

## **Breastfeeding in Bangladesh: A Review of the Literature**

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### **Introduction**

The breastfeeding tradition in Bangladesh is without a doubt among the strongest in the world. Though many studies published in different journals around the world have documented various aspects of this phenomenon in various parts of the country, no comprehensive review could be found in the medical literature. While attempting to be comprehensive, the present review excludes studies which cannot be interpreted due to methodological problems. For example, breastfeeding rates among sick children presenting at hospitals or health centres provide little interpretable information about breastfeeding rates in the community as a whole<sup>1</sup>. Few data about the duration of exclusive breastfeeding are presented, since researchers rarely define it carefully enough, with the exception of the 1993-94 Demographic and Health Survey (DHS)<sup>2</sup>. However, no attempt was made to be comprehensive in reviewing data on the quantity or quality of milk produced. Under each

heading, studies are presented in approximately chronological order according to when the data were gathered. (Often up to a decade has passed between when the field work was done and the study published.)

### **Prevalence and duration**

Bangladesh is one of the few countries where most women have never abandoned the Innocenti Declaration's ideal of breastfeeding for "two years and beyond"<sup>3</sup>. Huffman, *et al.*<sup>4</sup> did a series of studies on breastfeeding in Matlab, Comilla, on infants born in 1974. Of 2500 infants, 22% died before one year of age and only 1% of the mothers of these infants gave some other reason than death for stopping breastfeeding<sup>a</sup>. Taking the age of death as the duration of breastfeeding for the infants who died, the median duration for the entire sample was 30 months. At two years of age, 91% of surviving children were still being breast fed.

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<sup>a</sup>5% of these women actually continued to breast feed another child after these deaths, usually an older sibling.

Over half the women who became pregnant continued breastfeeding into the third trimester of pregnancy. Khan<sup>5</sup> conducted a series of prospective studies from 1974-77 in another rural area in Comilla District. Breastfeeding was initiated by 100% of the sample of 401 children, and 85% were still breastfeeding at two years.

The Bangladesh Fertility Survey (BFS) in 1975/6 found that 98% of infants were breast fed and the mean duration was more than 27 months<sup>6</sup>. A large Matlab study ten years later, in 1985/6<sup>7</sup>, found a mean length of breastfeeding of 28.8 months in a project area where maternal and child health services had been introduced. Another study done during the same time period in the control area where these services had not been introduced found a median duration of breastfeeding of 30.5 months<sup>8</sup>. The 1993 Multiple Indicator Cluster Survey report<sup>9</sup> estimated that about 94% of infants in rural areas were breast fed for longer than one year.

The DHS<sup>2</sup> found that 96% of children less than three years old in Bangladesh were "ever breast fed." The mean duration of any breastfeeding was 28 months, based on current status data for children less than three years of age. This is comparable to the mean figures of 29

months and 30 months arrived at by Huq and Cleland<sup>10</sup> and Mitra *et al.*<sup>11</sup>, respectively. The DHS median was more than 36 months, since 60% of children 34-35 months old were still being breast fed. Comparing this to BFS done nearly twenty years earlier, it would appear that both prevalence and duration of breastfeeding are at basically the same level, that is, no decline is evident.

An evaluation of a large-scale vitamin A promotion project in Gaibandah District provided an opportunity to obtain "current status" estimates of breastfeeding rates among older children due to the large probability samples used there and in the nearby northern subdistricts of Bogra and Joypurhat Districts used as a control area (N> 2500 X 2 for each area). This project, run by the Worldview International Foundation (WIF), promoted increased breastfeeding up to two years of age, but there was some evidence that field workers discouraged breastfeeding after that age. There is good evidence that, even in older infants, sustained breastfeeding protects against vitamin A deficiency in Bangladesh<sup>12,13</sup>. Breastfeeding rates were found to increase in Gaibandah among children 1-2 years old from 85% in 1992 (after the WIF project had been ongoing for two years) to 97% in 1993 (as the

project ended). However, similar increases occurred in the non-project area, from 88% to 96%. Indeed, there was evidence that some of the mass media and other messages spread to nearby districts. There were similar increases in breastfeeding rates among children 2-3 years of age, but only small increases among those 3-4 years of age. In the project area, small decreases occurred in the percent breastfeeding among children 4-6 years old. Nevertheless, it was of interest to note that in both areas in 1992, about 10% of children aged 48-59 months were still breastfeeding and 2% of those 60-72 months old were still breastfeeding<sup>14</sup>.

Brown, *et al.*<sup>15</sup> studied diets of children who were 5-18 months old in two Matlab villages in 1978 and followed them for over one year. They measured breast milk intakes during 12-hour periods and extrapolated to 24 hour production (assuming based on a previous study that slightly more than half of the intake took place during the day time). They estimated that intakes were on average 632 g for those 5-12 months old (N=28), 563g at 12-17 months (N=48), 501g at 18-23 months (N=55) and 368g among those over 24 months of age (N=26). However, these data from test weighing were thought by the authors to under-

estimate true breast milk production by about 5%. Breast milk was the major source of all nutrients except iron for all age groups. Because girls received less supplementary food than boys, breast milk played a more important role in the diets of girls in the older groups. Even for the boys, the complementary foods provided were inadequate in amount and nutritional content, however.

### **The neonatal period**

Breastfeeding is rarely initiated immediately after birth, but is usually preceded by so-called prelacteal feeds. Huffman, *et al.*<sup>4</sup> cite a study by Lindenbaum from 1966 in Matlab<sup>16</sup> that found that mothers fed the newborn for the first 3-4 days on honey, mustard seed oil and diluted cow milk, all given on the tip of a finger. In their own study, breastfeeding was delayed beyond 24 hours for 59% of infants and beyond three days for 3%. Honey and mustard seed oil were continued through the early postpartum period for many of those who did begin to receive the breast on the first day.

In a national sample of 381 women, the Nutrition Survey of Rural Bangladesh<sup>17</sup> found that 71% of those to whom the question was applicable said they threw away colostrum. In 1982, Isherwood *et al.*<sup>18</sup> studied breastfeeding rates

among a probability sample of 200 families in a project area in northern Jamalpur District. All 253 children less than five years of age had been breast fed and 83% of mothers said they gave colostrum, but breastfeeding was not initiated on the day of birth for 43% of the children.

In a study of 760 infants in urban Dhaka, Muttalib *et al.*<sup>19</sup> found that only 5% gave the breast within 12 hours of birth among infants born in the clinic, and 26% did so among those born at home. Ullah, *et al.*<sup>20</sup> in a study of 500 infants, also found delayed initiation of breastfeeding in Dhaka, with 9% starting within six hours and another 11% starting between 6-24 hours. Honey was the first food given to 52% and sugar water to another 32%. Of those who received honey, it was given in the first two hours by 21%, at 2-4 hours by 44% and at 5-12 hours by 22%. Haque *et al.*<sup>21</sup> found that 78% of mothers in one rural area in Sunamganj District began breastfeeding within one hour of birth and another 13% within six hours.

An evaluation of the WIF vitamin A program in Lalmonirhat District in 1992<sup>22</sup> found that only 8% of women had not given colostrum. The evaluation of WIF's Gaibandah project (which did promote use of colostrum) found that colostrum use increased from 69% in 1992 to 78 %

in 1993<sup>23</sup>. There were similar increases in the non-project areas in Bogra and Joypurhat from 69% to 77%.

In the Matlab control area, only 60% of infants received colostrum<sup>24</sup>. The DHS<sup>2</sup> found that only 9% of infants are put to the breast within one hour of birth, and a total of 48% within the first day of life. A study in 1992<sup>25</sup> of all 242 mothers of children less than two years old in seven villages in a rural area in Bandar Thana, Narayanganj District, 52% thought sugar water was the best food to give just after birth, 40% said honey and only 8%, breast milk. Sixty per cent said breast milk should start within a half hour after birth, 20% the next day and 19% after three days. Eighty-four per cent thought colostrum was good for health.

The data cited above suggest that some improvement has occurred in neonatal feeding practices. Much effort has been placed on convincing mothers to give colostrum and somewhat less on encouraging them to initiate breastfeeding soon after delivery. Less effort has been made to discourage the use of prelacteal feeds. Faruque, *et al.*<sup>26</sup> have shown that it is possible to have a substantial impact on these traditional neonatal feeding practices through provision of nutrition education. For

example, among 63 mothers sampled in a village near Dhaka, none gave breast milk immediately after birth before the education program, but 43% did so afterwards.

### **Exclusive breastfeeding/complementation :**

Like in most countries, supplementary feeding is now initiated unnecessarily early in Bangladesh according to the DHS<sup>2</sup>. This puts the child at risk of infection from contaminated feeds. Probably reduces breast milk output, and reduces the duration of lactation amenorrhea. Among the 164 infants who were less than two months of age, 12% received only plain water during the 24 hours preceding the interview and 24% received some other supplement. At 2-3 months of age (N=250), 5% received only plain water and 46% something else and at 4-5 months (N=211) these figures were 12% and 57%. In other words, infants who were exclusive breast fed the day before the survey declined from 63% among those less than two months of age to 47% of 2-3 month old and 31% of 4-5 months old.

The practice of combining bottle feeding with breastfeeding ("triple nipple" feeding) had become popular in urban Bangladesh by the early 1980's. Among 282 affluent Dhaka patients, Talukder, *et al*<sup>27</sup>, found

that 10% did not breast feed at all, and another 23% combined the bottle with breast from birth. By one month of age, 59% used the bottle and 88% did so by four months of age. Similarly, Muttalib, *et al.*<sup>19</sup> found that bottle was combined with breast from birth by 66% of those delivered in clinic and 51% of those delivered at home in Dhaka City. A few years later in 1987, Das *et al*<sup>28</sup> conducted a one-year longitudinal study of 110 consecutive normal births in 12 rural villages 40 km north of Dhaka. While 100% were still breast fed at one year, 80% had also introduced the bottle by 5 months of age and 100% by 12 months of age. A wide range of fluids was fed by bottle including cow, goat, powdered and condensed milk, sugar water, and rice, wheat and barley gruels.

The DHS<sup>2</sup> report does not mention bottle feeding, but does provide data on the fluids and foods fed to sample children at different ages. Among those less than two months of age, 10% received infant formula the day before the interview, 10% other milk, 11% other liquids, and 1% solid or mushy foods. At 2-3 months of age, these figures had increased to 14% for infant formula, 19% other milks, 26% other liquids and 3% solid/mushy foods. From that age onwards, generally 20-25% of chil-

dren in each age category were given infant formula up to three years of age. Use of other milks was usually about 10% higher than this, as were other fluids. By 6-7 months of age, 22% received solid/mushy foods the day before the interview. This increased to 36% at 8-9 months, 46% at 10-11 months, and 61% by 11-12 months. During the next year it increased to around 80% where it remained during the third year.

Das and Ahmed<sup>25</sup> recently found that 47% of a sample of rural women thought exclusive breastfeeding should last up to one month, 41% thought up to five months, and 12% 5-12 months. Nearly 2/3 said they would give other milk by five months of age. Slightly over half of them thought water was necessary before 5 months of age.

Thus, although breastfeeding is still nearly universal and sustained for long period among most women in Bangladesh, unnecessary and probably often harmful supplements are begun early, the value of exclusive breastfeeding is not recognized, and mixed feeding with other sources of milk is fairly common from the early months of life.

### **Suckling frequency**

Suckling frequency was observed by Huffman, *et al.*<sup>4</sup> in eight-hour

observations of a subsample of 200 children monthly for 18 months starting when they were 17-25 months old. All suckling taking place within a half hour period was considered to be a single suckling episode, yielding an average of 5-6 episodes for an average suckling time of 45 minutes per eight-hour observation period. Both breasts were given 62% of the time and the child initiated suckling 96% of the time. Suckling frequency was unrelated to maternal nutritional status; children with a higher weight for height had a shorter suckling time.

Guldan, *et al.*<sup>29</sup> observed breastfeeding patterns among mothers of 185 children in rural Manikganj District over a six-month period in 1986. At the beginning of the period the children's ages were 4-22 months. Each child was observed an average of 22 times for forty-five minutes each time. At the earlier ages, 4-9 months, infants received the breast more than once per hour. Up to age 15 months the breast was still given more than 0.8 times per hour. From 16 to 24 months there was a continued gradual decline to 0.4 times per hour<sup>b</sup>. The DHS<sup>2</sup> found that 95% of

<sup>b</sup>There was a very large decline in frequency of suckling in the months immediately after the child reached two years of age, but the number of observations at that age was likely quite small.

infants less than six months of age received the breast six or more times per day.

Based on data from twenty-four hour recalls, Greiner and Mitra<sup>14</sup> arrived at estimates identical to those obtained by Guldan *et al.*<sup>29</sup> using observational methods. Interestingly, if children were breastfeeding into the fifth or sixth years of life, this was not so-called "token breastfeeding" but was done 8-10 times a day.

### **Breastfeeding and fertility**

In one rural area in 1974 Huffman *et al.*<sup>30</sup> found a median duration of postpartum amenorrhea of 20 months. This compared with a median abstinence of only about 2 months. There was a seasonal variation (from 17-21.5) and a variation of two months on average from the highest to the lowest quartiles of maternal weight and weight for height. In a prospective study from 1975-1980, Huffman, *et al.*<sup>31</sup> found a median duration of amenorrhea of 15.5 months for women who had no child deaths. For couples not effectively using modern birth control methods, this birth spacing effect of breastfeeding is crucial. Under-five mortality rates were 75/1000 live births for those with previous birth space of four years or more, 134 for those with 2-3

years and 224 for those with less than two years.

DHS<sup>2</sup> current status data showed that the median length of lactation amenorrhea was about 10 months with mean of about 12 months. That it is not longer than this may relate to the widespread practice of early supplementation now practised in the country. In spite of this, the universality, intensity and duration of breastfeeding in Bangladesh are such that it plays an important role in reducing fertility and increasing birth spacing. Whereas in most countries, unsupplemented breastfeeding is considered to function as a reliable contraceptive measure only for six months (assuming menstruation does not return), in Bangladesh a cutoff point of 12 months could safely be adopted<sup>16</sup>.

### **Determinants**

Some research has been done on determinants of breastfeeding. The Bangladesh Fertility Survey in 1975/6<sup>6</sup> found that male children were breast fed for five months longer than female children. However, recent studies suggest that these gender differences in breastfeeding patterns have disappeared<sup>2,8,9</sup>. Huffman, *et al.*<sup>4</sup> found no gender differences in suckling time and the DHS<sup>2</sup> found no difference in proportion receiving 6 or more breast

feeds per day in the first six months Greiner and Mitra<sup>14</sup> found no significant gender differences in duration of breastfeeding, colostrum use, or suckling frequency.

The 1975/6 Fertility Survey<sup>6</sup> found that older mothers tended to breast feed longer than younger ones. Using a cutoff point of five years of education, educated women breast fed for 24 months, a reduction of less than four months. Education of the father had little effect. Huffman, *et al.*<sup>4</sup> found only small though statistically significant reductions in breastfeeding among rural women with some education as well as those with greater wealth. However, this shorter period of breastfeeding could be an artifact of the way the data were gathered.<sup>c</sup> Guldan, *et al.*<sup>29</sup> found a negative correlation between frequency and duration of suckling and month's education. Prevalence of breastfeeding did not vary by mother's level of education in the DHS<sup>2</sup> except that those with a secondary or higher education initiated breastfeeding 1% less often and breast fed for a median of 26 months, 10 months less than those with less education. However, they were more likely to give the breast for .....

<sup>c</sup> For the 22% of their sample who died, age of death was recorded as duration of breastfeeding and children of poorer women were more likely to die.

the first time during the first day of life. Variations in breastfeeding patterns, especially earlier supplementation, among women with six or more years of education led to their having only 8.4 months of lactation amenorrhea compared to 16.4 months for women with no education<sup>31</sup>. Urbanization has been associated with a decline in breastfeeding in most countries. However, in Bangladesh urbanization seems to have only a small impact on initiation and duration of breastfeeding except among a small group of urban elite. In the 1976/6 Fertility Survey<sup>6</sup> urban children were breast fed for more than 24 months on average, a surprisingly small reduction of less than four months' duration. If a woman herself grew up in an urban area, breastfeeding duration was reduced by another two months. At about this same period, Khan<sup>5</sup> found high rates of breastfeeding initiation of 98% among poor inhabitants of Dhaka City, continuing for two years for 63% of the 98 children in the sample. Among a sample of 95 urban elites, 78% initiated breastfeeding but only 4% continued beyond two years. In 1993<sup>9</sup>, about 85% of urban children were breast fed for more than one year, 9% less than in rural areas. The DHS<sup>2</sup> found no reduction in the incidence of breastfeeding



among urban dwellers. Sample size was too small to be certain, but current status estimates of the median duration suggested it was 26 months in urban Bangladesh. Though probably longer than among city dwellers in nearly all other countries, this was more than 10 months shorter than in the rural areas.

In the 1975/6 Fertility Survey<sup>6</sup>, working mothers actually breast fed slightly longer (1.6 months) than non-working mothers except for teen-age mothers. Teen-age mothers breast-fed for 28 months if not working and 21 months if working. Guldan *et al.*<sup>29</sup> found that about 1/3 of suckling took place while the mother was cooking, doing household maintenance, or some economic activity. Nearly 2/3 of breast feeds took place during leisure activities. Huffman, *et al.*<sup>4</sup> recorded a slight reduction in suckling during the winter (November-March) when mothers' work burdens were higher.

Nessa and Rahman<sup>32</sup> studied a purposive sample of 475 educated working mothers in Dhaka. Nine per cent of them had not breast fed their last child. Among those who did, the mean duration was 18 months and the mean length of lactation amenorrhea was 6 months. Breastfeeding was initiated on the first day of life by 43%, on the second day for 24%,

and later for 36%. Reasons for delaying initiation of breastfeeding included postpartum illness (36%), lack of milk flow (35%), both combined (12%), and advice from a doctor (17%). At the time of the survey, 39% were currently breastfeeding; all children were receiving supplements to breast milk, 84% by bottle, 12% by spoon and 4% by glass. Suckling frequency was seven times a day for infants less than three months of age and five times a day for those 3-6 months old.

Contact with health professionals can have an impact on feeding patterns. The DHS<sup>2</sup> found that infants born in a health facility were slightly more likely to receive breast milk within the first day of life, though only 93% of these infants initiated breastfeeding compared to 96% of those delivered at home.<sup>d</sup>

### **Breastfeeding and child health**

Exclusively breastfed Dhaka infants were found to grow well during the first five months and not to need

<sup>d</sup> It should be pointed out that those delivered in a health facility in Bangladesh are a special group. Only 3.5% of the infants in the entire sample were delivered in a health facility, compared to 16% of those few mothers who had a secondary or higher education and 20% of urban mothers. It also should be noted that negative impact of delivering in a hospital may be decreased or reversed as the Baby-Friendly Hospital Initiative is implemented throughout the country.

any additional water despite the hot climate in the months May to September<sup>33</sup>.

A mother's response to a fretful or sick child is commonly to put it to the breast<sup>34</sup>. Hoyle<sup>35</sup> found that breast milk intake did not decline when children were sick. This resulted in their obtaining more nutrients than sick children who were not breast even though their mothers were encouraged to feed them during illness.

In one study of children up to 36 months of age presenting with diarrhea, only 3% were found to have stopped breastfeeding beforehand<sup>36</sup>. These children had twice the risk of developing serious illness or dying within one month. Another recent study<sup>32</sup> found that less than 1% stopped breastfeeding when children were sick. Only 8% reduced breastfeeding when a child had dysentery, but 15% did so with fever or diarrhea and 21% did so with fever and cough. However, breastfeeding was reduced or discontinued due to the child's refusal in nearly all cases except for diarrhea where 12% of those who stopped or reduced breastfeeding did so because they believed it to be harmful.

Even in the third year of life, breastfeeding was found to provide significant protection against *Shigella* diarrhea<sup>37</sup>. Breastfeeding

was found to protect against xerophthalmia even at older ages in the slums of Dhaka<sup>12,13</sup> and through the country as a whole<sup>38</sup>. Zeitlin, *et al*<sup>39</sup>, estimated that children less than two years of age obtain nearly the entire recommended daily allowance of vitamin A if they are breast fed. Those who are not breast fed obtain only 1-8% of this amount except during the mango season.

In children 18-36 months of age, Briend, *et al.*<sup>8</sup> found that those who were not breast fed had a threefold risk of death. This was because the relative risk of death among non-breastfed children was more than 4 among those children who had an upper arm circumference below 11 cm (more common among non-breastfed children in their sample). Shahidullah<sup>40</sup> also found an increased risk of death associated with not breastfeeding. In addition they found a protective effect of unsupplemented breastfeeding.

Haider, *et al.*<sup>41</sup> found that among infants admitted to hospital with diarrhea in Dhaka, none were exclusively breast-fed, though 11% gave only water. Complementary feeding had been initiated early among these infants, at a median age of 27 days. Those who started it before two months of age had lower weight for age than those who started later.

## Summary

This paper reviewed research published around the world from studies done on breastfeeding in Bangladesh. Recent national-level data suggest that breastfeeding is initiated for 96% of infants. The duration of breastfeeding appears to be remaining stable at a mean of nearly 30 months and a median of about 36 months. However, feeding practices during the nearly 30 months and a median of about 36 months. However, feeding practices during the neonatal period are unsatisfactory. Substantial efforts to increase use of colostrum appear to have been effective and recent studies suggest that about 70-80% of children receive it. However, initiation of breastfeeding is still usually delayed, often by one day. As first feeds to the newborn, sugar water and honey (which can be dangerous for young children) are commonly given.

Similarly, exclusive breastfeeding is rare and lasts for a short period, even though bottle feeding with infant formula is still a problem mainly in urban areas. While the initiation of solid feeding is delayed for many infants, it is now initiated too soon for many others.

Suckling frequency appears to be high among nearly all breast-fed infants, even those who are breast-

fed for five years or more. This may explain to a large extent the fact that breastfeeding is associated with longer delays in the return to fertility in Bangladesh than in other countries.

Except for urban elites, breastfeeding duration is not affected as much as in other countries by urbanization, maternal employment, increased wealth or increased education of the mother. A substantial body of literature documents the positive association between breastfeeding and infant health and nutritional status in Bangladesh, even when it takes place at older ages.

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