

## ORIGINAL ARTICLE

# Relactation in lactation failure and low milk supply

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## ABSTRACT

The objective of the study was to determine the causes of lactation failure (LF), factors affecting relactation in mothers having low milk supply (LMS) and LF, and to know the success rate of relactation by proper counselling and positive support group. It was a prospective hospital-based study conducted in tertiary care referral hospital in mothers with their biological infants of less than 4 months of age, who were admitted with LF and some breastfeeding (BF) related problems. Mothers were advised for frequent BF in proper position and good attachment under supervision of trained BF experts with good support group. Lactagogue was used in few mothers. There were 64 mothers with LF and LMS, out of them 45 (70.3%) were between the age of 21–35 years. Maximum infants ( $n = 51$ , 79.69%) were below 6 weeks of age; and in 32 (78.04%) infants, artificial feeding was started within 15 days of postnatal life. Commonest cause of LF was mother's misconception of insufficient milk ( $n = 25$ , 39%). Relactation was possible in 100% mothers. Complete relactation was possible in 29 (85.29%) mothers when their age was <25 years and in 38 (86.36%) mothers when their infants age was <6 weeks. Chances of

complete relactation were less, when duration of artificial feeding was more and infant was fed with bottle (62.96%). We found no difference with the use of lactagogue. Relactation was possible in 100% of mothers (may be partial) by continuous and positive support from family members and trained health workers.

## KEYWORDS:

Breast feeding; Lactation failure; Relactation.

## INTRODUCTION

Breastfeeding (BF) is “natural” and “best feed” for infants since evaluation of mankind. Exclusive BF not only helps in bringing down the mortality and morbidity during infancy but is also helpful to mothers in many ways [1,2]. BF is evidence based intervention that has been found to be significantly reduced the neonatal as well as child mortality by 13% [3]. Breastfed children have at least six times greater chance of survival in the early months of life than non-breastfed children.

In the absence of poor knowledge of BF and inadequate support, a large number of mothers introduce artificial milk to their infants which lead to suppression of lactation, i.e., low milk

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supply (LMS). In the absence of timely and proper intervention it ultimately leads to lactation failure (LF). As artificial feeding is an important cause of increased mortality and morbidity in infants, relactation becomes an important integral part of Baby Friendly Hospital Initiative. The present study was undertaken to determine the causes of LF, the success rate and factors affecting relactation.

## METHODS

The study was carried out at the Department of Paediatrics, Nehru Hospital, Baba Raghav Das (BRD) Medical College Gorakhpur from June 2012 to September 2013. Sixty four mothers with their biological infants of less than 4 months of age were admitted for relactation. Informed consent was obtained from all the mothers. The Research and Ethics Committee of BRD Medical College Gorakhpur approved the study.

### Inclusion criteria

Mothers with: complete absence of lactation for more than 2 weeks; having BF problem which led to introduction of artificial feed and developed diminished lactation and developed diminished lactation during hospitalisation of their infants for more than 2 weeks in our hospital.

### Exclusion criteria\

Adopted/non-biological infants and infants with congenital anomalies.

LF was defined as "Total absence of milk flow or secretion of only a few drops of milk following regular suckling for a period of at least 7 days [4]." LMS was defined when mother complained of inadequate milk flow and infant required artificial milk feeding. It also included infant's weight gain less than 125 grams per week or 500 grams per month.

Relactation is the process by which a women who have given birth but, did not initially breastfed or has stopped after BF for few days to few weeks, is stimulated to lactate [5]. It includes increasing a LMS also.

Relactation achieved may be complete or partial. Complete relactation defined as when infant was

growing well only on BF [6]. Partial relactation was defined when infant was still required artificial feed for adequate growth (in LF) or more than 50% of artificial milk is replaced by BF (in LMS). If there was no milk secretion even after 2 weeks of continuous effort, then, this was regarded as relactation failure.

All the mothers were hospitalised, and mothers and infants were kept together for 24 hours a day. Detailed clinical history was recorded at the time of hospitalisation utilising the standard counselling technique which included socio cultural background of mother, antenatal knowledge about the BF, reason for introduction of artificial feeding, duration of artificial feeding, use of bottle or pacifier and duration of lactation gap in LF.

A thorough examination of infant was performed. A careful examination of mother was done including the examination of breast. Mothers were advised for adequate nutrition and rest with supplementation of iron, folic acid and calcium for entire duration of study.

Mothers were counselled in groups whenever possible or singly, regarding advantages of BF and disadvantages of artificial feeding. They were assured and made confident that they can successfully breastfeed even if they had not done initially. Mothers were shown proper position and attachment of infant, as well as expression technique of milk [7].

Mothers were divided in two groups:

*Mothers with LF (feeding their infants artificial milk by bottle/cup):* Mothers were advised to breastfeed their infants in proper position every 2 hours for at least 10–15 minutes in direct supervision of trained nursing staff. Bottle feeding was abruptly discarded. As the infant was frustrated and not suckling the nipple, the other family member was advised to pour artificial milk at breast by spoon while the infant was BF [8]. As he gets milk, he starts sucking which leads to stimulation of prolactin reflex. Once the infant started suckling, i.e. nipple confusion subsided, the artificial milk was given with cup after each feeding effort.

*Mothers with LMS:* It included mothers, whose infants were hospitalised and kept on intravenous

(I/V) fluids or fed by expressed breast milk through feeding tube/cup. Other groups were mothers who were still breastfeeding but introduced artificial milk for more than 2 weeks and having some breast problem. For the infants who were sick and cannot suckle at breast, mother were advised to roll the nipple between thumb and index finger gently for 5–10 minutes at least 8–10 times a day. This leads to stimulation of prolactin reflex, which can be induced by different kinds of nipple stimulation [1,9]. Followed this, milk was expressed and given to infants by feeding tube/cup whichever was indicated. Once the infant was stabilised and able to suckle, he was allowed for BF. Other mothers were advised for frequent BF in proper position and their breast problems were managed.

Initially, all the artificially fed infants were given supplementary feed (animal milk) by cup immediately after the infant has suckled at breast for 10–15 minutes. Mothers were advised to reduce artificial milk to 10–20 ml daily with appearance of milk at breast (in LF) or after mother's observation of increase in milk flow (in LMS). The artificial milk was gradually reduced and then, stopped as soon as breast milk was sufficient for infant. Sufficiency of the breast milk was assessed by, an active infant sleeping well in between breastfeed, passing clear, colourless and adequate urine more than 6 times in 24 hours, gaining weight at normal growth velocity, i.e., 125 grams per week and infant was continuously suckling for 10–15 minutes with good attachment particularly in LF mothers.

Mothers were discharged once the infant was growing well. She was followed weekly for 4 weeks, then, fortnightly for a total duration of 4 months. At each visit, she was counselled about the BF and infant's weight gain was assessed.

The results were assessed by chi-square test to see the effect of frequent feeding in proper position and attachment over relactation in cases of LF and LMS.

## RESULTS

A total of 64 mothers with LF and LMS constituted our case material. Maximum mothers ( $n = 45$ , 70.3%) were between the age group of 21–35 years. Twenty mothers (31.25%) were illiterate and only 7 (10.9%) were graduates. In our study, not a single

mother knew the proper position and attachment of BF and correct technique of expression of milk.

Causes of LF were shown according to age of infants (Table 1). Important causes of LF were mother's misconception of insufficient milk ( $n = 25$ , 39%) and lack of knowledge about successful BF ( $n = 7$ , 19.94%). For LMS, important causes were breast problems and illness in infants.

Out of the total 64 infants, two infants expired because of septicaemia, one left against medical advice and seven were not brought for follow up (Table 2). Therefore, relactation was assessed in 54 mothers.

In present study, all the mothers who were followed for 4 months could relactate, with partial and complete relactation in 24.07% and 75.93% mothers, respectively.

Association between success of relactation was established with the age of infant and that of mother (Table 3). In infants of less than 6 weeks, partial and complete relactation were possible in 6 (13.63%) and 38 (86.36%) mothers, respectively, and same was possible in 7 (70.0%) and 3 (30.0%) mothers, respectively, if age was more than 6 weeks. Association of relactation with age of infant is statistically highly significant ( $p < 0.001$ ). If age of mother was less than 25 years, partial vs. complete relactation was 14.71% vs. 85.29%, and this figure was 38.4% vs. 61.54% in mothers of more than 25 years. This association is also statistically significant ( $p < 0.05$ ).

Out of total 54 mothers, 33 mothers had given artificial milk to their infants. Duration of artificial feeding was statistically associated with possibility of relactation ( $p < 0.05$ ) (Table 4).

Table 5 shows association between method of feeding and percentage of mothers achieved partial and complete relactation. Table 6 shows method of feeding and days in which the milk appeared at breast, as well as days in which partial and complete relactation achieved.

Table 7 shows effect of lactagogue on lactation performance. We gave tablet metoclopramide (10 mg every 8 hours for 10 days) to 13 mothers, out of these only 10 (76.92%) mothers achieved complete relactation. In contrast, 39 mothers

**Table 1** - Causes of LF in different age groups.

Cause of introduction of artificial feed	Age of baby					Total no. (%)
	<2 weeks no. (%)	2–6 weeks no. (%)	6–10 weeks no. (%)	10–14 weeks no. (%)	>14 weeks no. (%)	
<b>Maternal causes</b>						
1. Insufficient milk	3 (12.0)	14 (56.0)	4 (16.0)	2 (8.0)	2 (8.0)	25 (39.06)
2. Lack of knowledge about successful BF	—	4 (57.14)	1 (14.19)	2 (28.57)	—	7 (10.94)
3. Breast problems						
Small nipple	2 (66.67)	1 (33.33)	—	—	—	3 (4.49)
Flat nipple	1 (100)	—	—	—	—	1 (1.56)
Retracted nipple	1 (50.0)	1 (50.0)	—	—	—	2 (3.13)
Sore nipple	1 (50.0)	1 (50.0)	—	—	—	2 (3.13)
4. Systemic maternal disease						
TB	—	—	1 (100)	—	—	1 (1.56)
Psychosis	—	1 (100)	—	—	—	1 (1.56)
<b>Causes in infant</b>						
1. HIE	13 (100)	—	—	—	—	13 (20.31)
2. Tetanus neonatorum	4 (80.0)	1 (20.0)	—	—	—	5 (7.81)
3. Sepsis	—	1 (100)	—	—	—	1 (1.56)
4. Prematurity	1 (100)	—	—	—	—	1 (1.56)
<b>Sociocultural causes</b>						
Working mother	1 (50.0)	—	—	1 (50.0)	—	2 (3.13)
<b>Total</b>	<b>27 (42.19)</b>	<b>25 (39.06)</b>	<b>6 (9.38)</b>	<b>5 (7.81)</b>	<b>2 (3.13)</b>	<b>64 (100)</b>

BF – Breast feeding, TB – Tuberculosis, HIE – Hypoxic Ischemic Encephalopathy.

who received placebo, complete relactation was achieved in 30 (76.92%) mothers. There was no statistical association between relactation and use of lactagogue ( $p > 0.05$ ).

## DISCUSSION

Three important things which are required for relactation are a strong desire by the mother, stimulation of the nipple [10] and a strong support system [11]. We achieved relactation in 100% of mothers because most of the infants were ill when relactation was advised; therefore, motivation of mothers was comparatively easy.

In our study “mother’s misconception of insufficient milk” was the commonest cause of LF. Similar reason was also found by other authors [12–18] in 53.3%–81.1% of mothers. We found this problem in primipara (75%) mothers and commonly for male (80%) infants. Reason given by mothers were baby crying excessively, not growing well (according to mother); try to suckle all the time, and sleeping for a short duration only. Many of these complaints are normal physiological findings. Infant can determine the amount, frequency and duration of feeding depending on their physiology and growth needs.

For LMS, important causes were breast problems (12.5%) and illness in infants (31.26%). For

**Table 2** - Outcome of infants in different age group.

Cause of introduction of artificial feed	Age of baby, no. = 64					Total no. (%)	Statistical significance
	<2 weeks no. (%)	2–6 weeks no. (%)	6–10 weeks no. (%)	10–14 weeks no. (%)	>14 weeks no. (%)		
Expired	—	1 (50.0)	—	1 (50.0)	—	2 (3.13)	
LAMA	—	1(100)	—	—	—	1 (1.56)	
Dropped out	1 (14.19)	4 (57.14)	1 (14.19)	1 (14.19)	—	7 (10.94)	
Relactation in mother							$\chi^2 = 14.52$ $df = 2$ $p < 0.001$
1. Not possible	—	—	—	—	—	—	
2. Partial	2 (15.38)	4 (30.77)	2 (15.38)	3 (23.08)	2 (15.38)	13 (20.31)	
3. Complete	19 (46.34)	19 (46.34)	3 (7.32)	—	—	41 (64.06)	
<b>Total</b>	<b>22 (34.38)</b>	<b>29 (45.31)</b>	<b>6 (9.38)</b>	<b>5 (7.81)</b>	<b>2 (3.12)</b>	<b>64 (100)</b>	

LAMA – Left against medical advice.

**Table 3**- Association between relactation and age of infant and age of mother.

Age of baby (weeks)	Age of infant and relactation		Total no. (%)	Dropped out	Expired	Statistical significance
	Partial	Complete				
<6	6 (13.63)	38 (86.36)	44 (81.48)	4	1	
6–10	2 (50.0)	2 (50.0)	4 (7.41)	2	—	$\chi^2 = 14.13$ $df = 1$ $p < 0.001$
>10	5 (83.33)	1 (16.67)	6 (11.11)	2	1	
	13 (24.07)	41 (75.93)	54 (100)	8	2	
Age of mother (years)	Age of mother and relactation		Total no. (%)	Dropped out	Expired	Statistical significance
	Partial	Complete				
<25	5 (14.71)	29 (85.29)	34 (62.96)	2	1	
26–35	8 (40.0)	12 (60.0)	20 (37.04)	5	1	$\chi^2 = 4.39$ $df = 1$ $p < 0.05$
>36	—	—	—	1	—	
	13 (24.07)	41 (75.93)	54	8	2	

breast problem, similar results were found by other authors [12,13] also; and most of these problems can be easily treated. Nanavati et al. also found illness in infants leading to LMS in 45.5% mothers.

We achieved relactation in 100% of mothers, though it may be partial. But other authors [13,16–19] had reported relactation failure in 0.72%–20.7% mothers, which could be because of different inclusion criteria by different authors. In our study, partial and complete relactation



**Table 4** - Association between relactation and duration of artificial feeding.

Duration of artificial feeding at the time of entry into study (days)	Relactation (n = 33)		Total no. (%)	Dropped out	Expired	
	Partial no. %	Complete no. %				
<15	3 (18.75)	13 (81.25)	16 (48.48)	2	1	
15–30	4 (40.0)	6 (60.0)	10 (30.30)	3	—	$\chi^2 = 4.71$ $df = 1$ $p < 0.05$
30–60	2 (50.0)	2 (50.0)	4 (12.12)	2	1	
60–90	3 (100.0)	—	3 (9.09)	1	—	
Total	12 (36.36)	21 (63.64)	33	8	2	

**Table 5** - Association between relactation and method of feeding.

Method of feeding	Relactation		Total No. (%)	Dropped out	Expired	
	Partial	Complete				
1. Still BF	1 (25.0)	3 (75.0)	4 (7.41)	1	—	$\chi^2 = 0.028$ $df = 1$ $p > 0.05$
2. I/V Fluids	—	17 (100)	17 (31.48)	—	—	
3. Artificial feeding						
By bottle	10 (37.04)	17 (62.96)	27 (50.0)	5	2	
By cup	2 (33.33)	4 (66.67)	6 (11.11)	2	—	
Total	13 (24.07)	41 (75.93)	54	8	2	

I/V – Intravenous.

were achieved in 24.07% and 75.93% mothers, respectively. Similar results achieved by Chaturvedi [20] in 25.0% and 50.0% mothers, Nanavati et al. in 21.2% and 78.1% mothers, Banapurmath et al. in 8.2% and 83.4% mothers and Seema et al. [21] in 6% and 92% mothers. Mathur et al. were successful in 70%–75% mothers.

We found that younger the age of infant at the time of intervention better was the relactation achievement. Other authors [17,18,22] also reported the same result. Similarly, if age of mother was less, possibility of relactation was more. This may be because of the fact that young and primipara mothers could be easily motivated for exclusive BF.

It was found that if duration of artificial feeding was less, possibility of complete relactation was more. Other authors [17,23] have also reported that shorter the lactation gap better was the relactation result. For successful lactation, the breast should be emptied frequently (either by feeding the baby or by manual expression) and infant should be fed frequently which causes stimulation of BF reflexes [24,25]. Artificial feeding causes inhibition of both the factors which could be the reason for less chances of complete relactation in infants who were on artificial feeding for longer duration. For the same reason the infants who were still BF, the milk appears at breast earlier and partial and complete relactation could be achieved earlier.

**Table 6 - Relactation in relation to method of feeding.**

Method of feeding	Total no. = 54 (100%)	Milk appeared at breast (days)					Partial relactation (days)					Complete relactation (days)								
		2	4	6	8	10	Mean ± SD	4	7	15	21	30	Mean ± SD	7	15	21	30	45	Mean ± SD	
Still BF infants	4 (7.41)													3						7
Infants on I/V fluids	17 (31.48)																			17
Artificially fed infants																				
By bottle	27 (50.0)		5	18	4		5.9 ± 1.15						18	6	3				18 ± 4.89	
By cup	6 (11.11)	2	4				3.3 ± 0.94		4	2									9.7 ± 3.77	

We found that in mothers who were “Still Breast Feeding” their infants, relactation achievement was earlier (7 vs. 17 days) as compared to mothers whose infants were on I/V fluid, because these infants were sick and not able to suck vigorously.

Present study showing that bottle fed infants took longer time to relactate (29 vs. 21 days) as compared to infants fed with cup. Similar results were shown by Tomar also. Bottle fed babies have severe nipple confusion because the mechanism is different for bottle feeding and BF, which could be reason for this finding. Other author [18] also stated that for complete relactation it took an average of 15–20 days, but Banapurmath et al. achieved it in comparatively less period of time.

Present study showing no association between relactation and use of lactagogue. Other authors [21,26,27] have also not found any difference in relactation with use of metoclopramide.

### CONCLUSION

We conclude that relactation is possible in 100% of mothers (may be partial) by continuous, patience and positive support from family members and trained health workers along with proper counselling and positive reinforcement for building confidence in mother. Therefore, the present study highlights the need of BF counselling and support of mothers; starting from antenatal, natal and during entire lactation period; because most of the causes of LF are preventable and easily correctable.

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**Table 7** - Effect of lactagogue on lactation performance.

Lactagogue/ placebo	Relactation (n = 33)		Total no. (%)	Dropped out	Expired	Statistical significance
	Partial no. (%)	Complete no. (%)				
Tab meto- clopramide	3 (23.08)	10 (76.92)	13 (24.07)	2	1	Z = 1.67 p > 0.05
Placebo	9 (23.08)	30 (76.92)	39 (72.72)	2	1	
Total	13 (24.07)	41 (75.93)	54 (100)	8	2	

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