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International Journal of Nursing Research and Practice

EISSN 2350-1324; Vol. 3 No. 1 (2016) January—June

United Publications for Health and Tech Research

Original Article

Effectiveness of Hot Fomentation Versus Cold Compression on Breast Engorgement among Postnatal Mothers

Abstract:

Introduction: Breast engorgement is a physiological condition that is characterized by painful swelling of the breasts caused by insufficient breastfeeding and/or obstruction in milk ducts. Breast pain during breastfeeding interferes with successful breastfeeding leading to exclusive abandonment of breastfeeding.

Objectives: The study was conducted to compare the effectiveness between hot fomentation and cold compression as the treatment of breast engorgement and associate the findings with demographic variables.

Methods and Materials: One group pretest-posttest design was adopted for the study. Using non probability purposive sampling technique 60 postnatal mothers from selected hospitals of Pune were enrolled for the study. They were distributed randomly in two groups and given therapy for three consecutive days after assessment of breast engorgement. Data collection was accomplished by interview and direct observation by using Demographic proforma, Wong Backers Facial pain rating scale and Modified breast engorgement scale. Data was analyzed by using descriptive and inferential statistics.

Results: Average reduction in pain intensity in cold compression group was 6.1 which was 4.9 in hot fomentation group. Reduction in pain intensity score of cold compression group was significantly higher than that for hot fomentation group (p=0.001). Average reduction in breast engorgement score in cold compression group was 3.6 which was 3.4 in hot fomentation group. Reduction in breast engorgement score of cold compression group was not significantly higher than that for hot fomentation group (p=0.116).

Conclusion: Hot fomentation was found more effective in reduction of breast engorgement whereas cold compression was found more effective in reduction of pain intensity score due to breast engorgement among postnatal mothers.

Key Words: Effectiveness, Breast engorgement, Hot fomentation, Cold compression, Postnatal mothers.

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Introduction

Motherhood is a very humanizing effect. Mother is placed at the level of God to provide love, warmth and satisfy needs of baby. It is usually a joyful event, when a woman gives birth to a baby, despite of tremendous pain and discomfort.[1]

Breast feeding is the most enriching experience for every mother; it plants the seeds of mother child bonding. It is the most natural and, unique experience for every mother. It is a cherished and a learned art. Breast milk the "Cinderella substance of the decade" is nature's most precious gift to the newborn, and equivalent of which is yet to be innovated by our scientific community despite tremendous advances in science and technology. Just as there is no substitute for mother's love, there is no substitute for mother's milk. In an updated review on common problems during lactation and their management, it was found that breast engorgement is one among the several common problems that may arise during the breast feeding period and adequate management is fundamental , if not treated will lead to early weaning.[2]

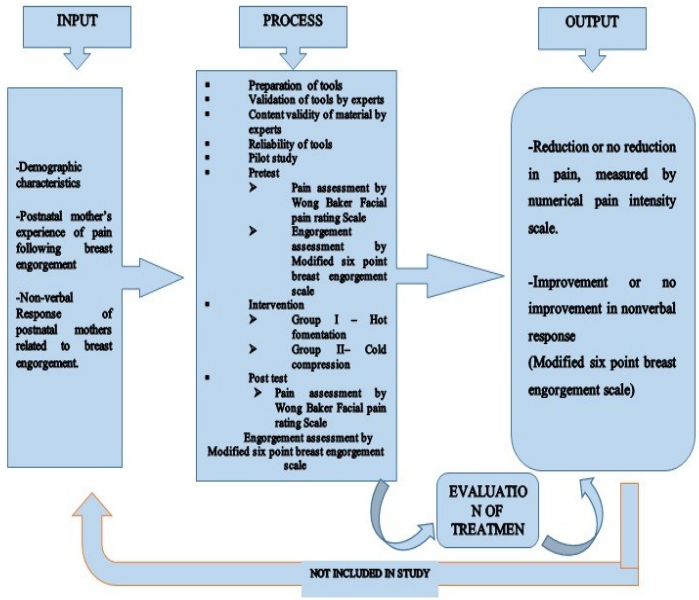
Pain The National Family Health Survey revealed that the breastfeeding rates in different states were: Tamilnadu – 55.3%, Kerala – 55.4%, Maharashtra – 51.8%, Mizoram -65.4%, Meghalaya – 58.6%, Orissa – 54.3%, Goa 59.7% and Assam –50.6%. Breastfeeding rates in Punjab, Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Karnataka and Delhi were below 50%. It is highlighted that compared to other states, the breastfeeding rate in the above mentioned states are less due to lack of awareness among women.[3]

Many methods for the treatment of breast engorgement have been explored. these include cold cabbage compresses,[4] cold gel pads,[5] hot compresses and warm showers, which are used to activate the milk ejection reflex. Further treatment methods which have been postulated include the use of therapeutic ultrasound, breast binding, breast massage, herbal remedies, manual/ electrical pump, and anti-inflammatory medication[6] which reduces swelling.

Today modernized health care also emphasizes on cost effective, quality nursing care and also independent practice of nursing are growing day by day. So the present study was conducted to compare the effectiveness between hot fomentation and cold compression as the treatment of breast engorgement and associate the findings with demographic variables.

Conceptual Framework

Fig 1: Conceptual Framework based on System Model



Methodology

The research approach adopted for this study quantitative approach and research design adopted for the study Pre - Experimental design. Using non probability purposive sampling technique 60 postnatal mothers were enrolled for the study and were distributed randomly in two groups and given therapy for three consecutive days after assessment of breast engorgement. Data collection was accomplished by using tool as Demographic data, Wong Backers Facial pain rating scale, Modified six point breast engorgement scale. Data was analyzed by using descriptive and inferential statistics.

Each Validity was obtained from 21 experts from different fields (Nursing, medical, statistician) and reliability of the research tool was done by using inter-rater formula (reliability of Wong's Baker facial Pain rating scale: 0.88, Modified six point Breast engorgement assessment scale: 0.94). Administrative approval was obtained from the selected hospitals of Pune city before approaching for data collection. Sample selection was done by non-probability purposive sampling technique. The selected samples were distributed in two groups. Every odd no were in group 1 and receiving hot fomentation and every even no were in group 2 and receiving cold compression. Data collection was done by using interview and observation method. Hot fomentation was provided to group 1 in the form of damp cotton cloth soaked with hot water [temp between 43^0C (109.4^0F) to 46^0C (114.8^0F)] applied anteriorly all over the engorged breast for 4-5 minutes and cold compression in the form of damp pad soaked in cold water (temperature- 59^oF or 15^0C.) applied anteriorly all over the engorged breast for 20 minutes was provided to group 2. The treatments were provided twice a day for 3 consecutive days. Pretest was taken each day morning before therapy and post-test taken in the evening after the therapy using pain scale, modified six point breast engorgement scale. The analysis includes descriptive and inferential Statistics.

Result

Table 1: Frequency and percentage distribution of the samples

n= 30+30

Demographic Variable	Hot Fomentation		Cold Compression	
	f	%	f	%
Age				
18-23	11	36.7	14	46.7
24-29	17	56.7	12	40.0
30-35	2	6.7	2	6.7
Above 35	0	0.0	2	6.7
Education				
Illiterate	2	6.7	0	0.0
Primary	10	33.3	8	26.7
Secondary	9	30.0	13	43.3
Higher secondary	6	20.0	4	13.3
Any other	3	10.0	5	16.7
Type of family				
Nuclear	10	33.3	8	26.7
Joint	20	66.7	22	73.3
Gravida				
Primi	15	50.0	15	50.0
Second	9	30.0	7	23.3
Third	4	13.3	5	16.7
More than 3	2	6.7	3	10.0
Postnatal day				
Two	5	16.7	2	6.7
Three	10	33.3	15	50.0
Fourth	6	20.0	5	16.7
5 and above	9	30.0	8	26.7
Types of delivery				
Normal delivery	14	46.7	13	43.3
Instrumental delivery	1	3.3	0	0.0
Lscs	15	50.0	17	56.7
Weeks of termination of pregnancy				
Preterm	9	30.0	4	13.3
Term	18	60.0	25	83.3
Post term	3	10.0	1	3.3
Breastfeeding status				
Mother is breastfeeding	19	63.3	24	80.0
Mother is not breastfeeding	11	36.7	6	20.0

The data presented in Table 1 shows that in Hot Fomentation group, maximum number of the postnatal mothers belongs to 24-29 years age group (56.7%). Where as in Cold Compression group, they belongs to 18-23 years age group (46.7%). In Hot Fomentation group, maximum number of the postnatal mothers has completed their primary education (33.3%). In Cold Compression group, maximum number of the postnatal mothers has completed their secondary education (43.3%). In both the group, maximum number of the postnatal mothers belongs to joint family (66.7% & 73.3%) & were primigravida (50% in each group). In both group, maximum number of the postnatal mothers on the 1st day of examination were at their third postnatal day (33.3% & 50%). In both group, maximum number of the postnatal mothers' undergone LSCS (50% & 56.7%) and were delivered at term (60% & 83.3%). In both group, maximum number of the postnatal mothers were breast feeding their baby (63.3% & 80.0%).

Figure 2: Pain intensity score of postnatal mothers under study before and after hot fomentation.

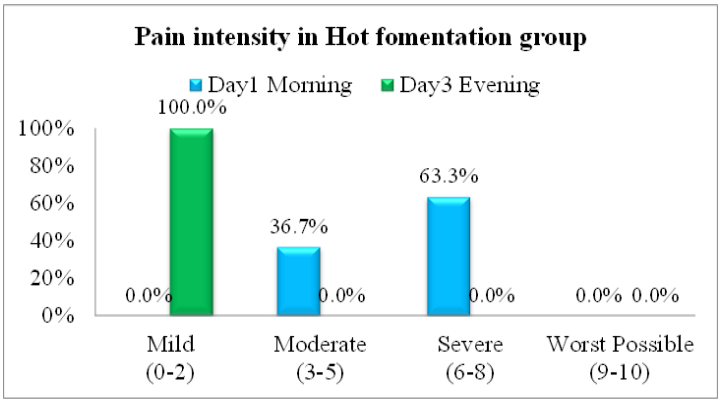


Figure 2 represents that in hot fomentation group on day 1 morning maximum (63.3%) of the postnatal mothers had severe pain intensity (score 6-8) and 36.7% had moderate pain intensity (score 3-5). After providing hot fomentation, on day 3 evening, all of them had mild pain (Score 0-2).

Table 2: Mean, SD, t- value of the pain intensity score among the postnatal mothers before and after hot fomentation. n=30

Pain intensity	Mean	SD	t	f	p-value
Day1 Morning	5.5	±1.3	19.8*	29	0.001*
Day3 Evening	0.5	±0.9			

***Significant at 0.05 level of significance (t_{29}= 2.05)**

Table 2 depicts the data related to the paired t-test which shows there was significant association of pain intensity between pre and post application of hot fomentation (t29= 19.8, p=0.001), hence the null hypothesis (H0) was rejected and research hypothesis (H1) was accepted. Therefore hot fomentation was proved to be significant effective in decreasing the pain intensity of postnatal mothers.

Figure 3: Pain intensity score of postnatal mothers under study before and after cold compression

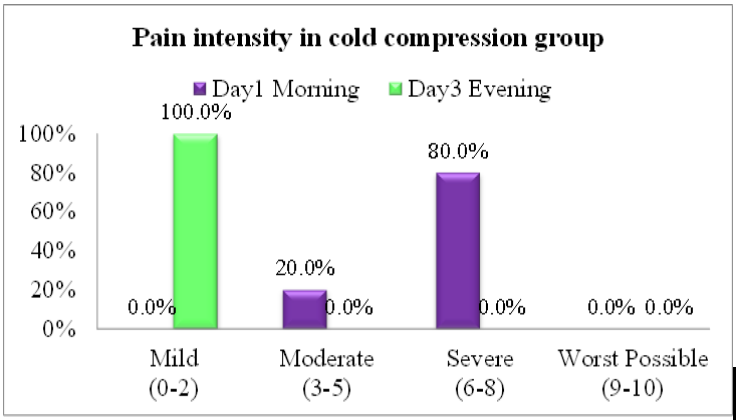


Figure 3 represents the frequency and percentage distribution of pain intensity score of cold compression group. On day1 morning, 80% of them had severe pain intensity (score 6-8) and 20% of them had moderate pain intensity (score 3-5). On day3 evening all of them had mild pain (Score 0-2).

Table 3 : Mean, SD, t- value of the pain intensity score among the postnatal mothers before and after cold compression n=30

Pain intensity	Mean	SD	t	df	p-value
Day1 Morning	6.07	±1.3	24.8*	29	0.001*
Day3	0	0			

*Significant at 0.05 level of significance (t_{29} = 2.05)

Table 3 depicts there was significant association between pain intensity of postnatal mothers in cold compression group before and after therapy (t_{29}= 24.8, p-value = 0.001). Hence the null hypothesis (H0) was rejected and research hypothesis (H1) was accepted. Therefore cold compression was proved to be significant effective in decreasing the pain intensity of postnatal mothers.

Figure 4: Cases of breast engorgement among postnatal mothers before and after hot fomentation

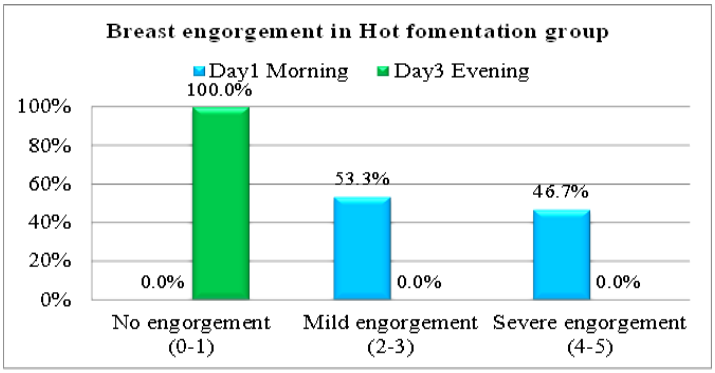


Figure 3 represents that in hot fomentation group, on day 1 morning, 53.3% of the postnatal mothers had mild engorgement (score 2-3) and 46.7% of them had severe engorgement (score 4-5). On day3 evening, all of them had no engorgement (Score 0-1).

Table 4 : Mean, SD, t- value of breast engorgement among the postnatal mothers before and after hot fomentation n = 30

Pain intensity	Mean	SD	t	df	p-value
Day1 Morning	3.5	±0.5	33.1*	29	0.001*
Day3 Evening	0.1	±0.3			

*Significant at 0.05 level of significance (t_{29} = 2.05)

Table 4 depicts that there was significant association between the result of hot fomentation on breast engorgement (t_{29}= 33.1, p-value = 0.001), hence the null hypothesis (H0) was rejected and research hypothesis (H1) was accepted. Therefore hot fomentation was proved to be significant effective in decreasing breast engorgement among postnatal mothers.

Table 5 : Mean, SD, t- value of breast engorgement among the postnatal mothers before and after cold compression n=30

Pain intensity	Mean	SD	t	df	p-value
Day1 Morning	3.8	±0.4	38.8*	29	0.001*
Day3 Evening	0.2	±0.4			

*Significant at 0.05 level of significance (t_{29} = 2.05)

Table 5 depicts that there was significant association between the result of cold compression on breast engorgement (t_{29}= 38.8, p-value = 0.001), hence the null hypothesis (H0) was rejected and research hypothesis (H1) was accepted. Therefore cold compression was proved to be significant effective in decreasing breast engorgement among postnatal mothers.

Discussion

In the present study, findings shows that in Hot Fomentation group, maximum number of the postnatal mothers on the 1st day of examination were at their third postnatal day i.e 33.3%. In Cold Compression group, maximum number of the postnatal mothers on the 1st day of examination were at there third postnatal day i.e 50%. The association of breast engorgement with demographic variables of postnatal mothers under study reveals demographic variables post-partum day and weeks of termination of pregnancy were found to have significant association with breast engorgement. And with the increased day of weeks of termination of pregnancy the mother experiences less breast engorgement.

A contradictory research study findings by University of Wyoming describes that most mothers reported experiencing breast engorgement after hospital discharge. Previous breastfeeding experience of the mother is a more critical variable than parity in predicting engorgement. Second time breastfeeding mothers experienced engorgement sooner and more severe than the first time breastfeeding mothers, regardless of delivery method.[10]

The present research findings shows that in Hot Fomentation group, maximum number of the postnatal mothers undergone LSCS i.e 50%. In Cold Compression group, maximum number of the postnatal mothers undergone LSCS i.e 56.7%. There was no association between the type of delivery with the pain intensity or breast engorgement score of postnatal mother.

A similar study by Moon & Humenic, 1989 shows the findings that women undergone LSCS typically experienced peak engorgement in 24-48 hours later than those who delivered vaginally.[11]

Another study findings reveals the comparison of the breastfeeding of mothers who delivered their babies per vagina and via caesarean section: an observational study using the LATCH breastfeeding charting system". There were 118 incidents of caesarean delivery under general anaesthesia and 82 of vaginal deliveries chosen for the study. According to the LATCH scoring system the average score for the first breastfeeding was 6.27 and 8.81 for the third in caesarean mothers and 7.46 for the first breastfeeding and 9.70 for the third in vaginal delivery mothers. Statistically meaningful difference were defined between the first ($t=10.48$ $P<0.001$), second ($t=7.82$, $P<0.001$), and third ($t=7.12$, $P<0.001$) breastfeeding section in both caesarean and vaginal delivery mothers. It was found that the pattern of delivery affected breastfeeding and that caesarean delivery mothers needed more support and help as compared vaginal delivery mothers. Caesarean delivery mothers were seen to need more support, particularly in positioning their babies for breastfeeding.[12]

The present study findings depicts comparison of effect of hot fomentation and cold compression on breast engorgement among postnatal mothers. Average reduction in breast engorgement score in cold compression group was 3.6 which was 3.4 in hot fomentation group. The obtained mean difference is not bychance it is a true difference($t58= 1.2$,p-value <0.05. Reduction in breast engorgement score of cold compression group was not significantly higher than that for hot fomentation group.

These findings are supported by a similar study that reveals Early Puerperal period is the time, were mother needs to be educated by the midwife regarding importance of initiation of breast feeding in order to prevent breast engorgement. Frequent emptying of the breasts helps to minimize discomfort and resolve

engorgement. Standing in a warm shower or applying warm compresses before feeding will help to soften the breasts and nipples in order to allow the newborn to latch on easier. Between feedings, applying cold compresses to the breasts helps to reduce swelling. If the women is not breast feeding, wearing a tight supportive bra 24 hrs daily, applying ice to the breasts and not stimulating the breasts by squeezing or manually expressing milk from the nipple will relive breast engorgement.[13]

The findings of the study shows that in Hot Fomentation group, maximum number of the postnatal mothers were primi gravida mothers i.e 50% (frequency 15). In Cold Compression group, maximum number of the postnatal mothers were primi gravida mothers i.e 50% (frequency 15). Gravida ($p < 0.05$) was found to have significant association with the pain intensity among postnatal mothers, that is with the increase in gravida mother experience less pain. It may be due to her previous experience regarding the condition.

A similar study was conducted by Dewey et al.2003.they have found that the relationship between parity and engorgement remains unclear because of little research. Onset of lactogenesis occurs sooner in multiparous compared to primiparous women.

Conclusion

The current study concludes that hot fomentation and cold compression both are effective in reducing breast engorgement. Reduction in pain intensity score of cold compression group was significantly higher than that for hot fomentation group. Reduction in breast engorgement score of cold compression group was not significantly higher than that for hot fomentation group.

Recommendations

Authors recommends that:

- A similar study can be replicated in different settings to strengthen the study findings.
- A similar study can be replicated on large samples for each group. This would provide invaluable evidence in the area of practice.
- A study can be done by using cold cabbage as cold therapy, and check the effectiveness between hot fomentation versus cabbage therapy.
- A study can be done to check the effectiveness of cabbage gel in breast engorgement.
- A study can be done to check the effectiveness between cold cabbage leaves and cabbage gel in breast engorgement.
- A study can be done to check the effectiveness between hot fomentation and cabbage gel in breast engorgement.

Legal issues

Administrative approval was obtained from Bharti Vidyapeeth College of Nursing, Medical Superintendent of Bharti Hospital & Research Centre, Medical Superintendent of Bharti Ayurved Hospital, Dean of SKN Medical College & Hospital and Pune Municipal Corporation for conducting the study in the specific settings. Participant was explained regarding the purpose of the study. Confidentiality assured and informed written consent is taken from participant before conducting study.

Acknowledgement

We express our sincere gratitude to all faculty members and all the participants in the study for their cooperation without whom this study would have been impossible. Totally indebted to family members, friend Mr. Arnab Adhikary for their constant love, concern, prayer, encouragement, inspiration, patience, support and help throughout the study.

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