PRE-LACTEAL FEEDING PRACTICES IN A RURAL AREA OF BANGLADESH

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Executive summary

This study aims to describe the nature and extent of pre-lacteal fluid and colostrum feeding practices in a rural community of Bangladesh and also to investigate the mother's level of knowledge in relation to hygiene and safety related to the feeding practices. The data were obtained from 473 mothers with infants aged less than 24 months from 14 villages of Matlab thana from April to August 1995. A total of 2076 households were visited to obtain the above number of the eligible mothers. The households were categorized into two groups based on their socioeconomic status, i.e., BRAC eligible or poor and non-eligible or non-poor.

The survey revealed that about 93% of the infants received pre-lacteal liquid and only 7% received breast milk as the first liquid. Honey or honey with water was the most frequently given pre-lacteal liquid followed by mustard oil, which they believed, would clean the baby's mouth. Surprisingly, around 12% of the infants did not receive any nutritious liquid except for plain water until 24 hours after birth. About 35 and 44% of the mothers in BRAC eligible and non-eligible households respectively mentioned that giving honey before initiation of breast feeding was their tradition. Among the BRAC eligible households, 22% of the mothers stated that insufficient milk secretion immediately after delivery was the reason to give pre-lacteal liquid. A majority of the mothers stated that finger, in most instances without washing, was used to introduce the liquid in the baby's mouth. Frequency of finger use was higher among the BRAC eligible compare to non-eligible households. Grand mothers were the initiators of pre-lacteal liquid in about 47% instances followed by the birth attendants, 25%. Sixty two percent of the infants among BRAC eligible and 76% among the non-eligible households received colostrum. Mothers from both BRAC eligible and non- eligible households seemed to have adequate knowledge about colostrum feeding in terms of its beneficial effects on infants' health. They mentioned that colostrum was a nutritious liquid, which provided required nutrients and protected the babies against infections.

In conclusion, pre-lacteal feeding was highly prevalent in the villages of Matlab thana, which perhaps a common feature in other rural areas of Bangladesh. In most of the cases,

women's lives, increased income/livelihood security, fertility control, increased nutritional status, decreased morbidity and decreased mortality (7). Improved nutritional status was identified as one of the important components of human well-being.

OBJECTIVE

The objective of this study is to describe the nature and extent of pre-lacteal and colostrum feeding practices in a rural area of Bangladesh. The study also investigates the mother's level of knowledge in relation to hygiene and safety related to pre-lacteal feeding practices.

HYPOTHESIS

The assumption was that BRAC's rural development programmes would improve the health and nutritional status of the household members through involving them in the development efforts. Programme inputs such as credit, skill training, issue-based meetings and Non Formal Primary Education (NFPE) are expected to increase knowledge on health, food intake and child care, which are considered as the immediate determinants of nutrition. The Essential Health Care (EHC) Programme incorporated into the Rural Development Programme (RDP) provides health and hygiene related information and services to the families' doorstep. It is also expected that as a result of all the interventions, the prevalence of pre-lacteal and unhygienic feeding practices would decrease over time among the programme participating households.

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METHEDOLOGY

Study design

This is a cross-sectional study. The study is based on analysis of the data collected under the BRAC-ICDDR,B joint research project in Matlab from April through August 1995 The details of the study design of the BRAC-ICDDR,B joint research project is mentioned elsewhere (8).

Study area

Data were collected from 14 villages, 9 located outside, 4 inside and 1 both sides of the embankment of Matlab thana. The embankment, which is called Meghna-Dhonagoda project, was constructed for the purpose of flood control that divided the study area in two different ecological locations. The villages were selected randomly from a list of 60 villages in where the baseline survey of the BRAC-ICDDR,B joint research project was conducted in 1992 (8). These villages are also covered by the Demographic Surveillance System (DSS) of ICDDR,B (9).

Selection of Households

It was the aim of the BRAC-ICDDR,B joint research project to conduct nutrition survey on 500 households from each of the four cells. Thus, a total of 2000 households were planned to be interviewed. The sample size was calculated based on the prevalence of nutritional indicators, i.e., prevalence of underweight, wasting and stunting among the children aged less than five years; and prevalence of per capita daily calorie inadequacy in the rural area of Bangladesh. The highest required sample size to detect any of the above mentioned outcome indicators with a 95% confidence interval was taken into consideration in calculating the sample size. The census technique was employed in selecting the households from each selected village and the households were interviewed serially until the required number of mothers were met for each cell. Thus, a total of 2,060 households were interviewed in 14 villages. Among the households surveyed, a total of 473 mothers with the youngest child aged less than 2 years were available and included in the study.

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Data Collection

Each selected mother was interviewed using a structured questionnaire to collect information about pre-lacteal and breast feeding practices of the child. Other elderly female family members and neighbours were encouraged to participate during the interview to help mothers in re-calling the fact and also to enhance reliability of the information given. The households were categorised into two groups, such as BRAC eligible[1] or poor and non-eligible or non-poor households.

Data Management

Computerised data bases were created to compile information and to facilitate statistical analysis. A coding manual was prepared and used by professional coders to put numerical codes for the open-ended answers at the BRAC head office in Dhaka. A user friendly computer programme was developed to identify data inconsistencies. Cross matching using key variables was performed, which was very important in linking different database files and carrying out analyses.

Quality Control

A variety of measures were employed to ensure quality of the data. To assure accuracy, 10% of the data were re-collected within one week time by the field supervisors. Pre-testing allowed the researchers to identify questions, which the respondents did not understand and might yield inaccurate information. The sensitivity of the required information was carefully evaluated and the questions were formed accordingly. Four temporary research field stations, one in each of the sampling cells, were established. Two stations were located in Uddomdi and Narayanpur villages outside the embankment and another two in Gourangabazar and Shahabazkandi villages inside the embankment. Qualified interviewers were grouped in the four base teams to carry out the survey. Senior members of the research project, based in head office, provided training to the field investigators and refresher trainings were held every month. There were supervisors for all field stations who ensured the quality of field work and randomly cross-checked

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[1]Households with less than 0.5 acres of land and the principal earner sold at least 100 days manual labour in the preceding year.

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the questionnaires. All completed questionnaires were checked and cross-checked at the end of each day to minimize the error and inconsistencies. Questionnaires with incorrect, incomplete or inconsistent answers were sent back to the field for correction the next day.

FINDINGS

A total of 473 mothers with 256 male and 217 female children were included in this study. The age of the children ranged from 1 to 24 months, with an average of 17 months. The distribution of the children by age and sex is shown in Table1. The age was determined from date of birth records of the DSS, ICDDR,B and age of each child was calculated based on the date of birth and the date of interview. Male-female ratio was almost similar among BRAC eligible and non-eligible households and about 50% of the children among both types of the households were more than 12 months old.

Table 1. Distribution of the study children by sex and age

Sex	BRAC eligible (n=270) % (n)	Non-eligible (n=203) % (n)
Male	53 (143)	56 (112)
Female	47 (127)	45 (90)
Age in month		
0 - 6	20 (53)	22 (44)
7 - 12	35 (93)	31 (62)
13 - 24	46 (124)	48 (97)

Table 2. Shows that most of the children (93%) were given some types of pre-lacteal liquid before initiation of breast milk in both types of the households. There was no significant association between the prevalence of pre-lacteal feeding and BRAC eligibility (p>0.05).

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Table 2. Proportion of infants who received pre-lacteal liquid by BRAC membership eligibility

Received pre-lacteal liquid	BRAC eligible % (n=269)	Non-eligible % (n=202)	p-value
Yes	94	92	
No	6	8	0.203

Mothers were asked if any liquid other than breast milk was given to the newborn. Table 3 shows that honey alone or mixed with water was the most frequently given pre-lacteal liquid. Among the BRAC eligible, 53% and among the non-eligible households, 60% of the infants received honey or honey with water, followed by 35 and 26% infants who were given mustard oil, respectively. There was no significant association between BRAC eligibility and types of pre-lacteal liquids given (p>0.05).

Table 3. Types of pre-lacteal liquid given to the infant by BRAC membership eligibility

Types of pre-lacteal liquid	BRAC eligible % (n=269)	Non-eligible % (n=202)	p-value
Honey/honey with water	53	60	
Water with sugar	3	5	
Mustard oil	35	26	
Plain water	9	8	0.173

Mothers were asked about the reasons for giving pre-lacteal liquid. Table 4 shows that highest proportion of the mothers among BRAC eligible and non-eligible households mentioned no milk secretion immediately after delivery as a reason to provide pre-lacteal liquids. A sizable proportion of mothers from BRAC eligible and non-eligible households stated that giving honey or honey with water to a newborn immediately after birth was their tradition. Interestingly about one fifth of the mothers among both types of the

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households believed that pre-lacteal liquid would prevent the newborns from crying. About 16% of the mothers in both types of the households used mustard oil as a pre-lacteal liquid which they believed would clean a newborn's mouth. There was a significant association between BRAC eligibility and the reasons for giving pre-lacteal liquids (p<0.001).

Table 4. Reasons for giving pre-lacteal liquid by BRAC membership eligibility

Reasons for giving pre-lacteal liquid	BRAC eligible % (n=245)	Non-eligible % (n=189)	p-value
Giving honey is our tradition	19 (47)	34 (64)	
Child becomes normal and quiet	21 (51)	23 (44)	
No milk secretion immediately after delivery	44 (108)	27 (50)	
Mustard oil is used to clear new born's oral cavity	16 (39)	16 (31)	0.000

Mothers were asked to re-call how the baby was introduced the pre-lacteal fluid. In majority of the instances, fingers were found to be the major means to introduce the pre-lacteal fluids followed by spoons, bottles and droppers (Table 5). A higher proportion of BRAC eligible households used finger (86%) to initiate pre-lacteal liquid compared to the non-eligible households (76%) (p<0.05). On the other hand, use of a spoon to initiate pre-lacteal liquid was higher among the non-eligible (11%) compared to BRAC eligible (6%) households. There was significant association between BRAC eligibility and type of instruments used to initiate pre-lacteal liquid (p<0.05).

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Table 5 : Instruments to initiate pre-lacteal liquid by BRAC membership eligibility

Instruments	BRAC eligible % (n=247)	Non-eligible % (n=189)	p-value
Finger	86 (212)	76 (144)	
Spoon	6 (14)	11 (21)	
Bottle using	7 (16)	8 (15)	
Dropper	2 (5)	5 (9)	0.046

The person who initiated the pre-lacteal liquid to a newborn was defined as the initiator. Table 6 shows that in most instances, grand mothers (BRAC eligible 41% and non-eligible 44%) were the major initiators of pre-lacteal liquids. About one fourth of the children among both types of the households were given the liquid by midwifes (traditional birth attendant), i.e., 25%. There was no significant association between BRAC eligibility and initiators of pre-lacteal liquid (p>0.05).

Table 6. Initiator of pre-lacteal liquid by BRAC eligibility

Initiators of pre-lacteal liquid	BRAC eligible % (n)	Non-eligible % (n)	p-value
Grand mother	41 (102)	44 (84)	
Mid-wife and *dai* (traditional birth attendant)	25 (61)	24 (46)	
Mother herself	19 (47)	15 (28)	
Father and neighbour	15 (38)	16 (31)	0.699

A majority of the infants had received colostrum. The proportion of infants who received colostrum was higher among non-eligible households (76%) compared to BRAC eligible households (60%) (Table 7). The prevalence of colostrum feeding was significantly associated with BRAC eligibility (p<0.001).

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Table 7. Proportion of receiving colostrum by BRAC eligibility

Received colostrum	BRAC eligibler % (n)	Non-eligible % (n)	p-value
Yes	60 (161)	76 (151)	
No	40 (106)	24 (48)	0.000

Different reasons for giving colostrum to infants by BRAC eligibility are shown in Table 8. About 24% of the mothers in BRAC eligible households stated the protective function of colostrum as a reason to provide it to a newborn compared to 17% among the non-member households. Majority of the respondents knew that colostrum was valuable and nutritious to an infant. There was no statistical association between BRAC eligibility and reasons for giving colostrum to a newborn (p>0.05).

Table 8. Reasons for giving colostrum by BRAC membership eligibility.

Reasons for giving colostrum	BRAC eligible % (n)	Non-eligible % (n)	p-value
Colostrum is the nutritious food for baby	28 (32)	29 (32)	
Colostrum protects the baby from diseases	24 (27)	17 (18)	
Doctor suggests giving colostrum for better health	21 (24)	17 (19)	
Colostrum is good for the baby	28 (32)	37 (40)	0.375

Table 9 presents bi-variate relationships between pre-lacteal feeding practice and some household level socioeconomic characteristics. Pre-lacteal feeding practice had significant association with BRAC eligibility, literacy of household head and occupation of the main earner (p<0.01). Household land holding was also associated with pre-lacteal feeding practices (p<0.10). Sex of household head, family size, literacy of child's mother and monthly food expenditure were not associated with the prevalence of pre-lacteal feeding (p>0.10).

Table 9. Prevalence of pre-lacteal feeding practice by household characteristics.

Characteristics	n	Prevalence of pre-lacteal feeding (%)	p-value
BRAC eligibility			
BRAC eligible	254	36	
Non-eligible	186	64	0.003
Sex of household head			
Male	373	85	
Female	67	15	0.486
Family size			
Small (2-3)	42	10	
Medium (4-6)	234	53	
Large (6+)	162	37	0.126
Literacy of household head			
Illiterate	241	62	
Literate (some education)	145	38	0.009
Literacy of child's mother			
Illiterate	225	59	
Literate (some education)	155	41	0.131
Occupation of main earner			
Manual labour	260	67	
Non-manual labour	126	33	0.013
Land holding (decimal)			
<50	228	63	
50+	132	37	0.086
Monthly household food expenditure (Tk)			
<500	21	96	
500+	366	93	0.553

Factors affecting pre-lacteal feeding practices

Logistic regression analysis was performed to identify the socioeconomic and demographic determinants of pre-lacteal feeding practices. A total of eight explanatory variables were considered in the analysis such as, household membership status, sex of household head, family size, literacy of household head, literacy of child's mother, occupation of household head, household land holding, household total food expenditure (monthly). The classification of the dependent and the explanatory variables are shown in Appendix 2.

Controlling for all 8 selected socioeconomic characteristics, BRAC eligibility, literacy and occupation of household head had significant association with pre-lacteal feeding practice (p<0.05). The prevalence of pre-lacteal feeding practice was found less among BRAC eligible compared to the non-eligible households. Prevalence of pre-lacteal feeding practice was higher among households with illiterate compared to literate heads and also was higher among manual labourer compared to non-manual labourer households (p<0.05).

Table 10. Determinants of pre-lacteal feeding practices in Matlab thana

Socioeconomic factors	Odds ratio	p value
Membership status		
Non-eligible	RC	
BRAC eligible	0.25	0.002
Occupation of household head		
Non-manual labour	RC	
Manual labour	2.28	0.049
Literacy of household head		
Literate	RC	
Illiterate	2.59	0.037
Constant	-1.289	0.322
Model χ^2 21.68		

Discussion

It was found that initiation of breast feeding is delayed in rural community of Bangladesh and many mothers put their infants to breast after 1-2 days of delivery. They thought that colostrum is harmful for the infant and many of them did not have milk flow during the first 1 to 2 days after delivery. This action reduces the infants hunger, delays the onset of breast feeding, causes breast refusal and reduces the suckling ability of the child (10). A study done in the rural area of Bangladesh, exclusive breast feeding rate was 20% for 5 months and giving water to babies besides breast milk is common (11).

It was observed that almost all of the children 93% (440) had received some types of pre-lacteal liquids. It has been found that fifty to hundred percent mothers discard colostrum, the valuable first milk. Only a few (7%) had received breast milk as a first liquid. Some studies have shown that practices of giving honey or honey with water, sugar water, *misry* or even oil are universal in the rural communities of Bangladesh (2). A high prevalence of pre-lacteal liquid is also reported in studies done in India (12-15). Findings of this study indicated that the main reason for giving pre-lacteal liquid is no or very little milk secretion immediately after delivery and the mothers could not produce enough milk for the baby (16). Many of them traditionally introduced honey or honey mixed with water to the baby as a pre-lacteal liquid. In most cases, grand mothers initiated the feeding followed by *dai* (traditional birth attendant) and the mother herself. Most of the times pre-lacteal liquids were given to the infant in an unhealthy and unhygienic way. The finger, either washed or not, was used to feed infants in most of the cases and a spoon was used in a few cases.

This study identified two socioeconomic factors as the determinants of pre-lacteal feeding practices. These were economic status as expressed by BRAC membership eligibility and occupation of the household head. Membership status was the most important factor, and occupation of the household head was the second important factor affecting pre-lacteal feeding practices.

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Women in Bangladesh, particularly in rural households, are in urgent need of knowledge and awareness about infant feeding practices and antenatal care.. There is lack both in knowledge and practice regarding proper breast feeding. If they can be motivated to practice proper breast feeding, prevalence of pre-lacteal feeding may be reduced.

Conclusion

In conclusion, it may be stated that -

- pre-lacteal feeding is highly prevalent in Matlab.

- pre-lacteal liquid is given in most cases in an unhygienic way, which eventually may introduce infection to the new-born.

- It is necessary to create awareness about child feeding practices especially colostrum and breast feeding practice among the mothers, grand mothers and midwives, who are the main people able to reduce early infections and promote better nutrition.

Recommendation

- In most of the cases the grand mothers and mid-wives were the initiator of the pre-lacteal feeding. Grandmothers and mid-wives should therefore be the target of any nutrition education programme to promote hygienic feeding practices and also to reduce the prevalence of pre-lacteal feeding.

- Existing nutrition education efforts should emphasize the importance of exclusive breast feeding and the harmful effects of pre-lacteal liquids.

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Appendix 1: General Characteristics of the households

Characteristics	BRAC member %	Non-member %	All %
Sex of Household head			
Male	87	83	85
Female	13	17	15
N	270	203	473
Family size			
Small (2-3)	12	7	10
medium (4-6)	62	45	55
Large (6+)	27	48	36
N	268	203	471
Literacy of household head			
Literate	25	59	39
Illiterate	75	41	61
N	248	169	417
Literacy of the mother			
Literate	28	63	42
Illiterate	72	37	58
N	245	165	410
Occupation of Household head			
Manual labour	69	62	66
Non-manual labour	31	38	34
N	248	169	417
Land holding (Decimal)			
< 50	83	39	65
>50	17	61	35
N	223	163	386
Food expenditure (monthly) (Taka)			
<500	8	1	5
>500	92	99	95
N	249	168	417

Appendix 2. Measurement of the dependent and the explanatory variables used in logistic regression analysis

Variables	Measurement
Dependent variable	
Pre-lacteal feeding	Yes =1, No =0
Explanatory variable	
Birth order of the child	1st-------9th
Sex of the household head	Male =1, Female =0
Family size	1------12
Literacy level of the household head	Literate =1, Illiterate =0,
Literacy level of child's mother	Literate =1, Illiterate =0,
Household land holding	<50 dc =0, >50 dc =1,
Household food expenditure (monthly)	<500 Tk.=0, >500 Tk.=1,
Occupation of the household head	Manual labour =0, Non-manual labour =1,
Membership status	BRAC member =1, Non-member =0,