

# Quasi experimental study to evaluate the effectiveness of Lukewarm water compress on breast engorgement among postpartum mothers admitted in selected maternity hospitals, Jaipur

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**Abstract:** A Quasi experimental study was conducted to evaluate the effectiveness of Lukewarm water compress on breast engorgement among postpartum mothers admitted in selected maternity hospitals, Jaipur.

**Aim:** The aim of the study was to assess the effectiveness of lukewarm water compress on breast engorgement among postpartum mothers.

**Materials and methods:** Quasi experimental non randomized control group design. The study was carried out in the postnatal wards of NIMS hospital and Rajnish hospital, Jaipur. 60 postpartum mothers (30 each in experimental and control group) with breast engorgement were purposively selected for the study. The postpartum mothers in experimental group was given lukewarm water compress application and postpartum mothers in control group received hospital routine care. The data collection was done with the help of demographic proforma, Six point breast engorgement scale and Numerical pain intensity scale. The statistical method for the demographic variables was presented by using frequencies and percentages. Mean, Standard Deviation and Hedge's G was used to evaluate effectiveness of lukewarm water compress on breast engorgement among postpartum mothers. Further statistical significance on the effectiveness of lukewarm water was analyzed using paired T test. Chi square test and p value was used to find out association between breast engorgement score and selected demographic variables of the samples.

**Results:** Result revealed that result shows that in experimental group mean post-test (2.2) was lower than mean pre-test (3.9) of experimental group which shows lukewarm water is effective in decreasing breast engorgement. And computed P value 0.00046 is less than established P value .05. which revealed that there is a significant difference between experimental group and control group post test breast engorgement score. The mean post test (2.2) in experimental group was lower than mean pre-test (3.9) of experimental group which shows lukewarm water is effective in decreasing breast engorgement. The mean in experimental group (2.2) was lower than mean in control group (3.2). Calculated 't' value 4.3 is more than tabled 't' value 1.6 at the degree of freedom 29, Calculated p value is 0.00031. Both t and p value show the significant difference between control group breast engorgement score and experimental group breast engorgement score at post test. Calculated Hedge's G is 1.2 which showed that lukewarm water compress application cause large effect on breast engorgement which can be observed easily.

**Conclusion:** The study revealed that lukewarm water compress is beneficial for relieving breast engorgement among postpartum mothers.

**Keywords:** lukewarm water compress, breast engorgement, postpartum mothers.

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## 1. Introduction

Breast feeding is the universally preferred method of feeding a newborn, because it provides numerous health benefits to both the mother and the infant. It is economically efficient, needs very little investment, gives invaluable returns to the family and to the nation. Breastfeeding rates in Punjab, Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, and Delhi were below 45% (National health survey 2009). Delayed breast feeding can produce breast complications like breast engorgement and breast abscess. Breast engorgement occurs around the third and fifth postnatal day in varying degrees from slight to severe (Robert 2000).<sup>1</sup>

The reason why engorgement occurs in the first two weeks postpartum is that the mother and her baby are adjusting to the process of demand and supply: i.e. if the milk production is increased too rapidly this may exceed the capacity of the breast alveoli to store it.<sup>2</sup>

### Need for the study

Engorgement happens when your breasts become uncomfortably full, or “engorged” with milk from missed feedings, or fewer feedings.<sup>3</sup>The prevalence of breast problems in the postnatal period is very high. About 20% postnatal mothers especially primigravida mothers are affected with breast engorgement within four days of postnatal period. In the Grampian study 33% of all women experienced breast problems in the first two weeks and 28% thereafter.<sup>4</sup>Inadequate breast emptying, improper breastfeeding techniques, using pacifiers and traditional nutritional supplements for the baby, as well as infant’s poor sucking are the risk factors that can account for the breasts’ problems.<sup>5</sup>

Although diuretics and other drugs have been shown to be effective in the treatment of breast engorgement but the mother wishes to nurse her child or is unwilling to use a drug-based remedy. Women are turning to non-medical treatments for breast engorgement, such as warm or cold compresses, breast massage, or the use of cold cabbage leaves. These non-medical interventions are receiving increasing attention as viable treatment methods as they are more easily available and generally easy to use, convenient and cheap as compared to medical interventions. Thus, determining the efficacy of non-medical interventions for treatment of breast engorgement is becoming increasingly important.<sup>6</sup>

Based on the review of literature and the personal experience of the investigator in the hospitals, found that in many hospitals breast engorgement are involved several practices such as cold cabbage leaf treatment, cold packs, manual expression, warm compress, drug treatment to relief pain and comfort and easy expression of milk. Hence, the investigator has inspiration to find the effectiveness of warm compress on the reduction of breast engorgement.

### Objectives of the research

1. To assess the level of breast engorgement among the Postpartum mothers of experimental and control group.
2. To assess the effectiveness of lukewarm water compress on breast engorgement among postpartum mothers between pre test assessment and post test assessment in experimental group.
3. To find the association between the pre test level of breast engorgement with their selected demographic variables.

### Hypothesis

**H<sub>1</sub>**:- There will be a significant difference in post test breast engorgement score between control group and experimental group.

**H<sub>2</sub>**:- There will be significant association between pre test breast engorgement score and selected demographic variables of postpartum mothers at 0.05 level of significance.

### Conceptual framework:

The framework of the present study is based on Ernestine Wiedenbach’s ‘prescriptive theory’ (Helping art of clinical nursing theory).

### 2. Methodology:

- **Research approach**- A quantitative research approach was used to identify the effectiveness of lukewarm water compress on breast engorgement.
- **Research design**- The research design used in this study was non randomized control group design to evaluate the effectiveness of lukewarm water compress on breast engorgement.
- **Independent variable** - In this study lukewarm water compress was the independent variable.
- **Dependent variables**- In this study Breast engorgement among postpartum mothers was the dependent variable.
- **Research setting** - The study was conducted in NIMS Hospital and Rajnish Hospital, Jaipur.
- **Sample**- The sample consists of postpartum mothers with breast engorgement in NIMS Hospital and Rajnish Hospital, Jaipur, who fulfilled the inclusion criteria.
- **Sample size**- A sample size for the study was 60 postpartum breast engorged mothers.
- **Sampling technique**- The sampling technique for this study was purposive sampling.
- The statistical method for the demographic variables was presented by using frequencies and percentages. Mean, Standard Deviation and Hedge’s G was used to evaluate effectiveness of lukewarm water compress on breast engorgement among postpartum mothers. Further statistical significance on the effectiveness of lukewarm water was analyzed using paired T test. Chi square test and p value was used to find out association between breast engorgement score and selected demographic variables of the samples.

**Tool:** The tool was divided into three sections:

- **Section I:** Demographic Proforma of postpartum breast engorged mothers consists of 10 items-age, type of family, educational status, parity, type of delivery, initiation of breast feeding, frequency of breast feeding, duration of breast feeding, postnatal day and birth weight.
- **Section II:** Six Point breast engorgement scale. It was developed by Hills and Humenick in 1994. It was used to assess breast engorgement score which ranges from 1 to 6.
- **Section III:** Numerical pain intensity scale which consists of four parts-No pain, Mild pain, Moderate pain and severe pain.

### Content validity and reliability

Content validity of the tool was established by experts from Nursing and Medical department from obstetrics and gynaecological nursing. The reliability of Six point breast engorgement scale and pain assessment scale was calculated by Karl-Pearson's coefficient with test retest method is found 8.16 and 0.96 respectively. These correlation coefficient values shows that tool is well reliable for assessing breast engorgement score and pain.

#### Ethical consideration

Ethical approval was obtained from the institutional Ethical committee of the University and formal approval for data collection was obtained from the NIMS hospital authority. Written consent of patients was obtained.

#### Data collection process

Pre-test was conducted then intervention was given. The post-test was conducted on 3<sup>rd</sup> day after intervention.

### 3. Results

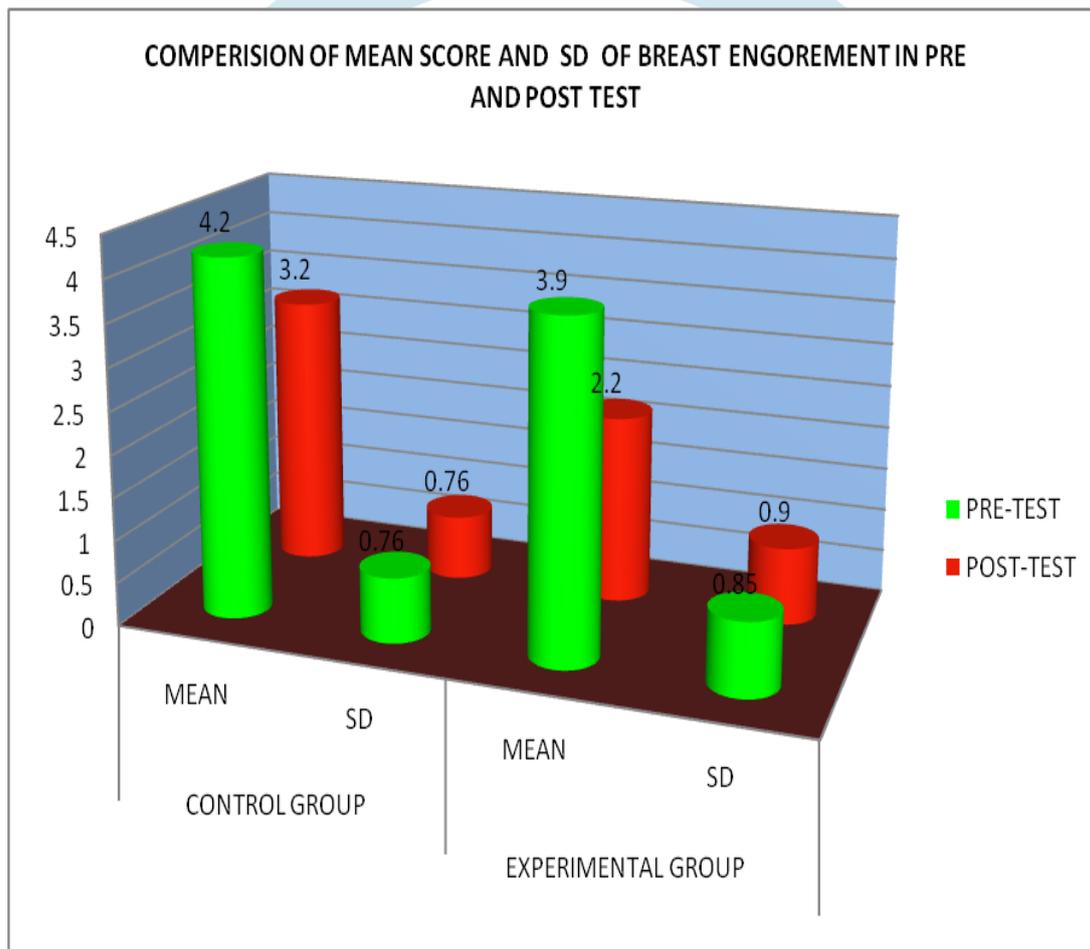
#### Findings related to Frequency and percentage distribution of demographic variables

Table No 1: Frequency and percentage distribution of demographic variables

DEMOGRAPHIC VARIABLES	CONTROL GROUP		EXPERIMENTAL GROUP	
	NO.	%	NO.	%
<b>Age</b>				
18-22 Yrs	13	43	14	47
23-27 Yrs	8	27	12	40
28-32 yrs	5	17	3	10
33 & Above Yrs	4	13	1	3
<b>Type of family</b>				
Nuclear Family	15	50	13	43
Joint Family	15	50	17	57
<b>Educational status</b>				
Graduate	8	27	8	27
Intermediate	6	20	7	23
High School Certificate	5	17	7	23
Primary School Certificate	8	27	5	17
Illiterate	3	10	3	10
<b>Parity</b>				
Primipara	15	50	17	57
Secondary Para	11	37	9	30
Multi Para	4	13	4	13
<b>Type of delivery</b>				
Normal Vaginal Delivery	5	17	6	20
Normal Vaginal Delivery With Episiotomy	7	23	4	13
Lower Segment Caesarian Section	18	60	17	57
Instrumental Delivery	0	0	3	10
<b>Initiation of breast feeding</b>				
Within Half An Hour	2	7	2	7
Half An Hour To One Hour	6	20	3	10
After 24 Hours	9	30	12	40
2 Hours To 24 Hours	13	43	13	43
<b>Frequency of breast feeding</b>				
2 Hourly	3	10	3	10
3 Hourly	5	17	5	17
4 Hourly	10	33	12	40
Demand Feeding	12	40	10	33
<b>Duration of breast feeding from each breast</b>				

16-20 Mins.	3	10	1	3
11-15 Mins.	10	33	10	33
5-10 Min.	17	57	19	63
<b>Postnatal day</b>				
1-3 Day	5	17	4	13
4-6 Day	19	63	21	70
>6 Day	6	20	5	17
<b>Birth Weight</b>				
<2.5 KG	16	53	16	53
2.5-3.5 KG	14	47	14	47

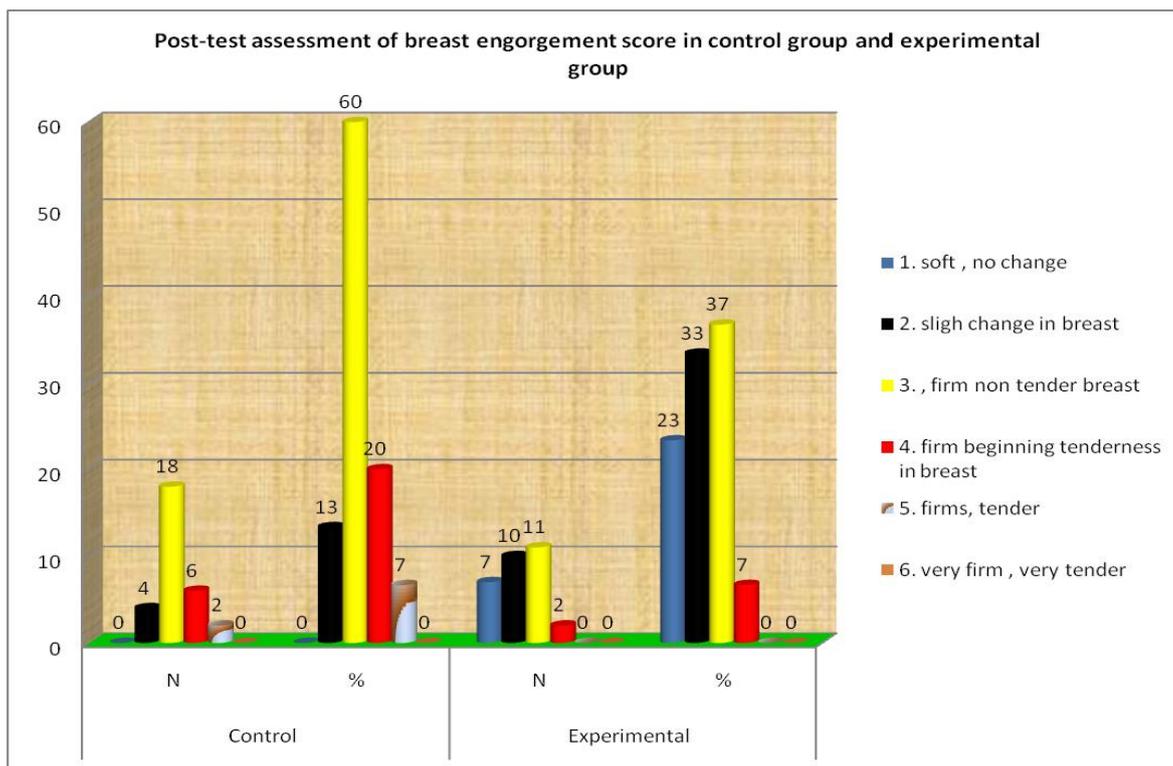
**Findings related to Comparison of mean and SD of breast engorgement score in pre-test and post test**



**Figure -1 Mean and S.D. of breast engorgement score in pre-test and post test**

The data presented in figure 1 showed that in experimental group mean post-test(2.2) was lower than mean pre-test(3.9) of experimental group which shows lukewarm water is effective in decreasing breast engorgement.

**Findings related to Post-test assessment of breast engorgement score in control group and experimental group**



**Figure -2** Post-test assessment of breast engorgement score in control group and experimental group

Figure -2 shows that 7(23%) samples did not have any breast engorgement in experimental group. 2(7%) samples of control group develop firm and tender breast where no one develop in experimental group. 6(20%) samples of control group develop firm breast with beginning tenderness wherever only 2(7%) samples develop same in experimental group. 11(37%) samples in experimental and 18(60%) samples in control group suffer from firm non tender breast engorgement. 10(33%) samples have slight changes in breast in experimental group and only 4(13%) samples have slight changes in breast in control group. There is no sample of both group has suffered with very firms and very tender breast engorgement. So it clearly shows that lukewarm water application is found effective to reduce breast engorgement in experimental group. In control group as there is no application so change is not observed.

**Findings related to Post-test assessment of breast engorgement score in control group and experimental group**

Table -2 Post-test assessment of breast engorgement score in control group and experimental group

	control	experimental	z score	p value
<b>Six Point Breast Engorgement Scale</b>				
<b>1. soft, no changes in breast</b>				
<b>2. slight changes in breast</b>				
<b>3. firm, non tender breast</b>	m-3 q-1	m-2 q3-1.25	3.49	0.00046
<b>4. firm beginning tenderness in breast</b>				
<b>5. firm, tender</b>				
<b>6. very firm, very tender</b>				

Table -2 shows that Median for control group is 3 and for experimental group is 2. Calculated Z- score is 3.49 and P value - 0.00046 is less than established P value .05. which revealed that there is a significant difference between experimental group and control group post test breast engorgement score. Lukewarm water application significantly decrease the breast engorgement in experimental group in spite of control group.

### Findings related to Post-test comparison of mean and SD of breast engorgement score in control group and experimental group

Table– 3 Post-test comparison of mean and SD of breast engorgement score in control group and experimental group

	MEAN	SD	t value	p. Value	Df	Hedge's G
CONTROL GROUP	3.2	0.76	4.3	0.000031	29	1.2
EXPERIMENTAL GROU P	2.2	0.90				

Data in the table -3 shows that the mean in experimental group (2.2) was lower than mean in control group (3.2) . Calculated 't' value 4.3 is more than tabled 't' value 1.6 at the degree of freedom 29 Calculated p value is 0.00031. Both t and p value show the significant difference between control group breast engorgement score and experimental group breast engorgement score at post test .Calculated Hedge's G is 1.2 which showed that lukewarm water application cause large effect on breast engorgement which can be observed easily. As t value  $4.3 > 1.6$  and p value  $.00031 < .05$  so it shows significant difference in post test breast engorgement score between experimental and control group.so stated researcher hypothesis  $H_1$  was accepted and universal null hypothesis was rejected.

#### Association between pre-test breast engorgement score with their selected demographic variables

Study revealed that in respect of Age ( $p=0.45$ ),type of family ( $p=0.73$ ),educational status( $p=0.15$ ), frequency of breast feeding ( $p=0.76$ ), duration of breast feeding from each breast ( $p=0.25$ ),postnatal day( $p=0.103$ ), and Baby birth weight( $p=0.17$ ), as calculated p value is more than established p value (0.05) which shows no significant association between breast engorgement score and these variables so  $H_2$  research hypothesis was rejected and universal null hypothesis was accepted.

where as Parity ( $p=0.03$ ), type of delivery ( $p=0.036$ ) and Initiation of breast feeding( $p=0.011$ ) have less calculated p value than established p value 0.05 which shows significant association between breast engorgement score and these variables so  $H_2$  researcher hypothesis was accepted and universal null hypothesis was rejected.

#### Discussion

In the pre-test assessment before application of lukewarm water compress 8(27%) samples were in control group and 10(33%) samples were in experimental group had severe engorgement ,where as22(73%) samples were in control group and 20(67%) samples were in experimental Group had moderate breast engorgement.There was no sample in both groups who suffer from mild breast engorgement.

Similar study conducted to assess theeffectiveness of chilled cabbage leaves on breast engorgement among primiparous mothers which shows thatbefore the intervention 10 (50%) women in experimental group and 11 (55%)samples in control group had severe engorgement while 8 (40%) each in both experimental and control group had moderate breast engorgement and only 2 samples in experimental group and 1 in control group had mild breast engorgement.<sup>7</sup>

In case of pre-test assessment of pain before application of lukewarm water compress7(23%) samples were in control group and 9(30%) samples were in experimental group had severe pain.where as21(70%) samples were in control group and 15(50%) samples were in experimental group had moderate pain.The 2(7%) samples were in control group and 6(20%) samples were in experimental group had mild pain.

Study revealed that 24(80%)samples were in control group and 13(43%)samples were in experimental group had moderate engorgement after lukewarm application where as 4(13%) were in control group and 17(57%)samples were in experimental group had mild engorgement. In severe level only 2(7%)samples were in control group had breast engorgement after lukewarm application where as 0(0%) was in experimental group respectively.

Similar study found on effectiveness of cabbage leaves application on breast engorgement among primiparous mothers which shows that after application of cabbage leaves (post intervention) 15 (75%) samples in experimental group and 1 (5%) in control group had mild breast engorgement, followed by 5 (25%) samples in experimental group and 11 (55%) in control group had moderate breast engorgement and none in experimental group and 8 in control group had severe breast engorgement<sup>7</sup>.

Data showed that 23(77%) samples were in control group and 9(30%) sampleswere in experimental group had moderate pain after application of lukewarm water where as 6(20%) were in control group and 21(70%) samples were in experimental group had mild pain. Only 1(3%) sample in control group had severe pain and there was no sample who had severe pain in experimental group after application of lukewarm water.

Present study has shown that in experimental group mean post-test(2.2) was lower than mean pre-test(3.9) of experimental group which shows lukewarm water is effective in decreasing breast engorgement.

These findings were supported by similar study found on Effectiveness of Chilled Cabbage Leaves on Breast Engorgement among Postnatal Mothers Admitted in a Selected Hospital of Delhi which shows improvement in breast engorgement with the intervention as Mean engorgement score after the application of chilled cabbage leaves was comparatively little low, i.e. 0.23 as compared to after the application of routine care (warm compression) i.e. 0.16.<sup>8</sup>

In post-test assessment of breast engorgement score in control group and experimental group Median for control group is 3 and for experimental group is 2. Calculated Z- score is 3.49 and P value - 0.00046 is less than established P value .05. which revealed that there is a significant difference between experimental group and control group post test breast engorgement score. Lukewarm water application significantly decrease the breast engorgement in experimental group in spite of control group.

No relevant study was found.

In post-test comparison of mean and SD of breast engorgement score in control group and experimental group. The mean in experimental group (2.2) was lower than mean in control group (3.2). Calculated Hedge's G is 1.2 which showed that lukewarm water application cause large effect on breast engorgement which can be observed easily. 't' value is 4.3 (Calculated) > 1.6 (tabulated) at the degree of freedom 29. Calculated 'p' value .00031 < .05 (tabulated value) so it shows significant difference in post test breast engorgement score between experimental and control group. so stated research hypothesis  $H_1$  was accepted and universal null hypothesis was rejected.

The analysis was done to find the association between pre test breast engorgement score and selected demographic variables of postpartum mothers. In respect of Age (p=0.45), type of family (p=0.73), educational status (p=0.15), frequency of breast feeding (p=0.76), duration of breast feeding from each breast (p=0.25), postnatal day (p=0.103), and Baby birth weight (p=0.17), as calculated p value is more than established p value (0.05) which shows no significant association between breast engorgement score and these variables where as Parity (p=0.03), type of delivery (p=0.036) and Initiation of breast feeding (p=0.011) have less calculated p value than established p value 0.05 which shows significant association between breast engorgement score and these variables.

Although breast engorgement is a common problem among postnatal mothers, but if it is not relieved at the right time, the nipples become sore and cracked, thereby impairing the breast feeding process and also severe breast infections like mastitis. Hence, timely intervention like application of lukewarm water compression, etc., can relieve breast engorgement.

## Recommendations

**Based on the findings of the study the following recommendations are made-**

- A comparative study can be conducted to determine the effectiveness of lukewarm water and hot water compress in treating breast engorgement.
- A similar study can be undertaken with a large sample to generalize the findings.
- Nurse should give periodic education to the postpartum mothers related to breast engorgement complication and management.

## Conclusion

The study shows that Lukewarm water compress is one of the effective methods in reducing breast engorgement and providing relieve to breast engorged postpartum mothers.

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