



**EFFECT OF LUKEWARM WATER COMPRESS ON PREVENTION OF  
NIPPLE PAIN AND BREAST ENGORGEMENT AMONG POSTNATAL MOTHERS  
WHOSE BABIES ADMITTED IN NURSERY AT WCH, JIPMER**

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WCH (Women and children hospital), JIPMER (Jawaharlal Institute of Postgraduate Medical Education Research), MOD (Mode of delivery).

**ABSTRACT**

Breastfeeding benefits is not just restricted to child, it protects the mother also. Nipple pain is the second most reason to cease breastfeeding. Aim of the study is to compare the post-test scores of lukewarm water compress among postnatal mothers whose babies are admitted in nursery in the experimental and control group. To compare the selected socio demographic variables, maternal and neonatal variables with nipple pain and breast engorgement among postnatal mothers whose babies are admitted in nursery. Posttest only control group design was used. Population comprises of all postnatal mothers whose babies admitted in nursery at WCH, JIPMER. A total of 226 samples who fulfilled the inclusion criteria were selected by simple random sampling. For mothers in the experimental group, lukewarm water compress was given before and after breast feeding at a temperature of 95F– 105F. Total duration is 20 minutes, thrice a day on 3rd and 4th postnatal day. By using six point breast engorgement assessment scale and numerical pain rating scale, breast engorgement and nipple pain was assessed on the 5th postnatal day (posttest) for both experimental and control group. There was a significant difference between the posttest scores of nipple pain ( $p=0.001^{**}$ ) and breast engorgement ( $p=0.001^{**}$ ) among the postnatal mothers in the experimental and control group. There was a significant difference between nipple pain, breast engorgement and MOD. The study concluded that the application of lukewarm water compress is effective in preventing the nipple pain and breast engorgement among postnatal mothers whose babies are admitted in nursery.

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**INTRODUCTION**

The birth of a baby is an auspicious and happiest event. It provides all the energy and nutrients that the infant needs for the first months of life, during the second half of the first year, and up to one-third during the second year of life<sup>1</sup>. Health professionals recommend that breastfeeding began within the first hour of a baby's life and continued as often and as much as the child wants<sup>2</sup>. Breastfeeding is an appropriate method for feeding an infant and is recommended by Leading health authorities, such as the World Health Organization, the Canadian Pediatric Society (2013), and the American Academy of Pediatrics (2012). They are suggesting that the infant should be breastfed exclusively until six months of life, then continued until two years, even beyond along with other foods<sup>3</sup>. Breast engorgement is an accumulation of milk in the breast leads to edema and swelling. It occurs in the mammary glands due to expansion and pressure exerted by the synthesis and storage of breast milk<sup>4,5</sup>. The incidence rate of breast engorgement throughout the world is 1:8000, and in India, it is 1:6500. Signs and symptoms occur most commonly between days three and five, with more than two thirds of women with

tenderness on day five but some as late as days 9-10. Majority experience moderate symptoms. More time spent in breast feeding during 48 hours after birth correlates with less engorgement. The 20% post- natal mothers especially primigravida mothers are affected with breast engorgement from 0-4 days of postnatal period<sup>6</sup>.

Various advantages such as decreased incidence of childhood infections, Sudden infant death syndrome, decrease in post neonatal mortality rates, reduced rate of childhood obesity, diabetes, and certain childhood cancers. Apart from babies, postnatal mothers are also enjoying the benefits of breastfeeding which is found to be decreased incidence of breast engorgement, postpartum bleeding and lower risks of developing breast and ovarian cancers.<sup>7</sup> Breast engorgement which occurs during the postnatal period can lead to pain over the breast and nipple pain, nipple damage, breast infections, and sometimes this can be the reason where the women stop breastfeeding. Often breast engorgement brings a lot of struggle for an infant to achieve a deep latch and feed without causing nipple damage<sup>8</sup>. Engorgement usually starts when colostrum is changed to mature milk. Engorgement may turn

to breast abscess if left untreated. Signs and symptoms include cyst over the breast, and the overall skin feels warmth. A fever may occur in 15% of the postnatal mothers<sup>9</sup>. When the woman stops secreting colostrum, and when the secretions increase, the alveoli enlarge causes damage to the glands which secretes breast milk and can lead to the flattening of the nipples or, and it can result in inverted nipples which are difficult for the baby to suck out all the milk from the breast<sup>10</sup>. A prospective cohort study to determine the breastfeeding problems in the first week, their predictors and impact on EBF rate at six months. 400 mothers were involved. Nearly eighty nine percent of the mother-newborn dyads had one or more BF problems before discharge. Majority found difficulty in positioning and encountered nipple problems which is continued even after going home. The only independent predictor in the first week was the caesarean section (odds ratio: 1.9, 95% confidence interval: 1.3-3.2,  $P < 0.05$ )<sup>11</sup>. According to sample registration scheme, the female population of Tamilnadu in June 2009 was about twenty five million. Field work performed during December 2007 to April 2008 showed that seventy percent of urban mothers & fifty percent of rural mothers received postnatal care within two days of delivery out of which 72 to 85 % of post natal mothers developed breast engorgement.. Among every ten mothers, six suffered with breast engorgement. The onset of breastfeeding problems observed in 420 postnatal mothers, karnataka. Results shows that majority (76.9%) of the woman experienced during the first week<sup>13</sup>.

A study done at Swaroop Rani Nehru and Kamala Nehru Memorial Hospital Allahabad among 600 postnatal mothers to know the complications associated with breast in the puerperal period. The results of the study showed that 20% mothers had breast complications. 43.33% had breast engorgement, 15.83% had cracked nipples, 10% had retracted nipples, 8.33% had cracked and sore nipples. 7.5% had broken and retracted nipple, 7.5% had failed in lactation, and 3.33% had breast abscess. Hence the study suggested to teach the postnatal mothers on prevention and management of breast complications which helps for successful breast feeding<sup>14</sup>. Nipple pain is the most common reason to stop breastfeeding and start early weaning by the mother because of her perception of insufficient milk supply. Most of the lactation experts are stressing that nipple soreness in the first week of the postnatal period is "normal," and it reaches its peak by third to sixth day, then it subsides<sup>2</sup>. In an observational study involving 100 breastfeeding mothers, 96% of women had developed sore nipples and nipple pain in first seven days of their postnatal period, many of the mothers had moderate to severe nipple pain recorded in the pain rating scale<sup>15</sup>. Purpose of the study is to compare the post-test scores of lukewarm water compress among postnatal mothers whose babies admitted to nursery in the experimental and control group. To compare the socio demographic variables, maternal and neonatal variables with nipple pain and breast engorgement among postnatal mothers whose babies admitted in nursery.

## MATERIALS AND METHODS

Quantitative research approach was used. Experimental research design- posttest control group design was used and the samples were selected by simple random sampling technique using computer generated random numbers

### ***Inclusion criteria***

- Postnatal mothers whose babies were admitted in nursery
- Who were in the 2<sup>nd</sup> to 5<sup>th</sup> day of postpartum period

### ***Exclusion criteria***

- Primiparous Mothers who were receiving lactation suppressants/stimulants.
- Mothers who had any breast problems such as breast engorgement and nipple problems such as nipple sore, nipple cracks, inverted nipple or with any antenatal or postnatal complications.

### ***Instrument***

Socio demographic data were collected using interview technique and record review from study participants. Maternal and neonatal variables will be collected by using interview technique and record review. Six point breast engorgement assessment scale to assess the breast engorgement. Modified visual analogue scale to assess the nipple pain.

### ***Tool – 1: socio-demographic variables, maternal and neonatal variables***

#### ***Section – A : Socio-Demographic variables***

It includes variables such as age, parity, educational status

#### ***Section – B : Maternal and neonatal variables***

It includes sex and weight of the baby, preferred maternal position for feeding, frequency of feeding, nature of breastfeeding, mode of delivery, type of cesarean section, type of incision and delivered at gestational weeks.

### ***Tool – 2 : six point breast engorgement assessment scale***

- 1 = Soft, no change in breasts
- 2 = Slight change in breasts
- 3 = Firm, no tender breasts
- 4 = Firm, beginning tenderness in breasts
- 5 = Firm, tender
- 6 = Very firm, very tender

### ***Tool 3 : Modified Visual Analog Scale To Assess Nipple Pain***

- 0 = None
- 2 = Annoying
- 4 = Uncomfortable
- 6 = Dreadful
- 8 = Horrible
- 10 = Agonizing

### ***Ethical consideration***

The study was approved by the Nursing Research Monitoring Committee, JIPMER and the Institute (JIPMER) ethical main committee (Human studies). Data collection period was 6 weeks from 29.09.16 To 23.11.16. The investigators obtained clearance from Departmental HOD, Department of obstetrics and gynaecology, WCH, JIPMER. The data has collected after getting permission from the head of the department. A brief description has given to the postnatal mothers whose babies are admitted in nursery and written consent will be obtained from them. Confidentiality was maintained during data collection.

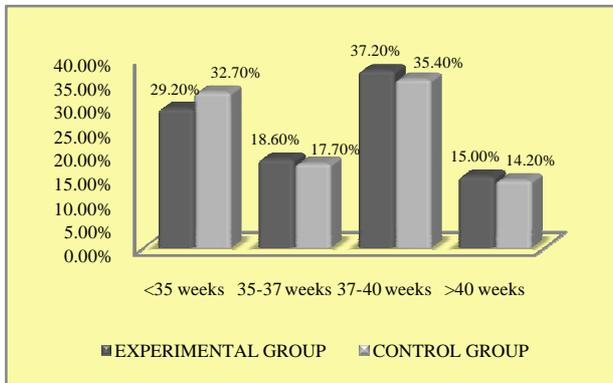
**Data collection procedure**

Postnatal mothers were allotted in the experimental and control group by using simple random sampling – computer generated random numbers by sequentially numbered opaque sealed envelope. For mothers in the experimental group, warm water compress was given before and after breast feeding at a temperature of 95F– 105F with a sponge cloth over the breast. Total duration is 20 minutes(10 minutes before and 10 minutes after breastfeeding), three times in a day(morning, afternoon, evening) on 3<sup>rd</sup> and 4<sup>th</sup> postnatal day. For mothers in the control group no intervention was given. By using six point breast engorgement assessment scale and numerical pain rating scale, breast engorgement and nipple pain was assessed on the 5<sup>th</sup> postnatal day (posttest) for both experimental and control group.

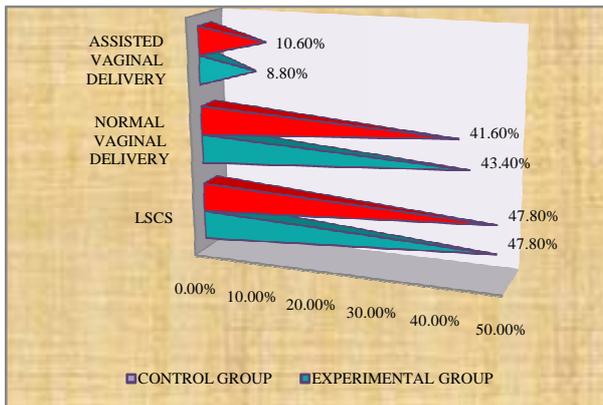
**Statistical Analysis**

**Table 1** Distribution Of Demographic Variables

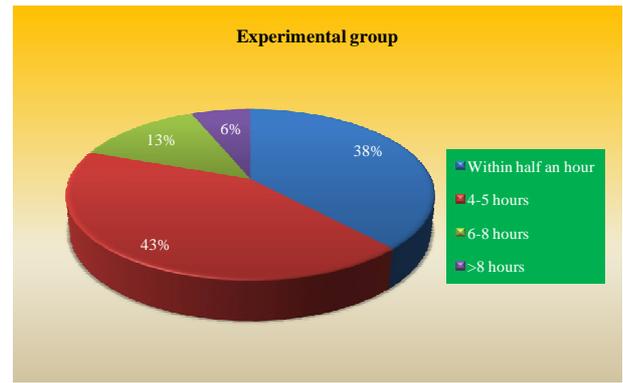
Demographic variables		GROUP			
		EXPERIMENT (n=113)		CONTROL (n=113)	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
age	<20yrs	0	0.0	3	2.7
	20-30yrs	98	86.7	100	88.5
	>30yrs	15	13.3	10	8.8
parity	primiparous	66	58.4	75	66.4
	multiparous	47	41.6	38	33.6
	Illiterate	7	6.2	14	12.4
educational status	Primary	41	36.3	47	41.6
	Higher secondary	30	26.5	21	18.6
	Graduate and above	35	31.0	31	27.4



**Figure 1** Distribution Of Newborn Babies According To Their Delivered Gestational Weeks



**Figure 2** Distribution Of Postnatal Mothers According To Their Mode Of Delivery



**Figure 3** Breast Feeding Initiation Time

**Table 2** Posttest assessment of breast engorgement by six point breast engorgement assessment scale

Six point breast engorgement assessment scale	Experimental group (n=113)		Control group (n=113)	
	N	%	N	%
1= soft, no change in breast	70	61.9	21	18.6
2= slight changes in breast	18	15.9	12	10.6
3= firm, no tender breast	5	4.4	16	14.2
4= firm, beginning tenderness	7	6.3	27	23.9
5= firm, tender	12	10.6	25	22.1
6= very firm, very tender breasts	1	0.9	12	10.6

**Table 3** Comparison of Posttest Scores Of Breast Engorgement

Six point breast engorgement scale	Experimental group	Control group	Mann whitney u test
1= Soft, no change in breast	Median	1	4
2= Slight changes in breast			
3= Firm, no tender breast	Interquartile range	1	3
4= Firm, beginning tenderness			
5= Firm, tender			p=0.001**
6= Very firm, very tender breasts			

**Table 4** Posttest Assessment of Nipple Pain By Modified Numerical Pain Rating Scale

Modified nipple pain rating scale	Experimental group (n=113)		Control group (n=113)	
	N	%	N	%
Mild pain 0-2	95	84.1	39	34.5
Moderate pain 4-6	17	15.1	50	44.2
Severe pain 7-10	1	0.9	24	21.2

**Table 5** Comparison of Posttest Assessment Of Nipple Pain

Modified numerical pain rating scale	Experimental group	Control group	Mann whitney u test
Mild pain 0-2	Median	0	2
Moderate pain 4-6			
Severe pain 7-10	Interquartile range	1	3
			P=0.001**

**Table 6** Comparison between posttest scores of breast engorgement and mode of delivery.

Mode of delivery	Mean	Sd	Kruskal wallis test h
Lscs	3.0	1.7	
Normal vaginal Delivery	2.3	1.5	
Assisted vaginal delivery	2.0	1.5	P = 0.002*

**Table 7** Comparison Between Posttest Scores Of Nipple Pain And Mode Of Delivery.

Mode of delivery	Mean	Sd	Kruskal wallis test h
Lscs	1.6	0.8	
Normal vaginal Delivery	1.4	0.6	
Assisted vaginal delivery	1.2	0.4	P = 0.002*

**Table 8** Comparison Between Posttest Scores Of Breast Engorgement And Postnatal Mothers Breast Feeding Initiating Time.

Breast feeding initiation time	Mean	Sd	Kruskal wallis test h
Within half an hour	1.6	1.1	
4-5 hours	2.0	1.3	
6-8 hours	2.4	1.2	
>8 hours	4.6	0.9	P = 0.001**

**Table 9** Comparison Between Posttest Scores Of Nipple Pain And Postnatal Mothers Breast Feeding Initiating Time.

Breast feeding initiation time	Mean	Sd	Kruskal wallis test h
Within half an hour	1.1	0.4	
4-5 hours	1.2	0.5	
6-8 hours	1.3	0.5	
>8 hours	2.2	0.6	P = 0.001**

## RESULTS AND DISCUSSION

**First objective is to compare the posttest scores of lukewarm water compress among postnatal mothers whose babies are admitted in nursery in the experimental and control group**

Comparing the nipple pain none 0% of the postnatal mothers developed severe nipple pain, whereas 9% of the postnatal mothers developed severe nipple pain. There was a significant difference ( $p=0.001^{**}$ , which is  $<0.05$ ) between the posttest scores of nipple pain among the postnatal mothers in the experimental group for whom lukewarm water compress is given and control group without any intervention. Pigeon *et al.*, done a study in 2003 with 50 primiparous and multiparous postnatal mothers to assess the effectiveness of a film dressing in preventing the nipple pain and nipple trauma. The treatment consists of polyethylene film dressing (Blisterfilm) specifically designed for the study. 94% of mothers experienced nipple pain but statistically significant difference were found for nipple trauma at ( $p<0.001$ ) which shows the intervention was effective<sup>16</sup>.

Only 10% of the postnatal mothers had severe breast engorgement in the experimental group, whereas 33% of the postnatal mothers developed severe breast engorgement in the control group. There was a significant difference ( $p=0.001^{**}$ , which is  $<0.05$ ) between the posttest scores of breast engorgement among the postnatal mothers in the experimental group and control group Cheryl *et al.*, 1993 conducted a randomized controlled study on "Do cabbage leaves prevent breast engorgement". 120 breastfeeding women, were randomly allocated to an experimental group who received application of cabbage leaves to their breasts, or to a control group who received routine care. The experimental group tends to report less breast engorgement. They concluded that the greater breastfeeding success in the experimental group may have been due to some beneficial effect of cabbage leaf application<sup>17</sup>.

Second objective is to compare the selected maternal and neonatal variables with nipple pain and breast engorgement among postnatal mothers whose babies are admitted in nursery. Three variables has been compared with the nipple pain and breast engorgement and they are mode of delivery, postnatal mothers delivered at gestational weeks, time of initiation of breast feeding. Equal number of mothers (47.8%) had undergone LSCS in the experimental and control groups. There was a significant difference between the mode of delivery and posttest scores of nipple pain and breast engorgement. ( $p=0.002$ ). Sithara suresh *et al.*, 2016 worked to find out the predictors of breastfeeding problems during the first week of postnatal period and its effect on exclusive breastfeeding rate in India. Under a prospective cohort design 400 mothers were involved in the study. Findings revealed that nearly 89% postnatal mothers developed one or more breastfeeding problems before discharge. The only independent predictor of breastfeeding problem in the first week was cesarean section. (odds ratio : 1.9, 95% confidence interval: 1.3-3.2,  $P<0.05$ )<sup>18</sup>.

Majority of the postnatal mothers delivered between 37-40weeks in experimental (37%) and in control (35%) group. There was no significant difference found between nipple pain ( $p=0.871$ ), breast engorgement ( $p=0.839$ ) and postnatal mothers delivered at gestational weeks. Maximum number of mothers in the experimental group(42.5%) initiated feeding within 4-5 hours and there was a significant difference found between nipple pain and breast engorgement scores ( $p=0.001$ ) and breast feeding initiating time. Moon *et al.*, 2012 conducted a study to identify the contributing variables for breast engorgement amenable to nursing intervention. The aim of the study was to explore the variables that correlate significantly with breast engorgement. 54 postnatal mothers were involved and the data such as initiation of breastfeeding, frequency of feeding, feeding duration, rate of milk maturation were collected through the questionnaire. The study findings shows that the initiation of breast feeding is significantly correlated with breast engorgement<sup>19</sup>.

## CONCLUSION

The present study assessed the effectiveness of lukewarm water compress on prevention of nipple pain and breast engorgement among postnatal mothers whose babies are admitted in nursery. Results revealed that though few postnatal mothers have developed nipple pain and breast engorgement, but majority of them the nipple pain and breast engorgement was prevented by application of lukewarm water compress. Hence the investigator concluded that the intervention was effective in preventing the nipple pain and breast engorgement.

### Recommendations

**The study recommends the following for further research.**

1. The study can be replicated with larger samples for better generalization
2. The study can be conducted in a different settings
3. The study can be conducted to compare various alternative complementary methods to prevent the nipple pain and breast engorgement
4. The study can be replicated by increasing the frequency of lukewarm water compress

5. The study can be conducted by involving the pretest and posttest assessment of nipple pain and breast engorgements
6. The study can be conducted to assess the effectiveness of structured teaching programme regarding the prevention of nipple pain and breast engorgement among postnatal mothers and staff nurses

#### Limitations

1. The study is limited for a period of 6 weeks
2. The study is limited only at WCH, JIPMER

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