

Effect of Peppermint Water V/S Lanolin Ointment Application in Management of Cracked Nipple among Lactating Postnatal Women

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ABSTRACT

Background of the study: Breast feeding is considered as the ideal method of feeding and nurturing infants. It is a dream for most mothers to have comfort in breast feeding, but sore nipples are still a common problem and pain or cracks frequently occur after breast feeding. The present study evaluated the Effect of peppermint water v/s lanolin ointment application in management of cracked nipple among lactating postnatal women.

Objectives: The objectives of the study were to assess the intensity of cracked nipple in lactating post-natal mothers, to compare the effect of Peppermint water and Lanolin in the management of cracked nipple, to find out the association between the pre interventional level of cracked nipples and selected demographic variables.

Methodology: The study design used was Quasi experimental two group pretest posttest design. Consecutive sampling was used to select 60 postnatal mothers with cracked nipple who met the sample selection criteria. Informed consent was obtained from the samples who fulfils the inclusion criteria. The tools used in this study were modified visual analogue scale, nipple soreness rating scale, nipple trauma scale. Out of 60 samples 30 were selected for Peppermint water application and 30 were selected for Lanolin ointment application.

Results: The data when analyzed using descriptive and inferential statistics revealed a significant reduction in the level of pain, soreness and trauma after the application of Peppermint water compared to lanolin ointment. There was no association between pre interventional level of cracked nipple and selected demographic variables.

Conclusion: The study concluded that Peppermint water is better than Lanolin ointment in management of cracked nipple among postnatal mothers. Cracked nipple is a prevalent problem among postnatal mothers and health care personnel should be equipped with good assessment tools and cost-effective interventions.

Key words: Peppermint water, Lanolin ointment, Cracked nipple, Lactating postnatal women

INTRODUCTION

Sore nipples associated with breast feeding are a common problem with an incidence ranging from 11%-96% and may lead to premature weaning¹. This frequently occurs from suction trauma to the nipple secondary to incorrect positioning at the breast². Positioning of the baby's body is important for good attachment and

successful breast feeding. An effective sucking technique is considered important to establish breast feeding, to ensure milk transfer and to prevent breast feeding problems³.

Cracked nipple is the loss of surface epithelium with the formation of raw area in the nipple or due to fissure either in the base or the tip of the nipple. It is estimated that

80 -90% of breastfeeding women experience some nipple soreness, among these 26% progressing to cracks and extreme nipple pain⁴. Up to one third of the mothers who experience these symptoms may change to alternate methods for infant nutrition within six postnatal weeks.

The International Breastfeeding Survey Series (INBFS) in 2014 provides statistics on the obstacle of breast feeding. Most common reasons identified for stopping breast feeding are breast or nipple problems (51%), not able to supply enough breast milk (47%) and inability of baby to suck properly (29%).⁵

An article published in Indian Journal of Public Health, 2015 showed the statistics that nearly 89% of the mother had one or more breast feeding problems. Major concern was difficulty in positioning and attaching the infant to the breast (88.5%), followed by breast and nipple problems (30.3%). Breast feeding problems continued to persist even after discharge in a significant proportion of the mothers (72.5%).⁶

A double blinded randomized study was carried out in a sample of 216 post-natal women in Iran in 2010. The study aimed to compare the effect of Peppermint gel, Lanolin ointment and Placebo gel on the treatment of traumatic nipples. Participants were randomly divided in to 3 groups to receive one of 3 preparations. The study revealed that, nipple crack was less reported in mothers who received Peppermint gel (3.8%) than in those who received Lanolin (11%) and Placebo gel (22.6%). The result showed that the formulated peppermint gel as a natural remedy and is effective in the prevention of nipple crack.¹

A Quasi-experimental study was carried out in Behna city in 2012 to evaluate the effect of using pharmacological versus alternative therapy on traumatic nipple for lactating mothers. A comparison was done between Peppermint, Lanolin and Tea group. Purposive sampling technique was used to recruit 200 lactating mothers

suffering from traumatic nipple. This study concluded that women using Peppermint for crack nipple had no pain and there was significant difference between the degrees of pain in samples. On the 7th day (35%) had no pain when compared with lanolin (22%) and tea (16%). Hence, Peppermint is found more effective than Lanolin and Tea².

Purpose

The purpose of the study is to compare the effectiveness of Peppermint water v/s Lanolin ointment in management of cracked nipple.

Objectives

- Assess the intensity of cracked nipple in lactating post natal mothers.
- Compare the effect of Peppermint water and Lanolin in the management of cracked nipple.
- Find the association between the pre interventional level of cracked nipples and selected demographic variables.

Hypotheses

- H_1 - There will be significant difference between the effect of Peppermint and Lanolin application for cracked nipple.
- H_2 - There will be an association between the pre interventional level of cracked nipples and selected demographic variables.

MATERIALS AND METHODS

Research approach: Quantitative approach

Research design: Quasi experimental Two group pretest posttest design.

Variables:

- Independent variable - Peppermint water and Lanolin ointment application over the cracked nipples.
- Dependent variable- Intensity of cracked nipple.

Population: Lactating post-natal women

Sample and sampling technique: Sample consists of 60 lactating mothers who fulfil the sample selection criteria. 30 samples for Peppermint water application and remaining 30 for lanolin application. The sampling

technique used in this study was consecutive sampling.

Criteria for sample selection: -

Inclusion criteria:

Lactating women

- in the first 2 weeks of post-natal period with cracked nipple.
- between the age group of 20-45 years
- willing to participate in the study

Exclusion criteria

Lactating women

- with breast feeding contraindicated
- who are intensively sick.

Tools

Description of tools

Tool 1: - Sample selection criteria: -The sample who meet at least 2 criteria will be selected for the study.

Table 1

S No.	Criteria	TICK MARK (√)
1	Redness	
2	Pain	
3	Tenderness	
4	Nipple red and tender	
5	Crack on the nipple	

Tool 2

Section A

1. It consisted of socio demographic variables of patient including hospital number, date of delivery, gestational age, age in years, educational status, religion and family income.

Section B

The clinical data of the patients including, parity and mode of delivery.

The clinical data were filled by the investigator.

Section C

History of breast-feeding including number of feeds in 24 hours, condition of the nipple and length of a single feed.

Tool 3 Modified visual analogue scale

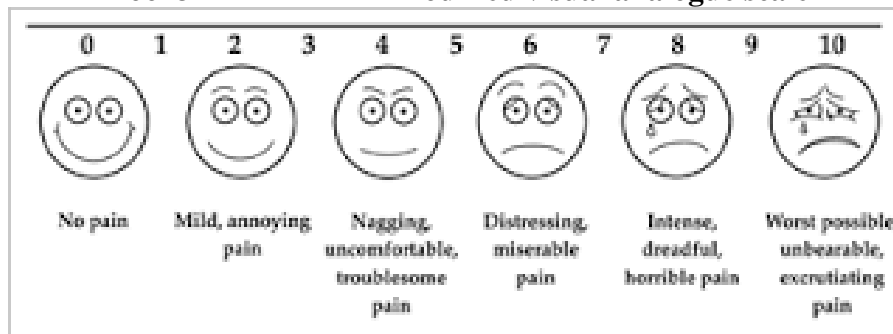


Table 2

SCALE	NIPPLE-PAIN DESCRIPTION	SCORE	TICKMARK (√)
0	No pain	0	
1-2	Minor discomfort	1	
3-4	Moderate pain	2	
5-6	Severe pain	3	
7-8	Very Severe pain	4	
9-10	The worst pain	5	

*Source:-Visual analogue scale adopted from Abou-Dankan

Table 3

Tool 4 Nipple Soreness Rating Scale

Scale	Description of nipple soreness	Score	TICK MARK(√)
0	Nipple color, no tenderness	0	
1	Nipple slightly red and tender for first 5-10 seconds of feeding	1	
2	Nipple red and tender for longer than first 5-10 seconds of feeding	2	
3	Tender between feeding, make grimace when baby starts feeding	3	
4	Nipple beginning to crack, involuntary gasp of pain when baby starts feeding	4	
5	Nipple cracked, feels sore	5	

Nipple soreness rating scale to assess the soreness of nipple

Tool 5 Table 4 Nipple Trauma Scale

SCALE	DESCRIPTION OF NIPPLE TRAUMA	Score	TICK MARK(✓)
0	No visible skin changes	0	
1	Erythematic, edema or combination of both	1	
2	Superficial damage with or without scar formation of less than 25% of the nipple surface	2	
3	Superficial damage with or without scar formation of more than 25% of the nipple surface	3	
4	Partial thickness wound with or without scar formation of less than 25% of the nipple surface	4	
5	Partial thickness wound with or without scar formation of more than 25% of the nipple surface	5	

Nipple trauma scale to assess trauma of the nipple

Data analysis

Descriptive statistics- Frequency and percentage distribution was used for representation of demographic variables and clinical data.

Inferential statistics- Independent t –test was used to compare the effectiveness of Peppermint water and lanolin ointment for cracked nipple among postnatal mothers.

Chi-square was used to find out the association between the pre interventional level of cracked nipple and selected socio demographic variables.

Ethical consideration: A written consent was obtained from the ethical review committee and concerned authority. Informed consent was obtained from the patients participating in the study. Confidentiality and anonymity of the subjects were maintained.

RESULTS

Section A: Distribution of samples according to socio demographic variables.

This section describes the socio-demographic data of samples studied such as age, education, religion and family income.

Table 5: Frequency and distribution of samples based on demographic variables (n=60)

Demographic variables	Frequency (F)	Percentage (%)
Age in years		
20-25	20	33.3
26-30	33	55
31-35	7	11.7
Education		
Secondary	15	25
Graduate	33	55
Post graduate	12	20
Religion		
Hindu	27	45
Christian	30	50
Muslim	3	5
Family income		
Below 10000	7	11.7
10000-20000	25	41.7
Above 20000	28	46.7

Table 6: Frequency and percentage distribution of pre intervention level of cracked nipple based on Clinical data (n=60)

Clinical Data	Frequency (F)	Percentage (%)
Parity		
Primi	39	65
Multi	17	28.3
Grand multi	4	6.7
Mode of delivery		
Normal	25	41.7
Caesarean section	33	55
Vacuum delivery	2	3.3
Number of feeds		
4 - 6	5	8.3
7 - 9	25	41.7
10 - 12	30	50
Condition of nipple		
Erect	25	41.7
Inverted	17	28.3
Flat	18	30
Length of a single feed		
6 – 10	8	13.3
10 -15	32	53.3
16 -20	20	33.3

SECTION D - Pre and Post intervention level of cracked nipple among lactating post-natal mothers receiving both interventions.

Table 7: - Distribution of samples based on pain over the cracked nipple before and after the application of Peppermint water. Modified visual analogue scale (Group 1) (n =30)

Modified visual analogue scale	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency(f)	Percentage (%)
No pain	0	0	12	40
Minor discomfort	0	0	14	46.6
Moderate pain	12	40	4	13.3
Severe pain	11	36.6	0	0
Very severe pain	7	23.3	0	0

Table 7 shows that 11(36.6%) of post-natal mothers had severe pain, 23.3%

had very severe pain before the application of intervention and after the application of

peppermint water 40% of sample had no pain and 46.6% had minor discomfort.

Table 8 shows that 7 (23.3%) post-natal mothers had very severe pain and

33.3% had severe pain before the application of lanolin ointment and after the application 53.3% had moderate pain and 20% had minor discomfort.

Table 8:- Distribution of samples based on pain over the cracked nipple before and after the application of Lanolin ointment. Modified visual analogue scale (Group 2) (n=30)

Description of MVAS	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No pain	0	0	6	20
Minor discomfort	0	0	16	53.3
Moderate pain	13	43.3	8	26.6
Severe pain	10	33.3	0	0
Very severe pain	7	23.3	0	0

Table 9:- Distribution of samples based on soreness over the nipple before and after the application of Peppermint water. Nipple soreness rating scale (NSRS) Group 1 (n= 30)

Description of nipple soreness	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Nipple color, no tenderness	0	0	10	33.3
Nipple slightly red and tender for first 5-10 seconds of feeding	0	0	13	43.3
Nipple red and tender for longer than first 5-10 seconds of feeding	0	0	7	23.3
Tender between feeding, make grimace when baby starts feeding	5	16.6	0	0
Nipple beginning to crack, involuntary gasp of pain when baby starts feeding	12	40	0	0
Nipple cracked, feels sore	13	43.3	0	0

Table 10:- Distribution of samples based on soreness over the nipple before and after the application of Lanolin ointment. Nipple soreness rating scale (NSRS) (Group 2) (n= 30)

Description of nipple soreness	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Nipple color, no tenderness	0	0	0	0
Nipple slightly red and tender for first 5-10 seconds of feeding	0	0	13	43.3
Nipple red and tender for longer than first 5-10 seconds of feeding	0	0	6	20
Tender between feeding, make grimace when baby starts feeding	6	20	10	33.3
Nipple beginning to crack, involuntary gasp of pain when baby starts feeding	14	46.6	8	26.6
Nipple cracked, feels sore	10	33.3	6	20

Table 11:- Distribution of samples based on trauma over the nipple before and after the application of Peppermint water. Nipple trauma scale (NTS) Group 1 (n =30)

Description of nipple trauma	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No visible skin changes	0	0	10	33.3
Erythematic, edema or combination of both	0	0	12	40
Superficial damage with or without scar formation of less than 25% of the nipple surface	13	43.3	8	26.6
Superficial damage with or without scar formation of more than 25% of the nipple surface	14	46.6	0	0
Partial thickness wound with or without scar formation of less than 25% of the nipple surface	3	10	0	0
Partial thickness wound with or without scar formation of more than 25% of the nipple surface	0	0	0	0

Table 9 shows that 13(43.3%) nipples cracked and feel sore before the application of peppermint and after the application 10(33.3%) had no redness and tenderness, 13(43.3%) had slight redness and tenderness for 1st 5-10 sec of feeding.

Table 10 shows that 10(33.3%) had cracked nipple, 46.6% had nipple begin to crack before the application of Lanolin

ointment and after the intervention 6(20%) had cracked nipple and 26.6% had nipple begin to crack.

Table 11 shows that 13(43.3%) of samples had partial thickness wound before the application of peppermint water and after the application of intervention 33.3% have no visible skin changes and 12(40%) have only erythema or edema.

Table 12 shows that 5 (16.6%) had partial thickness wound and 43.3% had partial thickness wound without scar formation of less than 25% before the application of Lanolin and after the

intervention 5 (16.6%) had erythema or edema only and 43.3% had only superficial damage and 6.6% had partial thickness wound without scar formation.

Table 12:- Distribution of samples based on trauma over the nipple before and after the application of Lanolin ointment. Nipple trauma scale (NTS)Group 2 (n =30)

Description of nipple trauma	Pre interventional level		Post interventional level	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No visible skin changes	0	0	0	0
Erythematic, edema or combination of both	0	0	5	16.6
Superficial damage with or without scar formation of less than 25%of the nipple surface	0	0	13	43.3
Superficial damage with or without scar formation of more than 25%of the nipple surface	12	40	10	33.3
Partial thickness wound with or without scar formation of less than 25% of the nipple surface	13	43.3	0	0
Partial thickness wound with or without scar formation of more than 25% of the nipple surface	5	16.6	2	6.6

Section E: - The effect of Peppermint water application v/s Lanolin ointment for cracked nipple among lactating postnatal women.

Table 13:- Mean, SD, Mean Difference and t-value in pretest and post test level of pain in both groups. (n= 60)

Group	Mean	SD	MD	t value	table value
MVAS					
Pre test					
• Group 1	2.83	.791	.003	.162	
• Group 2	2.80	.805			
Post test					
• Group 1	.73	.691	-1.333	7.468	2.04
• Group 2	2.07	.691			

Table 13 shows that there was a significant difference in the mean of group 1 and II (.73 and 2.07). The student t test calculated value was 7.468 with 58 df. But at 5% significance level the table value of t

= 2.04. Since the calculated value is greater than the table value it is concluded that the degree of pain in group 1 was reduced significantly when compared to lanolin ointment.

Table 14:- Mean, SD, Mean Difference and t-value in pretest and posttest level of soreness in both groups. (n = 60)

Group	Mean	SD	MD value	t value	table value
NSRS					
Pretest					
• Group 1	4.27	.740	.133	.703	
• Group 2	4.13	.730			
Post test					
• Group 1	.90	.759	-2.33	6.60	2.04
• Group 2	2.93	1.507			

Table 14 reveals that the mean value of group 1 and II was (.90 and 2.93). The student t test calculated value was 6.60 with 58 df. But at 5% significance level the table value of t = 2.04. Since the calculated value is greater than the table value it concluded that in group 1 the soreness level decreased more when compared to group II.

Table 15 reveals that the mean score in group 1 and II were (.93 and 2.3) Student t test calculated value was 6.525 with 58 df. But at 5% significance level the table value of t = 2.04. Since the calculated value is greater than the table values it concluded that the level of trauma reduced more in Peppermint group than lanolin.

Hence the research hypothesis H₁ is accepted.

Table 15:- Mean,SD, Mean Difference and t-value in pretest and post test level of trauma in both groups.

Group	Mean	SD	MD value	t value	table
NTS					
Pretest					
• Group 1	2.67	.661	-1.00	5.57	
• Group 2	2.77	.728			
Post test					
• Group 1	.93	.785	-1.367	6.525	2.04
• Group 2	2.3	.837			

Table 16

SECTION F: - Association between pre interventional level of cracked nipple and selected demographic variables in relation to MVAS. (n = 60)

Demographic Variables	Moderate pain	Severe pain	Very severe pain	df	χ^2
Age					
20-25	10	7	3	4	1.556
26-30	12	12	9		
31-35	3	2	2		
Education					
Secondary	4	7	4	4	5.183
Graduate	18	96			
Post graduate	3	54			
Family income					
Below 10000	4	21	4	6	2.122
10000-20000	11	77			
Above 20000	10	12			

Table 16 shows that the calculated value of Chi square is less than the table value 9.49 with df 4 for all the variables selected for association on basis of MVAS. Therefore, there is no significant association

between pre interventional level of cracked nipple and demographic variables such as age, education and monthly income. Hence the research hypothesis H₂ is rejected.

Table 17

SECTION F: - Association between pre interventional level of cracked nipple and selected demographic variables based in relation to NSRS (n – 60)

Demographic Variables	Tender between feeding	nipple begin to crack	nipple cracked	df	χ^2
Age					
20-25	4	10	6	4	1.949
26-30	6	12	15		
31-35	1	4	2		
Education					
Secondary	3	5	7	4	7.555
Graduate	7	18	8		
Post graduate	1	3	8		
Family income					
Below 10000	2	3	2	4	.681
10000-20000	4	11	10		
Above 20000	5	12	11		

Table 17 shows that the calculated value of Chi square is less than the table value 9.49 with df 4 for all the variables selected for association on basis of NSRS. Therefore, there is no significant association between pre interventional level of cracked nipple and demographic variables such as age, education and monthly income. Hence the research hypothesis H₂ is rejected.

Table 18 shows that the calculated value of Chi square is less than the table value 9.49 with df 4 for all the variables selected for association in relation to NTS. Therefore, there is no significant association between pre interventional level of cracked nipple and demographic variables such as age, education and monthly income. Hence the research hypothesis H₂ is rejected.

Table 18

SECTION F: - Association between pre interventional level of cracked nipple and selected demographic variables based in relation to NSRS (n – 60)

Demographic Variables	Superficial damage <25%	Superficial damage >25%	Partial thickness wound	df	χ^2
Age					
20-25	10	7	3	4	23.78
26-30	12	16	5		
31-35	3	4	0		
Education					
Secondary	4	8	3	4	6.166
Graduate	18	11	4		
Post graduate	3	8	1		
Family income					
Below 10000	4	3	0	4	2.669
10000-20000	10	10	5		
Above 20000	11	14	3		

DISCUSSION

The present study assessed the effect of peppermint water v/s lanolin ointment application in management of cracked nipple among lactating postnatal women in maternity wards. The objectives were to assess the intensity of cracked nipple in lactating post-natal mothers, to compare the effect of Peppermint water and Lanolin in the management of cracked nipple, to find out the association between the pre interventional level of cracked nipples and selected demographic variables. The study was conducted using quasi experimental design. The conceptual framework used was based on goal attainment theory for nursing developed by Imogene M King (1981).

The investigator selected 60 samples by non-probability consecutive sampling technique. During the pre-interventional level, the investigator assessed the level of pain, soreness and trauma of cracked nipple by using 3 different tools. Alternate samples were allotted to group 1 (peppermint water) and group 2 (lanolin ointment), this process was carried out until both groups had 30 samples each. Out of 60 samples, 30 were selected for Peppermint water application and 30 for lanolin ointment. Both interventions were applied 6 times a day. Application was continued for 4 days and assessed the final level of cracked nipple using the same tools. During the posttest the mean of Peppermint group (MVAS-.73, NSRS -0.90 and NTS-0.93) was less than the mean of lanolin group (MVAS-2.07, NSRS-2.93, NTS-2.3). Using the independent

samples t- test it was found that there was a significant difference in the mean intensity of pain, soreness and trauma score. The calculated value of independent t test is (7.468, 6.60 and 6.5250) for MVAS, NSRS and NTS respectively which is greater than the table value (2.04). It was inferred that there was a significant reduction in the degree of pain, soreness and trauma of cracked nipple with the application of peppermint water compared to lanolin ointment application.

These findings are supported by a randomized trial of peppermint gel, lanolin ointment, and placebo gel to prevent nipple crack in primiparous breastfeeding women conducted in 2007 at Iran. Two hundred and sixteen primiparous participants were assigned randomly to three groups. Each group applied only one of the above three preparations on both breasts for 14 days. On the 6th week rate of nipple and areola crack and pain was evaluated. Nipple crack were less in mothers who received peppermint gel than in those who received lanolin ointment or placebo ($c^2=16.8$, $df=6$, $P=0.01$). Relative risk of nipple crack in the lanolin group (RR: 2.41, 95%CI: 1.20–3.01) was higher than in the peppermint group (RR: 1.85, 95%CI: 1.64–3.10). The study concluded that peppermint gel application is more effective than lanolin and placebo.¹

The association between the pre interventional level of cracked nipple with selected demographic variables was calculated by Chi square (χ^2) and it shows that there was no association between pre

interventional level of cracked nipple and selected demographic variables. The findings of the present study were analyzed and discussed with the findings of other similar studies. This helped the investigator to prove that findings were true and the intervention was cost effective in reducing the level cracked nipple.

Result proved that both peppermint and lanolin ointment were cost effective interventions in reducing cracked nipple. It was well appreciated and accepted by subjects.

Limitation

- Mothers are reluctant to participate in the study because of lack of awareness about the intervention.
- Some mothers were not bothered about their cracked nipple.
- The sample size was limited to 60 samples only.

Recommendation

- Similar study can be replicated on a large sample for better generalization.
- A study can be conducted to assess the effectiveness of peppermint on prevention of cracked nipple.
- Another study can be conducted to assess the perception of the postnatal mothers regarding the use of peppermint.
- Another study can be conducted to evaluate the effect of other natural measures such as honey, olive oil and breast milk on cracked nipple.

Compliance with ethical standard

Obtained permission from Institutional ethical committee before conducting the study Informed consent was obtained from samples.

Conflicts of interest: There is no conflict of interest among the authors.

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