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Infant and Child Feeding Practices in Bangladesh: Evidence from Bangladesh Demographic and Health Survey, 1993-94

Introduction

KNOWLEDGE of feeding pattern at infancy and beyond has been substantially expanded in developing countries in recent years as a result of the increased use of sample surveys to monitor the situation (Truong *et al.*, 1995). In particular, in Bangladesh, the Bangladesh Fertility Survey, 1975 (BFS, 1975), and BFS, 1989, incorporated questions about breastfeeding. The Bangladesh Demographic and Health Survey 1993-94 (BDHS, 1993-94) has continued this tradition and also added additional questions about other aspects of infant and child feeding to its core questionnaire.

This paper explores the various aspects of breastfeeding using BDHS, the most recent nationally representative survey in Bangladesh. As some aspects of breastfeeding were exclusively focused on the last birth, the study population consists of the most recent births of the period 1990-1994.

This paper extends previous research works in a number of ways. First, it utilizes the most recent and best available data and thus provides the most current information. Second, the other aspects of breastfeeding, like the timing of initiation of breastmilk,

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frequency of breastfeeding at day and night, status of breastfeeding—whether the child is exclusively breastfed, or breastfed with only water as supplement, types of supplementary food—which are not explored in other studies, have been considered in this study.

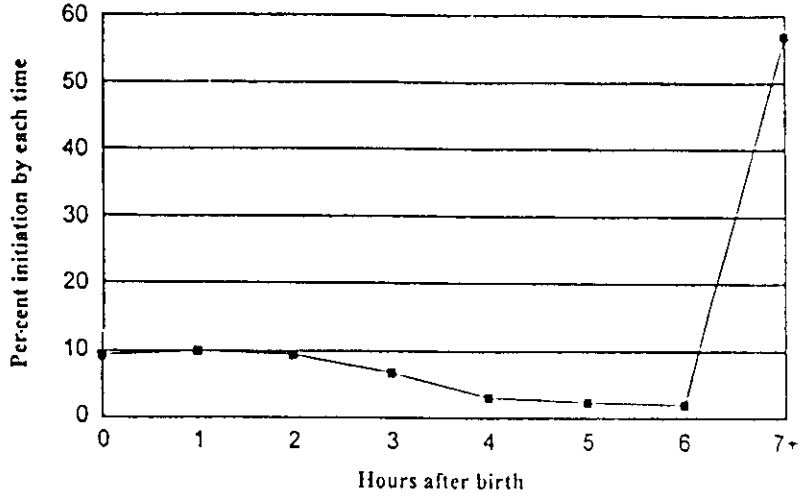
Data and Methodology

The data on which the present study is based have been extracted from the Bangladesh Demographic and Health Survey, which collected information during the period November 1993 to March 1994 as part of the International Demographic and Health Survey projects. A two-stage probability sample of 9,640 ever-married women below age 50 were interviewed. Information on the duration of breast feeding was collected from the evermarried women with at least one live birth in the last four years preceding the interview. Out of the total 9,640 respondents, 4,538 women reported having at least one live birth in the period 1990-94. Since the information gathered on other aspects of breast feeding was on the basis of mother's report to most recent birth, our analysis is restricted to 4,538 births and every child is taken as unit of analysis. Of the 4,538 mothers, about 6 percent did not breastfeed at all, about 73 per cent was currently breastfeeding and about 21 percent children were already weaned. Details of the survey methodology and sample as well as the principal findings have been published in a report (Mitra *et al.,* 1994).

Initiation of Breastmilk

The BDHS inquired with respect to the most recent birth as to how long after the birth the child was first put to the breast milk. The question carries significant weight in respect of policy implications, since colostrom, the early milk which provides necessary nutrients and immunological protein for newborn, is present in the breast milk only during the first few days after child birth (Institute for International Studies in Family Planning, 1990).

The mean timing of the baby being put to breast is 3.6 hours. Graph 1 shows that about nine percent of the children started breastfeeding immediately after birth. Only about 43 percent of the children was put to the breastmilk within the first six hours (timely initiation) of birth. About 57 percent of the children was put to the breastmilk for the first time after the first six hours (late initiation). Initiation of breastmilk after 48 hours (2 days) happened in about 46 percent of the cases (result not shown).



Graph 1: Timing of initiation of breastmilk for the most recent birth, BDHS 1993-94

Factors Affecting the Initiation of Breastmilk

Place of residence does not have any significant effect in the early resumption of breastfeeding. Percentage of early initiation between rural and urban children is slightly different. Early initiation is much higher among the children whose mothers have at least secondary level of education. About 48 percent of the children whose mothers have at least six years of schooling exposure started breastfeeding early compared to 42 percent of no schooling and primary educated groups. Early initiation is more common among the older women than their younger counterpart. Table 1 shows that about 42 percent children of adolescent mothers (age 15-19) started breastfeeding early compared to 45 percent children whose mothers are 25 years and above and the finding is statistically significant. Birth order appears to be a significant factor that affects early resumption of breast milk. Among the children comprising of the third or higher birth order, 45 percent had experienced early initiation compared to 44 percent of the second child and 39 percent of the first child in the family.

A significant difference in initiation of breast milk between male and female child is observed. Early initiation is higher among the male children. About 45 percent

TABLE 1: TIMING OF INITIATION OF BREASTMILK BY SELECTED SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS, BASED ON THE MOST RECENT BIRTH, BDHS, 1993-94

Characteristics	*Early* (< = 6 hours)	*Late (*> 6 hours)	*Total*
Place of residence*			
rural	42.90	57.10	3646
urban	44.66	55.34	562
Education of mother**			
no schooling	42.27	57.73	2342
primary	42.17	57.83	1207
secondary or above	47.95	52.05	659
Age of mother at birth**			
15-19	41.78	58.22	1058
20-24	41.70	58.30	1463
25+	45.30	54.70	1687
Birth order**			
1	38.85	61.15	1009
2	43.82	56.18	938
3	44.99	55.02	729
4+	44.68	55.35	1532
Sex**			
male	44.86	55.14	2131
female	41.86	58.64	2077
Place of delivery*			
home	43.12	56.88	4035
elsewhere	43.35	56.65	173
Religion*			
Muslim	43.20	56.80	3736
Non-Muslim	42.58	57.42	472
Number of Antenatal visits***			
0	41.77	58.23	3043
f-2	44.81	55.19	665
3	46.67	53.33	255
4+	51.84	48.16	245
Wanted pregnancy of the last child*			
Yes	43.78	56.22	2821
Not that time	42.15	57.85	790
Not at all	41.37	58.63	597

*p > O.1, **P > 0.05,***p < 0.01

of the male children was put to breastmilk early compared to 42 percent of the female children (Table 1). No statistically significant difference is observed between initiation of breast milk and place of delivery. Religion also does notplay a significant role in the early initiation. A strong positive association is observed between early initiation and the number of antenatal visits. More than half of the children whose mothers had received at least four antenatal checkup had started early initiation compared to about 41 percent of the children whose mothers did not receive any antenatal care and to about 45 percent of the group whose mothers received one to. two antenatal cares. Desirability of the last pregnancy also does not have a significant effect on the initiation of breastmilk (Table 1).

Duration of Breastfeeding

The total duration of breastfeeding is the combination of full and partial breast-feeding. For heavily censored data, the product-limit estimate (PL) is used to find the mean duration of breastfeeding. The PL estimate of mean duration of breastfeeding for the last child (including dead children) is about 34 months (Table 2). The advantage of life table technique is that it permits full utilization of the information on whether the child was ever breastfed, whether the child is currently

TABLE 2: BREASTFEEDING INDICATORS BASED ON THE MOST RECENT BIRTH, BDHS, 1993-94

Breastfeeding indicator	*National*
Mean duration (in months)	34.40
Percentage never breastfeeding	6.03
Percentage breastfeeding at least	
3 months	87.38
6 months	78.57
9 months	71.20
12 months	65.86

being breastfed and at what age the child died in case he/she was a breastfed child. The estimate would have been longer if it was made for all women having at least one child and if the history of breastfeeding would be based on completed data. The mean duration of breastfeeding found by Mannan and Islam (1995) in their study using 1989 BFS, is 28.2 months (considering all surviving children born in the past four years before the survey). Ferry and Smith (1983) found this to be

28.9 months. Huffman and others (1980) found the mean duration for surviving children to be 32 months. Table 2 also presents a series of breastfeeding indicators. The survey reveals that for the most recent birth about 6 percent of them was never breastfed, over four-fifths (87%) were breastfed for at least 3 months, over three-fourths (78%) were breastfed for at least 6 months and about two-thirds (65.86%) were breastfed for at least one year.

Frequency of Breastfeeding

The physiological process of breastmilk production and output is dependent on the suckling process including its frequency (Sandra *et al.*, 1984). The BDHS collected information on the frequency of breastfeeding from the mothers who were currently breastfeeding. Two questions were asked in this regard: the first referred to the number of times the child was breastfed during the previous night between sunset and sunrise; the second was about the number of times the child was fed during the day light hours.

The mean frequency of breastfeeding at day time is 4.04 and that at night time is 3.15. Table 3 indicates that Bangladeshi children in general are breastfed quite frequently. More than half of the children were breastfed six times or more during the previous day. Even, for the children aged 13 months and older, at least six times feeding during the pervious day is also quite common. Feeding practice of six times or more at previous night is also common among the children aged 13 to 16 months

TABLE 3: PERCENTAGE DISTRIBUTION OF CHILDREN ACCORDING TO THE FREQUENCY OF BREASTFEEDING IN PREVIOUS DAY AND BY AGE BDHS, 1993-94

Frequency of breastfeeding	*Age of the child* in months (%)					*Total*
	(0-4)	*(5-8)*	*(9-12)*	*(13-16}*	*(17+)*	
0 - 1	1.17	1.33	0.76	1.30	7,27	4.07
2	2.14	2.13	1.02	4.34	11.10	6.59
3	4.47	5.05	5.60	6.94	13.35	9.25
4	4.86	5.32	6.87	10.41	12.92	9.76
5	7.98	13.83	13.49	14.10	12.98	12.52
6+	79.38	72,34	72,26	62.91	42.38	57.80
Total	514	376	393	461	1595	3339

(Table 4). Although frequent feeding (6+) during the last day or night declines as the child ages (excepting the night feeding for the age group 13-16 months), however, a clear pattern of association between age of the child and frequency of breastfeeding is not apparent with respect to day-time and night-time feeding. Sex differentials in the frequency of breatfeeding at day and night is not substantial (results not shown).

TABLE 4: PERCENTAGE DISTRIBUTION OF THE CHILDREN ACCORDING TO THE FREQUENCY OF BREASTFEEDING AT PREVIOUS NIGHT AND BY AGE, BDHS, 1993-94

Frequency of breastfeeding	*Age of tlie child* in months (%)					*Total*
	(0-4)	*(5-8)*	*(9-12)*	*(13-16)*	*(17+)*	
0 - 1	1.36	2.13	2.29	2.39	6.83	4.31
2	5.84	5.59	6.87	7.16	18.81	12.31
3	23.35	17.82	20.10	26.46	26.90	24.47
4	15.56	22.87	23.16	16.05	15.86	17.46
5	13.04	18.09	17.81	17.04	11.85	14.17
6+	40.86	33.51	29.77	30.80	19.81	27.28
Total	514	376	393	461	1595	3339

Current Status of Breastfeeding

In BDHS, the women who were breastfeeding their children during the survey time were asked whether the child was exclusively breastfed, or the child was almost exclusively breastfed, or the child was on supplementation. In the literature, exclusive breastfeeding or full breastfeeding is defined differently in different studies. The most commonly used definition is the consumption of breastmilk as the only nutrient source except for water. Some include juice as well in full breastfeeding (Perez *etal.,* 1972). In this study, the children who were completely dependent on breastmilk, and did not even receive plain water, are assumed to be exclusively breastfed children. 'Almost exclusive' category consists of the children who were receiving only plain water other than breastmilk at the time of the survey.

Table 5 shows that the percentage of babies who were exclusively breastfed for the first four months is about 50 percent. In India and Pakistan, the corresponding figures are 51 per cent and 25 percent respectively (UNICEF, 1996). Again, 9 percent of the children aged 13 months and beyond was exclusively dependent on breastmilk, while about 35 percent started early supplementation (within the first four months).

Again, 12 percent of the children who already completed one year were given only plain water along with breastmilk.

TABLE 5: THE PERCENTAGE DISTRIBUTION OF CURRENT STATUS OF THE LAST SURVIVING CHILDREN BY AGE, BDHS, 1993-94

Current status	*Age of the child* in months (%)					*Total*
	(0-4)	*(5-8)*	*(9-12)*	*(13-16)*	*(i7+)*	
Exclusive breastfeeding	50.39	18.62	7.38	6.51	2.96	13.03
Almost exclusive breastfeeding	14.84	14.36	13.49	7.81	4.65	8.80
Supplementation	34.77	67.02	79.13	85.68	92.39	78.7
Total	512	376	393	461	1589	3331

Note: Total observations in not equal to 3339 due to missing value.

Types of Supplementary Food

Mothers in the BDHS who indicated that they were currently breastfeeding their children were asked what types of liquid or solid food they had given to their child other than breastmilk during the previous day or night. Such information is of importance because use of infant formula or other liquids may reduce the suckling stimulus for breastfeeding, thereby affecting the impact of breastfeeding on the suppression of ovulation (Chayovan *et al.*, 1990). In addition, the use of only plain water or sugar-added water can become a source of diarrhoea as in most rural areas of developing countries water supply is poor (Shahidullah, 1994). Moreover, use of bottles can result in bacterial contamination due to improper sterilization (Jelliffe and Jelliffe, 1978).

Table 6 shows that three-fourths of the children were given plain water other than breastmilk during the previous day or the night. About one-fourths and more than one-fourths were given infant formula and cow's milk respectively. More than half of the children were given solid or mushy food. In the youngest age group, cow's milk and infant formula were the most common food given other than water. Solid or mushy food (a mixture of rice, lentils and vegetables cooked together) was the least common food given. Providing bottle or infant formula is highest in the age group 5-8 months and the percentage declines as the age of the child increases. However, the percentage of children given cow's milk increases as the child ages. Overall, only a minority of breastfed children were provided with tea.

TABLE 6: PERCENTAGE GIVEN VARIOUS TYPE OF LIQUID OR SOLID FOOD BY AGE OF THE CHILD, AMONG CURRENTLY BREASTFEEDING CHILDREN, BDHS, 1993-94

Supplemental food given	*Age of the child* in months (%)					*Total*
	(0-4)	*(5-8)*	*(9-12)*	*(13-16)*	*(17+)*	
Plain water	21.79	58.78	79.39	86.33	91.79	75.08
Sugar water or honey	8.95	7.98	6.87	5.21	7.34	7.31
Juice	5.25	8.78	12.72	11.06	13.10	11.08
Tea	0.19	0.53	2.54	1.95	5.58	3.32
Bottle or infant formula	14.01	24.47	23.16	23.64	22.13	21.47
Cows milk	17.12	29.26	25.70	30.15	33.48	29.11
Other liquid	9.73	21.54	20.61	16.92	16.93	16.77
Meat	0.39	1.85	1.53	5.21	11.22	6.53
Solid or mushy food	1.17	21.02	49.62	64.21	77.49	54.27
Total	514	376	393	461	1589	3333

Note : Total Observation is not equal to 3339 due to missing value. Each child might given more than one food.

Discussion

Before discussing the findings it is important to focus on the quality of data. The retrospective collection of breastfeeding behaviour based on mothers' report always bristles with problems. First, the cessation of breastmilk is not like an event to recall by exact date, even if it is the case of most recent birth. As a result, concentration of response at a certain duration has always been observed (Lestheghe and Page, 1980). In the present data set, heaping is observed at the age 12, 18, and 24 months. Again, in respect of timing of initiation of breastmilk, a large number of responses are concentrated at 24,48 and 72 hours after birth. Second, it is always difficult to elicit accurate information on current status of breast feeding. For example, in most developing countries, particularly in Bangladesh 90 percent of births is delivered at home, and according to general custom, following the delivery, a few drops of honey diluted with water is given to the newbom. Sometimes, a few drops of mustard oil is given to help evacuate the meconium which is considered 'dirty' (Shameem, 1988). Even if the birth occurs in hospital and the initiation is not immediate (due to inability of the child to suckle or due to weakness of mother), plain water or sugarcube diluted with water is given to the newbom until the mother

is physically fit enough to feed the baby or the newborn is strong enough to suckle the nipple. As a result, there may be a chance of over estimation of proportion of exclusive breastfeeding children due to the distortion of reporting errors.

The study documents some findings, which have strong policy implications. Early initiation of breastmilk is not common in Bangladesh. More than half of the children were given breastmilk for the first time after the first six hours. Again, nearly half of the children were put to the breast after two days. This is in fact a matter of traditional belief that colostrum is not good for the health of the newborn (Institute of Nutrition and Food Science, 1977). Delaying the start of breastmilk may deprive the child of receiving colostrum that protects children against infection. The current breastfeeding promotion programmes at Government- and NGO-levels should emphasis the need for early initiation of breastmilk.

The study reveals that a higher percentage of children whose mothers have secondary level of education or above were given breastmilk early than the children whose mothers have primary level or no education. This reflects the importance of at least secondary level of education for women. The Government's recent introduction of incentives for the girls' (in rural areas) having at least six years of formal education will inspire the parents to let their daughters to continue schooling. Effective implementation of the scheme would raise the level of education of women. In this regard, adult literacy programmes to educate mothers should also be further intensified. A lower percentage of early initiation among the children of adolescent mothers than the children of older mothers (age 25 or higher) may be because of lack of awareness of the benefit of early initiation among the adolescent group. Women, particularly the adolescent mothers should be provided with all reliable information on breastfeeding. Here, health professionals can play a vital role by providing necessary knowledge to women, especially the teen-age mothers to initiate and maintain breastfeeding, at the time they go for antenatal checkup in hospitals or health centres. A strong positive association between early initiation and the number of antenatal checkup reflects that antenatal care at the pregnancy stage can influence the mother's view on the importance of early initiation for the child's health. The field workers as such should stress upon the need for at least one antenatal check up of all pregnant mothers. It is noteworthy in this regard that for all live births in the past four years preceding the survey, in about 72 percent of the cases no antenatal care is sought. Sex differentials in initiation of breastmilk indicates that girls are given less importance in the society. Although rural-urban differentials in breastfeeding initiation is not statistically significant but still a variation is observed. Absence of significant influence of place of delivery is partly because of changes in hospital practices in the past decade. Now a days infant formula is not encouraged in hospitals as well as in private clinics. Again, due to IEC activities

mothers are generally aware about initiation of breastfeeding after a short period of delivery.

With respect to the frequency of breastfeeding in previous day or evening, it has been found that mean frequency of breastfeeding at day-time is high than that of night feeding. The study also shows that the Bangladeshi children in general are breastfed for a long period of time. Since the introduction of supplemental food is quite early, so the long duration ofbreastmilk typically includes substantial periods of mixed feeding. An interesting finding of this study is that about 11 percent of the children who already crossed one year was completely dependent on breastfeeding. Again, half of the children in the youngest age group were given supplemental food with 15 percent provided with plain water only. Exclusive breastfeeding is important for the first few months but towards the middle of the first year of life, introduction of supplemental food is crucial for the child nutritional progress (UNICEF, 1996). Mass campaign for exclusive breastfeeding for the first four months may reduce the chance of the child being infected by diarrhoea. Health experts can also educate the mothers regarding the hazards of early supplementation, particularly the use cf only plain water as a substitute—which has no nutritional value, rather has the potentiality of contamination, and the benefit of exclusive breastfeeding at the early stage of the baby, when the mothers will go for child immunization vaccines or seek treatment for the sick child.

The study further reveals that although introduction of supplemental food is fairly early, solid food is introduced quite late. The vast majority of the children who received solid food during the previous day or night is nine months or older. The declining trend of bottle-feeding (with infant formula) with the age of the child reflects the practice of the mothers' intention of not making their children dependent on bottle. The pattern of increasing trend of providing cow's milk as the child grows gives an indication that mothers would rely on cow's milk as the child grows gives an indication that mothers would rely on cow's milk (along with solid), for weaning. Introduction of solid food or dependency on cow's milk after the first four months is an appropriate thought but introduction of bottle feeding at the early stage of the child is not an appropriate decision.

Conclusion

The study reveals that although breastfeeding is universal in Bangladesh and its duration is quite long however, certain aspects of breastfeeding are not practiced in effective manner. Late initiation of breastmilk, too early, and too late introduction of supplementation, and too early initiation of bottle feeding—these are the issues need to be addressed to bring a substantial improvement in child health. In this

regard, further research in infant and child feeding is essential. Although a small percentage of women, particularly in rural areas, are involved in formal sector outside home but their huge involvement in household activities make the young girls in the family to take care for their unweaned siblings. This practice inevitably will have its toll on the health of the infants. A survey designed focusing this issue would bring realities to light and would enable the policy makers to formulate future health strategies.

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