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IP Journal of Paediatrics and Nursing Science

Journal homepage: <https://www.jpns.in/>

Original Research Article

Benefits of breast milk for prevention of sore nipple & association with their demographic variables: A quasi-experimental study

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ARTICLE INFO

Article history:

Received 22-10-2021

Accepted 18-11-2021

Available online 11-01-2022

Keywords:

Effectiveness

Application of breast milk

Prevention of sore nipple

Postnatal mothers

Hind milk

ABSTRACT

Introduction: A newborn baby has only three demands. They are warmth in the arms of his mother, food from her breasts and security in the knowledge of her presence. Breastfeeding satisfies all three. While breastfeeding may not seem the right choice for every parent, it is the choice for every baby because it fulfills the physical needs as well as psychosocial complementary of the child.

The study aimed to find out the association of nipple soreness in experimental group and comparison group in terms of sample characteristics of postnatal mothers.

Materials and 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.

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1. Introduction

Breastfeeding protects against weight loss due to diarrhea, and in some studies children exclusively breastfed were shown to be less likely to be stunted. Due to its large impact on reduction of infectious diseases, breastfeeding plays a role in reduction of stunting, as infectious diseases are important determinants of stunting. However, breastfed children will still become stunted if they do not receive

an adequate quantity and quality of complementary foods from the age of six months onwards. It is needed to develop effective interventions to improve the rates of expressed breast feeding and thus reduce infant mortality rate that is the highest in the world. Data suggest that infant mortality in developing countries is 5-10 times higher among children who have not been breastfed or who have been breastfed for less than six months.^{1,2}

It is estimated that some optimal breastfeeding especially non-exclusive breastfeeding in the first six months of live results in 1.4 Million deaths and 10% of disease burden in

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children younger than five years. Globally, less than 40% of infants fewer than six months

Proper feeding of infant and young children can increase their chance of survival. It can also promote optimal growth and development especially in the critical window from birth to two years of age ideally infants should be feed within 1 hour of birth, breast feed exclusively for first 6 months of life and to continue to be breast feed up to 2 years of age and beyond starting at 6 months of breast feeding with safe, age appropriate, feeding of solid, semisolid, and soft foods. Several factors have been identified as determinants of nipple trauma in breastfeeding mothers, e.g., poor breastfeeding technique/position/latch- on use of a feeding bottle.³

Nipple pain at the early postpartum period is the most common complain of breastfeeding mother.⁴ 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 months.^{5,6} 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 pain.⁷ 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 pain.⁸ 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 pain.⁹ There are various interventions for management of nipple pain such as breastfeeding education, applying compresses, dressings, ointments or tea bags.¹⁰

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 prevented.¹¹ 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.

2. Materials and Methods

This study was quantitative 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

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.

2.1. Statistical analysis

KS kolmogorov sminov 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

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)			
1.2) 20-25 years	14 (40.00)	09(25.71)			
1.3) 26-30 years	18(51.42)	19(54.28)	3.40	4	0.49 ^{NS}
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)			
2.2) Muslim	03(08.57)	04(11.42)	0.96	2	0.61 ^{NS}
2.3) Sikh	02(05.71)	04(11.42)			
Married since					
3.1) < 1 year	06(17.14)	02(05.71)			
3.2) 1-2 years	12(34.28)	11(31.42)	2.13	3	0.54 ^{NS}
3.3) 3-4 years	05(14.28)	05(14.28)			
3.4) more than 4 year	12(34.28)	17(48.57)			
Mode of delivery					
4.1) Normal vaginal		13(37.14)	1.44		
18(51.42) Delivery					
4.2) LSCS	17(48.57)	22(62.85)	0.92 ^Y	1	0.22 ^{NS}
Breast feeding					
5.1) Single baby		34(97.14)			
35(100.00)		1.01			
5.2) Twin baby	00(00.00)	01(02.85)	0.00 ^Y	1	0.31 ^{NS}
Gravida					
6.1) Primi gravida	19(54.28)	13(37.14)			
6.2)Multigravida	10(28.57)	15(42.85)	2.20	2	0.33 ^{NS}
6.3)Grand multi gravida	06(17.14)	07(20.00)			

*significant ($p \leq 0.05$) ^{NS} Non-significant ($p > 0.05$)

χ^2 (1)= 3.84, χ^2 (2)=5.99, χ^2 (3)= 7.82, χ^2 (4)=9.49

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

value=0.6) comparison group. Hence, parametric tests were applied in both scales

3. Results

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

There is no association of nipple soreness score with selected sample characteristics among postpartum mothers in experimental and comparison group, tested at 0.05 level of significance. Except mode of delivery which is significant (0.04).

4. 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 .

In the current study in order to find out the association of nipple soreness with selected demographic variables ANOVA and chi-square test was computed. After computing the F value it was found to be not significant for both experimental group (F=0.63, $p= 0.60$) and in comparison group (F= 2.1, $p=0.09$) at the level of 0.05 level of significance except mode of delivery ($p=0.04$), which was significant in experimental group. Hence it can be concluded that there is no significant association between sore nipple score and demographic variables among postnatal mothers except mode of delivery. The findings of the study is related to the study conducted by Cadwell K et al. (2014).

Table 2: Association between mean score of nipple soreness in experimental group and comparison group in terms of sample characteristics of postnatal mothers(70)

Experimental Group Sample Characteristics	Comparison Group				p value	Mean	df	f/t	p value
	Mean	df	f/t	p value					
Age (in years)									
1.1) 20-25 yrs	0.21								
1.2) 26-30 yrs	0.50	3/31	0.63	0.60 ^{NS}	1.58	4/30	2.10	0.09 ^{NS}	
1.3) 31-35 yrs	0.50				0.60				
1.4)36-40 yrs	0				1.00				
Mode of delivery									
2.1) Normal vaginal delivery	0.22	33	1.42	0.04*	1.38	33	0.21	0.15 ^{NS}	
2.2) LSCS	0.53				1.32				
Breast feeding									
3.1) Single baby	1.00	33	0.37	-	1.32	33	0.75	-	
3.2) Twin baby	0.00				2.00				
Gravida									
4.1) Primi gravida	0.47	2/32	0.58	0.56 ^{NS}	1.46	2/32	0.29	0.74 ^{NS}	
4.2) Multigravida	0.30				1.33				
4.3) Grandmultigravida (>5 children)	0.17				1.14				
Gap between children (in multigravida).									
7.1) <1 year.	0				2.33			0.82 ^{NS}	
7.2) 1-2year.	1.40	3\31	0.69	0.56 ^{NS}	1.86	4/30	0.37		
7.3) 2-3years.	0.86				1.83				
7.4) >3years	0.67				1.00				
Gestational age of baby.									
11.1)<30week	0				0				
11.2) 30 35weeks	2.84	3/31	0.69	0.56 ^{NS}	1.60	2/32	0.36	0.70 ^{NS}	
11.3) 36-40 weeks	2.86				1.27				
11.4)41-42weeks	3.00				1.50				
Birth weight of baby									
12.1)< 2kg	0.45				1.00				
12.2) 2 -2.5kg	0.38	2\32	0.22	0.80 ^{NS}	1.00	3/31	0.75	0.53 ^{NS}	
12.3) 2.6 - 3kg	0.24				1.58				
12.4) 3.1- 4kg	0				1.36				

^{NS} Not Significant (p>0.05) * Significant (p ≤ 0.05)

F(2/31)= 3.31, F(2/32)= 3.30, F(3/31)= 2.91, F(4/30)=2.69.

T(33)=1.69

determined that no significant differences existed between the experimental groups (F=2, p = 1.34) and in comparison group F=86 P=0.34), Hence it can be concluded that there is no significant association between sore nipple score and demographic variables among breast feeding postnatal mothers.

5. 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“ value t= 21.11 of nipple soreness score was greater than the table value (t₂₉=2.045; p<0.05). There was no significant association between nipple soreness score with selected demographic variables of postnatal mothers.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Cite this article: Rashid N, Mir JA. Benefits of breast milk for prevention of sore nipple & association with their demographic variables: A quasi-experimental study. *IP J Paediatr Nurs Sci* 2021;4(4):127-131.