



Effectiveness of Application of Breast Milk in the Prevention of Sore Nipple Among Postnatal Mothers: A Quasi-experimental study

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ABSTRACT Becoming a mother is an experience which every woman cherishes, she nourishes that life with a food which has found no substitute yet despite advances in science and technology, that pristine food is called "Mother's own milk".

The study aimed to evaluate the effectiveness of application of breast milk in the prevention of sore nipple among postnatal mothers.

Methods: A quasi experimental study was conducted on 70 postnatal mothers, (35 in experimental group and 35 in the comparison group) who breast feeds their babies were selected conveniently. Feeding pattern was assessed by LATCH scale four times in a day followed by the application of hind milk minimum four times in a day for three or four days as per discharge day of mother. The mother was asked to rub hind milk on nipples after feeding the baby and letting it air dry in front of researcher and nipple soreness scale was used to check the sore nipple at third and fifth day or at the day of discharge. Follow up of postnatal mothers was done telephonically by using interview questionnaire on day 15th in both groups.

Results: Study findings revealed that on 3rd day, the mean nipple soreness score was higher in comparison group (1.45) than experimental group (0.10) and thus there was significant difference (t value = 3.87) in nipple soreness score.

Conclusion: Study concluded that breast milk application was effective in preventing sore nipples among postnatal mothers. Hence it can be recommended to use breast milk for the prevention of sore nipple.

Key words: Effectiveness, application of breast milk, prevention of sore nipple, postnatal mothers, hind milk.

Key Messages

- Sore nipple is main problem faced by mothers after delivery¹
- Breast milk was effective in reducing the sore nipple²
- The mean post test score (1.33 2.25) was significantly lower ($t = 21.11$) than the mean pre-test score (8.07 2.05).

Introduction :

Recently expressed breast milk is recommend as a palliative breastfeeding practice which manage nipple pain to support and foster breastfeeding experience with its numerous benefits to the mother and infant¹. Breast milk is a unique product. It has the consistent function of providing infant nourishment, protection, and development with short and long-term effects. It contains maternal cells, from leukocytes to epithelial cells of various developmental stages that include myoepithelial cells and lactocytes which have anti-inflammatory effects². In addition, breast milk contains numerous antioxidants such as bilirubin albumins, uric acid, cysteine, coenzyme glutathione, lactoferrin proteins, carbohydrates, lipids, and molecules with bioactivity, such as vitamins and immunoglobulin which play a role in raising the immunity reaction to the part it applied on³.

Nipple pain at the early postpartum period is the most common complain of breastfeeding mother⁴. Around the world, only two-fifths of infants are breastfed exclusively at the first six months after birth although, it is recommended by the World Health Organization to make exclusive breastfeeding for the first six months⁵. Nipple pain is considering the most pertinent cause for either reduction of exclusive breastfeeding or its early cessation and poor outcomes⁶. The common cause of nipple pain may varied from improper breastfeeding technique, incorrect infant positioning or improper attachment that lead to in effective milk transfer which in turn results in unrelieved suction applied to the nipple surface, and this may extract subsequent pain⁷. Painful stimulus when the infant apply strong vacuum movement with improper positioning or latch on nipple during breastfeeding has an inhibitory effect on oxytocin release. Inhibition of milk release and efficient transfer of milk from the alveoli to the nipple result in either non-nutritive sucking or breast engorgement that are both potential causes of nipple pain⁸. Evidence indicates that multifaceted breastfeeding interventions strategies are in need to improve the breastfeeding outcomes and rates. The most highly effective evidence based interventions to improve the rate, duration and outcome of breastfeeding is providing early and comprehensive lactation support and managing breastfeeding difficulties as nipple pain⁹. There are various interventions for management of nipple pain such as breastfeeding education, applying compresses, dressings, ointments or tea bags¹⁰.

Evidence suggests that utilization of some drops of expressed breast milk can be a facilitator of moist and healing nipple tissue among breastfeeding women. Expressed breast milk is a treatment for nipple pain as it works as a barrier that avoids losing the natural moistness of deeper skin layers. Thus, cellular growth is increased and nipple trauma is prevented¹¹. Also, it can be used as a non-invasive and plentiful source of cells from the lactating breast to differentiate tissue during lactation by the effect of stem cells which found in the breast milk components and have a great role in regeneration of cells in the case of breast difficulties during lactation¹². So, this study was conducted to evaluate the effectiveness of application of breast milk in the prevention of sore nipple among postnatal mothers.

Methods and Measurement

This study was quantative research approach with Quasi experimental research design (non-equivalent control group posttest only design) approved by ethical committee of (IEC NO.1523) Maharishi Markandeshwar (Deemed to be university) Mullana Ambala at maharishi markandeshwar hospital of mullana Ambala. Clinical trial registration has been done (CTRI NO. 024467). The sample size was calculated with power analysis by Cohen's d formula. The calculated effect size was found at 0.50 at power of 0.8. The calculated sample size was 70. 70 postnatal mothers were selected conveniently and allocated to experimental and comparison group by non-randomization (figure 1)

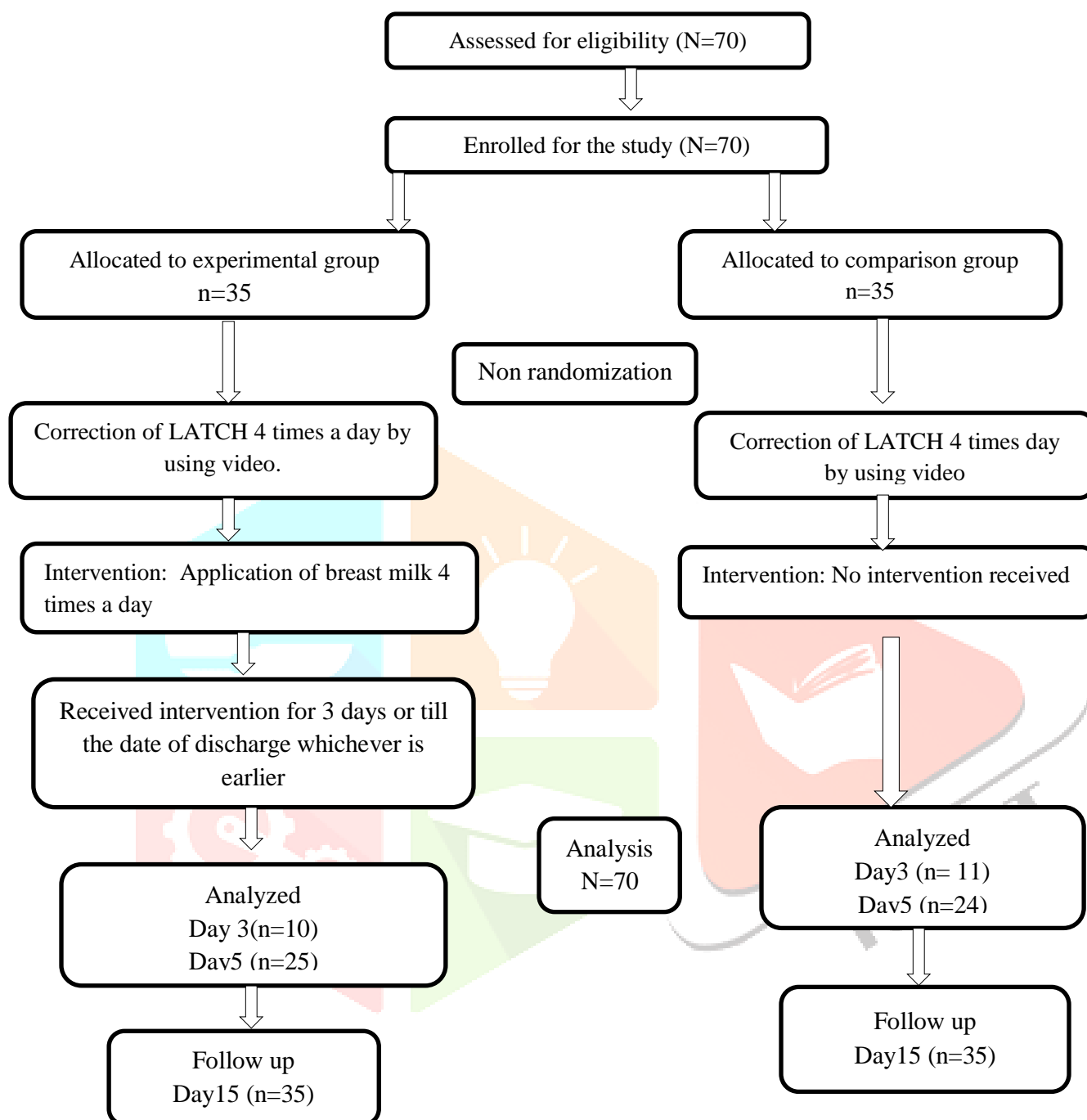


Figure 1

Flow chart of the study

The post-natal mothers who were breast feeding their babies, available at the time of study were included in the study. Those who have breast pathology and whose newborn babies are shifted to neonatal intensive care unit due to any medical condition were excluded.

Nipple soreness rating scale ($k=0.92$) was used to check the sore nipple among postnatal mothers in experimental and comparison group. LATCH scale ($\alpha=0.75$) was used to check the LATCH four times in a day in both experimental and comparison group.

The researcher gave information about study and took informed consent from postnatal mothers to take participate. Data were taken firstly from comparison group in order to prevent contamination. In comparison group data collected regarding sample characteristics after that feeding pattern was assessed with the help of LATCH scale four times in a day for a period of 3-4 days according to discharge of mother and LATCH was corrected by giving education to mother. After that nipple soreness score was assessed with the help of nipple soreness scale at 5th day or at the day of discharge (which ever was earlier). In experimental group the feeding pattern of babies was also assessed by LATCH scale four times in a day for a period of 3-4 days according to discharge of mother after that the intervention that is application of breast milk (hind milk) minimum four times in a day was given. The mother was asked to rub some hind milk on nipples after feeding the baby and letting it air dry in front of researcher and nipple soreness scale was used to check the sore nipple at fifth day or at the day of discharge (which ever was earlier). Follow up of postnatal mothers was done telephonically by using interview questionnaire on day 15th in both experimental and comparison group.

STATISTICAL ANALYSIS

KS kolmogorov smirnov test was applied to check the normality of data. It showed that comparison group (p value = 0.10) respectively. In nipple soreness score data was also normally distributed in experimental (p value=2.55) and (p value=0.6) comparison group. Hence parametric tests were applied in both scales

RESULTS

Data were entered into Microsoft Excel 2007 and using SPSS (Armonk, NY: IBM Corp) version 20 for analysis.

Table 1

Sample characteristics of postnatal mothers (N= 70)

Sample Characteristics	Experimental Group n= 35 f (%)	Comparison Group n=35 f (%)	Chi- Square χ^2	df	p value
Age (in years)					
1.1) < 20 years	01 (02.85)	01(02.85)	3.40	4	0.49 ^{NS}
1.2) 20-25 years	14 (40.00)	09(25.71)			
1.3) 26-30 years	18(51.42)	19(54.28)			
1.4) 31-35 years	02 (05.71)	05(14.28)			
1.5) 36-40 years	00(00.00)	01(02.85)			
Religion					
2.1) Hindu	30(85.71)	27(77.14)	0.96	2	0.61 ^{NS}
2.2) Muslim	03(08.57)	04(11.42)			
2.3) Sikh	02(05.71)	04(11.42)			
Married since					
3.1) < 1 year	06(17.14)	02(05.71)	2.13	3	0.54 ^{NS}
3.2) 1-2 years	12(34.28)	11(31.42)			
3.3) 3-4 years	05(14.28)	05(14.28)			
3.4) more than 4 years	12(34.28)	17(48.57)			
Mode of delivery					
4.1) Normal vaginal Delivery	18(51.42)	13(37.14)	1.44	1	0.22 ^{NS}
4.2) LSCS	17(48.57)	22(62.85)	0.92 ^Y		
Breast feeding					
5.1) Single baby	35(100.00)	34(97.14)	1.01	1	0.31 ^{NS}
5.2) Twin baby	00(00.00)	01(02.85)	0.00 ^Y		
Gravida					
6.1) Primi gravida	19(54.28)	13(37.14)	2.20	2	0.33 ^{NS}
6.2)Multigravida	10(28.57)	15(42.85)			
6.3) Grand multi gravida	06(17.14)	07(20.00)			

*significant ($p \leq 0.05$)^{NS} Non-significant ($p > 0.05$) $\chi^2(1) = 3.84$, $\chi^2(2) = 5.99$, $\chi^2(3) = 7.82$, $\chi^2(4) = 9.49$

Note :Y=Yates correction ,LSCS = Lower segment caesarian section.

Results presented in table 1 shows frequency, percentage distribution and comparison of experimental and comparison group in terms of their sample characteristics.

Frequency distribution table

Table 2

Frequency of postnatal mothers as per their day of discharge from hospital (N=70)

Day	Group	Range	Mean± SD	Median
3rd	Experimental group(n=10)	0-1	0.10 ±0 .31	0.00
	Comparison group(n=11)	0-3	1.45± 1.12	2.00
5 th	Experimental group(n=25)	0-2	0.48 ± 0 .71	0.00
	Comparison group(n=24)	0-3	1.29 ± 0.75	1.00

Minimum score 0

Maximum score 5

It shows that sore nipple score among postnatal mothers in experimental and comparison group was not associated with their day of discharge.

Table 3

A comparison of Nipple Soreness Score between Experimental and Comparison group (N=70)

Groups	Mean ± SD	Range	MD	SEMD	t value	df	p value
Experimental Group (n=35)	0.37 ± 0.64	0-3	0.42	0.23	5.29	68	0.00**
Comparison group (n=35)	1.34 ± 0 .87						

*significant (p≤0.05)

^{NS} Non-significant (p>0.05)

The independent t test shows significant difference in nipple soreness score in experimental (t=1.66,P=< 0.001) and comparison group after application of breast milk

DISCUSSION :

The present study shows in experimental group distribution of samples based on age shows that majority of subjects (51%) were in the age group of 26- 30 years, 40% were within the age group of 20-25 years, (2.85%) were below 20 years and the remaining (5.71%) were in the age group of 31-35 years. The current study were similar with the study conducted by **Getahun Tiruye et al(2018)** in Harar city, Eastern Ethiopia in which majority of subjects (43.9%) were in the age group of 26-30 years , (27.2%) were within the age group of 20-25 years ,(11.9%) were below 20 years and remaining (17%) were in the age group of above 30 years thus it was inferred that majority of mothers belong to the age group of 26-30 years .

The mean nipple soreness score of experimental group was (0.37) which was lower (1.34) than the mean nipple soreness score of comparison group. The mean difference between post test scores of nipple soreness in experimental and comparison group was 0.42 which is not significant. These findings were consistent with the findings of the study conducted by **Eman ahmad Fadel et al (2018)** that the intensity of nipple pain in the experimental group was (0.00) which was lower (0.841) than comparison group. Thus it was accepted that during puerperal period the breast feeding women who lubricate their nipple with expressed breast milk

experience lower level of nipple pain intensity than those who do not do this.

In current study on day 3rd the mean of nipple soreness score in experimental group was 0.10 and in comparison group it was 1.45. The computed t value (3.66, $p = 0.002$) was found to be significant at 0.05 level of significance. On Day 5th, the mean of nipple soreness score in experimental group was 0.48 and in comparison group was 1.29 the computed t value (3.87, $p = 0.000$) was found to be significant at 0.05 level of significance. These findings were consistent with the findings of the study conducted by **Kazemirad et al (2013)**. Indicating that the fissure severity was homogeneous between both groups and its reduction in the 3rd day had no significant decrease ($p = 0.2$), but the experimental group showed a significant difference at the 7th day ($p = 0.006$).

Limitation

- The study sample was restricted to only one setting.

Implication

- Application of breast milk can be practiced in clinical setting in order to relieve patient discomfort and to prevent early cessation of breastfeeding.

Recommendations

- Further study can be done on large samples may help to draw conclusions that are more definite and generalize to a larger population.
- Similar study can be conducted using true experimental design to develop higher level of evidence.

CONCLUSION Breast milk application was effective in preventing sore nipples. The mean post test score (1.33 2.25) was significantly lower than the mean pre-test score (8.07 2.05). The calculated t value $t = 21.11$ of nipple soreness score was greater than the table value ($t_{29} = 2.045$; $p < 0.05$).

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