International Journal of Nursing & Midwifery Research
Volume 12, Issue 1&2 - 2025, Pg. No. 38-44
Peer Reviewed & Open Access Journal

Research Article

A Comparative Study to Assess the Effectiveness of Warm Compress and Cold Cabbage Leaves Application on Breast Engorgement Among Postnatal Mothers in Selected Urban Areas of Jabalpur (M.P)

Vinitha Suresh[1], Ankita[2]

[1]Professor and Head of Department, Obstetrics and Gynaecology, Jabalpur Institute of Nursing Sciences and Research , Jabalpur, Madhya Pradesh, India
[2]Nursing Tutor and Clinical Instructor, Holy Family Institute of Nursing Education, Mumbai, Maharashtra, India
DOI:https://doi.org/10.24321/2455.9318.202508

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Corresponding Author:
Vinitha Suresh, Obstetrics and Gynaecology, Jabalpur Institute of Nursing Sciences and Research , Jabalpur, Madhya Pradesh, India
E-mail Id:
sureshvinitha02@gmail.com
Orcid Id:
https://orcid.org/0000-0001-9249-7138
How to cite this article:
Suresh V, Ankita A. Comparative Study to Assess the Effectiveness of Warm Compress and Cold Cabbage Leaves Application on Breast Engorgement among Postnatal Mothers in Selected Urban Areas of Jabalpur (M.P). *Int J Nurs Midwif Res. 2025;12(1&2):38-44.*

Date of Submission: 2025-03-19
Date of Acceptance: 2025-07-08

A B S T R A C T

Background: Motherhood is a lasting journey, and breastfeeding is important. Breast engorgement is a common issue for mothers and can lead to reduced milk production and stress. 13.3% of mothers who don't breastfeed may experience puerperal fever due to engorgement.

Aim: Breast engorgement affects 72% to 85% of mothers after childbirth and makes exclusive breastfeeding difficult. The study highlighted the benefits of using cabbage leaves to help relieve breast engorgement, aiming to reduce illness and death rates in new borns.

Methodology: A study was done to see how effective warm compresses and cold cabbage leaves are for easing breast engorgement in new mothers in Jabalpur, Madhya Pradesh. 60 mothers took part, with 30 using warm compresses and 30 using cabbage leaves. Researchers used a scoring system and a pain scale to collect information.

Result: Warm compresses significantly reduced breast engorgement, with mean scores improving from 5.88 to 9.93 (t = 9.91), indicating strong effectiveness. Cold cabbage leaves also showed significant improvement (t = 4.020), suggesting they are effective as well. However, comparison between the two methods (t = 0.106) showed no significant difference, indicating that both treatments are equally effective.

Conclusion: Exclusive breastfeeding greatly benefits newborn health, but breast engorgement can make breastfeeding uncomfortable and painful, affecting the mother-child bond. It is important for mothers to learn an effective technique to relieve engorgement, such as using cabbage leaves. This simple remedy can help ease engorgement, leading to a more enjoyable breastfeeding experience.

Keywords: Comparative, Effectiveness, Breast Engorgement, Warm Compress, Cold Cabbage Leaves, Postnatal Mothers

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Introduction

Breast engorgement poses a feeding threat to the newborns, and it is a prime area of discomfort for the mothers in the postpartum period. Engorgement typically occurs when the breastfeeding transitions from colostrum to mature milk. Also, when the feeding episodes are missed, by the mothers who can't or don't feed due to mammary gland constraints.[1] Alternative therapies like warm compress and cold cabbage leaf application, massaging the breasts, on-demand regular feeding, alternate feeding positions and alternate breast feedings are easily available, efficient modalities to reduce breast engorgement and self-care.[2]

Problem Statement

A comparative study to assess the effectiveness of warm compress and cold cabbage leaf application on breast engorgement among postnatal mothers in selected urban areas of Jabalpur.

These objectives were met:

- Assess the pre- interventional score of warm compress application on breast engorgement.
- Assess post- interventional score of warm compress application on breast engorgement.
- Assess the effectiveness of a warm compress on breast engorgement.
- Assess the pre-interventional score of cold cabbage leaf application on breast engorgement.
- Assess the post-interventional score of cold cabbage leaf applications on breast engorgement.
- Assess the effectiveness of cold cabbage leaves on breast engorgement.
- Compare the post- interventional score of warm compress and cold cabbage leaves application on breast engorgement among postnatal mothers.
- Determine the association between pre –intervention of warm compress with selected demographic and clinical variables.
- Determine association between pre –intervention of cold cabbage leaves with selected demographic and clinical variables.

Hypotheses (Tested at a level of 0.05%)

RH1: There will be a significant mean difference between pre- and post-intervention scores of warm compresses.
RH2: There will be a significant mean difference between the pre- and post-intervention scores of cold cabbage leaves.
RH3: There will be a significant mean difference in post –interventional score between warm compress and cold cabbage leaves for breast engorgement.
RH4: There will be a significant association between the pre- interventional score with selected demographic and clinical variables on breast engorgement in Group 1.
RH5: There will be a significant association between the pre -interventional score with selected demographic and clinical variable on breast engorgement in Group 2.

Operational Definitions

Warm compress

In this study, warm compress refers to the fomentation of warm water at the temperature of 43°C – 46°C with a cotton cloth 2 times a day for 1-2 mins for 1 week.

Cold cabbage leaves

In this study, 'cold cabbage leaves' refers to the frozen fresh cabbage leaves left in the refrigerator at 18-20°C, placed in the mother's brassiere for 30 mins, 2 times a day for 1 week, 20-30 mins prior to application.

Breast engorgement

In this study, 'breast engorgement' refers to characteristics like softness of breasts, tenderness and pain according to Hill and Humenick's engorgement scale from 1 to 6.

Postnatal mothers

In this study, 'postnatal mothers' refers to mothers who have given birth and are lactating their babies, including 1st and 2nd gravida mothers with normal and caesarean deliveries.

Delimitations

- The study is delimited to primigravid mothers and second-gravida mothers with both vaginal delivery and caesarean section.
- It's only a comparative study to assess the effectiveness of warm compresses and cold cabbage leaves on breast engorgement, without a control group.
- The study is delimited to those mothers who are willing to participate.
- The study is delimited to a 1-week period of time for application of interventions.
- The study is delimited to mothers with 4 weeks of postnatal period.

Methodology

- **Research design**: A pre-experimental two-group pre-test and post-test design, and the research approach adopted was a quantitative and evaluative approach.
- **Setting**: The study will be conducted in selected urban community areas of Jabalpur.
- **Population**: The population for the study consisted of 60 postnatal mothers from a selected urban area of Jabalpur.
- **Sampling technique**: The non-probability purposive sampling technique was used to select the sample size from the accessible population.

- **Sample size**: A total of 60 postnatal mothers (30 in Group I for warm compress)

(30 in Group II for cold cabbage leaf application)

- **Tools**: The tool consisted of five sections:
- **Section A**: Socio-demographic data included age of mother, educational status, occupational status, family income, type of family, dietary pattern, duration of marital life, main support system during postnatal period, and previous knowledge on warm compress and cold cabbage leaf applications.
- **Section B**: Clinical variables data include gravida, haemoglobin %, hospital delivery, and registered antenatal check-up, nature of delivery, initiation of breastfeeding, nature of breastfeeding, frequency of breastfeeding, position for breastfeeding, use of appropriate brassieres during the postnatal period, nature of nipple, breast affected with engorgement.
- **Section C**: This section consists of a six-point engorgement scale. It was developed by Hill & Humenick. It was used to assess the degree of breast engorgement, which gave the scoring ranges from 1 to 6. It included a breast engorgement score and interpretation score by Hill and Humenick. The reliability for the breast engorgement scale was calculated, and the obtained value was r = 0.93, which showed that the tool was reliable.
- **Section D**: It included a visual analogue pain score. Pain assessment was done 2 times a day, morning and evening, after the applications of the interventions. The reliability for the visual analogue pain scale was calculated, and the obtained value was r = 0.93, which showed that the tool was reliable. Questions of knowledge for breastfeeding and breast engorgement were scored on the number of correct responses, which is one mark, and zero marks for incorrect answers.

Pilot study

Data for the pilot study were gathered from the samples that met the inclusion criteria. Informed consent was acquired from participants before the study began. The study's purpose was clarified to the subjects, and confidentiality was guaranteed to all involved. Data analysis was performed employing descriptive and inferential statistics. The analysis of the pilot study indicated that the study's objectives could be met.

The reliability was calculated by using the split-half method, which measures the coefficient of internal consistency. The correlation is obtained by using Karl Pearson‟s coefficient of correlation formula.

The reliability for the visual analogue pain scale was calculated, and the obtained value was r = 0.93, which showed that the tool was reliable.

The reliability for the breast engorgement scale was calculated, and the obtained value was r = 0.93, which showed that the tool was reliable.

Data Collection Procedure

Formal authorisation was secured from the CMO of Victoria Hospital, Jabalpur City (M.P.). A total of 60 samples were chosen for the research, who were living in Tilwara in Jabalpur City. Data gathering commenced through non-probability purposive sampling, and the initial 30 samples were chosen for warm compress application, while another 30 samples were chosen for cold cabbage leaf application. Data collection was finalised after 28 days. The interventions were applied two times a day, and the data collection period lasted one week.

Findings

Section I: Sociodemographic Data

Out of 60 postnatal mothers, 75% were between 20 and 25 years of age, 50% were educated till higher secondary school, 75% were working, 46.7% were having a monthly income of above Rs.10000, 87% belonged to a nuclear family, 67% were non-vegetarian, 58% were having a marriage duration of 1-3 years, 56% were having support from their mothers, 50% had no previous knowledge on warm compress, and 33% had no previous knowledge on cold cabbage leaf application.

Section II: Clinical variables

Out of 60 postnatal mothers, 80% were primigravida, 60% were having 9-10 gm/dl haemoglobin, 80% had hospital delivery, 91% had registered antenatal checkups, 63% had normal delivery without episiotomy, 75% had initiated breastfeeding immediately after labour, 80% had engorgement equally from both breasts, 70% were feeding every 2 hours, 67% were breastfeeding through crossover hold position, 93% had used brassieres during the postnatal period, 72% had normal nipples, and 77% had both right and left breasts affected.

Section III: It deals with the analysis of the data of the effectiveness of the warm compress score before administering the application on breast engorgement among postnatal mothers.

This achieves the objective, which is to assess the relationship between the warm compress's pre-intervention score and various demographic and clinical factors. The effectiveness was analysed through a t-test comparing pre- and post-intervention scores. The knowledge levels before and after the intervention were evaluated statistically using the paired t-test approach. The computed t value is 9.91, while the table value is 1.699. Since the computed value exceeds the table value of 1.699, we accept H1, indicating

a significant difference exists between the pre-intervention score and the post-intervention score for warm compress.

Section IV: It deals with the analysis of the data of the effectiveness of cold cabbage leaf application scores before and after administering it on breast engorgement among postnatal mothers.

This achieves the objective, which is to assess the relationship between the initial score of cold cabbage leaves and various demographic and clinical factors. The comparison of scores before and after the intervention was analysed using a t-test. The knowledge levels before and after the test were statistically evaluated using the paired t-test approach. The computed t value is 4. 020, while the table value is 1. 699. Since the computed value exceeds the table value of 1.699, hypothesis H2 is validated, indicating a significant difference between the scores obtained prior to and following the intervention with cold cabbage leaves (table 1).

Section V: Comparative assessment of post-interventional score of warm compress and cold cabbage leaf application on breast engorgement.

The mean post-interventional score (10) of warm compress application and the post-interventional score (10) are equal. The mean difference was 0 for both of the groups. By applying an unpaired t-test. The calculated t' value (0.106) was less than the table value (1.699) at the level of 0.05%, which shows no statistical difference between warm compress and cold cabbage leaves application among postnatal mother's leaf applications.

Table 1.The warm compress and cold cabbage leaves application among postnatal mother's leaf applications

Test	Mean	Mean Difference	Sd	Sd Difference	Unpaired t test value
Post test score (warm compress)	10	0	9.9331	3.76	0.106 (Non Significant)
Post test Score (Cold Cabbage Leaves)	10		6.1644		

Section VI: Association of warm compress and cold cabbage leaves with demographic and clinical variables.

Association of pre-interventional score regarding the effect of warm compress and cold cabbage leaves, the association between selected demographic variables, age of mother, educational status occupational status, family income, dietary pattern, and duration of marital life, were statistically significant. Rest variables were non-significant.

Association of pre-interventional score regarding the effect of warm compress and cold cabbage leaves, the association between selected clinical variables, gravida of mother, haemoglobin percentage, initiation of breast feeding nature of breast feeding frequency of breast feeding position of breast feeding use of appropriate brassieres and nature of nipple were variables type of family, main support system during postnatal period and previous knowledge regarding warm compress were statistically significant. Rest variables were non-significant.

Discussion

Section-III: It deals with the analysis of the data of effectiveness of warm compress score before administering the application on breast engorgement among postnatal mothers.

This achieves the first goal, which is to assess the relationship between the warm compress's pre-intervention score and various demographic and clinical factors. The effectiveness was analysed through a t-test comparing pre- and post-intervention scores. The knowledge levels before and after the intervention were evaluated statistically using the paired t-test approach. The computed t value is 9. 91, while the critical t value is 1. 699. Since the computed value exceeds the table value of 1. 699, we accept H1, indicating a significant difference exists between the pre-intervention score and the post-intervention score for warm compress.

The findings of the study were supported by a study conducted by Maryam Monazzami, Sedigheh Yousefzadeh[2], Hasan Rakhshandeh, HabibollahEsmaily.[3]

Departments of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran (April 2021) carried out a research study comparing the impacts of hot compresses and hot ginger compresses on pain resulting from breast engorgement. The study included 80 breastfeeding women diagnosed with breast engorgement. Two individuals from each group were removed from the study due to non-compliance with the intervention, leaving a total of 76 participants (38 in each group) who successfully completed the research. The average age of participants was 28. 76 ± 6. 23 years for the intervention group and 28. 55 ± 6. 41 years for the control group. The majority of participants in both categories indicated that their income was inadequate. No notable differences were observed between the groups regarding age, educational attainment, family income, delivery method, prior breastfeeding experiences, number of births, and the weight of their newborns (P > 0. 05). However, it was found that the age of newborns in the control group was significantly older than those in the intervention group.

The effectiveness of the warm compress on breast engorgement was supported by a study conducted by Prof. Takhellambam Kiranmala Chanu.

A research study was conducted by Departments of Midwifery, Parul Institute of Nursing, Parul University, Gujarat to assess how effective warm compresses are in alleviating breast engorgement in first-time postnatal mothers at selected hospitals in Kolar District, Karnataka. This study utilized a quasi-experimental design and employed a convenient sampling technique. A total of 60 participants were involved, split evenly into two groups: 30 in the experimental group and 30 in the control group. The experimental group participated in a specific intervention, and breast engorgement levels were evaluated in both groups using a Six-point engorgement scale. The data obtained were analysed using both descriptive and inferential statistical methods. The results indicated that 90% of the postpartum mothers achieved normal breast conditions in the post-test assessments. The mean post-test score was recorded at 4. 3, along with a standard deviation of 0. 789. A notable reduction in breast engorgement was found when comparing the scores from the pre-test and post-test in both groups (t=34. 106, P). The study concludes that the reduction of breast engorgement is faster in experimental group then the control group and the application of warm compress therapy is effective on reduction of breast engorgement.[4-7]

Section-IV: It deals with the effectiveness by comparing the pre- interventional score of cold cabbage leaves application on breast engorgement, pre-test pain score, and post-interventional score of cold cabbage leaves and post- test pain score.

The present study findings were supported by BohBoi, Serena Koh, and Desley Gail.

They conducted research on the benefits of using cabbage leaves for addressing pain and firmness associated with breast engorgement, as well as its influence on breastfeeding duration (2012). This review encompasses four studies: one randomized controlled trial, two quasi-randomized studies, and a quasi-experimental study. In the randomized controlled trial, following the initial application of the cabbage leaves, a lower number of mothers reported experiencing breast engorgement during their second to fourth assessments compared to those in the control group. During the second assessment, a smaller percentage of participants in the intervention group believed their breasts were engorged (51% versus 57%, p = 0. 68). One study demonstrated that participants in the cabbage leaf treatment group experienced an improvement, with their pre-treatment score of 5. 17 (70%) decreasing to 3. 02 (20%) The findings indicated that applying cabbage leaves to women experiencing breast engorgement alleviated discomfort, softened the firmness of engorged breasts, and extended the length of breastfeeding. Recent evidence implies that using cabbage leaves effectively lessens pain associated with breast engorgement and promotes a longer breastfeeding period.[5]

Section V: Comparative assessment of post- interventional score of warm compress and cold cabbage leaves application on breast engorgement.

The present research findings that there is no significant difference in the effectiveness of warm and cold compress on the breast engorgement was supported a study conducted by R. Nanthini,[1] G. Bhuvaneswari.

They Conducted a study to assess the effectiveness of cold cabbage leaves vs hot water application on breast engorgement among postnatal mothers in selected hospital, Chennai in the study out of 30 postnatal mothers have curable breast engorgement by giving both cabbage leaf application and hot water application the overall study was effective and curable. There was no significant association between the occupations, age, type of family, types of breast feeding. The overall paired „t" test value was significant at the level of p<0.001. This shows that there was significant improvement in both cold cabbage leaf application and hot water application. The study findings revealed there was significant improvement in both cabbage leaf application and hot water application among postnatal mother. The study concludes that both the hot water application and cold cabbage leave application is used for relieving the breast engorgement the need of pharmacological intervention.

The present study finding was also supported by a similar study conducted by Disha, Avinash Rana, Amarjeet Kaur, Vanita Suri.[3]

They conducted a study to assess the Effect of Cold Cabbage Leaves Versus Warm Compression on Breast Engorgement in Postnatal Mothers in a Tertiary Care Facility.

This study evaluates the effectiveness of two different methods: the use of cold cabbage leaves and warm compresses, for alleviating breast engorgement in new mothers. The assessment of breast engorgement levels, measured through mean scores, revealed that there was no significant similarity between the two groups prior to the initiation of the treatments. Specifically, the level of breast engorgement was markedly elevated in group 2 (cold cabbage leaves) prior to treatment, with a mean engorgement score of 5. 88±0. 33, compared to group 1 (warm compression), which had a score of 5. 62±0. 48. (P0. 05). These findings suggest that both methods are similarly effective in addressing breast engorgement.

Section VI: It deals with the association of warm compress and cold cabbage leaves with demographic and clinical variable.

In the present study the associated demographic variables that were found significant was supported by a study conducted by Ms. Rekhakumari (2017) conducted a study effectiveness of hot water bag application on breast engorgement. Quasi experimental design was used for this study. Total of 63 postnatal mothers were selected for the study. In that 32 women were experimental group. 31 women were in control group. Who fulfilled the inclusion criteria Data were collected by or assigned randomly to experimental group and control group respectively the result was finding hot water bag group were initiated Majority of the mother (94%) had undergone LSCS in green cabbage leaves and(97%) in the hot water bag groups. Breast feeding after 24 hours of delivery. [27] The homogeneity was checked in both groups by using chi-square test, fisher exact test and t, test. It was found that except the educational status, the group were homogenous in term of age (p=0.006), parity (p=0.36), Type of delivery (p=0.51), Initiation of breast feeding (p=0.68), frequency of feeding (p=0.92), duration of breast feeding(p=0.50). Postnatal day of engorgement (p=0.62) were found significant.

Conclusion

The outcomes related to the use of warm compresses and cold cabbage leaves for treating breast engorgement provided insights into possible methods for managing this condition and alleviating discomfort.

In the present study findings revealed that in research Group 1 using warm compresses helps relieve breast engorgement. After treatment, the score increased to an average of 9. 93, compared to 5. 88 before treatment. A paired t-test showed a t-value of 9. 91, which was higher than the critical table value of 1. 699. This indicates that the treatment was significantly effective.

Research Group 2 showed that using cold cabbage leaves helps reduce breast engorgement more effectively, with a post-intervention score of SD (6. 164) compared to a pre-intervention score of SD (5. 09). The paired t-test revealed a significant difference with a t-value of 4. 020 which was statistically significant.

When comparing post interventional warm compresses to cold cabbage leaves application by unpaired t-value was 0. 106, indicating no significant difference between the two methods. However, both are effective for managing breast engorgement.

It is commonly observed that breast engorgement tends to happen between the third and fifth day after childbirth, although some women may experience symptoms as late as the 10th or even 14th day. The cabbage (Brassica capitata) has been identified as a potential treatment method for this issue due to its chemical composition, including sinigrin and allylisothiocyanate, which can be absorbed into the body reducing engorgement .Breast engorgement is known to cause significant pain, sensitivity in the nipples, cracks, and infections, which can ultimately lead to the discontinuation of breastfeeding. This research assisted participating mothers in turning painful nursing sessions into a less painful process. With consistent use of these remedies, mothers can choose from various alternative treatments to alleviate discomfort and avoid complications linked to breast engorgement throughout the breastfeeding period. For more precision, high extent generalization and accuracy of the effect of warm and cold interventions, control group can be added for large scale studies.[3]

What does the study convey?

Breast engorgement is a serious condition in postnatal mother, especially in new mothers who should be continuously assessed for identifying any pain leading to painful breastfeeding occurrence, early treatment and preventing any other complications due to engorged breasts.

The results of this research will assist professionals in recognizing the susceptibility to breast engorgement and exploring alternative solutions to alleviate it. It will empower healthcare providers to deliver specialized, empathetic, and skilled care, as many postnatal women are reluctant to seek medical assistance. Thus, it is crucial to recognize and meet the unique challenges faced by these women. Given the limited available evidence, no single treatment has been found to significantly alleviate pain or trauma in breastfeeding mothers. Nevertheless, there are promising possibilities for reducing discomfort and enhancing comfort levels, which could extend the duration of breastfeeding. To prevent issues, using warm water compresses is advised to help avoid nipple pain, along with maintaining clean and dry nipples. Nursing leaders, nursing staff, nurse educators, nursing researchers, and nursing students can utilize this study to enhance health awareness programs for postnatal mothers in the community, focusing on the effective use of warm compresses and cold cabbage leaves to address breast engorgement and discomfort. The study aligns in promoting Exclusive Breast Feeding for the newborns thereby contributing to Millennium Development Goals (MDGs) of 5a and 5b.

Implications

Nursing supervisors can engage in inspiring the nursing staff, particularly in relation to the use of warm compresses and cold cabbage leaves during the postpartum care visits of mothers at hospitals or clinics. Nurse managers have the opportunity to design and implement informational and educational programs for the nursing team in the community, focusing on the application of warm compresses

and cold cabbage leaves to alleviate breast engorgement in postpartum mothers at both urban and rural health facilities.

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