF was formed to take the responsibility of the BFHI, and to collaborate with the Ministry of Health to implement this initiative. Health professionals received training of trainers, and in turn helped conduct the UNICEF/WHO 18-hour breastfeeding course in their own and other hospitals.

The present study was undertaken to assess the current knowledge and practice of mothers regarding breastfeeding in rural Bangladesh and the factors affecting these.

Subjects and Methods

This was a cross-sectional study for which data were collected from a household survey in four rural subdistricts, Abhoynagar and Keshobpur of Jessore district, and Mirsarai and Satkania of Chittagong district of Bangladesh during May and August 1996. These are the field sites of the Operation Research Project of ICDDR,B. According to the Bangladesh Bureau of Statistics, 1996 [16] the crude birth rate in Chittagong district is 29 and in Jessore it is 24 per 1,000 live births. The population in Chittagong district rely primarily on farming and small business for their livelihood. In Jessore district a sizeable proportion of the

labour force work in mills and factories. In Chittagong district the literacy rate is 43 percent and in Jessore district this rate is 33 percent which is higher than that of the national average [17].

A total of 2,105 married women who had delivered within a year of the survey were interviewed using a pre-tested structured questionnaire. These women were selected from the Sample Registration System (SRS), a longitudinal data collection system of the Operations Research Project (ORP) of the International Centre for Diarrhoeal Disease Research, Bangladesh. Information on knowledge regarding breastfeeding was collected from all the women in the study. Of the 2,105 women, 1,878 (89%) had live births while 91 infants died before their mothers could be interviewed. Thus, the breastfeeding practices of only 1,787 mothers could be assessed.

A structured questionnaire was used to interview the mothers. The interviews were conducted by female field research assistant of the Project who were given prior training. For the purpose of this study, an infant was considered to be exclusively breastfed if he/she was on breastmilk alone. Even water along with breastmilk was not considered to be exclusive breastfeeding.

Univariate analyses were done and two different logistic regression models were used for determining the factors affecting breastfeeding practice. In the first model, feeding colostrum and, in the second, exclusive breastfeeding up to 5 months, served as the dependent variables. In both the models, the independent variables included women's age, education, husbands' education, number of living children, women's knowledge, place of delivery, and birth attendant. Age, education and the number of living children were categorized as dummy variables.

Characteristics of the women

The mean age of the women in the study was 25 years ($\pm$6.1 SD), and their mean years of schooling was 2.8 years ($\pm$3.5 SD). The mean age of the husbands was 32.5 years ($\pm$11.3 SD), and their mean years of schooling, 3.5 years ($\pm$4.2 SD). On an average, the women had two living children, and the mean parity was 2.8. Ninety-four percent of the deliveries took place at home. Of all the deliveries about 79 percent were attended by untrained providers or relatives or were self attended while the rest were attended by trained providers.

Results

First food of newborns

More than four-fifths of the women stated that the baby's first food should be honey, sugar water, or mustard oil and, in practice, this figure was even higher (Fig. 1). Only 12 percent knew that newborns should be given colostrum first, and, in practice, even fewer women fed colostrum to their infants.

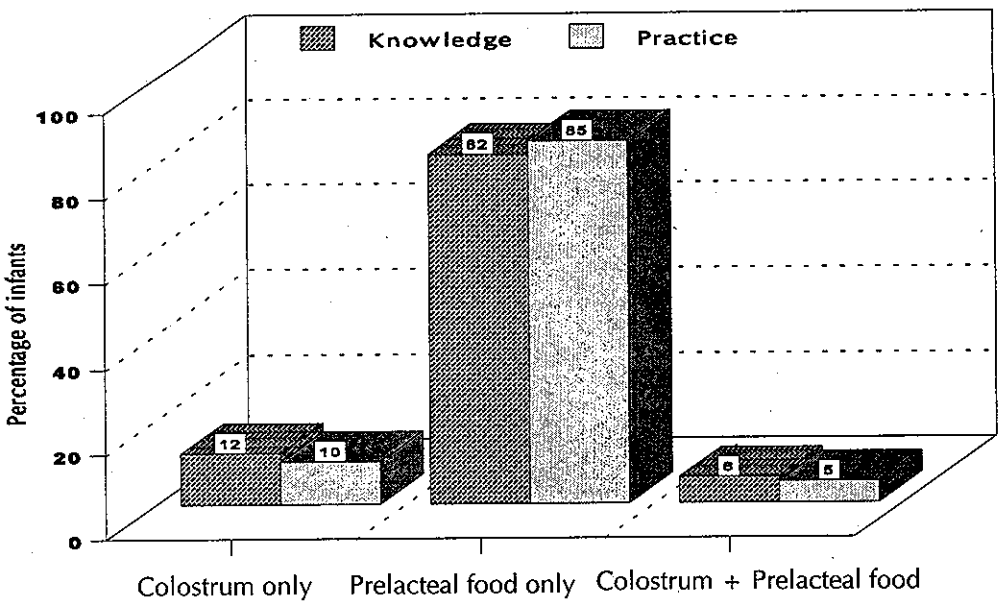

Fig.1. Knowledge and practice of mothers regarding first food of newborns

Time of initiation of breastfeeding

Only about one-fourth women knew that breastfeeding should be initiated immediately after birth, and another one-fourth thought this should be within 2-3 hours (Fig.2). However, in practice, almost one-fifth women initiated breastfeeding immediately after birth, and about one-fifth did so within 2-3

hours. More than one-fourth of the women initiated breastfeeding on the third day or later, while one percent did not breastfeed at all.

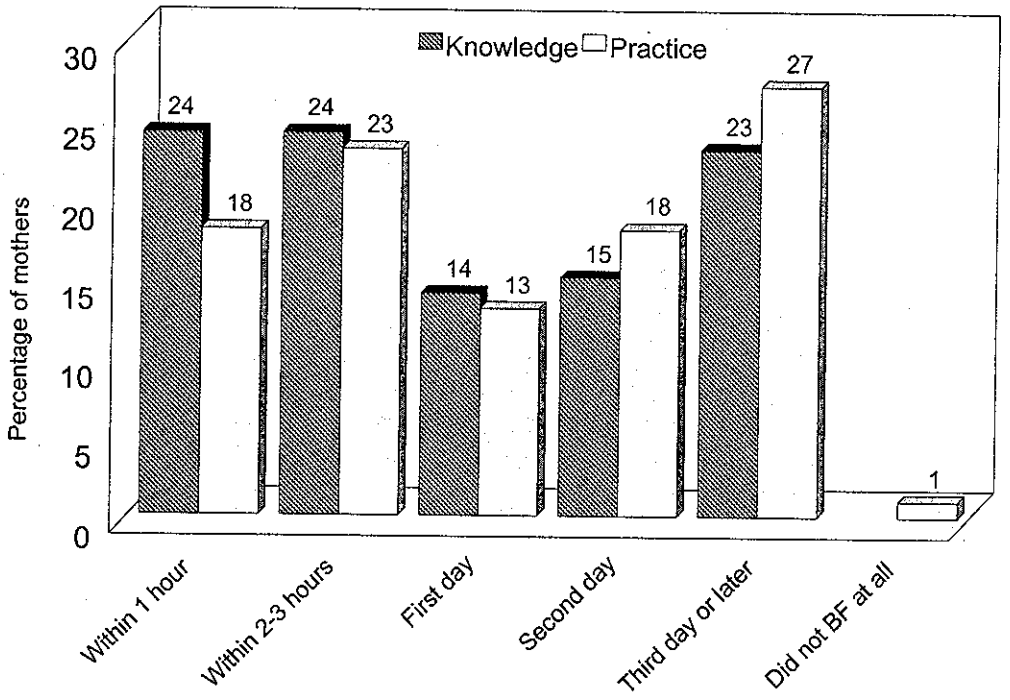

Fig 2 Knowledge and practice of mothers regarding time of initiation of breastfeeding

Exclusive breastfeeding

Thirty-five percent of the mothers thought that the duration of exclusive breastfeeding should be less than five months, while more than one quarter stated that it should be up to five months. However, 29 percent of the women thought that exclusive breastfeeding should be continued up to 6-12 months, and 4 percent had no idea about the duration as shown in Table 1.

Table 1. Knowledge regarding duration of exclusive breastfeeding

Duration	Percentage of women n=2105
<5 months	35
5 months	27
6-12 months	29
2 years	5
Don't know	4

In practice, only 43 percent of the one month old and 15 percent of the five month old infants were exclusively breastfed (Table 2). However, one percent of the infants were still exclusively breastfed at 9-12 months of age.

Table 2. Percentage distribution of the infants by age-specific current feeding practice.

Age of the infant (in months)	Type of food				
	E.BF	BM+Water	BM+ Other food	Other food	n
<1	60	26	11	3	70
1	43	29	27	1	143
2	37	27	32	4	138
3	28	24	44	4	130
4	17	23	56	4	156
5	15	20	59	6	196
6	6	16	76	2	160
7	5	11	80	4	208
8	5	9	82	4	183
9-12	1	5	87	7	403

Duration of breastfeeding

A majority of the women (94%) knew that breastfeeding should be continued for two years or more, along with other foods. About four percent thought that this should be just one year or less (Table 3). In practice, 99 percent of the one month old infants were breastfed. This decreased to 93 percent at 9-12 months (Table 2).

The median duration of exclusive breastfeeding in this study was found to be 2 months.

Table 3. Knowledge about duration of breastfeeding

Duration	Percentage of women n=2105
5 months	1
1 year	3
2 years	29
>2 years	66
Don't know	1

Mother's diet during breastfeeding

Almost four-fifths of the women knew that a mother should eat more than usual during pregnancy and lactation. Eleven percent women said that the mother's diet should remain as usual, while 8 percent thought that it should be less than usual.

Factors associated with breastfeeding practice

Women aged between 20 - 24 years were more likely to give colostrum compared to those aged less than 20 years ($p < 0.10$). A significant relationship was found to exist between knowledge and practice of feeding colostrum. Women who knew that the first food of the newborns should be colostrum were three times more likely to give colostrum first than those who did not (Table 4).

Women between 20 and 24 years were more likely to breastfeed their infants exclusively for the first five months ($p < 0.05$). However, the likelihood of this decreased with the mother's education (Table 4). Women whose deliveries were attended by medically trained personnel were 96 percent ($p < 0.10$) more likely to breastfeed exclusively for the first five months than those who were attended by others. Women with one to five years of education were 28 percent less likely ($p < 0.10$), and those with six or more years of education were 51 percent less likely to breastfeed their infants exclusively for this duration ($p < 0.01$). Women who knew about the recommended duration of exclusive breastfeeding were 48 percent more likely to do so ($p < 0.05$).

Table 4. Association between socio-demographic factors and giving colostrum to the newborn (Model 1) and exclusive breastfeeding up to five months (Model 2).

Factors	Odds Ratios	
	Model 1 (n = 1878)	Model 2 (n = 1307)
Women's age (in years)		
< 20 (RC)†	1.00	1.00
20-24	1.59*	1.50**
25-29	1.30	1.16
30-34	1.11	0.88
35 and above	0.52	1.07
Women's education (in years)		
0 (RC)	1.00	1.00
1-5	1.27	0.72*
6 or more	0.91	0.49***

Contd..

Table 4. (Contd.)

Factors	Odds Ratios	
	Model 1 (n=1878)	Model 2 (n=1307)
Husbands' education (in years)		
0 (RC)	1.00	1.00
1-5	1.02	0.92
6 or more	0.70	0.91
Number of living children		
1-2	0.83	0.97
3-4	0.82	0.78
5 or more (RC)	1.00	1.00
Knowledge of colostrum giving		
Yes	1.00	a
No (RC)	3.30***	
Knowledge of exclusive breastfeeding		
Yes	a	1.48**
No (RC)		1.00
Place of delivery of index child		
Home (RC)	1.00	1.00
FWC/THC/Hosp./Clinic	1.60	0.66
Birth attendant for index pregnancy		
Untrained (RC)	1.00	1.00
TTBA	1.50	0.95
Medically trained person (MBBS/paramedic)	1.24	1.96*

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
† RC = Reference category; a = not included in the model

Discussion

The results of this study shows that mothers' knowledge about proper breastfeeding is poor in rural Bangladesh. Initiation of breastfeeding is delayed, and the prevalence of exclusive breastfeeding is low. Only about a quarter of the mothers in this study knew that breastfeeding should be initiated immediately after birth. That 27 percent of the mothers still initiate breastfeeding on the 3rd day or later is quite alarming, and is comparable to a study carried out nearly 10 years ago by Ahmed [12]. The recent national survey [10] also shows that 55 percent of the newborns were given breastmilk on the 2nd day or later. This may be due mainly to the existing traditional beliefs and practices in the rural community. It appears that the belief that breastmilk "does not come down" before the third day [12] is still prevalent.

Almost 90 percent of the mothers interviewed did not know that colostrum should be the first and only food for the newborns. Giving colostrum as the baby's first food is not a common practice in Bangladesh, or in the neighbouring countries [13,18]. The results of a study conducted by Das and Ahmed [19], found that 81 percent of the mothers in two rural areas in Bangladesh discarded colostrum before putting their infants to the breast. Majority of the mothers who do not feed colostrum believe that it causes diarrhoea or stomach upset [20].

In this study, only about 18 percent of the mothers initiated breastfeeding immediately after birth, and an additional 23 percent, within 2-3 hours after birth. However, just 10 percent of the newborns received colostrum only as the first food. This paradox, between 18 percent immediate initiation of breastfeeding and only 10 percent actually getting colostrum, is due to the fact that pre-lacteal feeds, like honey, sweetened water, etc., were given along with colostrum, a practice which is still very common in Bangladesh. Giving sweet pre-lacteals like honey is associated with the belief that these will ensure a pleasant personality [12].

Mothers' knowledge and practice regarding the duration of exclusive breastfeeding were poor. Only 43 percent were exclusively breastfed at one month, and only 15 percent at 5 months. This is similar to the findings of a recent study [21] which shows that the duration of exclusive breastfeeding is still quite low in Bangladesh. In another recent study [22], only 12 percent of

the mothers were exclusively breastfeeding their 0-5 months old infants. However, it is interesting to note that about one percent of the infants in the present study were still exclusively breastfed at 9-12 months. This is slightly lower than that of the recent national survey [10] which reported 4 percent of 10-11 months old infants to be exclusively breastfed.

The present study shows that 11 percent of the infants were started on weaning foods from the very first month of life. Although 76 percent of the infants at 6 months, and about 87 percent at 9-12 months got weaning foods, most of them were given breastmilk along with these. Similar results were shown in a study done in urban Dhaka [23].

An interesting observation in our study was that the more educated the mothers were, the less likely they were to breastfeed their infants exclusively for the first five months. Education is a proxy for socio-economic status [24]. Better socio-economic status is usually related to the husband's education and, in some instances, to a woman's education. Thus, education may be related to the capability of buying artificial milk. Therefore, those who were more educated fed their babies infant formula.

Women's prior knowledge regarding giving colostrum and exclusive breastfeeding for the first five months resulted in better breastfeeding practice. It may be noted that delivery by medically trained personnel was found to be positively related to exclusive breastfeeding, but not to giving colostrum. However this may not be important as the proportion of deliveries by medically trained personnel was too small in this study as is also true for Bangladesh as a whole.

The results of this study show that knowledge and practice regarding proper breastfeeding is poor in rural Bangladesh. The major concerns are: not giving colostrum, delayed initiation of breastfeeding, giving pre-lacteal feeds, and inadequate duration of exclusive breastfeeding. Findings of this study suggest that it is important to raise awareness among mothers, especially in rural Bangladesh, regarding proper breastfeeding practice, including giving colostrum. It appears that the national breastfeeding programme has concentrated its activities more in the urban hospitals, and training doctors and nurses. Involvement of the grassroots workers at the community level is important. It is, thus, suggested that the national programme should further strengthen its activities for addressing the needs of the community, especially in the rural areas of the country.

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MCH-FP Extension Work at the Centre

An important lesson learned from the Matlab MCH-FP project is that a high CPR is attainable in a poor socioeconomic setting. In 1982, the MCH-FP Extension Project (Rural) with funding from USAID began to examine in rural areas how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first year, the Extension Project set out to replicate workplans, and record-keeping and supervision systems, within the resource constraints of the government programme.

During 1986-89, the Centre helped the national programme to plan and implement recruitment and training, and ensure the integrity of the hiring process for an effective expansion of the work force of governmental Family Welfare Assistants. Other successful programme strategies scaled up or in the process of being scaled up to the national programme include doorstep delivery of injectable contraceptives, management action to improve quality of care, management information systems, and strategies to deal with problems encountered in collaborative work with local area family planning officials. In 1994, this project started family planning initiatives in Chittagong, the lowest performing division in the country.

The Centre and USAID, in consultation with the government through the Project's National Steering Committees, concluded an agreement for new rural and urban Extension Projects for the period 1993-97. Salient features include: improving management, quality of care and sustainability of the MCH-FP programmes, and providing technical assistance to GoB and NGO partners. In 1994, the Centre began an MCH-FP Extension Project (Urban) in Dhaka (based on its decade long experience in urban health) to provide a coordinated, cost-effective and replicable system of delivering MCH-FP services for Dhaka urban population. This important event marked an expansion of the Centre's capacity to test interventions in both urban and rural settings. The urban and rural extension projects have both generated a wealth of research data and published papers in international scientific journals.

In August 1997 the Centre established the Operations Research Project (ORP) by merging the two former MCH-FP Extension Projects. The ORP research agenda is focussed on increasing the availability and use of the high impact services included in the national Essential Services Package (ESP). In this context, ORP has begun to work with partners in government and NGOs on interventions seeking to increase coverage in low performing areas and among underserved groups, improve quality, strengthen support systems, enhance financial sustainability and involve t he commercial sector.

ORP has also established appropriate linkages with service delivery partners to ensure that research findings are promptly used to assist policy formulation and improve programme performance.

The Division

The Health and Population Extension Division (HPED) has the primary mandate to conduct operations research, to disseminate research findings to program managers and policy makers and to provide technical assistance to GoB and NGOs in the process of scaling-up research findings to strengthen the national health and family planning programmes.

The Division has a long history of solid accomplishments in applied research which focuses on the application of simple, effective, appropriate and accessible health and family planning technologies to improve the health and well-being of underserved and population-in-need. There are various projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures. These cut across several Divisions and disciplines in the Centre. The Operation Research Project (ORP) is the result of merging the former MCH-FP Extension Project (Rural) and MCH-FP Extension Project (Urban). These projects built up a considerable body of research and constituted the established operations research element for child and reproductive health in the Centre. Together with the Environmental Health and Epidemic Control Programmes, the ORP provides the Division with a strong group of diverse expertise and disciplines to significantly consolidate and expand its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research. For one, the public health research activities of these Projects are focused on improving programme performance which has policy implications at the national level and lessons for the international audience also. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructure, dissemination of research findings to the highest levels of policy makers as well as recipients of the services at the community level; application of research findings to improve program performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national program at Thana, Ward, District and Zonal levels both in the urban and rural settings.

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CENTRE
FOR HEALTH AND POPULATION RESEARCH

Health and Population Extension Division (HPED)
International Centre for Diarrhoeal Disease Research, Bangladesh
GPO Box 128, Dhaka 1000, Bangladesh
Telephone: 871751-871760 (10 lines)
Fax: 880-2-871568 and 880-2-883116