

A Comparative Study to Evaluate the Effectiveness of Hot Compression vs Cabbage Therapy on Management of Breast Engorgement and Pain Among Postnatal Mothers Admitted in a Selected Hospitals, Hubballi

Pooja Karki¹; Dr. Asha Bhatakhande²; Sherly A.³

¹Final Year Student, Department of Obstetrics & Gynaecological Nursing, KLES' Institute of Nursing Sciences, Hubballi

²Professor and Head of the Department (HOD), Department of Obstetrics & Gynaecological Nursing, KLES' Institute of Nursing Sciences, Hubballi.

³Lecturer, Department of Child Health Nursing, KLES' Institute of Nursing Sciences, Hubballi.

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Abstract:

➤ *Background of the Study:*

Women form the cornerstone of society and contribute significantly to its progress and prosperity. Therefore, promoting and protecting women's health is essential. During their reproductive years, women often require proper guidance and support from skilled healthcare professionals to prevent, identify, and manage various health-related issues. Early recognition and timely management of breastfeeding difficulties during the postpartum period are crucial for the well-being of both the mother and the newborn. Mothers should be encouraged to continue breastfeeding, as it helps relieve breast engorgement, minimizes discomfort and pain, and supports successful breastfeeding while ensuring adequate nutrition for the infant.

➤ *Aim:*

The aim of the study was to evaluate and compare the effectiveness of hot compression and cabbage therapy in the management of breast engorgement and pain among postnatal mothers.

➤ *Objectives:*

- To assess the level of breast engorgement & pain among postnatal mothers in both the experimental groups.
- To evaluate the effectiveness of hot compression on management of breast engorgement & pain among postnatal mothers of experimental group 1.
- To evaluate the effectiveness of cabbage therapy on management of breast engorgement & pain among postnatal mother of experimental group 2.
- To compare the effectiveness of hot compression and cabbage therapy in the management of breast engorgement and pain among postnatal mothers by comparing the outcomes between Experimental Group I and Experimental Group II.
- To determine the association between the pre-test scores of postnatal mothers and their selected sociodemographic variables in Experimental Group I.
- To determine the association between the pre-test scores of postnatal mothers and their selected sociodemographic variables in Experimental Group II.

➤ *Methodology:*

An experimental study was conducted among 30 postnatal mothers admitted to selected hospitals in Hubballi. The participants were divided into two groups: Experimental Group I, which received hot compression therapy, and Experimental Group II, which received cabbage therapy. A quasi-experimental concurrent two-group pre-test and post-test design was adopted for the study. The samples were selected using a non-probability purposive sampling technique.

➤ **Result:**

The result of the study showed that in Experimental group I, in pre-test most of them 6(40%) had moderate level of breast engorgement symptoms, 6(40%) had mild level of breast engorgement symptoms and 3 (20%) had severe level of breast engorgement symptoms. After administration of hot compression on postnatal mothers breast in post-test 7 (46.66%) had mild level of breast engorgement symptoms, 3(20%) had moderate level of breast engorgement symptoms and 5(33.33%) had no symptoms of breast engorgement. And in Experimental group II, in pre-test most of them 7(46.66%) had moderate level of breast engorgement symptoms, 5(33.33%) had mild level of engorgement symptoms and 3(20%) had severe level of engorgement symptom. After administration of cabbage therapy on postnatal mothers in post-test 07(46.66%) had mild level of breast engorgement symptoms and 6 (40%) had moderate level of breast engorgement symptoms & 2(13.33%) had no any symptoms of breast engorgement. One way analysis of variance revealed that the F_{cal} value (24.02*) was greater than F_{tab} value (4.20). This indicates that the mean reduction in Breast engorgement symptom scores of postnatal mothers in the experimental group I who were put under hot compression was higher than those in the experimental group II who were put under cabbage therapy.

➤ **Conclusion:**

The study concluded that, both the intervention i.e. Hot compression and Cabbage therapy were effective in reducing breast engorgement symptoms & pain. Hot compression was more effective than the Cabbage therapy for reducing breast engorgement symptoms and pain.

Keywords: Breast Engorgement, Postnatal Mothers, Effectiveness, Hot Compression, Cabbage Therapy.

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I. INTRODUCTION

Breast engorgement is characterized by swelling, firmness, and enlargement of the breasts. It commonly occurs during the early days of breastfeeding, usually between the third and fifth postpartum days, although it may occur as late as the ninth or tenth day. Moderate to severe breast engorgement results in hard, full, tense, warm, and tender breasts accompanied by throbbing and aching pain.¹

A study conducted in India reported that 43.33% of postnatal mothers experienced breast engorgement, while 15.8% had cracked nipples, 10.0% had retracted nipples, 8.3% experienced sore nipples, 7.5% had lactation failure, and 3.3% developed breast abscesses. The study concluded that a majority of mothers experienced various breastfeeding-related problems during the postnatal period and had inadequate knowledge regarding their prevention and management.²

Several methods have been used to manage breast engorgement. These include cold cabbage leaf compresses, cold gel packs, hot compresses, and warm showers, which help stimulate the milk ejection reflex. Other treatment modalities include therapeutic ultrasound, breast binding, breast massage, herbal remedies, manual or electric breast pumps, and anti-inflammatory medications to reduce swelling and relieve discomfort.³

The application of hot compresses to the engorged breast promotes vasodilation, thereby increasing blood circulation and facilitating milk flow. Warmth also helps soften the breast tissue and may improve milk ejection, thereby reducing discomfort associated with engorgement. Green cabbage leaves contain sulphur compounds and other

bioactive substances that are believed to have anti-inflammatory and soothing properties. Their application may help reduce edema, relieve pain and inflammation, improve local circulation, and facilitate the free flow of milk, thereby alleviating breast engorgement.⁴

➤ **Objectives:**

- To assess the level of breast engorgement and pain among postnatal mothers in both experimental groups.
- To evaluate the effectiveness of hot compression in the management of breast engorgement and pain among postnatal mothers in Experimental Group I.
- To evaluate the effectiveness of cabbage therapy in the management of breast engorgement and pain among postnatal mothers in Experimental Group II.
- To compare the effectiveness of hot compression and cabbage therapy in the management of breast engorgement and pain among postnatal mothers by assessing the differences in outcomes between Experimental Group I and Experimental Group II.
- To determine the association between pre-test scores of breast engorgement and pain among postnatal mothers and their selected socio-demographic variables in Experimental Group I.
- To determine the association between pre-test scores of breast engorgement and pain among postnatal mothers and their selected socio-demographic variables in Experimental Group II.

II. MATERIAL'S AND METHOD'S

- Research approach: An evaluative research approach was used in the present study.

➤ Research design: The present study adopted a quasi-experimental, concurrent two-group pre-test–post-test design.

➤ Quasi experimental; concurrent two group pre- test post-test design.

GROUP	PRETEST	INTERVENTION	POST-TEST
Experimental group 1	O ₁	X ₁	O ₂
Experimental group 2	O ₁	X ₂	O ₂

➤ Variables:

- Dependent variable: Breast engorgement and pain.
- Independent variable: Hot compression and Cabbage therapy.
- Attributive factors: Socio demographic variables such as Age, Religion, Educational status of mother, Occupation of mother, Family income (in Rupees), Parity, Mode of delivery and Source of information.

➤ Research Setting:

The present study was conducted in two randomly selected settings.

- City clinic Hospital, Shivaji circle, Hubballi. (Experimental Group I)
- KLE'S Co-operative Hospital, Coen Road, Hubballi. (Experimental Group II)

➤ Research Population:

• Target Population:

In the current research study, the target population refers to postnatal mothers admitted in selected Hospitals of Hubballi.

• Accessible Population:

In the current research study, the accessible population refers to postnatal mothers who were present in City clinic Hospital and KLE'S Co-operative Hospital of Hubballi.

• Sampling Technique:

The samples for the present study were selected using a non-probability purposive sampling technique.

• Sample:

In the present study, the sample consisted of 30 postnatal mothers with breast engorgement admitted to selected hospitals in Hubballi. Of these, 15 postnatal mothers from City Hospital, Hubballi, were assigned to Interventional Group I, and 15 postnatal mothers from KLE's Co-operative Hospital, Hubballi, were assigned to Interventional Group II.

• Sample Size:

The sample size selected for the present study consisted of 30 postnatal mothers, with 15 postnatal mothers assigned to Experimental Group I and 15 postnatal mothers assigned to Experimental Group II.

➤ Criteria for Selecting Samples

The criteria for selection of samples in this study involves: -

• Inclusion Criteria:

The study included postnatal mothers who:

- ✓ Were suffering from breast engorgement.
- ✓ Were present in the selected hospitals during the period of data collection.
- ✓ Were ready to participate in the study.

• Exclusion Criteria:

The study excluded postnatal mothers who:

- ✓ Were sick during the period of data collection.
- ✓ Had any gynaecological disorders.

➤ Description of the Tool

The tool consists of structured interview schedule which comprised of 3 sections.

- Section I : Socio demographic variables
- Section II : Modified six-point self rated breast engorgement scale
- Section III: Numerical pain rating scale

✓ Permission:

Written permission was obtained from the concerned authorities of City Clinic Hospital, Shivaji Circle, Hubballi, and KLE's Co-operative Hospital, Coen Road, Hubballi, prior to the commencement of the study.

III. RESULTS

➤ Section I:

Distribution of the sample characteristics according to socio demographic variables. $n_1+n_2=30$

Table 1 Distribution of the Sample Characteristics According to Socio Demographic Variables. $n_1+n_2=30$

	Demographic Variables	Experimental Gp. I		Experimental Gp. II	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
01	Age in Years				
	a. 25-30	6	40	5	33.33
	b. 30-35	5	33.33	6	40
	c. 35-40	2	13.33	3	20

	d.40-45	2	13.33	1	6.66
02	Religion				
	a. Hindu	7	46.66	6	40
	b. Muslim	6	40	6	40
	c. Christian	2	13.33	3	20
	d. Others	0	0	0	0
03	Education status of mother				
	a. No formal education	0	0	0	0
	b. Primary education	9	60	8	53.33
	c. Secondary education	4	26.66	3	20
	d. Pre university	0	0	2	13.33
	e. Graduate & above	2	13.33	2	13.33
04	Occupation of mother				
	a. Daily wages worker	0	0	0	0
	b. Private employee	3	20	5	33.3
	c. Government employee	3	20	3	20
	d. Home maker	9	60	7	46.6
05	Monthly income (in Rupees)				
	a. 10000- 20000	6	40	6	40
	b. 20000-30000	8	53.33	6	40
	c. 30000-40000	0	0	0	0
	d. 40000-50000	1	6.66	3	20
06	Number of children delivered				
	a. One	6	40	5	33.33
	b. Two	6	40	7	46.66
	c. Three	3	20	3	20
	d. More than three	0	0	0	0
07	Mode of delivery				
	a. Normal vaginal delivery	9	60	12	80
	b. Vaginal delivery with complication	0	0	0	0
	c. Caesarean section	6	40	3	20
08	Sources of information about				
	a. Print media	0	0	0	0
	b. Electronic media	2	13.33	3	20
	c. Health personnel	3	20	0	0
	d. Peer group & social circle	0	0	3	20
	e. No information	10	66.66	9	60

SECTION-II: Analysis and Interpretation of Findings Related to the Effectiveness of Hot Compression and Cabbage Therapy in the Management of Breast Engorgement Symptoms Among Postnatal Mothers in Selected Hospitals.

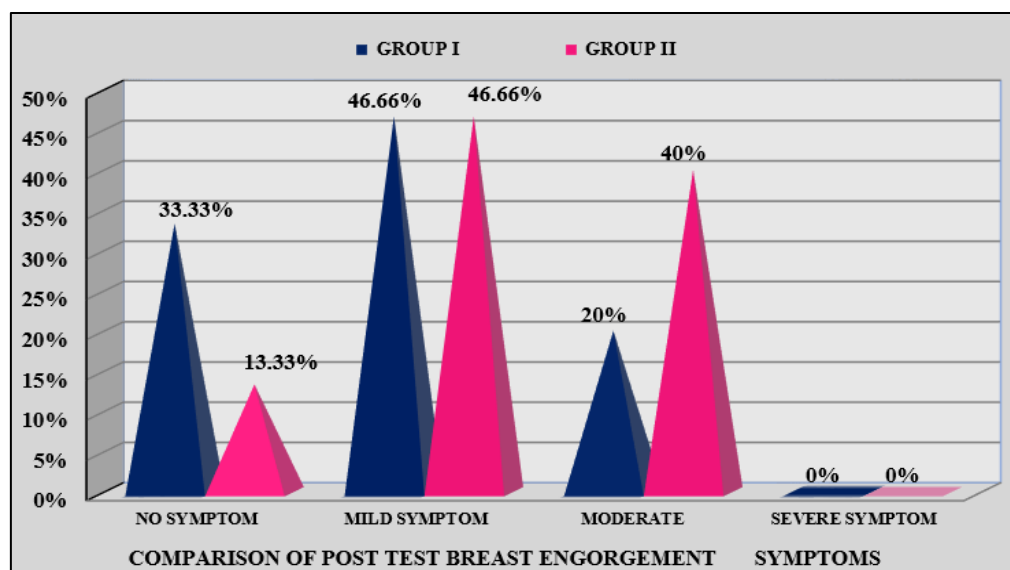


Fig 1 Comparison of Post Test Breast Engorgement Symptoms

Table 2 Comparison of Post-Test Scores on Breast Engorgement Symptoms Among Postnatal Mothers in Experimental Group I and Experimental Group II in Terms of Frequency and Percentage. $n_1+n_2=30$

Level of Breast Engorgement	Experimental group I		Experimental group II	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No symptom	05	33.33	02	13.33
Mild symptom	07	46.66	07	46.66
Moderate symptom	03	20	06	40
Severe symptom	00	00	00	00

Graph 13: The pyramid graph represents the percentage distribution of subjects according to breast engorgement symptom scores in both experimental groups.

Table 3 Comparison of Post-test Breast Engorgement Pain Scores Among Postnatal Mothers in Experimental Group I and Experimental Group II. $n_1+n_2=30$

Level of Pain	Experimental group I		Experimental group II	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No pain	06	40	01	6.66
Mild pain	05	33.33	08	53.33
Moderate pain	04	26.66	06	40
Severe pain	00	00	00	00

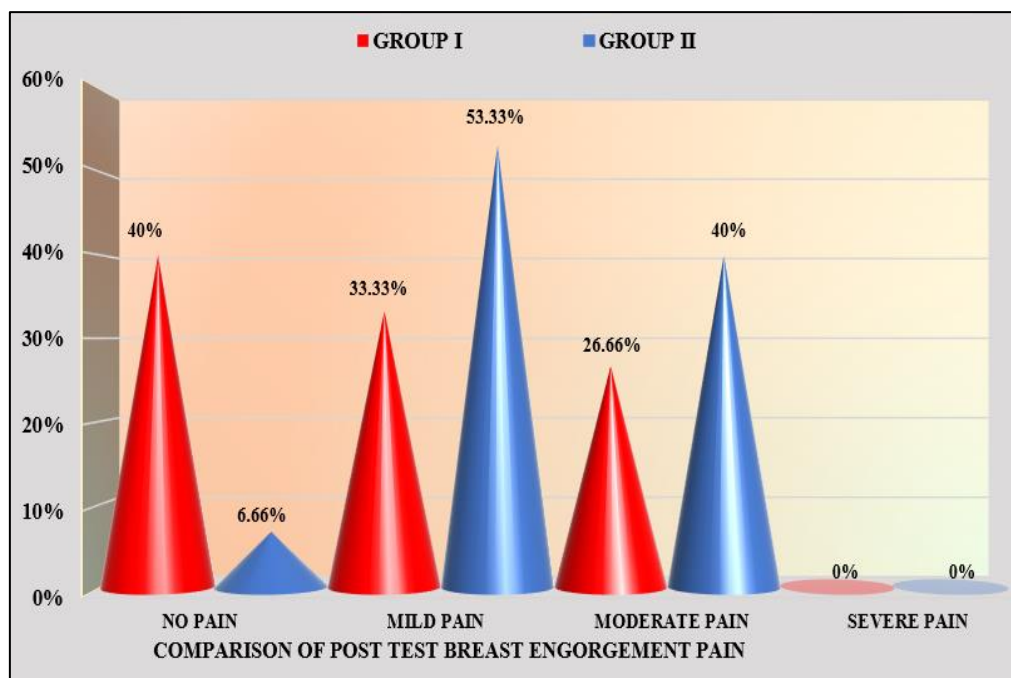


Fig 2 Comparison of Post Test Breast Engorgement Pain

Graph 02: The cone graph depicts the percentage distribution of subjects based on their post-test pain scores in Experimental Group I and Experimental Group II.

Section III: Testing of Hypotheses.

Table 4 Comparison of Group I and Group II Using One-Way Analysis of Variance (ANOVA) in breast engorgement scores. $n_1+n_2=30$

Source of variance	Sum of squares	Degree of freedom	Means of sum of squares	F-ratio	
				Cal. value	Tab. Value
Between the groups	327.33	1	109.11	24.02*	4.20
Within the groups	254.41	28	4.54		

* Significance was considered at the 0.05 level of significance.

Table 5 One Way Analysis of Variance (ANOVA) Values of Subjects of Exp. Group I and Exp. Group II in Breast Engorgement Pain Scores. $n_1+n_2=30$

Source of variance	Sum of squares	Degree of freedom	Means of sum of squares	F-ratio	
				Cal. value	Tab. Value
Between the groups	593.92	1	197.97	28.82*	4.20
Within the groups	384.66	28	6.87		

*Significance at 0.05 level of significance

Table 6 Association Between Pre-Test Breast Engorgement Symptom and Pain Scores of Subjects with Selected Socio Demographic Variables Among Subjects of Experimental Group I. $n_1=15$

Sl. No	Demographic variables	No symptoms	Mild symptoms	Moderate symptoms	Severe symptoms	Chi-Square		Df
						Cal. value	Tab. value	
1.	Age(in yrs.)							
	a. 25-30	0	3	3	0	5.62	16.91	9
	b. 30-35	0	3	3	0			
	c. 35-40	0	0	0	0			
	d. 40-45	0	0	2	1			
2.	Religion							
	a. Hindu	0	0	6	0	8.62	16.91	9
	b. Muslim	0	3	3	0			
	c. Christian	0	1	1	1			
	d. Others	0	0	0	0			
3.	Education status of mother							
	a. No formal education	0	0	0	0	2.5	21.02	12
	b. Primary education	0	0	0	0			
	c. Secondary education	0	3	6	0			
	d. Preuniversity education	0	3	2	1			
	e. Graduate & above	0	0	9	0			
4.	Occupation of mother							
	a. Daily wages worker	0	0	0	0	1.89	16.91	9
	b. Private employee	0	1	2	0			
	c. Government	0	0	3	0			
	d. Home maker	0	2	6	1			
5.	Monthly income (in rupees)							
	a. 10000- 20000	0	2	4	0	7.88	16.91	9
	b. 20000-30000	0	1	5	0			
	c. 30000-40000	0	0	0	0			
	d. 40000-50000	0	2	0	1			
6.	Number of children delivered							
	a. One	0	1	5	0	5.12	16.91	9
	b. Two	0	2	4	0			
	c. Three	0	1	1	1			
	d. More than three	0	0	0	0			
7.	Mode of delivery							
	a. Normal vaginal delivery	0	4	5	0	2.59	12.59	6
	b. Vaginal delivery with complication	0	0	0	0			
	c. Caesarean section	0	1	4	1			
8.	Sources of information about							
	a. Print media	0	0	0	0	2.42	21.02	12
	b. Electronic media	0	1	2	0			
	c. Health personnel	0	2	1	0			
	d. Peer group & social circle	0	0	0	0			
	e. No information	0	2	6	1			

- The calculated chi-square value for age (5.62) was lower than the table value (16.91); therefore, hypothesis $H_{4.1}$ was rejected.

- The calculated chi-square value for religion (8.62) was lower than the table value (16.91); therefore, hypothesis $H_{4.2}$ was rejected.

- The calculated chi-square value for the mother's educational status (2.50) was lower than the table value (21.02); therefore, hypothesis H_{4.3} was rejected.
- The calculated chi-square value for the mother's occupation (1.89) was lower than the table value (16.91); therefore, hypothesis H_{4.4} was rejected.
- The calculated chi-square value for monthly income (7.88) was lower than the table value (16.91); therefore, hypothesis H_{4.5} was rejected.
- The calculated chi-square value for the number of children delivered (5.12) was lower than the table value (16.91); therefore, hypothesis H_{4.6} was rejected.

- The calculated chi-square value for mode of delivery (2.59) was lower than the table value (12.59); therefore, hypothesis H_{4.7} was rejected.
- The calculated chi-square value for source of information (2.42) was lower than the table value (21.02); therefore, hypothesis H_{4.8} was rejected.

➤ *In Experimental Group I:*

No significant association was found between the pre-test scores of postnatal mothers and their selected sociodemographic variables related to breast engorgement symptoms and pain.

Table 7 Association Between Pre-Test Levels of Breast Engorgement Symptom and Pain Scores Among Postnatal Mothers in the Experimental Groups with Their Selected Sociodemographic Variables. n₂=15

Sl. No	Demographic variables	No symptom	Mild symptom	Moderate symptom	Severe symptom	Chi-Square		DF
						Cal. value	Tab. value	
1.	Age(in yrs.) a. 25-30 b. 30-35 c. 35-40 d. 40-45	0 0 0 0	1 4 0 0	4 2 1 0	0 1 1 1	9.55	16.91	9
2.	Religion a. Hindu b. Muslim c. Christian d. Others	0 0 0 0	1 2 2 0	3 4 0 0	2 0 1 0	5.41	16.91	9
3.	Education status of mother a. No formal education b. Primary education c. Secondary education d. Pre-university education e. Graduate & above	0 0 0 0 0	0 2 1 1 1	0 5 1 0 1	0 1 1 1 0	4.79	21.02	12
4.	Occupation of mother a. Daily wages worker b. Private employee c. Government employee d. Home maker	0 0 0 0	0 1 0 4	0 3 2 2	0 1 1 1	4.02	16.91	9
5.	Monthly income (in Rupees) a. 10000- 20000 b. 20000-30000 c. 30000-40000 d. 40000-50000	0 0 0 0	2 1 0 2	2 5 0 0	2 0 0 1	6.83	16.91	9
6.	Number of children delivered a. One b. Two c. Three d. More than three	0 0 0 0	0 3 2 0	5 2 0 0	1 1 1 0	8.13	16.91	9
7.	Mode of delivery a. Normal vaginal delivery b. Vaginal delivery with complication c. Caesarean section	0 0 0	4 0 1	7 0 0	1 0 2	5.82	12.59	6
8.	Sources of information about a. Print media b. Electronic media c. Health personnel d. Peer group & social circle e. No information	0 0 0 0 0	0 0 0 2 3	0 2 0 0 5	0 1 0 1 1	3.67	21.02	12

- The calculated chi-square value for age (9.55) was lower than the table value (16.59); therefore, hypothesis $H_{5.1}$ was rejected.
- The calculated chi-square value for religion (5.41) was lower than the table value (16.59); therefore, hypothesis $H_{5.2}$ was rejected.
- The calculated chi-square value for the mother's educational status (4.79) was lower than the table value (21.02); therefore, hypothesis $H_{5.3}$ was rejected.
- The calculated chi-square value for the mother's occupation (4.02) was lower than the table value (16.59); therefore, hypothesis $H_{5.4}$ was rejected.
- The calculated chi-square value for monthly income (6.83) was lower than the table value (16.59); therefore, hypothesis $H_{5.5}$ was rejected.
- The calculated chi-square value for the number of children delivered (8.13) was lower than the table value (16.59); therefore, hypothesis $H_{5.6}$ was rejected.
- The calculated chi-square value for mode of delivery (5.82) was lower than the table value (12.59); therefore, hypothesis $H_{5.7}$ was rejected.
- The calculated chi-square value for source of information (3.67) was lower than the table value (21.02); therefore, hypothesis $H_{5.8}$ was rejected.

➤ *In Experimental Group II:*

No significant association was found between the pre-test scores of postnatal mothers and their selected sociodemographic variables related to breast engorgement symptoms and pain.

IV. DISCUSSION

In the present study, a total of 15 postnatal mothers were included as the study sample. Among them, the highest proportion, 6 (40%), belonged to the 25–30 years age group, followed by 5 (33.33%) in the 30–35 years age group. Additionally, 2 (13.33%) mothers were in the 35–40 years age group, and another 2 (13.33%) were in the 40–45 years age group. These findings are consistent with the study conducted by Rani M, which reported that the majority of postnatal mothers, 16 (53.3%), were between 25 and 31 years of age, while 13 (43.3%) belonged to the 18–24 years age group, and only 1 (3.3%) was in the 32–38 years age group.⁵

In terms of religion, the majority of postnatal mothers, 6 (40%), belonged to the Hindu religion, and an equal proportion, 6 (40%), belonged to the Muslim religion, while 3 (20%) belonged to the Christian religion. These findings were supported by a study conducted by Disha, Avinash R., and Amarjeet S., which reported that the majority of postnatal mothers, 22 (68.8%), were Hindu, followed by 6 (18.8%) who were Sikh and 4 (12.5%) who were Muslim.⁶

The pre-test mean breast engorgement symptom score was 4, standard deviation 0.89 whereas, in post-test the mean breast engorgement symptom score was 2.73, standard deviation 0.59. The overall difference in mean breast engorgement symptom score was 1.27, standard deviation 0.3. These findings were supported through a study conducted by

Rani M, who observed that the mean pretest breast engorgement symptom score was 3.43, standard deviation 0.67 whereas, in post test mean breast engorgement symptom score was 1.27, standard deviation 0.52. The overall difference in mean breast engorgement symptom score was 2.16, standard deviation 0.15.⁵

The pre-test mean breast engorgement symptom score was 3.86 with a standard deviation of 1.2, whereas the post-test mean breast engorgement symptom score was 2.53 with a standard deviation of 0.50. The overall mean difference in breast engorgement symptom scores was 1.33 with a standard deviation of 0.7, indicating a reduction in breast engorgement symptoms following the intervention. These findings were supported by a study conducted by Varghese B. and Patwa A., who reported that the mean pre-test breast engorgement symptom score was 17.9 with a standard deviation of 5.6, while the post-test mean score was 8.2 with a standard deviation of 1.7. The overall mean difference in breast engorgement symptom scores was 9.7 with a standard deviation of 3.9, demonstrating the effectiveness of the intervention in reducing breast engorgement symptoms.⁷

There was a significant reduction in breast engorgement symptoms among postnatal mothers in Experimental Group II who received cabbage therapy. The calculated paired 't' value ($t_{cal} = 8.31^*$) was greater than the tabulated value ($t_{tab} = 2.14$), indicating a statistically significant difference between the pre-test and post-test breast engorgement symptom scores at the 0.05 level of significance. Hence, H_2 was accepted. This finding indicates that cabbage therapy was effective in reducing breast engorgement symptoms among postnatal mothers. These results were supported by a study conducted by Amarpreet K. and Mamata, who reported a significant reduction in breast engorgement symptoms among postnatal mothers after receiving cabbage therapy. The calculated paired 't' value ($t_{cal} = 2.85^*$) was greater than the tabulated value, confirming the effectiveness of cabbage therapy in reducing breast engorgement symptoms.⁸

V. CONCLUSION

The study concluded that, both the intervention i.e. Hot compression and Cabbage therapy were effective in reducing breast engorgement symptoms & pain. Hot compression was more effective than the Cabbage therapy for reducing breast engorgement symptoms and pain.

RECOMMENDATIONS

On the basis of the findings of the study following recommendations have been made.

- A similar study may be conducted with a larger sample size and for a longer duration to enhance the generalizability of the findings.
- A similar study may be replicated in different settings and with a larger sample size to validate the effectiveness of the intervention.

- A similar study may be conducted to assess the knowledge of postnatal mothers regarding the prevention and management of breast engorgement and pain.
- A comparative study may be conducted to evaluate the effectiveness of hot compression and other home-based interventions in the management of breast engorgement.

• *Ethical Consideration:*

- ✓ Ethical clearance was obtained from the Institutional Ethical Committee prior to the commencement of the study.
- ✓ Written permission was obtained from the concerned authorities of:
- ✓ City Clinic Hospital, Shivaji Circle, Hubballi (Experimental Group I).
- ✓ KLE's Co-operative Hospital, Coen Road, Hubballi (Experimental Group II).
- ✓ Written informed consent was obtained from all participants before their inclusion in the study.
- ✓ Privacy, confidentiality, and anonymity of the collected data were maintained throughout the study.

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