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Effectiveness of Reverse Pressure Softening Technique on Level of Breast Engorgement among Post-Partum Mothers at Selected Hospitals of Bagalkot

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Abstract **Original Research Article**

***Background*:** Breast feeding remains the simplest, healthiest and least expensive feeding method that fulfills the baby's needs. Approximately after giving birth the women's breasts fill with milk, which is a natural process and makes breast heavy and swollen but under normal circumstances. Breast engorgement develops in 72% - 85% in postnatal mothers, which is painful and unpleasant condition. In order to reduce breast engorgement Reverse pressure softening technique may be very effective intervention. ***Methods*:** A quantitative evaluative approach, True experimental pre -test –post – test control groups design was used for present study. The sample for the study consists of 60 postnatal mothers with breast engorgement, equally segregated to both groups, selected by simple random sampling technique. Six point breast engorgement Scale was used to assess the level of breast engorgement of postnatal mothers in both groups. Data were analyzed using descriptive and inferential statistics. ***Results*:** Inferential and descriptive statistics were used to analyze the data. The mean pretest value of breast engorgement of postnatal mothers for experimental and control group was 4.67 and 4.90 respectively. The mean post test score was 3.10 and 4.53 for the experimental and control group respectively. The comparison was done between two groups by performing the independent 't' test value was 6.843 at $p<0.05$. The variable family monthly income was found significant association. ***Conclusion*:** The study shows that the Reverse pressure softening technique is effective in reducing breast engorgement among postnatal mothers.

Keywords: Assess, effectiveness, reverse pressure softening technique, breast engorgement and demographic variables.

INTRODUCTION

The breasts are pair of mammary glands extending from the front of the chest in pubescent and adult human female. It produces milk for infants. One breast is made up of deep and superficial structures. The superficial structures constitute of the skin, areola and nipple. While the internal part constitutes of the subcutaneous fat, lobules and other underlaying structures. The breasts are considered to be remarkably significant in the female reproductive system [1].

Breastfeeding is natural but first-time mothers don't know the breast feeding properly. Proper education and encouragement provide knowledge and is helpful for mother and their child. After delivery engorgement of breast and breast swelling are two main causes which can lead to painful breast. After delivery there are various problems which affect mother's and baby's health so there is great need of giving attention and provide solution and treatment related to the breast [2]. But after making a couple of days, they are going to increase in milk production. So breasts becomes fuller and firmer. This swelling is not only caused by the greater amount of milk, but also by increased blood flow and extra lymph fluids in breasts tissues [3].

For most new mothers, these feelings of heaviness pass without problems when their baby feeding well and frequently. But some produce more milk than their breast can hold which makes them feel rock hard and uncomfortably full - a condition called engorgement. Breast engorgement is a problem commonly encountered in breast feeding mothers and it can lead to potentially serious issues including painful blebs, plugged milk ducts or mastitis [4].

There are many lactating mothers suffering with breast engorgement. Severe engorgement can make it difficult to baby to latch on to the breast properly and feed well. Engorgement may even cause body temperature to rise around 99–100-degree F, it is also known as milk fever. According to Academy of Breastfeeding Medicine Protocol Committee, breast engorgement is defined as the swelling and distension of the breasts [5]. Usually in the early days of initiation of lactation caused by vascular dilation as well as the arrival of the early milk. Breast engorgement during the first week of breast feeding and can also occurs as a result of delayed, infrequent or interrupted removal of milk from the breast [6].

Reverse Pressure Softening Technique (RPS) is a simple intervention that has proven very helpful in the first 14 days postpartum. RPS uses gentle positive pressure 6 to soften a 1– 2-inch area of the areola surrounding the base of the nipple, temporarily moving some swelling slightly backward and upward into the breast. Interstitial fluid volume increases 30% above normal before oedema becomes visible [7].

MATERIALS AND METHODS

Research approach quantitative research approach. the present study is a true experimental pre-test posttest control group design. A purposive sample of 60 postnatal mothers were selected from HSK Bagalkot. Written consent was taken from participants for the study. Socio demographic variables, Clinical characteristics, and Six point breast engorgement Scale were used as tool for data collection. The data was analyzed by using descriptive and inferential statistical in terms of mean, standard deviation, paired t test, independent t test & chi square.

Study design: The study design adopted for this study was True experimental pre -test –post –test control groups design. Here experimental group and control group of postnatal mothers were selected from randomization.

Setting of the study: The present study was conducted at HSK Hospital Bagalkot. The study setting was selected according to the availability of postnatal mothers at HSK Bagalkot.

Participants: In the present study participants were the postnatal mothers. The sample consisted of 60 Postnatal mothers who met inclusion criteria, segregated 30 in each experimental and control group respectively.

Instruments: The study was conducted using a Self-Structured Questionnaires with items related to socio demographic and personal characteristics of postnatal mothers and Six-point engorgement scale for the assessments of severity of breast engorgement.

Description of data collection instruments

Part I: Consists of structured Questionnaires with items related socio demographic and personal characteristics of postnatal mothers.

Part II: Standardized Six-point engorgement scale for the assessment of severity of breast engorgement.

Data Collection Procedures: The main study was conducted between 29-04-2024 to 25-05-2024 in HSK Hospital Bagalkot, Karnataka, India. A prior formal permission was obtained from the concerned authority and consent was obtained from the subjects. The pretest was conducted by using the structured questionnaire and Six-point engorgement scale was used to assess the level of breast engorgement among postnatal mothers. Then the reverse pressure softening technique was administered to the subjects for thrice a day for 10 minutes during every session, for 3 consecutive days ,2nd to 4th postnatal days. Then the post-test was assessed after intervention for all the samples included in the study.

Variables under study:

Independent variable: The independent variable for the present study Reverse pressure softening technique.

Dependent variable: Dependent variable is Breast engorgement among of postnatal mothers.

Sociodemographic Variables: Socio Demographic variables are characteristics or attributes of subjects. In this study the socio-demographic variables are Age, Education, Occupation, Age at marriage, Residence, family monthly income, type of family, para.

Statistical analysis: The obtained data were statistically examined in terms of the objectives of the study using descriptive and inferential statistics. A master sheet was prepared with responses given by the study participants. Frequencies Percentage was used for the analysis of demographic data, and 't' test to determine significance of difference between pre-test and post test score of breast engorgement among postnatal mothers, and The Chi square(x^2) test to find out the association between socio demographic variables and pretest level of engorgement among postnatal mothers.

Ethical Approval: A certificate of ethical permission was obtained from ethical committee of the institution and written consent was taken from each participant.

RESULTS

Part I. Socio- demographic variables

In this study, The majority (57%), in experimental group and 53% in control group were in the age group of 21-25 years old, followed by 43% in experimental group and 47% in control group were in the age group of 26-30 years old. 37% belonged to no formal education in control group and 33% belonged to primary

education whereas 40% belonged to secondary education and 17% belonged to university education in experimental group. 60% in experimental group belongs to home maker and 43% belongs to working women in control group. 60% married at the age less than 20 years in control group whereas 43% married at the age more than 21 years. 57% were residing in urban area in experimental group whereas 53% were residing in rural area in control group. 30% had less than 10,000/- of family monthly income in control group, whereas 63% were having the income between 10,001-15,000/- in control group and 33% were having income 15,000/- above.60% belongs to nuclear family in control group, whereas 47% belongs to joint family in experimental group. 53% belongs to multipara in experimental group, whereas 50% belongs to primipara in control group.

Part II: Assessment of pre-test and post-test level of breast engorgement among postnatal mothers of experimental and control group.

Table 1: Frequency and percentage distribution of pre-test and post-test level of breast engorgement in experimental and control group, N=60

Sl. No	Level Of Breast Engorgement	Experimental Group				Control Group			
		N=30				N=30			
		Pre Test		Post Test		Pre-Test		Post Test	
		F	%	F	%	F	%	F	%
1	Mild	1	3	4	13	1	3	1	3
2	Moderate	11	37	26	87	8	27	14	47
3	Severe	18	60	0	0	21	70	15	50

Table 1 shows shown that in the experimental group, 18(60%) had severe breast engorgement, 11(37%) had moderate, 1(3%) had mild engorgement in the pre test where as in the post test, 4(13%) had mild engorgement, 26(87%) had moderate engorgement. In the control group, 21(70%) had severe breast engorgement, 8(27%) had moderate, 1(3%) had mild engorgement in the pre-test where as in the post test, 15(50%) had severe engorgement, 14(47%) had moderate engorgement and 1(3%) had mild engorgement.

Part III: Comparison of pre-test and post-test level scores of breast engorgement among postnatal mothers of experimental and control group.

Table 2: Mean, standard deviation, mean difference, and standard deviation difference in experimental and control group, N=60

Sl. No	Observation	Experimental group		Control group		Md	T value	P value
		Mean	Sd	Mean	Sd			
1	Pre test	4.67	1.06	4.90	0.99	0.23	0.879	0.383**
2	Post test	3.10	0.61	4.53	0.97	1.43	6.843	<0.00001*
Sd: standard deviation, std.diff: standard deviation difference, *: p<0.05 **: not significant								

Table 2 shows that the pretest mean score breast engorgement in the experimental group was 4.67±1.06 and the pretest mean score in the control group was 4.90±0.99. The mean difference score was 0.23. The calculated student independent 't' test value of t = 0.879 which was not found to be statistically significant. This clearly infers that there was no significant difference of pretest level of breast engorgement among postnatal mothers between the experimental and control group. The post-test mean score breast engorgement in the experimental group was 3.10±0.61 and the post-test mean score in the control group was 4.53±0.97. The mean difference score was 1.43. The calculated student independent 't' test value of t = 6.843 which was found to be statistically significant at p<0.05 level. This clearly infers that reverse pressure softening technique on breast engorgement administered among postnatal mothers in the experimental group was found to be effective in reducing the level of breast engorgement in the post-test among the postnatal mothers than the postnatal mothers in the control group.

Part IV: Evaluation of effectiveness of reverse pressure softening technique on reduction of breast engorgement among postnatal mothers.

Table 3 Effectiveness of Reverse pressure softening technique on the level Breast engorgement among Study Participants in the Experimental Group: N=30

Observations	Mean	Sd	Mean diff	Sd diff	Paired t-test value	P value
Pre-test	4.67	1.06	1.57	0.45	7.56	<0.00001*
Post-test	3.10	0.61				
Sd: standard deviation, sd diff/; standard deviation difference, *: significant at p<0.05						

Table 3 shows that in experimental group the pretest mean score breast engorgement was 4.67±1.06 and the post-test mean score was 3.10±0.61. The mean difference score was 1.57. The calculated paired 't' test value of t = 7.559 which was found to be statistically significant at p<0.05. This clearly infers that reverse pressure softening technique on breast engorgement administered among postnatal mothers was found to be effective in reducing the level of breast engorgement in the post-test among the postnatal mothers.

Part V: find out the association between pre-tests level of breast engorgement with their selected socio demographic variables among postnatal mothers.

Table 4: Frequency, Percentage and Chi square (χ^2) on level of breast engorgement among postnatal mothers in experimental group with their demographic variables, N=30

Sl. No	Demographic variable	Level of breast engorgement				Df	X^2 value	Interpretation
		Mild + moderate		Severe				
		F	%	F	%			
1	**Age**							
	21-25	6	20	10	33	1	0.09	Ns
	26-30	6	20	8	27			
2	**Education**							
	No +primary education	7	23	13	43	1	0.63	Ns
	Secondary +university	5	17	5	17			
3	**Occupation**							
	Working	5	17	8	27	1	0.02	Ns
	Homemaker	7	23	10	33			
4	**Age of marriage**							
	≤ 20 years	4	13	8	27	1	0.05	Ns
	≥ 21 years	8	27	10	33			
5	**Residence**							
	Rural	6	20	10	33	1	0.09	Ns
	Urban	6	20	8	27			
6	**Family monthly income**							
	≤ 15,000/-	7	23	2	7	1	5.56	S
	≥ 15001/-	5	17	16	53			
7	**Type of family**							
	Joint family	6	20	6	20	1	0.83	Ns
	Nuclear family	6	20	12	40			
8	**Para**							
	Primi para	6	20	9	30	1	0	Ns
	Multi para	6	20	9	30			
DF: Degree of freedom, Ns: Not significant, S: Significant at P<0.05								

Table 4 shows that In the experimental group the demographic variables family income per month ((χ2=5.56, p=0.018) had shown statistically significant association with pretest level of breast engorgement among postnatal mothers at p<0.05. the other demographic variables did not show statistically significant association with pretest level of breast engorgement among postnatal mothers in experimental group.

Table 5: Frequency, Percentage and Chi square (χ2) on level of breast engorgement among postnatal mothers in control group with their demographic variables, N=30

Sl. No	Demographic variable	Level of breast engorgement				Df	X^2 value	Interpretation
		Mild+ moderate		Severe				
		F	%	F	%			
1	**Age**							
	21-25	3	10	13	43	1	1.08	Ns
	26-30	6	20	8	27			
2	**Education**							
	No+primary education	4	13	16	53	1	1.61	Ns
	Secondry+university	5	17	5	17			
3	**Occupation**							
	Working	4	13	9	30	1	0.1	Ns

	Home-maker	5	17	12	40			
4	**Age of marriage**							
	≤ 20 years	5	17	7	23	1	0.54	Ns
	≥ 21 years	4	13	14	47			
5	**Residence**							
	Rural	4	13	12	40	1	0.06	Ns
	Urban	5	17	9	30			
6	**Family monthly income**							
	≤ 15,000/-	8	27	20	67	1	0.03	Ns
	≥ 15001/-	1	3	1	3			
7	**Type of family**							
	Joint family	3	10	9	30	1	0.01	Ns
	Nuclear family	6	20	12	40			
8	**Para**							
	Primi	5	17	10	33	1	0	Ns
	Multi	4	13	11	37			
DF: Degree of freedom, Ns: Not significant, S: Significant at P<0.05								

Table 5 shows that in the control group the demographic variables did not show statistically significant association with pretest level of breast engorgement among postnatal mothers at p<0.05.

DISCUSSION

The findings of the present study are discussed in light of previous scientific studies in this chapter and discussion regarding findings of the study is presented in accordance with the objectives of the study and hypothesis. The current study find out the effectiveness of reverse pressure softening technique among postnatal mothers at BVVS HSK Hospital and Research Centre, Bagalkot. The study found that the there is effectiveness of reverse pressure softening technique on reduction of breast engorgement among postnatal mothers

Findings of the present study showed that the level of breast engorgement among post natal mothers of experimental group pre-test belong to mild 1 (3%), moderate 11 (37%), severe 18 (60%) and in post-test mild 1(13%), moderate 8(27%), severe 0 (0%). in control group pre test mild 1(3%), moderate 8(27%), severe 21(70%). In post test mild 1(3%), moderate 14(47%), severe 15(50%).

Current study is compared with the study conducted by Priyanka Sandeep Pednekar (2021), to assess Effectiveness of Reverse Pressure Softening of Areola in Women with Postpartum Breast Engorgement. the study results shown the significant improvement in Group b along with reduction of pain.

Findings of present study shows that the pretest mean score breast engorgement in the experimental group was 4.67±1.06 and the pretest mean score in the control group was 4.90±0.99. The mean difference score was 0.23. The calculated student independent 't' test value of t = 0.879 which was not found to be statistically significant. The post-test mean score breast engorgement in the experimental group was 3.10±0.61 and the post-test mean score in the control group was 4.53±0.97. The mean difference score was 1.43. The calculated student independent 't' test value of t = 6.843 which was found to be statistically significant at p<0.05.

The results of the present study are support with the study conducted by Dr. Akansha Massey (2022), A Study to Assess the efficacy of reverse pressure softening technique among postnatal. it reported that for the comparing of the pre and post test score of the breast engorgement after the intervention of reverse pressure softening technique was significant difference between the mean values from the pre-test and the post-test in terms of the degree of breast engorgement. This is shown by the t-values of 4.22 and 17.21, which are statistically significant at the p0.05 level

Present study result found that the mean difference scores in the experimental group was 1.57 and the calculated t value is 7.56 was found to be statistically significant at p<0.05. which depicted clearly that there was a significant decrease in the level of breast engorgement after Reverse Pressure Softening Technique in experimental group.

The results of the present study are compared with the study conducted by Ananthavarshini (2022) The obtained results shown post-test 't' value 26.93 on level of breast engorgement and 3.22 on level of breastfeeding was significant at p< 0.05 level. Study concluded that Reverse Pressure Softening (RPS) technique is effective in reducing the level of breast engorgement and improving breast feeding among postnatal mothers.

Findings of the Present study shows that In the experimental group the demographic variables family income per month ((χ2=5.56, p=0.018) had shown statistically significant association with pretest level of breast engorgement among postnatal mothers at p<0.05.

The study results are supported by Dr. Ashok Sharma (2023). Effectiveness of reverse pressure softening technique on prevention and reduction of breast engorgement among patients undergoing delivery. The study results showed that there will be significant association between the pretest level breast engorgement and the selected demographic variables such as age, education occupation, age of marriage, residence, type of family, para.

LIMITATIONS

The study limited to the sample of 60 postnatal mothers admitted in BVVS HSK Hospital Bagalkot, assessing breast engorgement.

CONCLUSION

The study concluded that administration of Reverse pressure softening technique intervention on reduction of breast engorgement among postnatal mothers was very effective, scientific, logical, and cost-effective strategy.

Declaration by authors

Ethical Approval: Institutional ethical clearance approved.

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