MATERNAL PARTICIPATION IN THE CARE OF THE HIGH RISK INFANT: FOLLOW-UP EVALUATION

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ABSTRACT

Fifty mothers of high risk infants admitted to the Neonatal Special Care Unit were followed up to the postnatal age of 2.5 mo ± 15 days. Twenty five mothers (Group I) had stayed in the nursery with the infant for a period of 4.8 ± 4.6 days until the discharge of the infant, providing expressed milk and participating in the non-specialised care of the infant. The other 25 mothers (Group II) remained separate from their babies for the duration of the latter's stay in the hospital although some of the mothers did come off and on to give expressed human milk and at times handle their infants. Family features such as parental age, educational and occupational status, and presence of residential elder women, were similar in the two groups. Infant characteristics too, such as sex, birth weight, and early neonatal morbidity were also comparable. Operative deliveries and maternal problems were as expected more in the separated group. The duration of the infants' hospital stay was also more in the latter (9.5 ± 3.5 vs 6.3 ± 3.9 days; p > 0.05).

Subsequent to their discharge, mothers who had stayed with the infant identified the following benefits of their stay -acquiring of knowledge relevant to infant care especially hygiene(19) and their personal involvement in the care of their infant(12), both of which they said increased their self confidence in looking after the babies after discharge, and provision of breast milk round the clock(17). Among mothers who had remained separate, 15 complained of breast engorgement, 6 of excessive worry about the welfare of the infant and 6 apprehension about caring for the latter at home after discharge. Eleven mothers, however, said that they were not unduly worried about their babies as they received information about them.

At the follow-up more infants were breast-fed in the intervention group(25) than in the separated group(19) and probably secondary to this, the former showed a decreased morbidity. These findings were statistically significant.

Key words: *Newborn, Mother-infant interaction.*

There is evidence in the literature to suggest that maternal involvement with high risk infants has beneficial effects. In the Western world the main aspects studied have been the impact of early mother-infant interaction on breast-feeding and subsequent infant behaviour and development(1-3). In India, there are limited studies(4,5) and these too on the immediate impact, evaluating primarily the influence on the physical outcome of survival, early morbidity before discharge, and duration of hospital stay.

This study presents a follow-up evaluation of the impact of maternal participation in the care of the high risk infant after discharge from the hospital.

Material and Methods

Fifty mother-high-risk infant pairs were

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taken up for study. The first 25 mothers (Group I) came to stay with their infants in the Neonatal Special Care Unit after discharge from the Obstetric Unit and remained there until the latter were discharged. The mothers provided expressed breast milk for their babies and also participated in the non-specialised care of the latter including cleaning, changing of napkins and other clothes. The infants were initially on tube feeds, the more sick ones being administered short-term intravenous glucose-electrolyte fluids. Twenty five mothers who did not stay with their infants were also studied. Mothers of infants delivering in the same hospital were informed personally about the facilities available for their stay within the nursery. For the others, at least one relation was informed about this matter. Mothers who did not come to stay in the unit were asked to come and give expressed milk for their babies whenever possible.

Mothers and infants were followed up after discharge for 3 months and the nature of feeding, infant weight gain and morbidity, and maternal views about the

TABLE I—*Maternal Characteristics*

Characteristics	Group I mothers in NSCBU (n=25)	Group II separated (n=25)	Statistical evaluation χ^2	df	p value
Maternal education					
Illiterate	7	7			
Primary schooling	4	4			
			0.19	3	>0.05
Secondary schooling	10	11			
College education	4	3			
Maternal Age (yrs)					
<20	2	2			
21-30	22	21	0.35	2	>0.05
31-40	1	2			
Presence of residential elder woman	15	14	0.82	1	>0.05
Outside employment	2	1	0.35	1	>0.05
Child rearing experience	8	12	1.33	1	>0.05
Perinatal problems					
Antepartum hemorrhage	1	2			
Hypertensive disorders	1	2			
Cesarean section	3	6	0.37	4	>0.05
Episiotomy	2	7			
Miscellaneous	1	3			

intervention were evaluated. The staff interviewing mothers at the follow-up for this study belonged to another unit and were not aware of the group to which the individual mother-infant pairs originally belonged. The definition of morbidity such as diarrhea, pneumonia, septicemia was in accordance with guidelines published earlier(6). Weight gain was expressed as a percentage of the birth weight.

Results

The major maternal characteristics are noted in *Table I.* Thirty six mothers (72%) had some education, mostly school level while 14 (28%) were illiterate. Fifteen mothers in the intervention group and 14 in the separated group had the support of a residential elder women in the family. Most of the mothers were housewives, only

TABLE II—*Infant Characteristics*

Characteristics	Group I mothers in NSCBU (n=25)	Group II separated (n=25)	Statistical evaluation		
			χ^2/t	df	p value
Place of delivery					
In same hospital	20	19	$\chi^2 = 0.12$	1	> 0.05
Outborn	5	6			
Sex					
Males	17	16	$\chi^2 = 0.09$	1	> 0.05
Females	8	9			
Birth weight					
Mean	2343	2316	t = 0.19	1	> 0.05
SD	533	442			
Neonatal morbidity					
Jaundice (requiring treatment)	20	15	$\chi^2 = 0.61$	4	> 0.05
LBW/Prematurity	15	13			
Birth asphyxia (Apgar score <6 at 1 min)	8	6			
Major infections (septicemia, diarrhea	3	4			
Miscellaneous (bleeding, convulsions, *etc.*)	5	5			
Stay in NSCBU (in days)					
Baby	6.3±3.8	9.5±3.4	t = 3.14	1	> 0.05
Mother	4.8±4.5				

3 having outside employment. Eight women in the intervention group and 12 in Group II were multifarious, having had some past experience in breast-feeding and child-rearing. There were no significant differences in the above factors nor in paternal educational and occupational status in the two groups. Postnatal maternal problems were somewhat more among mothers who did not come to stay in the nursery, but the difference was not significant in this sample size. In Group II, 19 mothers came to the nursery to give expressed breast milk for their infants when-ever they could.

Regarding the infant characteristics shown in *Table II,* sex, birthweight, place of delivery, neonatal morbidity in the hospital were similar in the two groups. The stay in the nursery was less in the intervention group, but again this difference was not statistically significant. Maternal stay in the neonatal unit was obviously less than that of the infant as the mother came to stay only after she was discharged from the Obstetric Department.

Table III indicates the outcome at the three-month follow up. The number of infants who were breast-fed were significantly more in the intervention group (χ^2 = 18.0, df = 1, p <0.001). In fact, all the infants in this group were breast-fed, 20 receiving no supplementary milk feeds. In contrast, in Group II in 6 infants breast feeds had been discontinued and only 5 were totally breast-fed, the remaining receiving breast and 'top' milk feeds.

The percentage weight gain was better in the intervention group although not of statistical significance. The number of infants with problems however, was significantly higher in the control group, diarrhea being most common.

On being asked as to what they felt about the intervention, 23 said that they liked their stay with the infants and defined the following advantages. Opportunity to learn about the case of their infants was felt to be useful by 19 mothers, 12 feeling that personal involvement during hospital stay gave them greater confidence for subsequent management after discharge.

TABLE III—*Outcome at Follow-up*

Characteristics	Group I mothers in NSCBU (n=25)	Group II separated (n=25)	Statistical evaluation		
			χ^2/t	df	p value
Only breastfed	20	5	χ^2=6.87	1	< 0.01
On supplementary milk	5	14	χ^2=4.16	1	< 0.05
Totally bottle fed	-	6			
% weight gain	31.3±12.9	22.8±11.8	t=2.43	1	>0.05
Infant morbidity					
Nil	22	7			
No. with problems	3	18	χ^2=18.47	1	<0.001
Diarrhea	1	18	χ^2=24.52	1	<0.001
Respiratory infection	2	5	χ^2= 1.28	1	>0.05

Eleven women also felt that they could provide more breast milk for their infants by staying in the hospital.

The disadvantages identified included in 10 cases separation from the rest of the family and being away from their homes for a longer period than would have happened had they gone straight home after their discharge. Eleven mothers complained of lack of adequate facilities in the unit for stay of mothers, particularly relevant to bathrooms and toilets as these were some distance from the Unit. In addition meals were not provided for mothers by the hospital as in the neonatal unit as in other Pediatric Wards, mothers were treated merely as attendants for the infants and were not given any food, whereas during their stay in the Obstetric Wards before discharge, they were given all the meals by the hospital.

Among those women who did not stay with their infants, stated reasons for non-compliance included painful operative interventions such as episiotomy and Cesarean section in 13 cases, and maternal problems in 4. Four mothers could not stay because of family problems such as a nuclear family with no other person available to look after the home and/or other young siblings. Surprisingly, 2 mothers claimed that they did not know about this intervention although the nursery staff insisted that at least one relative of each infant was definitely informed about it.

On direct questioning, 20 mothers could not identify any advantages of being separate from the baby; but 5 said that they had less disturbance. Regarding disadvantages, 17 said that they had been worried about their babies as they could not be with them, 15 developed breast engorgement, and 6 said that they experienced some apprehension and lack of confidence when they had to look after their infants after discharge. Eleven mothers said there were no specific disadvantages of being separate from the infant for that period and infact had felt more relaxed as someone competent was caring for their babies in the hospital.

Discussion

Having mothers in the neonatal special care unit is now commonly accepted, although the degree of involvement, facilities available, and the benefits identified may vary in different units(1-5,7,8). Unlike centres in advanced countries where the follow-up support for health care by community workers is better, entry of mothers into the nursery in developing countries should not be merely to provide human milk or even for helping with non-specialised nursing care, but also to utilise the opportunity provided by this intervention to impart some health education. This is easier when the mothers actually stay in the unit as the staff can do this whenever they have the time, whereas, frequently when mothers come merely to give expressed breast milk, they may not necessarily be there when the staff is relatively free. Staying in the unit also ensures better supply of human milk for high risk infants around the clock. In addition, mothers learn indirectly by observation and mimicry when they watch the nurses care for their babies. Hence, it is also important to ensure that the staff take even greater care to check what they do in front of the mothers including washing hands properly before handling the high risk infant so that a positive re-inforcing effect is achieved on the mother's subsequent behaviour. Possible inadvertent detrimental influences of careless behaviour and remarks on the part of

the staff should always be kept in mind.

Participation in the non-specialised care of the infant such as cleaning and care of the umbilical cord can have significant advantages especially when done under supervision of trained, motivated staff. It is also useful to have another female relation to stay with the high risk infant in the nursery as a 'mother figure' until the mother can come, as it helps to educate them. They in turn hopefully will give some suitable support to the mothers later on. While elder female relations such as mothers and mothers-in-law can be very supportive, some may have just the opposite effect. For example, they may be very ones to sow the seeds of doubt about possible inadequacy of the mother's milk and lead to unnecessary supplementation with other milks. They may also enforce harmful traditions in the care of the infant. Hence, they must be included in health education programmes wherever possible.

At follow-up the lower morbidity in the intervention group was most likely due to the higher percentage of breast-fed infants. The latter in part, atleast, can be attributed to the shorter duration of separation and hospital stay and to a greater frequency of expression of milk in the intervention group. Other factors which can be implicated are the very factors which presumably prevented the mother from coming and staying in the nursery, notably, Cesarean section. While maternal illnesses can be considered as legitimate reasons for non-compliance, the morbid fear of Cesarean section needs to be taken into consideration when giving health education. Ignorance and superstitions both among mothers and their relatives lead to needless restriction in diets and activity long after the medical indications are over.

It is also essential to have both types of facilities in a neonatal special care unit, namely stay with and without the mother as the latter may not be able to comply in case of illness or if there is no other person to help at home in a nuclear family, especially when there are other young siblings. Again in units catering to higher social classes having mothers regularly participating in the care of the infants may not always be feasible and the entry inside the regular nursery rooms frequently signals a number of unwanted visitors. In some of these units, however, facilities may be available for rooming-in some of the high risk infants with mothers in individual rooms.

What is now universally accepted is that all healthy mothers must be encouraged to come to the nursery to give breast milk and also handle their infants where feasible and where facilities exist actually stay in the unit and participate in the non-specialised care of their infants. Early mother-infant interaction appears to have both immediate and long term benefits as noted here and in earlier studies(1-5,7,8) and hence it is strongly recommended. However, local requirements and nature of available facilities will determine the exact type of intervention and degree of involvement of the mother.

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NOTES AND NEWS

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