

Risk Factors for Discontinuation of Exclusive Breastfeeding by One Month of Postnatal Age Among High Risk Newborns: An Institution Based Case Control Study

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ABSTRACT

Background: Beyond one month of age, there is generally a drop in the proportion of mothers providing exclusive breastfeeding to their infants. Infants with morbidities during neonatal period have been observed to be at higher risk of discontinuation.

Objective: To enumerate the prevalent factors behind discontinuation of breastfeeding among high risk newborns by first month of life.

Materials and Methods: A case control study conducted at high risk newborn followup clinic of a teaching medical institute in northern India between January and May 2013. Infants were divided on the basis of continuation (controls) or discontinuation (cases) of exclusive breastfeeding at one month of age. The socio-

demographic factors along with maternal and neonatal medical factors were compared among groups.

Results: During the study period, 112 newborns were screened. Forty seven cases and thirty eight controls were enrolled and finally evaluated. Female gender of newborn, less educated mothers and large families were observed to be associated with discontinuation of exclusive breastfeeding during first month of life among high risk newborns. Requirement of parenteral fluids during hospital stay emerged as the only independent medical reason.

Conclusion: As in healthy newborns, the socio-cultural factors overshadow the medical reasons for discontinuation of exclusive breastfeeding during first month of life among high risk newborns.

Keywords: Breast milk, Infant nutrition, Prematurity

BACKGROUND

Breast milk is the ideal food for infant and its role for the newborn growth, development and immunity is universally recognized. The World Health Organization recommends exclusive breastfeeding for the first six months of life "to achieve optimal growth, development and health" [1,2]. Unfortunately, exclusive breastfeeding rate is only 28% at 4-5 months of age [3]. There are numerous factors behind discontinuation of breast feeding, ranging from those related to the newborn (prematurity, sickness), mother (sickness, depression) or social (working mother, myths) [1].

High risk newborns deserve special attention in this context. On one hand, deficits in their growth, development and immunity secondary to the morbidities further increase the importance of breastfeeding, on the other hand, they are at high risk of discontinuation of breastfeeding due to their compromised physiological state. Apart from the immediate effects on neonatal health, the long term benefits of breastfeeding on individual's metabolic and endocrine status is recently being emphasized [4]. Compared to healthy counterparts, high risk newborns have been observed to have higher rates of discontinuation of breastfeeding. The risk of discontinuation is noted to be highest during the first month of infant's life, possibly due to failure of mothers to cope with and newborn demands and get adjusted to the familial environment [5]. It is essential to delineate various risk factors behind discontinuation of breastfeeding among these newborns in order to design some effective strategies promoting exclusive breastfeeding.

The study was planned with the primary objective of finding out the prevalent factors behind discontinuation of breastfeeding among high risk newborns by first month of life.

MATERIALS AND METHODS

This was a case control study conducted at tertiary level teaching institute in northern India catering to population coming

from urban as well as rural settings. The study was performed between January and May 2013. The newborns attending the high risk newborn follow up clinic (<34 wk or <1800 gm at birth, culture proven sepsis or meningitis, asphyxia with neurological abnormality, neonatal jaundice requiring exchange transfusion), with completed one month of age, were screened for enrolment. Newborns were grouped according to type of feeding received till one month of age. The exclusively breastfed newborns were taken as controls and those who received any other feeding (animal milk, formula feeds, soups, etc) besides own mother's breast milk (with or without breastfeeding) were taken as cases.

Babies who were discharged from hospital >15 d after birth and those with contraindication to breastfeeding due to newborn or maternal factors were excluded. The eligible newborns were enrolled if written informed consent was willingly given by the mother. With expected proportion of very low birth weight (VLBW <1.5kg) babies to be key factor behind discontinuation of breastfeeding by one month, the expected prevalence of VLBW among those who continue to breast feed was taken as 30% against 60% among those not continuing [5]. For 80% power and two sided alpha of 5%, 44 babies were required to be assessed in each group. However, the final enrolment was as many babies enrolled during limited period of four months.

All the information was recorded at a single contact with the mother. The complete demographic profile including mother's age, education, socio-economic status, occupation was recorded. The details of family comprised of income, house hold details, number of people helping in newborn care and other relevant issues. Maternal medical, obstetric, antenatal, birth and perinatal details followed by complete details about the newborn e.g. birth weight, gestation, morbidities, intervention, day of starting feeding, age at which breastfeeding was established, and age at discharge from hospital and postnatal days at home was recorded.

STATISTICAL ANALYSIS

The data was recorded in Microsoft excel sheet. The continuous variables were presented as mean (SD) and compared using student t-test and categorical variables were depicted as proportions and compared using chi-square test. The study protocol was approved by institute ethics committee of Pandit BD Sharma PGIMS, Rohtak and all the procedures followed were in accord with its ethical standards.

RESULTS

During the four months of study period, 112 newborns were screened. Forty seven cases and thirty eight controls were enrolled and finally evaluated. There was no statistically significant difference in the background characteristics among the groups. The mean (SD) birth weight among cases and controls was 1531.32 gm (316.86 gm) and 1588.16 gm (421.13 gm), respectively. The gestational age of cases was 32.79 wk (2.21 wk) against 33.76 wk (2.09 wk) and both the groups had comparable number of premature deliveries. The groups were similar in terms of order of birth, number of working mothers, supervised pregnancies, number of antenatal visits, hospital deliveries and rural background [Table/Fig-1]. The number of female newborns were significantly higher among cases than controls (28 of 47 against 14 of 38, $p=0.03$). The number of mothers educated less than 10th standard were significantly higher among cases (11 among 47 against 2 among 38, $p=0.02$) and there were significantly higher number of members living in the household among cases: 7.4 (2.8) against 4.6 (2.3) among controls ($p=0.02$). No significant difference was observed in age at achievement of full oral feeds, age at discharge, weight gain during hospital stay and discharge weight among the groups. Significantly higher number of newborns received intravenous fluid during hospital stay among controls, compared to cases (34 of 38 against 33 of 47, $p=0.03$).

Characteristics	Cases (47)	Controls (38)	p-value
Male:Female	19/28	24/14	0.03
Working mothers	6	4	0.75
Educated <10th class	11	2	0.02
Supervised pregnancy	32	25	0.82
Premature, 34 weeks	40	31	0.11
Primigravida	26	28	0.80
Rural background	31	21	0.31
Government hospital delivery	46	34	0.43
Neonatal sepsis	23	23	0.26
Received parenteral fluids (any duration)	33	34	0.03
	Mean \pm (SD)	Mean \pm (SD)	
Number of antenatal visits	5.5 \pm (4.4)	6.9 \pm (6.9)	0.23
Number of family members	7.4 \pm (2.8)	4.6 \pm (2.3)	0.02
Full feeds achieved at age (days)	8.17 \pm (4.7)	7.1 \pm (4.5)	0.29
Age at discharge (days)	10.7 \pm (5.0)	10.3 \pm (4.8)	0.84
Weight at discharge (grams)	1520 \pm (314)	1605 \pm (442)	0.40
Weight gain during hospital stay (grams)	35.65 \pm (189.39)	62.63 \pm (165.59)	0.48

[Table/Fig-1]: Comparison of socio-demographic and clinical characteristics among cases and controls

DISCUSSION

Our observation does not add any surprising contribution to the expected list of reported causes behind the discontinuation of exclusive breastfeeding. However, it certainly emphasizes upon the fact that, as in healthy newborns, the socio-cultural factors

overshadow the medical reasons for discontinuation of exclusive breastfeeding during first month of life among high risk newborns. Female gender of newborn, less educated mothers and large families were observed to be associated with discontinuation of exclusive breastfeeding during first month of life among high risk newborns. Requirement of parenteral fluids during hospital stay emerged as the only independent medical reason.

Among the demographic factors, maternal age, age at the time of marriage, parity, religion, maternal education and maternal employment have been reported to be associated with early cessation of exclusive breastfeeding [6,7]. We also observed higher proportion of less educated mothers among the cases. Mothers reporting lack of confidence and embarrassment during initiation of breastfeeding have been noticed to have high probability of early discontinuation [8]. We found large family to have an adverse relation with breastfeeding success, which possibly translates to high likelihood of mother feeling embarrassed due to lack of privacy. Once the breastfeeding is established, cracked nipple, fixed breastfeeding schedules and use of pacifiers and bottles predict poor adherence to exclusive breastfeeding. Similarly, maternal depression, smoking and use of contraception are likely to adversely affect breastfeeding compliance [9,10]. Newborns weighing more than 2780 gm and having head circumference more than 33 cm were noticed to have better long term adherence to exclusive breastfeeding [11]. Female gender of the newborn, spotted as a factor associated with breastfeeding failure in our study, clearly indicate towards the unfortunate gender based discrepancy in the newborn care practices. In addition, newborns requiring parenteral fluid are likely to receive exclusive breastfeeding for longer duration, possibly because of their mothers being longer exposed and more receptive to breastfeeding promotion education during hospital stay.

Small sample and lack of followup are the potential limitations suggesting cautious interpretation of the study results. Since the observations are based upon population with a spectrum of socio-cultural background, these are applicable to most of the developing countries in Asia. The availability of focused clinical support system, addressing the identified lacunae, is likely to forecast better breastfeeding outcome in high risk newborns [8].

CONCLUSION

Less educated mothers from large families having female newborns should be identified as potential defaulters and the breastfeeding promotion should be instituted at an early stage when it would be possible to prevent the default.

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