
Breast-feeding counselling in a diarrhoeal disease hospital*

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Lactation counsellors were trained to advise mothers of partially breast-fed infants who were admitted to hospital because of diarrhoea, so that they could start exclusive breast-feeding during their hospital stay. Infants (n = 250) up to 12 weeks of age were randomized to intervention and control groups. Mothers in the intervention group were individually advised by the counsellors while mothers in the control group received only routine group health education. During follow-up at home by the counsellors a week later, only the mothers in the intervention group were counselled. All the mothers were evaluated for infant feeding practices at home two weeks after discharge.

Among the 125 mother–infant pairs in each group, 60% of mothers in the intervention group were breast-feeding exclusively at discharge compared with only 6% in the control group (P < 0.001); two weeks later, these rates rose to 75% and 8% in the intervention and control groups, respectively (P < 0.001). However, 49% of mothers in the control group reverted back to bottle-feeding compared with 12% in the intervention group (P < 0.001). Thus, individual counselling had a positive impact on mothers to start exclusive breast-feeding during hospitalization and to continue the practice at home.

Maternal and child health facilities should include lactation counselling as an integral part of their programme to improve infant feeding practices.

Introduction

Despite the high prevalence of breast-feeding, only a small proportion of infants below four months of age are exclusively breast-fed in developing countries (1). Diarrhoeal morbidity (2–4) and mortality (5) are increased by the introduction of other milk or gruel. However, when breast-fed infants develop shigellosis and cholera, the risk of severe disease is less (6, 7). Studies from countries with low infant mortality rates show that infants fed artificial milk require hospital treatment up to five times more often than those who are fully or partially breast-fed (8). The maximum protection, however, is provided by exclusive breast-feeding (8, 9). Unfortunately in Bangladesh, where most women breast-feed, the

practice of exclusive breast-feeding is almost non-existent (10).

WHO has estimated that promotion of breast-feeding could lead to a 25% reduction in diarrhoeal mortality in the first six months of life (11, 12); the cost-effectiveness of such an intervention has also been calculated.^a Strategies for promotion of breast-feeding have laid emphasis on mothers delivering at a hospital or health facility (13), but in many developing countries (e.g., Bangladesh) only a few deliveries take place in these institutions. On the other hand, infants are brought to health facilities when ill and the opportunity for influencing mothers during these visits should not be missed. In the Dhaka hospital of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), the proportion of young infants admitted with diarrhoea has steadily increased over the years. Among 3058 infants below three months of age attending the hospital during 1993–94, 63% of the infants were partially breast-fed and 28% were non-breast-fed (unpublished data).

This study was therefore carried out to advise mothers of young infants attending the hospital for

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^a Phillips MA et al. *Options for diarrhoea control. The cost and effectiveness of selected interventions for the prevention of diarrhoea.* London School of Hygiene and Tropical Medicine, 1987.

treatment of diarrhoea in order to start exclusive breast-feeding during their hospital stay and to continue the practice at home till the baby reaches six months of age.

Materials and methods

The following definitions have been used in this study (14):^b

- *exclusively breast-fed*: infant given only breast milk (no other liquid or solid);
- *predominantly breast-fed*: given breast milk plus oral rehydration salts (ORS) and/or water; and
- *partially breast-fed*: given breast milk and other milk or gruel.

Training of study personnel. Lactation counsellors and research physicians (all females) were trained for three weeks, using the breast-feeding counselling course for health workers.^c In addition, these staff were taught about diarrhoeal disease management and anthropometric measurements required for the study, followed by practice. Finally, some patients were recruited for pilot testing and familiarizing with the procedures and questionnaires for data collection.

Study design. The study was a randomized controlled intervention trial which was started in the hospital and evaluated on discharge and later (at home) by physicians who were not involved in counselling. The mother–infant pairs were grouped as follows:

- *intervention group*: mothers of infants who received breast-feeding counselling and lactational support during their hospital stay, which was reinforced at home one week after discharge; and
- *control group*: mothers of infants who received the usual health education messages including routine breast-feeding advice during hospital stay only.

None of the infants included in the study had stopped breast-feeding, so “relactation” was not required. The frequency of breast-feeds and other feeds during the day and night, as well as the amount consumed, were comparable in both groups.

Inclusion and exclusion criteria. Infants up to 12 weeks of age, with diarrhoea of less than five days’ duration, weight-for-age >60% of the NCHS median, and living within reasonable distance (15 km) in Dhaka to enable follow-up, were included in the study. Infants who did not require hospitalization (discharged with ORS from the outpatient desk), or had severe infection, or whose mothers were unwilling/unable to stay in the hospital were excluded from the study. Also excluded were infants who stayed for less than 8 hours in the hospital after selection. These exclusions were necessary because of limited time for counselling.

Randomization. Random permuted blocks of variable length were used for randomization of intervention and control groups. Serial numbers corresponding to the randomization list were placed in a series of sealed envelopes. After receiving informed consent, as required by the Ethical Review Committee, each mother–infant pair selected for the study was allocated to the intervention or control group according to the numerical sequence in the envelopes.

Standard case management. A baseline history was taken to record relevant present and past information on feeding and the patient was examined. Infants were rehydrated and maintenance of hydration was accomplished with intravenous fluids or ORS. The infants continued to be breast-fed throughout their hospital stay and those requiring infant formula were fed by cup and spoon according to hospital policy. Investigations and treatment of infection followed the usual hospital practice in ICDDR,B.

Mothers in the intervention group were scheduled to receive a minimum of three counselling sessions — by the lactation counsellors on day 1 and the day of discharge, and by the principal investigator on day 2. The first session was brief (5–7 minutes), because it was felt mothers were worried and anxious about their infants’ illness and were less attentive. The next two sessions were longer, lasting approximately 30–40 minutes. The lactation counsellors first attempted to determine the reasons for starting early complementary feeds, and gave relevant information on breast-feeding (namely, that breast-feeding helps recovery from diarrhoea, more breast-feeding makes more milk, and breast milk alone is sufficient for baby’s growth during the first five months of life), and on the importance of the mother eating an adequate diet and of family support to enable her to breast-feed. Only 3–4 items of relevant information on breast-feeding were given during each session. The counsellors also helped mothers, when needed, with the baby’s positioning and attachment at the

^b Indicators for assessing breast-feeding practices. Report of an informal meeting, 11–12 June 1991, Geneva, Switzerland. Unpublished WHO document, CDD/SER/91.14, 1991.

^c World Health Organization/UNICEF. Breast-feeding counselling: a training course. Unpublished document WHO/CDD/93.3–6 and UNICEF/NUT/93.1–4, 1993.

breast. The mothers in the control group attended the usual health education sessions daily, which included advice on exclusive breast-feeding for 5 months, followed by the addition of home-cooked complementary feeds.

Follow-up. Mother–infant pairs in both intervention and control groups were followed up at home one week after discharge by a lactation counsellor. Mothers in the intervention group were questioned about the infant's feeding (24-hour recall), advised about any feeding and health problems, and encouraged to continue breast-feeding. Mothers in the control group also received a visit from the same counsellors, who questioned them similarly, but without intervening for breast-feeding management. The lactation counsellors spent 2–4 hours in the respondents' houses to observe infant feeding and to obtain the family members' views on breast-feeding. Household assets, type of latrine and water used for drinking and washing were also noted during these visits. An evaluation (24-hour recall data on infant feeding, two-week morbidity data, and structured breast-feeding observations) was carried out by a study physician at the end of the two-week follow-up period at home.

Evaluation and monitoring of study staff. The lactation counsellors were monitored by the principal investigator (RH) who evaluated breast-feeding assessments through frequent direct observations. They were independently asked to assess a breast-feed (positioning of mother and baby and attachment of baby at the breast, etc.) and take anthropometric measurements of mothers and infants. Their assessments were then compared for inter-observer variation. Study physicians were similarly monitored for management of diarrhoea, assessment of follow-up data collection, and data entry.

Statistical methods. After evaluation of baseline data for comparability of mother–infant pairs in the intervention and control groups, the outcome variables (namely, breast-feeding status at discharge from hospital and two weeks later at home, use of bottles for feeding, baby's weight, etc.) were compared by parametric and nonparametric tests. Logistic regression was performed on variables which might affect the feeding status of the infant, including infant's age and gender, mother's age and education, and father's income.

Results

A total of 250 mother–infant pairs were recruited in the study, 125 in each group. Age, nutritional status,

and duration of diarrhoea in the intervention and control group infants were comparable (Table 1). Twenty-two (18%) infants in the control group and 25 (20%) infants in the intervention group had moderate or severe dehydration on admission and were treated with intravenous fluids for initial rehydration; 17 (14%) infants in each group also had associated respiratory tract infection. Mothers' education and nutritional status, and fathers' education, occupation and income were also comparable (Table 2). There were more first-born infants in the intervention group (65 versus 44 ($P = 0.007$)) and more second-born in the control group (45 versus 30 ($P = 0.03$)). But there was no association of birth order with exclusive breast-feeding when the χ^2 test and logistic regression were used to test the relationship. Neither was there any association of gender with exclusive breast-feeding status. Houses and sanitary facilities of families were also similar in both groups. The majority of infants (85% of the controls and 80% of the intervention group), had been given prelacteal feeds after birth (honey, sugar water, plain water, etc.) followed by colostrum. Complementary feeds were started at approximately the same time in both the control and intervention groups, 16.5 ± 16.6 days and 17.6 ± 18.2 days, respectively (Table 3).

The mean hospital stay \pm SD was 4.3 ± 1.8 days for the intervention group and 3.0 ± 2.0 days for the controls ($P < 0.001$). The infants in the control group

Table 1: Characteristics of study infants on admission

	No. in control group ($n = 125$)	No. in intervention group ($n = 125$)
Age (days):	53.8 ± 18.3^a	51.0 ± 19.8^a
<1 month	15 (12) ^b	24 (19)
1–2 months	66 (53)	54 (43)
2–3 months	44 (35)	47 (38)
Females	45 (36)	40 (32)
Males	80 (64)	85 (68)
Weight-for-age (% NCHS median)	78.6 ± 11.6^a	76.9 ± 11.5^a
Weight-for-length (% NCHS median)	91.8 ± 10.8^a	90.8 ± 10.7^a
Residence:		
City	114 (91)	116 (93)
Slum	4 (3)	2 (2)
Peri-urban	7 (6)	7 (6)
Born at:		
Home	93 (74)	93 (74)
Hospital	22 (18)	25 (20)
Clinic	10 (8)	7 (6)
Days with diarrhoea	3.6 ± 1.6^a	3.5 ± 1.7^a

^a Mean \pm standard deviation.

^b Figures in parentheses are percentages.

Table 2: Characteristics of parents of the study infants

	No. in control group (n = 125)	No. in intervention group (n = 125)
Mothers		
Age (years)	23.0 ± 4.2 ^a	22.1 ± 4.0 ^a
Weight (kg)	45.7 ± 7.3	43.8 ± 7.4
BMI	20.2 ± 3.0	19.5 ± 2.9
Education (years)	4.2 ± 4.4	4.2 ± 4.3
Mid-upper arm circumference (cm)	23.7 ± 2.5	23.0 ± 2.5
Parity:		
1	44 (35) ^b	65 (52) ^c
2	45 (36)	30 (24) ^d
3	20 (16)	22 (18)
≥4	16 (12)	8 (6)
Fathers		
Education (years)	7.2 ± 4.9	6.9 ± 4.9
Income (in takas) ^e :	4 350 ± 5 218	5 052 ± 8 843
≤3000	74 (59)	69 (56)
3001–5000	26 (21)	30 (25)
>5000	25 (20)	23 (19)
Occupation:		
Service	31 (25)	32 (26)
Business	35 (28)	36 (29)
Others ^f	55 (44)	53 (42)
Unemployed	4 (3)	4 (3)

^a Mean ± standard deviation.

^b Figures in parentheses are percentages.

^c P = 0.007.

^d P = 0.003 (Mantel–Haenszel test).

^e 40 takas = US\$ 1.00.

^f Others are rickshaw puller, labourer, shopkeeper, vendor, odd jobs.

Table 3: Feeding history of study infants

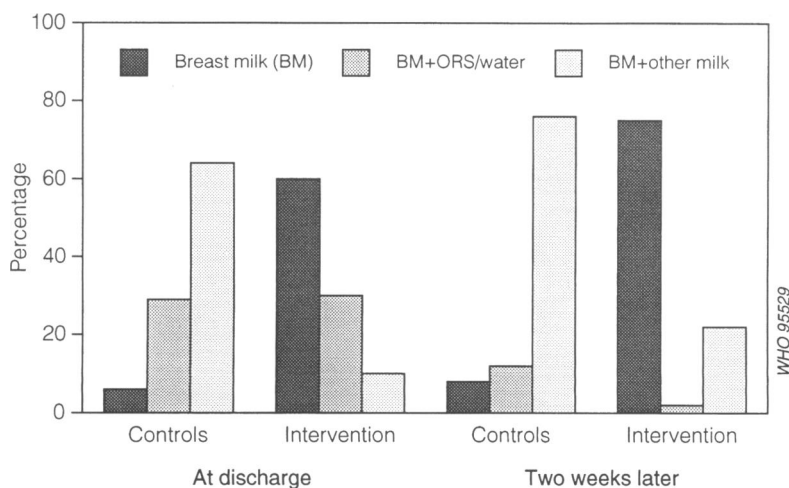
	No. in control group (n = 125)	No. in intervention group (n = 125)
Colostrum given:		
Yes	116 (93) ^a	117 (94)
No	9 (7)	8 (6)
Prelacteal feeds:		
Yes	106 (85)	100 (80)
No	19 (15)	24 (19)
Started other milk:		
At age (days)	16.5 ± 16.6 ^b	17.6 ± 18.2
Range (days)	1–65	1–71
Reason for other feeds:		
Not enough breast milk	98 (78)	87 (70)
Mother sick	4 (3)	4 (3)
Other ^c	23 (18)	34 (27)
Given by:		
Bottle	93 (76)	107 (87)
Cup and spoon	26 (21)	16 (13)
Both	2 (1)	—

^a Figures in parentheses are percentages.

^b Mean ± standard deviation.

^c Nipple problem, baby sick, diarrhoea, etc.

Fig. 1. Impact of counselling on feeding status of infants (intervention group and controls) at the time of discharge and two weeks later.



generally left before the diarrhoea had stopped, which is the usual practice in the hospital, whereas those in the intervention group were encouraged to stay till the diarrhoea had resolved in order to ensure opportunity and time for behaviour modification. At discharge from the hospital, 74 (60%) mothers who had received breast-feeding counselling had converted to exclusive breast-feeding compared with only 7 (6%) of the controls. As many infants went home before the diarrhoea had stopped, there were 37 (30%) mothers predominantly breast-feeding (breast milk + ORS) at discharge in the counselled group and 24 (19%) among the controls ($P < 0.001$). There were no differences in exclusive breast-feeding rates among mothers who had received either two or three counselling sessions during hospital stay.

Two weeks later at home, when ORS was stopped, the rate of exclusive breast-feeding increased to 78 (75%) in the intervention group versus only 8 (8%) in the controls (Fig. 1). On the other hand, 49% of the control mothers had reverted to bottle-feeding compared with only 12% in the intervention group ($P < 0.001$).

At the 2-weeks' follow-up, only 103 mother-infant pairs in the control group and 104 in the intervention group could be evaluated because 14 families in the control group had migrated and 8 of the infants had died. In the intervention group, 19 families had migrated and 2 infants had died. In the control group, 6 infants had died from diarrhoea and 2 from pneumonia. In the intervention group, one infant's mother had reverted to partial breast-feeding at home; the other infant was found dead in bed on the second day of hospitalization. Fifteen infants in the control group had another episode of diarrhoea within two weeks, compared with only four in the exclusively breast-fed group ($P = 0.05$; odds ratio = 2.92; 95% CI, 0.86–10.92).

Discussion

This study was based on the hypothesis that most mothers want to exclusively breast-feed their infants for as long as they are able to. But to do this, they require correct information, help, encouragement and support from their family and from health professionals. Structured breast-feeding counselling was accordingly used to advise mothers of infants in a diarrhoea treatment centre and its impact was evaluated. The results show that the breast-feeding counselling course was highly effective in training lactation counsellors, who in turn successfully helped mothers to achieve exclusive breast-feeding during their stay in hospital.

Maternity hospitals which claim to be "baby-friendly" recognize that constant encouragement and support are essential to enable lactating mothers to breast-feed successfully (13), and are also supposed to provide these mothers with follow-up support facilities (15). Reports from hospitals in India and Pakistan (16, 17) have shown that most mothers who were referred to lactation management clinics could be helped to overcome breast-feeding difficulties and also continue exclusive breast-feeding. In other countries too, supportive care and counselling have contributed to increases in exclusive breast-feeding rates (18). Our study differs from those cited above because neither were the babies born in this hospital nor were they referred for breast-feeding management. The investigators took the opportunity of counselling mothers of partially breast-fed infants to change their breast-feeding practices when their babies were in hospital for treatment of diarrhoea.

Prior to implementation of this study, we expected that the mothers of first-borns would be more receptive to breast-feeding counselling. But when birth order and attainment of exclusive breast-feeding status were compared between the groups, no such difference was seen, indicating that counselling itself was the prime factor for this change in breast-feeding practice.

It may be argued that changing the mothers' breast-feeding behaviour was easier in the hospital since mothers could give full attention to their babies, and feeding of other milk could be controlled to some extent. In the home situation, mothers have multiple tasks which might prevent keeping up what was learned. However, results of the follow-up show that, in most cases, the mothers could continue to breast-feed exclusively at home. Another important and interesting finding was that although all the mothers fed their babies ORS and infant formula, when required, by spoon and cup during the hospitalization period, half of the mothers in the control group reverted back to bottle-feeding at home, compared with only a few in the intervention group. The fact that only four of the exclusively breast-fed infants had another episode of diarrhoea within two weeks after discharge highlights the protective effect of exclusive breast-feeding (2, 5), even within a short follow-up period.

For obvious reasons, the evaluators of the study could not be blinded regarding study group assignment. Patients in the two groups had to be kept in separate parts of the hospital to avoid message contamination. Doctors' instructions and diet sheets also provided information on infant feeding status. However, any bias would be expected to be minimal since the evaluators themselves were not involved

with counselling during the stay in hospital or at the first follow-up visit.

There may be some concern about the replicability of the programme since home visits by lactation counsellors may not be feasible in most hospitals on a regular basis as described here. The follow-up visit, however, was valuable; the counsellors felt that reinforcement of the messages used during counselling and the reassurance provided by them helped to increase the mothers' confidence and enabled them to continue exclusive breast-feeding. The success rates might not have been so high without this visit.

The lack of privacy for counselling sessions in the hospital may have been a constraint. This may also be applicable to other developing countries where women traditionally may not speak freely in the presence of strangers. Two to three short sessions under these circumstances might not always be sufficient to determine the underlying cause for mothers' perception of "not enough breast milk", which probably accounts for failure in some cases.

In conclusion, it may be said that the intervention itself was highly effective and therefore should be incorporated in maternity and child health programmes since it can considerably reduce infant morbidity and mortality. Health staff in diarrhoeal and paediatric units should be trained and assigned as lactation counsellors, to help mothers improve infant feeding practices for these high-risk infants. Training of selected mothers as peer counsellors in the community should be explored as a cheaper and more practical way of assisting and encouraging mothers to start exclusive breast-feeding right after delivery. They can also provide follow-up support to mothers who receive breast-feeding assistance in the hospital (as provided in this study) and thus help prevent diarrhoea in infancy.

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Résumé

Promotion de l'allaitement au sein dans un hôpital traitant des cas de diarrhée

Parmi les nombreux avantages du lait maternel, l'effet protecteur qu'il exerce contre la morbidité et la mortalité dues à la diarrhée est bien connu. Dans le monde entier, des efforts sont faits pour encourager l'allaitement au sein exclusif pendant les six premiers mois de la vie. Malheureusement, au Bangladesh, cette pratique est presque inexistante. Les stratégies de promotion de l'allaitement au sein visent principalement les mères qui accouchent dans les centres de santé, mais la plupart des naissances ont lieu à domicile. Il ne faut donc pas négliger l'occasion de convaincre les mères qui se présentent dans un centre de santé avec un nourrisson malade.

Dans l'étude décrite ici, des conseillers en lactation ont été formés pour inciter les mères qui amenaient leur nourrisson à l'hôpital pour une diarrhée à passer de l'alimentation mixte à l'allaitement au sein exclusif pendant la durée de l'hospitalisation. Les nourrissons ($n = 250$), âgés de 0 à 12 semaines, ont été répartis au hasard entre un groupe d'intervention et un groupe témoin et traités avec des sels de réhydratation orale ou par perfusion, selon leur état. Toutes les mères étaient encouragées à allaiter leur enfant, mais elles pouvaient aussi lui donner des préparations pour nourrissons à l'aide d'une tasse et d'une cuillère, si elles le désiraient. Les mères du groupe d'intervention ont reçu des conseils individuels à l'hôpital, puis une semaine plus tard à leur domicile. Les mères du groupe témoin ont participé aux séances habituelles d'éducation pour la santé données à l'hôpital et ont été suivies à domicile, mais n'ont pas été conseillées individuellement. Les pratiques d'alimentation des nourrissons des deux groupes ont été évaluées à domicile deux semaines après leur sortie de l'hôpital.

L'âge des nourrissons, leur état nutritionnel, la durée de la diarrhée, l'âge et le niveau d'instruction de la mère ainsi que le revenu du père étaient comparables dans les deux groupes. Tous les

enfants ont commencé à recevoir des aliments complémentaires vers le même âge, soit 16,5 ± 16,6 jours pour le groupe d'intervention et 17,6 ± 18,2 jours pour le groupe témoin. A la sortie de l'hôpital, 60% des mères du groupe d'intervention pratiquaient l'allaitement exclusif au sein, contre 6% dans le groupe témoin ($p < 0,001$). Deux semaines plus tard, ces proportions atteignaient respectivement 75% et 8% ($p < 0,001$). Toutefois, 49% des mères du groupe témoin étaient revenues à l'alimentation au biberon, comparées à 12% des mères du groupe d'intervention ($p < 0,001$).

Dans le groupe témoin, huit décès sont survenus après la sortie de l'hôpital – six dus à la diarrhée et deux à une pneumonie. Dans le groupe d'intervention, un enfant est décédé après que sa mère eut recommencé à lui donner une alimentation mixte à domicile et un autre a été trouvé mort dans son lit le lendemain de son hospitalisation. Quinze enfants du groupe témoin ont eu une nouvelle diarrhée dans les deux semaines suivant leur sortie de l'hôpital, contre quatre seulement parmi ceux qui étaient nourris exclusivement au sein (odds ratio = 2,92, IC à 95% : 0,86–10,92, $p = 0,05$). Ces résultats montrent que les conseils donnés en matière d'allaitement ont eu un impact positif sur les mères en les incitant à pratiquer l'allaitement au sein exclusif au cours de leur hospitalisation et à continuer une fois de retour chez elles. L'étude illustre également l'augmentation du risque de morbidité et de mortalité dues à la diarrhée chez les enfants recevant une alimentation mixte.

Il est recommandé que les centres de santé maternelle et infantile forment des conseillers en lactation et les utilisent dans leurs programmes pour saisir toutes les occasions d'améliorer les pratiques d'alimentation des nourrissons.

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