SHORT REPORT

FACTORS INFLUENCING A MOTHER'S CHOICE OF FEEDING AFTER DISCHARGE OF HER BABY FROM A NEONATAL UNIT

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Objective. To assess feeding methods chosen by mothers of babies who spent time in a neonatal unit. Factors influencing this decision were investigated.

Design. Descriptive study.

Methods. Mothers were interviewed on the day they took their babies home. Basic demographic data on mother and baby were collected from the hospital records.

Setting. The neonatal unit, Pelonomi Hospital, Bloemfontein from May 1996 to May 1998.

Subjects. Eighty-one mothers of babies admitted to the neonatal unit.

Outcome measures. At discharge 60% of mothers intended to breast-feed their babies exclusively the next day. The mother's decision to breast-feed her baby at home was significantly associated with her decision before delivery ($P = 0.0050$). Other factors positively associated with the decision to breast-feed exclusively at home were a significantly higher birth weight of the baby ($P < 0.0008$) and gestational age of the baby ($P < 0.0005$). The only hospital practice positively associated with this decision was the frequency with which mothers saw their babies during their stay in the unit ($P = 0.0153$). Mothers' knowledge of how to increase breast-milk supply was very poor.

Conclusions. Infants with a lower weight and gestational age, who stayed in the unit longer, were less likely to be breast-fed after discharge from the neonatal unit. The mothers' experience in the unit did not seem to alter their choice of feeding method decided upon before delivery. This suggests that efforts to promote breast-feeding in the neonatal unit were either ineffectual or inadequate. In order to remedy this situation it is necessary to keep the mother-infant pair together (lodger mothers) and to promote breast-feeding before and after delivery. It would also be necessary to train staff in the management of lactation problems.

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Ill newborns and babies born prematurely need special care. There is often separation of the mother-baby pair and this interferes with the establishment of the normal breast-feeding process. Under these circumstances, with inadequate stimulation and emptying of the breasts it is difficult to maintain lactation. Expressing the milk (by hand or with the help of a manual or electric pump) correctly and frequently enough allows a mother to maintain lactation, although usually at a smaller volume. If the baby has not suckled for approximately 4 weeks most mothers will be unable to breast-feed their infants successfully.

Once a baby is well and neurologically mature, mothers can start breast-feeding. This is a gradual process and mothers need to be supported, helped and encouraged to be successful in re-establishing lactation.[1,2]

It has been reported from studies in other countries that at least a 75% breast-feeding rate should be attainable under these circumstances.[3,4] It seems that in some rural hospitals in South Africa, where mothers stay with their babies until they are discharged, virtually 100% are exclusively breast-fed.

The advantages of breast-feeding have been extensively documented.[5] The benefits of breast-milk to premature babies are very important, although it often needs to be supplemented by certain nutrients.[6] Furthermore, the advantages of exclusive breast-feeding versus partial breast-feeding, especially regarding protection against infection and possible allergy development, have been well documented.[5,7] There is also a large financial saving if mothers can establish exclusive breast-feeding.[8] Once mothers introduce formula feeds there is long-term under-stimulation and under-emptying of the breasts. This usually results in complete dependence on breast-milk substitutes.

When following up babies 4 - 6 weeks after being discharged from the neonatal unit, we noticed that only a minority were exclusively breast-fed. Exclusive breast-feeding being the ideal feeding method, the aim of the study was to determine how many mothers planned to breast-feed their babies exclusively after leaving the hospital, and to investigate which factors influenced their decision.

The study attempts to understand the local situation in order to improve the service. However, some factors might well be applicable to other hospitals as well.

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PATIENTS AND METHODS

This descriptive study was undertaken from May 1996 to May 1998 at the neonatal unit of Pelonomi Hospital, Bloemfontein. Factors that could be important in influencing mothers in their feeding choice were assessed. Mothers who were ready to leave the hospital with their babies were interviewed three mornings a week, after giving verbal consent. The authors (UH and JG) conducted the interviews, sometimes with the assistance of other doctors in the unit or nursing staff to help with interpreting when necessary. We believe that this sample is representative of the general population of mothers with infants in the nursery. Babies admitted within 24 hours of birth were included. Excluded were babies born to HIV-positive mothers, babies with congenital anomalies affecting feeding, and babies for whom breast-feeding was contraindicated. Basic medical data on the mother and baby were obtained from the hospital notes. Misconceptions or misunderstandings of the mother regarding feeding of her baby were frequently noticed during the interview. These were corrected at the end of the interview and appropriate advice was given.

The responses and medical data were coded and analysed using Epi-Info version 6.0 and statgraphics computer programs. The chi-square test was used in the case of categorical data. Descriptive statistics included minimum and maximum value, mean, median, standard deviation and range. Where necessary the *t*-test was used to determine any significant differences in numerical data. The *P*-value is indicated in each case to determine significance.

RESULTS

Of the 81 mothers who took part in the study, most ($N = 60$, 74%) had decided during pregnancy to breast-feed their babies exclusively. There was no significant association between this decision and parity, age, level of education, previous breast-feeding experience or whether the mother would return to school or work. The decision taken before the birth was, however, significantly associated with her reply to the question 'How will you feed your baby tomorrow?' ($P = 0.0050$) (Table I).

On discharge of the babies, 60% of mothers intended to breast-feed exclusively on the following day. 'Other' feeding methods were breast and bottle-feeds, bottle-feeding only, or bottle-feeds and porridges.

Table I. Association between antenatal feeding decision and subsequent feeding plans*

During pregnancy decided to breast-feed only	Yes ($N = 60$)	No (bottle, other, undecided) ($N = 21$)
How will you feed your baby tomorrow?		
Breast-feed only (%)	41 (68)	7 (33)
Other (%)	19 (32)	14 (67)

*$P = 0.0050$, $\chi^2 = 7.89$.

The mother's decision at discharge to breast-feed exclusively was significantly associated with an increased birth weight ($P < 0.0008$) and gestational age ($P < 0.0005$) of the baby at birth. The average birth weight of babies of mothers who intended to breast-feed exclusively after discharge was 2 411 g, in contrast to the 'other' group where the average birth weight was 1 823 g. The discharge weight of the baby was also found to be associated significantly with the mother's decision to breast-feed exclusively at home (Tables II and III).

In response to the question: 'Do you know how to increase your breast-milk supply?', only one mother had the correct knowledge, although 58% of mothers thought they knew and explained what they would do. There were no significant associations between the choice of feeding method and age, parity or educational level of the mother. Feeding practices in the hospital and any assistance given to the mother by hospital staff had no influence on mothers' feeding decisions at discharge of the baby. Only 37% of mothers stated that they were shown how to express milk and 42% were shown how to breast-feed. Although not statistically significant, the average stay of babies whose mothers did not intend to breast-feed exclusively was longer than that of infants with mothers intending to breast-feed exclusively. Numbers were too few to be able to comment on whether ventilation had an influence on the decision.

A significantly greater proportion of the mothers who intended to breast-feed exclusively saw their babies daily ($P = 0.0220$) (Fig. 1). More mothers living in and around

Table II. Association between babies' weight and mothers' feeding decisions (%)

	Birth weight ≤ 2 000 g* ($N = 44$)	Birth weight > 2 000 g* ($N = 37$)	Discharge weight ≤ 2 000 g† ($N = 42$)	Discharge weight > 2 000 g† ($N = 36$)
Breast-fed only	21 (48)	27 (73)	19 (45)	27(75)
Other	23 (52)	10 (27)	23 (55)	9 (25)

*$P = 0.0213$ $\chi^2 = 5.31$.
†$P = 0.0077$, $\chi^2 = 7.10$.

Table III. Association between gestational age at birth and mothers' feeding decisions (%)*

	Gestational age ≤ 34 weeks (*N* = 40)	Gestational age > 34 weeks (*N* = 41)
Will breast-feed tomorrow	17 (42.5)	31 (76)
'Other' feeds tomorrow	23 (57.5)	10 (24)

*$P = 0.0024$, $\chi^2 = 9.19$.

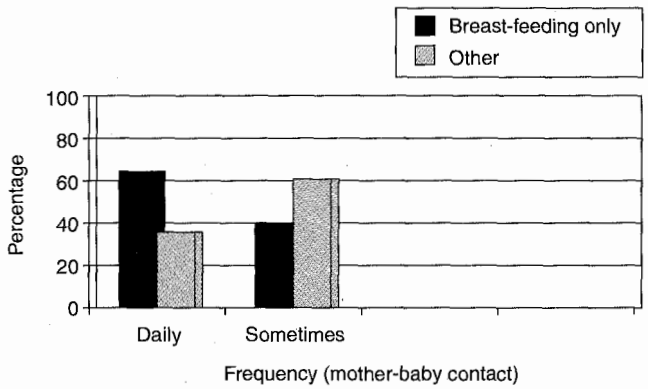

Fig. 1. Chosen feeding method v. mother-baby contact.

Bloemfontein saw their babies daily compared with those living further away. The latter group was also much less involved in the feeding process (breast-feeding or feeding by bottle or nasogastric feeding).

Many mothers felt it would be difficult to breast-feed after the interruption. They said their milk would have dried up, milk would be sour, or that one just could not feed after a non-breast-feeding period.

While the baby was in the unit, many mothers ($N = 54$, 70%) expressed their milk; however, only 31 of the women expressed more than once a day (the maximum mentioned was five times a day), and many only started after 3 days. Mothers staying further away expressed milk to an even lesser extent. The main reasons for not expressing were that there was no milk, that the mother did not know how to express, or that she did not know it was important to express. There was no association between expressing milk and any demographic data on the mother or baby or whether the mother participated in the feeding process in any way. Most stated that drinking a lot of tea, eating a lot of food, especially porridge or meat, would help.

Mothers were asked where they would seek help if they had problems breast-feeding at home. Two-thirds of the mothers replied that they would get help at a clinic or hospital or from a doctor.

Discussion

It is well known that the decision to breast-feed is usually taken during pregnancy,[9] and it was again demonstrated in this study. Breast-feeding motivation and teaching of the process, including the importance and technique of expressing breast-milk, should be an essential part of antenatal care. This may help mothers to breast-feed if the infant is admitted to a neonatal unit.

Only 50 - 60% of mothers thought that they would exclusively breast-feed their babies at home. Except for frequent mother-baby contact, unfortunately no hospital practices (e.g. assistance with breast-feeding or with expressing of milk) in this study influenced mothers to decide to breast-feed exclusively when they took their babies home. Breast-feeding support groups in the neonatal unit have been used in hospitals.[2,10] Staff members of the neonatal unit should be trained and have the skills to help manage lactation in difficult circumstances.

The birth weight, discharge weight and gestational age of the baby had an important influence on the feeding decision, as can be expected.[11] Smaller, more immature babies are usually tube-fed for a while. Therefore the mother-baby pairs at higher risk of partial or no breast-feeding should be given extra attention while in the unit.

The expressing of milk and actual breast-feeding of the baby during the hospital stay were not at a level that would sustain lactation adequately. To maintain lactation while the baby is not feeding, it is recommended that the mother expresses five of more times a day, frequency being more important than duration per session, totalling an average of 100 minutes per 24 hours. Expressing of milk should be started as soon as possible after delivery.[12,13]

Virtually no mother had the correct knowledge of how to increase her breast-milk supply. The basic rule is that the more the baby drinks the more breast-milk is produced, following the simple rule of demand and supply.[14]

The baby benefits from being fed its mother's milk[5] and this also reduces costs to the hospital (less artificial milk, lower infection rate). Kangaroo care of the premature baby has also been shown to increase breast-feeding rates.[15] Admitting the mother as a lodger might not seem cost-effective initially, but does help in establishing a sound mother-baby relationship as well as improving the overall breast-feeding rates.[4] Mothers also take on tasks that would otherwise have to be done by nursing staff, thus freeing staff to attend to their specialised work. This results in healthier babies. Some staff members of the neonatal unit should receive more intensive training so that they can manage breast-feeding under difficult circumstances and take responsibility for breast-feeding support in the unit.[16] In case of separation of the mother and infant, re-admission of the mother-baby pair for 2 - 3 days before going home,

specifically to help establish good breast-feeding technique and build-up the milk supply, is another possibility.[4,13] Referring the mother to knowledgeable health workers after discharge is important to encourage and help her in breast-feeding the infant. Attention to these factors should result in an increase in the breast-feeding rate on discharge.

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THE METABOLIC SYNDROME IN BLACK HYPERTENSIVE WOMEN — WAIST CIRCUMFERENCE MORE STRONGLY RELATED THAN BODY MASS INDEX

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Objective. To examine the association between measures of obesity and features of the metabolic syndrome in treated black female hypertensive subjects.

Design. Cross-sectional study.

Setting. An urban primary health care centre in Mamelodi, Pretoria.

Subjects. Women with hypertension and without known diabetes mellitus or secondary causes of hypertension. In total 124 women participated, with a mean age of 56.9 years (standard deviation (SD) 11.0) and mean body mass index (BMI) of 34.1 kg/m^2 (SD 8.1).

Main outcome measures. Blood pressure, glucose, insulin and lipid levels.

Results. Waist circumference and waist-hip ratio were more strongly associated with insulin, uric acid, glucose and triglycerides than was BMI. Statistically significant associations were found between waist circumference and low high-density lipoprotein HDL cholesterol (standardised regression coefficient –0.006, standard error of the mean (SEM) 0.002), log triglycerides (0.007, SEM 0.003), uric acid (0.002, SEM 0.001) and log insulin (0.012, SEM 0.003). BMI was only significantly associated with uric acid (0.002, SEM 0.002) and log insulin (0.009, SEM 0.004).

Conclusion. In a group of black hypertensive women measures of central obesity were more strongly associated with components of the metabolic syndrome than BMI.

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