Impact and sustainability of a "baby friendly" health education intervention at a district hospital in Bihar, India

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Abstract

Objectives—To evaluate the impact and sustainability of a baby friendly training intervention for staff at an Indian district hospital on initiation of breast feeding and use of prelacteal feeds by mothers.

Design—Intervention study with assessment by interviewing mothers.

Subjects—172 mothers recruited before the intervention, 195 recruited immediately after the intervention, and 101 recruited six months later.

Setting—District hospital in a small town in Bihar, India.

Main outcome measures—Age of infant when breast feeding started, use of prelacteal feeds, and colostrum feeding.

Intervention—10 day training programme for doctors, nurses, and midwives, explaining the benefits and feasibility of early breast feeding and dangers of prelacteal feeds together with instruction on explaining this information to mothers.

Results—Breast feeding was started within 24 hours of birth by 53 (29%) of control mothers, 164 (84%) in the early follow up group, and 60 (59%) in the late follow up group. Prelacteal feeds were used by 165 (96%), 84 (43%), and 78 (77%) respectively. Only 36 mothers in the late follow up group reported receiving education on feeding. Mothers in this group who had received the education were significantly more likely than mothers who received no education to breast feed early (28 (78%) *v* 11 (17%), $P < 0.001$) and not use prelacteal feeds (21 (58%) *v* 2 (3%), $P < 0.001$).

Conclusions—Training doctors and midwives greatly improves the feeding practices of mothers. However, the impact of the training fell off quickly and refresher training is needed to sustain the improvement.

Introduction

The "baby friendly" hospital initiative, led by Unicef, is attempting to improve the quality of perinatal care in hospitals and maternity institutions, especially early infant feeding. A joint World Health Organisation/Unicef statement on 10 steps to successful breast feeding has stressed that newborn infants should not be given any food or drinks other than breast milk (unless medically indicated) and that mothers should be helped to start breast feeding within half an hour of birth.¹²

In many societies it is traditional not to put the infant to the breast for a few days and not to give colostrum.³ A delay in the onset of breast feeding may lead to hypoglycaemia, hypothermia, and acidosis especially among high risk low birthweight infants.⁴⁻⁶ In many countries newborn babies receive prelacteal feeds—water, sugar-water, honey, tea, or animal milk—as

their first feed in place of mother's milk, often after fasting for many hours or days.⁷ Prelacteal feeds are potentially harmful because they may introduce infection, sensitise the gut to foreign proteins, or delay the onset of lactation. In India more than 70% of rural mothers use prelacteal feeds,⁸ and Singhanian *et al* showed that more than half of educated mothers from the upper socioeconomic classes in Bombay discarded colostrum and used prelacteal feeds and that 68% delayed breast feeding for more than 24 hours.⁹

Some studies have suggested it is not easy for health workers to convince mothers to give up delayed breast feeding, discarded colostrum, and use of prelacteal feeds.¹⁰ Cultural pressures may limit the impact of health education messages in this setting and elsewhere. We conducted a study to determine whether an education programme could change traditional practices and whether any change is sustained.

Subjects and methods

The study was conducted in Hajipur, Bihar, India, a town with an estimated population over 100 000. Sadar district hospital is a public government funded hospital, which has about 3500 deliveries a year, mostly mothers from villages situated near the town.

The study was conducted from July 1992 to February 1993. The criterion for selection was spontaneous normal delivery of normal singleton or twin babies and exclusion criteria were delivery by caesarean section, eclampsia, high maternal fever, stillbirth delivery, or a severely ill newborn infant. In the first phase 172 mothers were enrolled consecutively over 20 working days as the control group.

General hospital practices and maternal behaviour in relation to early breast feeding were observed by the health education doctor. The mother's current address was recorded. Mothers were followed up and interviewed with a semistructured, short questionnaire in their local language (Hindi) within two weeks of delivery. The interviews were conducted at home either by a local doctor (not involved in service delivery at the hospital) or by one of two local female teachers. Details of age, education, parity, and religion were recorded as well as use of prelacteal feeds, time of putting baby to the breast, and colostrum feeding.

HEALTH EDUCATION INTERVENTION

A health education programme was then started. Over 10 days a health education doctor visited the maternity ward and spoke with key staff members (hospital administrators, eight doctors, one ward sister, seven nurses, and two midwives) individually or in small groups. Each health worker had at least five contacts with the education doctor. The programme included discussions on the WHO/Unicef recommendations to encourage breast feeding within half hour of delivery and discourage prelacteal feeding. The

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scientific evidence for health advantages of immediate breast feeding to the infant and mother and the potential disadvantages of prelacteal feeding were reviewed. Health workers were shown successful secretion of colostrum and early establishment of lactation after suckling within half hour of birth. This was done to convince the health workers that a newborn infant can suckle effectively within the first hour of birth. Midwives and nurses were trained to motivate, persuade, and help mothers to start breast feeding immediately after birth. They told mothers about the disease protecting qualities of colostrum, that newborn animals can suckle immediately after birth, and that sugar-water or animal milk might cause diarrhoea or fever. They would then invite the mother to place her infant at the breast and "see what happens." Time was allowed to address any doubts the mother wanted to raise.

The approach was tested on 12 randomly selected mothers of different parity belonging to mixed socio-economic classes. Informal discussions with doctors and nurses continued during the whole of the intervention period.

EARLY FOLLOW UP

In the early follow up phase, covering the 20 working days after the interventions, 195 mothers were enrolled consecutively. All were visited in hospital to see if they had received the health education and were subsequently interviewed at home within 14 days of delivery in the same way as controls.

LATE FOLLOW UP

Six months after the health intervention the principal study investigator returned to the hospital and enrolled mothers who had just delivered in the hospital. Maternity care staff were not aware of this part of the follow up study until after the interviews were completed. A total of 101 women were enrolled and interviewed in their homes by the two female interviewers within 14 days of delivery. The number of mothers seen in the late follow up group was lower than the other groups because fewer deliveries occurred over the 20 days and some addresses were not recorded in the hospital delivery book.

Results

Table I shows the demographic characteristics of the study mothers. Most were illiterate, Hindu, living in a rural area and primiparous. There were no differences between the groups in age, level of education, religion, where they lived, and sex of infant. More newborns were male in all groups, the highest rate occurring in the control group.

Table II shows the number of mothers who reported receiving health education, the number who used prelacteal feeds, and the age at initiation of breast feeding. Prelacteal feeds could be classified into those which were sugar based (sugar, water, or honey) or milk based (cows' milk or formula). The use of milk

TABLE II—Time of starting breast feeding and use of prelacteal feeds by mothers before and after baby friendly health education training for hospital staff

	Control (n=172)	Early follow up (n=195)	Late follow up (n=101)
No (%) who received health education	0 (0)	195 (100)	36 (36)
No (%) using prelacteal feeds	165 (96)	84 (43)	78 (77)
Water	14 (8)	12 (14)	6 (8)
Sugar water or honey	94 (57)	54 (64)	56 (72)
Milk (animal or formula)	57 (35)	18 (21)	16 (21)
Age of infant at initiation of breast feeding (hours)			
<1	6 (3)	117 (60)	14 (14)
1-12	12 (7)	30 (15)	25 (25)
12-24	32 (19)	17 (9)	21 (21)
>24	122 (71)	31 (16)	41 (40)

based prelacteal feeds was lower in both the early and late follow up intervention groups than in the control group.

The figure shows the age at initiation of breast feeding in relation to whether the mother received health education. In the late follow up group 36/101 (36%) mothers reported receiving some health education messages from delivery staff around the time of birth and 65 mothers did not recall any health education. Twenty one (58%) mothers who received health education did not use prelacteal feeds compared with two (3%) who received no education (χ^2 36.2, $P<0.001$). Breast feeding was started within 12 hours by 28 (78%) and 11 (17%) mothers, respectively (χ^2 40.2, $P<0.001$).

Time after birth that breast feeding was started according to health education received by mothers from health professionals

The 65 mothers who received no education about feeding in the hospital were given the health messages by female interviewers at home. When asked whether these messages would have influenced them, 44 said they would have started breast feeding early without using prelacteal feeds. Twenty one said they might have changed but needed the approval of their guardian, mother in law, or religious adviser.

By the time of enrolment of the late follow up group, one trained midwife and three doctors had moved or been transferred from the hospital.

Discussion

Our study has highlighted the importance of providing good health and nutrition education to mothers immediately after the birth. We have confirmed that early infant feeding practices in a traditional community can be changed quickly by simple messages

TABLE I—Clinical details of study mothers

	Control (n=172)	Early follow up (n=195)	Late follow up (n=101)
Mean (range) age (years)	25 (19-36)	24 (18-40)	25 (16-40)
Mean (range) parity	2.6 (1-7)	2.4 (1-8)	2.7 (1-9)
Education (%)			
Illiterate	95 (55)	97 (50)	59 (58)
Up to age 10	29 (17)	36 (18)	16 (16)
Above age 10	48 (28)	62 (32)	26 (26)
Religion	163/9	189/6	89/12
(Hindu: Muslim)	(95:5)	(97:3)	(88:12)
Rural/urban	117/55	154/41	63/38
Infant sex (male:female)	103/69	103/92	55/47

Key messages

- Cultural factors are thought to make it hard to produce changes in infant feeding practices
- In this study education given to health professionals in an Indian hospital on the benefits of early breast feeding greatly increased the number of babies breast fed within 24 hours
- The number of babies given prelacteal feeds also fell
- Six months after the intervention many mothers were no longer being given the health education and feeding practices had reverted to the traditional
- A single explanation can change mothers' behaviour, but education for health professionals needs to be reinforced regularly to maintain the programme's effect

given by health professionals. Bathija and Anand have shown that education around the time of birth improved the initiation of breast feeding among educated mothers in Bombay who were seen on several occasions.¹¹ We have shown that a single health education contact in the postpartum period can have a large effect on early infant feeding practices even among largely illiterate, rural mothers. Cultural early feeding practices do not seem to be deeply ingrained.

We have no information as to whether this intervention led to a change in the duration of exclusive breast feeding or to a reduction in early infant morbidity, although previous studies have shown an association between both the age at initiation of breast feeding and the use of supplements with subsequent duration of breast feeding.^{12,13} A community based study in Pakistan showed that simple health messages given to mothers in the antenatal and postpartum periods prolong the length of exclusive breast feeding and reduce the incidence of diarrhoea in the first six months of life, but the study involved many contacts between health workers and mothers, raising questions about the sustainability of such an intensive intervention on a wider scale (A Billoo, Pakistan Paediatric Association meeting, Lahore, 1994).

The use of milk based rather than sugar based prelacteal feeds was lower among mothers giving prelacteal feeds in the early and late follow up groups than in the control group. This suggests that even when health education does not affect a mother's decision to use a prelacteal feed it may influence the type of feed used.

SUSTAINABILITY

We have shown that health workers respond positively to brief intensive training which helps them to disseminate health messages more effectively. The training effect, however, is relatively short lived. Six months after the training, only one third of mothers received feeding advice after the birth, and many mothers were following traditional practices. The fall in early breast feeding in the late follow up group occurred mainly in those who did not receive health education messages, which suggests other factors did not play a part in these changes.

After completion of the late follow up group study a focus group discussion was held with trained health workers (three doctors and five nurses) about the failure to provide health education to mothers. All the staff felt that an important factor was the absence of one nurse and one midwife who had both received the training. It was disappointing that new staff joining the maternity ward had not been trained in baby friendly health education. Certainly some contribution from a "dilution effect" of training over the six months could

be a factor as well. Unfortunately we were unable to differentiate between mothers who had been attended by a trained or untrained staff member in the late follow up group, which might have allowed an estimate of this "dilution effect."

Baby friendly health training in the setting of a busy district hospital (especially in the Indian subcontinent but perhaps also in Britain) must be reinforced at regular intervals to take account of staff movement and loss of interest. We suggest refresher training after six months in the first instance, and continued monitoring of impact with simple outcome indicators such as those in this study.

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ONE HUNDRED YEARS AGO

SIR,—It seems to me that Surgeon-General Jessop's letter, that appeared in the *BRITISH MEDICAL JOURNAL* of January 19th, contains more spirit than judgment. That it should be necessary for "a youth to be able to reply in good Latin to questions asked at a preliminary examination, and at the same time evince sound scientific knowledge in the subjects submitted," seems to me to be expecting a little too much, especially when Mr. Jessop goes on to say that if he cannot do so "it is evident that medicine should not be his vocation." I think we are all more or less acquainted with men who are good and clever scientists who could not master a foreign language however much, in an ordinary way, they applied themselves to do so. I was myself acquainted with several men at Cambridge who failed more than once in the classical part of their "little go," and yet took high places (when they had eventually managed to scrape through), in the Natural Science and Mathematical Triposes. One man would have undoubtedly taken a much higher place than he did in the Natural Science Tripos if he had not been kept back by repeated failures in the Latin paper of his "little go." There are some men, especially perhaps students of Nature, that cannot master languages, and to say that these men are not to be allowed to succeed in medical science simply because they happen to have a natural defect in being able to acquire a language, is preposterous.—I am, etc.,

T. WILSON PARRY, M.A., M.B.Cantab.
(*BMJ* 1895;i:336.)