

Postnatal Lactational Counseling and Neonatal Weight Pattern

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Objective: To compare the impact of postnatal lactational counseling on the weight gain and frequency of mixed feeding in full term neonates.

Design: Observational study.

Setting: Mother-infant pairs were observed in the maternity section of a multispecialty general hospital in Mumbai during two time periods.

Participants: 260 mothers who delivered a full term, healthy, appropriate for gestational age neonate with birth weight >2.2 kg.

Methods: Between 18 November, 2007 and 4 March, 2008, 126 mothers received unstructured verbal encouragement to maintain breastfeeding from the maternity staff. From 1 June, 2008 to 16 December, 2008, 134 mothers were counseled about breastfeeding by the pediatric residents and nurses with the help

of charts, literature and verbal advice. They were supervised and helped during the first feed and subsequently until discharge.

Main outcome measure: Weight gain (g/kg/day) of neonate at 28 days of life.

Results: The mean (SD) weight gain was significantly higher in the counseled group in comparison to historical control group [9.2 (4.5) g/kg/d vs. 7.9 (5.1) g/kg/d; $P=0.03$]. Mixed feeding occurred less frequently in [RR 0.36, 95% CI 0.13, 0.98; $P=0.046$] the counseled group (5/134) as compared to control group (13/126).

Conclusions: Postnatal lactational counseling leads to higher weight gain, and lesser chances of mixed feeding in the neonatal period.

Keywords: Breastfeeding, Neonate, Nutrition.

Early successful breastfeeding is known to be important in securing effective, long term lactation [1-5]. Early initiation of breastfeeding and exclusive breastfeeding [6] for six months or more has many advantages but is only practiced in less than half of the population in India [7]. Globally over one million newborn infants could be saved each year by initiating breastfeeding within the first hour of life [8].

There is some evidence that the implementation of the 'ten steps to successful breast feeding' (Baby Friendly Hospital Initiative) [9] shall lead to an increase in exclusive breastfeeding. There are several studies [10-15] documenting the benefit of lactational counseling to secure effective long term lactation. However, there is paucity of literature documenting the effect of postnatal maternal lactational counseling on the weight gain and a reduction in mixed feeding rates amongst term infants.

We carried out this study to assess whether postnatal lactational counseling of the mother has any positive impact on the neonatal weight gain or reduction in the frequency of mixed feeding.

METHODS

The study was conducted in the maternity section of the

Department of Obstetrics and Gynecology of a multispecialty general hospital where the annual rate of deliveries is about 800 per year. The study population consisted of mothers who had delivered a full term (≥ 37 to ≤ 42 weeks) healthy singleton appropriate for gestational age (AGA) neonates, with a birth weight of >2.2 kg. Mother-infant pairs were excluded if the mother or infant was admitted to an intensive care unit, if the infant was born with congenital or chromosomal malformations, or those who were not likely to follow-up due to distance from home to the hospital or likely migration. The research ethics board of the institution approved the protocol. Informed consent was taken from the mothers of the enrolled infants.

During the period between 19th November 2007 and 4th March 2008, mothers of infants received the usual verbal encouragement to maintain breastfeeding from the maternity staff. From 5th March 2008 to 31st May 2008, pediatric residents and nursing staff in the maternity unit were formally trained in postnatal lactational counseling in a structured format with the use of charts, literature and verbal advice. They were trained by Infant and Young Child Feeding (IYCF)-certified lactational consultants at our hospital. They received several lectures, talks and one-to-one discussions on benefits of breastfeeding,

positioning, attachment, and the management of problems faced while breastfeeding. Mothers of infants born between 1st June 2008 to 16th October 2008 were individually counseled postnatally from day 1 of life about breastfeeding by the pediatric residents and nurses with the help of charts, literature and verbal encouragement. These mothers were supervised and helped during the first feed and subsequently till discharge. They were empowered with the knowledge of breastfeeding – its benefits, demonstration of correct positioning, attachment – on and duration of each feed. Approximately 4-5 counseling sessions were conducted, each lasting for 45-60 minutes. They were encouraged to exclusively breastfeed their infants for 6 months or more. They were counseled at their bedside in the comfort of their room with adequate privacy for the mother.

The weights of the infants in both groups were recorded on day 1 and 3 while in the hospital, and on day 7, 14 and 28 during the follow-up visits. Mothers in the intervention group were counseled and encouraged to continue breastfeeding. The mothers in both the groups were asked about the details of feeding at the end of 28 days from birth. Infants were weighed naked on an electronic weighing scale (Eagle Model No. EUT30) with minimum reading of one gram.

Baseline socio-demographic, maternal and birth details were recorded. The primary outcome was the assessment of weight gain (g/kg/day) at day 28 of life. The secondary outcomes were: weight on day 3, day 7 and day 14; the frequency of mixed feeding (defined by use of animal/formula milk in addition to breast milk).

The baseline characteristics for both mothers and infants were analyzed by the unpaired ‘t’ test for continuous variables. This test was also used to analyze the weight change on day 3, 7, 14 and 28. Adjusted analysis using linear regression was performed for primary outcome measure to assess the impact of the baseline maternal characteristics that were not equally distributed in the two comparison groups. Chi-square test was used for the categorical outcome of mixed feeding and relative risk was used as a measure of association. A *P* value of <0.05 was considered statistically significant. IBM SPSS version 21 was used for statistical analysis.

RESULTS

The flow of the participants in study is shown in *Fig. 1*. Between 19 November, 2007 and 4 March, 2008, the control group comprising 126 mothers of 126 infants did not receive structured postnatal lactational counseling. Between 1 June, 2008 and 16 October, 2008, 134 mothers

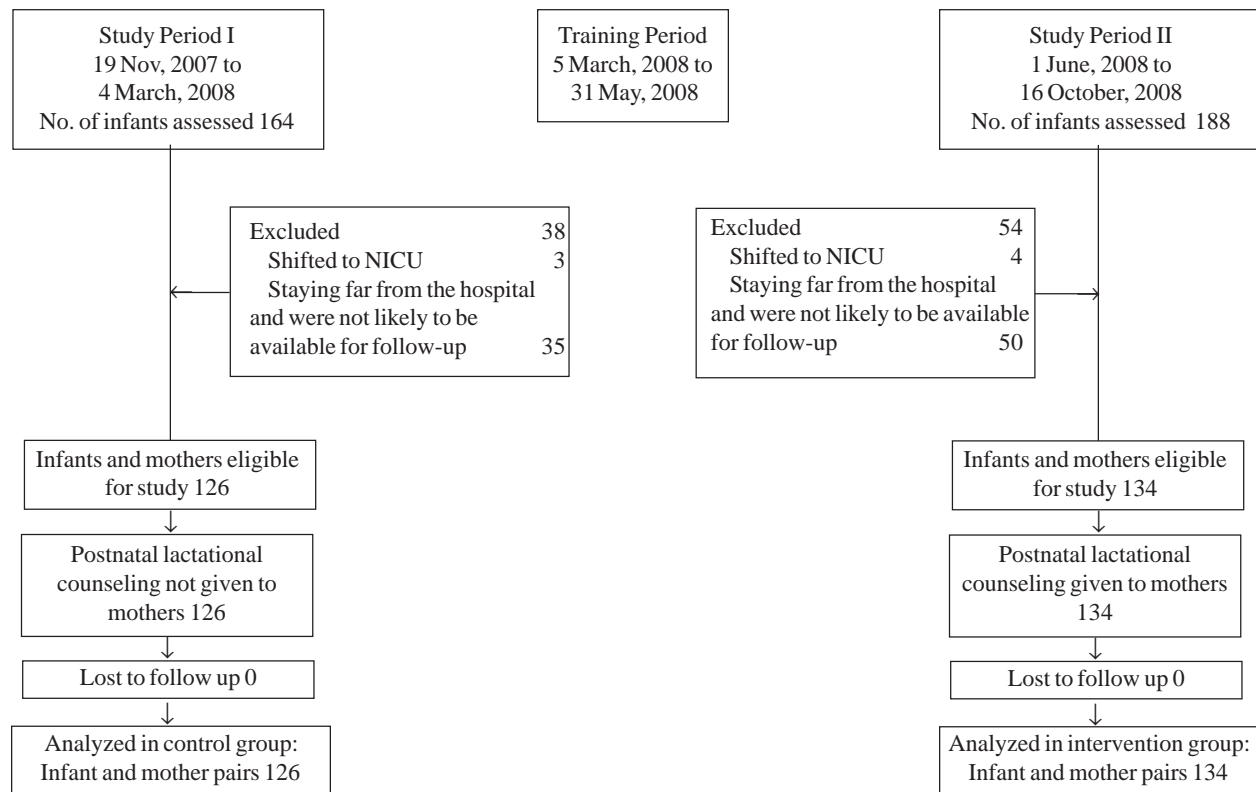


FIG. 1 Flow chart of study subjects.

of 134 infants received postnatal lactational counseling. The baseline maternal and infant characteristics of both groups are presented in **Table I**.

The weight gain pattern at day 28 in the two groups is shown in **Table II**. The weight gain at day 28 was significantly higher in the group who received lactation counseling. Adjusting for baseline differences in maternal weight, socioeconomic and educational status did not change these results. The weight loss pattern on day 3 and 7 and weight gain patterns on day 14 were also favorable in group that received lactation counseling (**Table II**).

Mixed feeding occurred less frequently (RR 0.36, 95% CI 0.13, 0.98; $P=0.046$) in the intervention group (5/134; 3.7%) as compared to control group (13/126; 10.3%).

DISCUSSION

Our study demonstrated the beneficial impact of postnatal lactational counseling on the weight gain at day 28 of life. It also demonstrated that mothers who received postnatal lactational counseling of were less likely to practice mixed feeding.

The limitations of our study were: an observational design with historical control, and infants were not followed up beyond 28 days of life. Moreover, there was a difference in the level of education and socio-economic status in the two groups that might have influenced the outcome to some extent. However, adjusted analysis for maternal weight, socio-economic class and education status did not change direction of the results.

Our study supplements the findings of other studies by showing that specific instructions directed at early initiation of breastfeeding are effective not just in changing maternal behavior but also resulting in better infant weight gain. It has been suggested that early initiation of suckling is correlated with a prolonged duration of breastfeeding [16]. Our results are comparable to earlier studies [10-12] that demonstrated

TABLE I CHARACTERISTICS OF THE STUDY POPULATION

	Control group (n=126)	Intervention group (n=134)	P value
<i>Mother's characteristics</i>			
*Age, y	27.4 (4.5)	27.4 (4.6)	0.97
Prior breastfeeding experience, No. (%)	50 (40)	49 (37)	0.61
Socioeconomic class			<0.01
I	34 (27)	43 (32)	
II	52 (41)	79 (59)	
III	38 (30)	9 (7)	
IV	2 (2)	3 (2)	
Education			0.005
Below SSC	15 (12)	28 (21)	
SSC	27 (21)	17 (13)	
HSC	7 (6)	20 (15)	
Graduate	60 (48)	46 (34)	
Post Graduate	17 (13)	23 (17)	
Mode of delivery			0.68
Vaginal	64 (51)	75 (56)	
LSCS	46 (36)	45 (34)	
Vacuum	16 (13)	14 (10)	
Analgesia received	46 (37)	45 (34)	0.70
<i>Infant characteristics</i>			
*Birthweight, g	2969 (382)	2959 (347)	0.82
*Gestational age, wk	38.7 (1.1)	38.9 (1.1)	0.09

*Values in mean (SD).

peer counseling promotes exclusive breastfeeding and can effectively increase the initiation and duration of exclusive breastfeeding. Randomized controlled trials [13,14] conducted in Haryana, India demonstrated that community-based intervention of promotion of exclusive breastfeeding until age 6 months through existing primary health-care services is feasible, reduces the risk of diarrhea, and does not lead to growth faltering. Our

TABLE II WEIGHT PATTERN IN NEONATES IN TWO GROUP

Weight gain (g/kg/d)	Control group (Lactational counseling not given) (n=126)	Intervention group (Lactational counseling given) (n=134)	Mean difference (95% CI)	P value
Day 28, Mean (SD)	7.9 (5.1)	9.2 (4.5)	1.30 (0.12, 2.48)	0.030
*Day 3, Mean (SD)	26.9 (10.2)	23.2 (10.8)	-3.67 (-6.23, -1.10)	0.005
*Day 7, Mean (SD)	4.9 (7.5)	2.7 (7.4)	-2.17 (-3.99, -0.34)	0.020
Day 14, Mean (SD)	3.4 (5.4)	5.1 (5.3)	1.73 (0.42, 3.04)	0.010

* weight loss.

WHAT IS ALREADY KNOWN?

- Early successful breastfeeding is important in securing effective, long term lactation.

WHAT THIS STUDY ADDS?

- Postnatal lactational training helps in better weight gain in neonatal period and reduces the frequency of mixed feeding.

study complements the above studies by demonstrating the beneficial impact of postnatal lactational counseling on the weight-gain during neonatal period and on decreasing the proportion of mixed feeding. Thakur, *et al.* [15] demonstrated that nutrition education given to mothers on breastfeeding helped increase the weight and length in low birth weight babies. Our study replicated these results in term infants.

We conclude that postnatal lactational counseling improves weight-gain in term infants and decreases the rate of mixed-feeding.

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