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Effect of sacral warm compress on the level of pain during first stage of labour among primi gravida mothers

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Abstract

The current study aimed to assess effect of sacral warm compress on the level of pain among the primi gravida mothers during the first stage of labour in selected hospitals of Pune city. The study adopted "system model" as a theoretical base for the framework of the study. Quantitative approach was adopted for the study and design was quasi experimental non-equivalent control group design. Reliability of tool done using inter rater method which found to be reliable. The sample consists of 60 who fulfilled the inclusion criteria. 30 samples for experimental group and 30 for control group. The samples were selected by Non probability-Purposive sampling technique. Severity of the pain was assessed by using Numerical Pain scale and FLACC scale.

Result: In control group, majority of the primi gravida mothers (70%) are under 18 – 22 years. 26.7% of them are under 23–26 years and 3.3% of them are under 27–30 years. In experimental group, majority of the participant (73.3%) are under 18- 22years, and 26.7% are under 23–26 years. In control group, 13.3% of them were illiterate, 50% of them had primary education, 33.3% of them had secondary education and 3.3% of them had graduation. In experimental group, 60% of them had primary education, 33.3% of them had secondary education and 6.7% of them had graduation. In control group 90% of them were home makers and 10% of them had some other occupation. In experimental group 76.7% of them were home makers and 23.3% of them had some other occupation. In control group, 10% of them had received child birth education. They had received it from doctor. In experimental group, 16.7% of them had received child birth education. 3.3% of them had education from staff, 10% of them had it from doctor and 3.3% of them had education from others. The p-value of posttest 1 in experimental group is less than 0.05 level of significance. As p-value of experimental group in posttest 2 and 3 is lesser than p-value of posttest 2 and 3 in control group shows that the rate of increase of level of pain is slower in experimental group as compare to control group.

Keywords: Assess, Effect, Sacral Warm Compress, First stage of labour, Primi gravida mothers, Hospitals

1. Introduction

Pain is a highly unpleasant and very personal sensation that cannot be shared with others. No two people experience pain in exactly the same way ^[1]. Among pains, the pain of child birth is a time honored and inevitable part of the human existence. Labour pain is a fluctuating cycle pain, appearing in waves, radiating and then subsiding in turn. The causes of labour pain are uterine contractions and dilatation of cervix which causes unbearable pain in mothers ^[2]. the obstetricians and midwives are the health care providers who need to provide current maternity services to manage a women who is in labour. Normally labour pain in primigravida is unbearable, usually they cry out for help when the intensity increases. To relieve this pain there are many pharmacological and Non-pharmacological measures. But these pharmacological measures may cause some adverse effects. Women who preferred to avoid drugs were more satisfied with overall birth experiences than women who had drugs. Treating pain is important, because coping of patient with pain influences the birth experience. There are some non-pharmacological measures to reduce labour pain such as TENS application, aromatherapy, acupressure, heat applications, hypnosis and breathing & relaxation techniques etc.

Among these measures women prefer to have heat applications as it is considered as effective measure in relieving pain [3].

Researcher noticed that primi gravida mothers are having unbearable pain as compared to multi gravida mothers. Sacral Warm Compress one of the non-pharmacological method which can be adopted to relief the pain in labour. So, the researcher felt the need to find out the effect of Sacral Warm Compress on the level of pain during first stage of labour among primi gravida mothers.

2. Methodology

A Quantitative approach with quasi experimental non-equivalent control group design was adopted. The study was conducted in selected hospitals of Pune city. 60 primi gravida mothers (30 experimental, 30 control group) by

using Non probability-Purposive sampling technique. The data were collected using demographic Performa, Numerical Intensity pain scale and FLACC scale. During cervical dilation of 4 to 7cm, three interventions for 10 mins for every half an hour interval are given after that posttest are taken. Content validity of the tool was established by suggestion of 17 experts. Tool was found to be reliable by using Karl Pearson correlation coefficient formula ($r = 0.96$, $r = 0.86$). Ethical consideration: Formal Administrative approval was obtained from selected hospitals of Pune city. Written Consent from the participants.

3. Findings

Section I

Description of samples (primigravida mothers) based on their personal characteristics

Table 1: Description of samples (primigravida mothers) based on their personal characteristics in terms of frequency and percentages n=30, 30

Demographic variable	Control		Experimental	
	Freq	%	Freq	%
Age				
18 – 22 years	21	70.0%	22	73.3%
23 – 26 years	8	26.7%	8	26.7%
27 – 30 years	1	3.3%	0	0.0%
Education				
Illiterate	4	13.3%	0	0.0%
Primary	15	50.0%	18	60.0%
Secondary	10	33.3%	10	33.3%
Graduate	1	3.3%	2	6.7%
Patient's occupation				
Home maker	27	90.0%	23	76.7%
Others	3	10.0%	7	23.3%
Have received child birth education				
Yes	3	10.0%	5	16.7%
No	27	90.0%	25	83.3%
If Yes, from where				
From staff	0	0.0%	1	3.3%
From doctor	3	10.0%	3	10.0%
Other	0	0.0%	1	3.3%

Table no.1-In control group, majority of the primi gravida mothers (70%) are under 18 – 22 years. 26.7% of them are under 23 – 26years and 3.3% of them are under 27 – 30 years. In experimental group, majority of the participant (73.3%) are under 18- 22years, and 26.7% are under 23 – 26 years. In control group, 13.3% of them were illiterate, 50% of them had primary education, 33.3% of them had secondary education and 3.3% of them had graduation. In experimental group, 60% of them had primary education, 33.3% of them had secondary education and 6.7% of them had graduation. In control group 90% of them were home makers and 10% of them had some other occupation. In experimental group 76.7% of them were home makers and 23.3% of them had some other occupation. In control group, 10% of them had received child birth education. They had received it from doctor. In experimental group, 16.7% of them had received child birth education. 3.3% of them had education from staff, 10% of them had it from doctor and 3.3% of them had education from others

Section II

Analysis of data related to the level of labor pain among the primi gravida mothers during the first stage of labour in both experimental & control group

Table 2: The level of labor pain (based on FLACC scale) among the primi gravida mothers during the first stage of labor in both experimental & control group. n= 30, 30

	Level of pain	Control		Experimental	
		Freq	%	Freq	%
Pretest	No pain (Score 0)	0	0.0%	0	0.0%
	Mild pain (Score 1-3)	0	0.0%	0	0.0%
	Moderate pain (Score 4-6)	20	66.7 %	22	73.3 %
	Severe pain (Score 7-10)	10	33.3 %	8	26.7 %

Table no. 2: In control group, 66.6% of the primigravida mothers had moderate pain (score 4-6) and 33.3% of them had severe pain (score 7-10). In experimental group, 73.3% had moderate pain (score 4-6) and 26.6% had severe pain (score 7-10).

Table 3: The level of labor pain (based on numeric pain scale) among the primi gravida mothers during the first stage of labor in both experimental & control group n= 30, 30

	Level of pain	Control		Experimental	
		Freq	%	Freq	%
Pretest	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	21	70 %	22	73.33 %
	Severe pain (Score 7-10)	9	30 %	8	26.67 %

Table no 3: In control group, 70% of the primigravida mothers had moderate pain (score 4-6) and 30% of them had severe pain (score 7-10).

In experimental group, 73.33% had moderate pain (score 4-6) and 26.6% had severe pain (score 7-10).

Section III

Analysis of data related to the level of labor pain among the primi gravida mothers during the first stage of labor in both experimental and control group, after sacral warm compress in experimental group.

Table 4: Level of pain (based on FLACC scale) among primi gravida mothers during first stage of labour in both experimental and control group, after sacral warm compress in experimental group. n=30, 30

	Level of pain	Control		Experimental	
		Freq	%	Freq	%
Posttest 1	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	15	50%	20	66.6 %
	Severe pain (Score 7-10)	15	50%	10	33.4 %
Posttest 2	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	10	33.3 %	18	60%
	Severe pain (Score 7-10)	20	66.6 %	12	40%
Posttest 3	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	3	10%	16	53.3 %
	Severe pain (Score 7-10)	27	90%	14	46.7 %

Table no. 4: In control group, in posttest 1, 50% of the primigravida mothers had moderate pain (score 4-6) and 50% of them had severe pain (score 7-10). In posttest 2, 33.33% had moderate pain (score 4-6) and 66.66% had severe pain (7-10) and posttest 3, 10% had moderate pain (4-6) and 90% had severe pain, (score 7-10).

In experimental group, in posttest 1, 66.6% had moderate pain (score 4-6) and 33.4% had severe pain (score 7-10). In posttest 2, 60% had moderate pain and 40% had severe pain.

In posttest 3, 53.3% had moderate pain (score 4-6) and 46.66% had severe pain (score 7-10). This indicates that the severity of pain increases more in control group than the experimental group.

Table 5: Level of pain (based on numerical pain scale) among primi gravida mothers during first stage of labour in both experimental and control group, after sacral warm compress in experimental group. n=30, 30

	Level of pain	Control		Experimental	
		Freq	%	Freq	%
Posttest 1	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	1	3.3%
	Moderate pain (Score 4-6)	14	46.6 %	20	66.6 %
	Severe pain (Score 7-10)	16	53.4 %	10	33.4 %
Posttest 2	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	9	30 %	18	60%
	Severe pain (Score 7-10)	21	70 %	12	40%
Posttest 3	No pain (Score 0)	0	0.0 %	0	0.0%
	Mild pain (Score 1-3)	0	0.0 %	0	0.0%
	Moderate pain (Score 4-6)	6	20 %	14	46.6 %
	Severe pain (Score 7-10)	24	80 %	16	53.4 %

Table no. 5: In control group, in posttest 1, 46.6% had moderate pain (score 4-6) and 53.4% had severe pain (score 7-10). In posttest 2, 30% had moderate pain (score 4-6) and 70% had severe pain (score 7-10) and in posttest 3, 20% had moderate pain (score 4-6) and 80% had severe pain (7-10).

In experimental group, in posttest 1, 66.6% of the primigravida mothers had moderate pain (score 4-6), 33.4% of them had severe pain (score 7-10). In posttest 2, 60% of the primigravida mothers had moderate pain (score 4-6) and 40% of them had severe pain (score 7-10). In posttest 3, 46.6% of the primigravida mothers had moderate pain (score 4-6) and 53.4% of them had severe pain (score 7-10). This indicates that the severity of pain increase more in control group as compare to experimental group.

Section IV

Analysis of data related to effectiveness of sacral warm compress on the level of labor pain among

Table 6: Paired t-test for effectiveness of sacral warm compress on the level of labor pain (FLACC scale) among women during first stage of labour during first stage of labor n=30, 30

Group		Mean	SD	T	df	p-value
Control group	Pretest	6.2	1.26			
	Posttest1	6.5	1.0	0.7	29	1.000
	Posttest2	7.7	1.48	4.7	29	1.000
	Posttest3	7.8	1.09	5.7	29	1.000
Experimental group	Pretest	6.4	1.58			
	Posttest1	6.2	0.83	1.55	29	0.04
	Posttest2	6.4	0.94	0.61	29	0.22
	Posttest3	6.6	1.14	0.62	29	0.72

Table no. 6: In control group, researcher applied paired t-test for comparison of pretest pain score (based on FLACC scale) with posttest1, posttest2 and posttest3 pain scores (based on FLACC scale). In control group, average FLACC pain score in pretest was 6.2 which increased to 6.53, 7.73 and then 7.8 in posttest1 posttest2 and posttest3 respectively. Corresponding T values were 0.7, 4.7 and 5.7 at posttest1, posttest2 and posttest3 respectively. Corresponding p-values were 1. This indicates that the level of pain increases.

In experimental group, researcher applied paired t-test for comparison of pretest pain score (based on FLACC scale) with posttest1, posttest2 and posttest3 pain scores (based on FLACC scale). In experimental group, average FLACC pain score in pretest was 6.4 which increases to 6.2, 6.4 and then 6.6 in posttest1 posttest2 and posttest3 respectively. Corresponding T values were 1.55, 0.61 and 0.62 at posttest1, posttest2 and posttest3 respectively. Corresponding p-values were 0.04, 0.22 and 0.72

The p-value of posttest 1 in experimental group is less than 0.05 level of significance. Hence H_0 is rejected. As p-value of experimental group in post 2 & 3 is lesser than the p-value of control group posttest 2 & 3 which shows that the rate of increase of level of pain is slower in experimental group as compare to control group.

This shows that the sacral warm compress is effective in reducing the level of pain during first stage of labour.

Table 7: Two samplet-test for comparison of effect of sacral warm compress on labour pain (FLACC scale) among experimental and control group. n=30, 30

	Experimental group		Control group		T	Df	P-value
	Mean	SD	Mean	SD			
Posttest1	0.16	1.2	0.33	1.3	4.4	58	0.055
Posttest2	0.13	1.5	1.53	1.6	1.62	58	0.090
Posttest3	0.14	1.3	1.6	1.5	4.76	58	1

Table no. 7: Researcher applied two sample t-test for comparison of effect of sacral warm compress on labour pain (FLACC scale) among experimental and control group. Average change in experimental group was 0.16, 0.13 and 0.14 in posttest1, posttest2 and posttest3 as compared to pretest. Average change in control group was 0.33, 1.53 and 1.6 in posttest1, posttest2 and posttest3 as compared to pretest. T-values for these comparisons were 4.4, 1.62 and 4.76, 58 degrees of freedom at posttest1, posttest2 and posttest3. The p-values were large (more than 0.05).

This indicates that Sacral Warm Compress is effective in reducing the pain intensity during first stage of labour.

Table 8: Paired t-test for effectiveness of sacral warm compress on the level of labor pain (numeric pain scale) among women during first stage of labor. n=30, 30

Group		Mean	SD	T	df	p-value
Control group	Pretest	6.5	1.2			
	Posttest1	7	1.15	2.19	29	0.990
	Posttest2	7.83	1.36	4.70	29	1.000
	Posttest3	8.966	1.42	7.70	29	1.000
Experimental group	Pretest	6.66	1.145			
	Posttest1	6.3	0.82	1.23	29	0.030
	Posttest2	6.5	0.92	0	29	0.270
	Posttest3	6.53	0.71	0.17	29	0.370

Table no. 8: In control group, researcher applied paired t-test for comparison of pretest pain score (based on numeric pain scale) with posttest1, posttest2 and posttest3 pain scores (based on numeric pain scale). In control group, average numeric pain score in pretest was 6.5 which increased to 7, 7.8 and then 8.9 in posttest1 posttest2 and posttest3 respectively. Corresponding T values were 2.19, 4.70 and 7.70 at posttest1, posttest2 and posttest3 respectively. Corresponding p-values were large (greater than 0.05). This indicates that the level of pain increase faster in control group.

In experimental group, researcher applied paired t-test for comparison of pretest pain score (based on numeric pain scale) with posttest1, posttest2 and posttest3 pain scores (based on numeric pain scale). In experimental group, average numeric pain score in pretest was 6.6 which increased to 6.3, 6.5 and then 6.5 in posttest1 posttest2 and posttest3 respectively. Corresponding T values were 1.23, 0 and 0.17 at posttest1, posttest2 and posttest3 respectively. Corresponding p-values were 0.030, 0.270, 0.370.

The p-value of posttest 1 in experimental group is less than 0.05 level of significance. Hence H_0 is rejected. As p-value of experimental group in post 2 & 3 is lesser than the p-value of control group posttest 2 & 3 which shows that the rate of increase of level of pain is slower in experimental group as compare to control group.

This shows that the sacral warm compress is effective in reducing the level of pain during first of labour.

Table 9: Two samplet-test for comparison of effect of sacral warm compress on labour pain (numeric scale) among experimental and control group. n=30, 30

Admin	Experimental group		Control group		T	df	p-value
	Mean	SD	Mean	SD			
Posttest 1	0.16	0.8	0.5	1.0	3.2	58	0.040
Posttest 2	0.04	0.8	1.3	0.9	1.57	58	0.800
Posttest 3	0.07	0.7	2.46	1.1	5.10	58	0.900

Table no. 9: Researcher applied two sample t-test for comparison of effect of sacral warm compress on labour pain (numeric scale) among experimental and control group. Average change in experimental group was 0.16, 0.04 and 0.07 in posttest1, posttest2 and posttest3 as compared to pretest. Average change in control group was 0.5, 1.3 and 2.246 in posttest1, posttest2 and posttest3 as compared to pretest. T-values for these comparisons were 3.2, 1.57 and 5.10 with 58 degrees of freedom at posttest1, posttest2 and posttest3. The p-values were greater (more than 0.05).

This indicates that Sacral Warm Compress is effective in reducing the pain intensity during first stage of labour.

Section v

To associate the findings with the selected demographic variables

Analysis of data related to association of the findings with selected demographic variables

Association of level of pain among primigravida mother’s findings with selected demographic variables was assessed using Fisher’s exact test. The summary of Fisher’s exact test is tabulated below:

Table 10: Fisher's exact test for Association of level of pain (FLACC scale) among primigravida mothers with selected demographic variables N=60

Demographic variable		FLACC Scale		p-value
		Moderate	Severe	
Age	18 – 22 years	7	36	0.227
	23 – 26 years	3	13	
	27 – 30 years	1	0	
Education	Illiterate	1	3	0.165
	Primary	8	25	
	Secondary	1	19	
	Graduate	1	2	
Parent's occupation	Home maker	9	41	1.000
	Others	2	8	
Have received child birth education	Yes	2	6	0.631
	No	9	43	

Since all the p-values are large (greater than 0.05), none of the demographic variable was found to have significant association with level of pain (FLACC scale) among primigravida mothers

Table 11: Fisher's exact test for Association of level of pain (numeric pain scale) among primigravida mothers with selected demographic variables N=60

Demographic variable		Numerical Pain Scale		p-value
		Moderate	Severe	
Age	18 – 22 years	7	36	1.000
	23 – 26 years	2	14	
	27 – 30 years	0	1	
Education	Illiterate	0	4	0.543
	Primary	4	29	
	Secondary	5	15	
	Graduate	0	3	
Parent's occupation	Home maker	9	41	0.333
	Others	0	10	
Have received child birth education	Yes	0	8	0.339
	No	9	43	

Since all the p-values are large (greater than 0.05), none of the demographic variable was found to have significant association with level of pain (numeric pain scale) among primi gravida mothers.

4. Discussion

The findings of the study have been discussed with the reference of the objectives and hypothesis. The findings of the study show that warm compress was significantly effective in relieving the pain during first stage of labour. A similar study was done by Shirley Joseph (2005) on effectiveness of warm compress on labour pain. The sample consisted 60, second and third gravid women in labour who met inclusion criteria were randomly assigned to group 1, group 2 and group 3. All the three groups had usual care and support from health care professionals. Data was collected by using visual analogue scale and structured observational check list. The study revealed the experimental group had reduction in pain and experienced comfort than the control group at 0.05 level of significance. The study concluded that warm compress is one of the simple, effective, noninvasive and cost effective method having [4] Behmanesh F (2009), study on effectiveness on heat therapy on labour pain., the mean of the pain severity in the first labour stage in the heat

therapy and control groups was (8.144 to .99) and (8.88 to 1.02) respectively ($p < 0.001$) [5].

The present study findings depict the effectiveness of sacral warm compress on the level of pain during first stage of labour. The findings are supported by similar study that reveals the effectiveness of sacral warm compress or heat therapy on the level of pain during the first stage of labour. The findings are supported by similar study that reveals the effectiveness of sacral warm compress or heat therapy on the level of pain during the first stage of labour. Studies shows that warm compression or heat therapy is cost effective and one of the most effective non-pharmacological measures to relieve pain with no complication to the patient.

5. Conclusion

The conclusion drawn from the findings of the study are as follows

Sacral warm compress helps controlling the pain among primi gravida mothers during first stage of labour in experimental group as compare to control group.

- 1) Statistical findings shows that the pain is increased in both control and experimental group but the severity of increasing pain is slower and control in experimental group as compare to control group.
- 2) Sacral warm compress is cost effective non-pharmacological methods and can be implemented in any setting of labour room.

6. Recommendation

On the basis of the findings of the study, it is recommended that,

1. A similar study may be conducted on a larger population for generalizations of the findings.
2. A case study can be conducted to assess the outcome of labour by giving sacral warm compress during first stage of labour.
3. A comparative study can be done to assess the effectiveness of sacral warm compress and other alternative therapy in labour pain.
4. A study can be done to assess the effect of sacral warm compress on back pain during pregnancy.
5. A study can be carried out using other alternative therapy.

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