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Review Article

The effectiveness of slow paced breathing on pain perception during first stage of labour among primigravida mothers

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ABSTRACT

Introduction: Natural childbirth is a profound and powerful human experience which is a mixture of feeling of empowerment and accomplishment. Both pharmacological and non-pharmacological methods are available today and it is known that the non- pharmacological options involve less risk when used in this process. Breathing exercises helps labour women to relax and distract from the painful response.
Materials and Methods: The research design adopted for this study was quasi experimental design. The sample size was 60 (30 experimental and 30 control group) and was drawn through purposive sampling technique. The level of labour pain perception was assessed by using Numeric pain rating scale. Slow paced breathing was instructed to practice during contractions for 2 hours during active phase for experimental group. Pre-test was assessed before intervention and Post test done after intervention for both group. The data gathered were analyzed by descriptive and inferential statistical method.
Result: The mean post-test score on level of pain perception during first stage of labour in experimental group was 1.6, but in control group it was 2.5. The calculated unpaired,, t" value was 5.92, which is more than the table value at 5% significance (table value=2.02). Hence, it was statistically significant at 5% ($p<0.05$). It shows that slow paced breathing is effective in reduction of pain perception during first stage of labour. Hence, the research hypothesis (H1) is accepted. There is no significant association between demographic variables. Hence, the research hypothesis (H2) is rejected.
Conclusion: This study finding revealed that slow paced breathing exercise helps in reducing the level of pain perception among primigravida mothers in the experimental group. So this can be practiced as a Non-pharmacological method to relieve pain perception during labour in various settings.

1. Introduction

Childbirth is one of the most marvelous and memorable segment in a woman"s life. It does not really matter if the child is the first, second or the third one. Each experience is unique and calls for a celebration. The fear and anxiety about child birth often prevents most women from enjoying this experience.[1]

Events of labor are divided into three stages. First stage starts from onset of true labor pain and ends with the full dilatation of cervix. Second stage starts from full dilatation of cervix and ends with the expulsion of the fetus from the birth canal. Third stage involves separation and expulsion of placenta and its membranes and fourth stage involves observation for at least one hour after birth.[2]

The first stage of labor averages about 13-14 hours for a nullipara and about 6 – 7 hours for a multipara. Latent phase (early) involves dilatation from 0-3cm in which contractions are usually every 5-30 minutes, lasting for 10-

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30 seconds and of mild intensity. Active phase involves dilatation from 4-7cm, contractions are usually every 3-5 minutes; lasting 40-60 seconds and of mild to moderate intensity. Transitional phase involves dilatation from 8-10 cm, contractions are every 2-3 minutes, lasting 50-60 seconds and of moderate to strong intensity. Some contractions may last up to 90 second.[3]

Specific exercises and postures can help the pregnant women to adapt to the physical changes in her body during the childbearing years. They will help to ease the minor aches and pains during pregnancy and may also help to prevent long term postpartum problems. In addition, coping skills such as relaxation, positioning and breathing awareness will provide the mother with the practical means of managing labour.[4]

Breathing properly is vital for having an untroubled labour. Shallow and panic breathing are common when a person is frightened or is in a state of stress. During labour, pain makes the mother stressed and leads to panic breathing which would means less flow of oxygen to the mother as well as for the baby. This may cause lose control of the body and make labour a very hard process. However, breathing in a rhythmic manner during labour helps in increasing the flow of oxygen in the body. This ensures that there is plenty of oxygen available for both mother and baby during the crucial phase.[5]

2. Need for the Study

Pregnancy is a time of great change for a woman, not only for the obvious physical change in her body, even her emotional state changes several times throughout the day.[6] Each woman comes into labor with a set of expectations: fear, preparation, pain threshold, personality and behavioral makeup, and ways of experiencing what is happening to her, which has to be maintained effectively. The time of labor and birth, though short in comparison with the length of pregnancy, is the most dramatic and significant period of pregnancy.[7]

Labor pain is the most severe pain experienced by the women. Parity also influences labor pain, that is, primigravida women experience more pain during labor than multigravida mothers.[8] Recent studies have shown that the incidence of caesarean sections is increasing throughout the developed and developing countries. Majority of women (68%) are requesting for caesarean section because of psychological indications. Women with adequate psychological support and relaxation techniques had reduced the incidence of caesarean section and 38% of them agreed for normal vaginal delivery.[9]

The investigator during her clinical posting and interaction with mothers in labor had observed various behavioral responses like crying, hitting the labor table, biting of teeth tightly, etc. Mainly, mothers are not prepared mentally and physically to deal the happenings of pregnancy. Moreover, they sink into panic during the progress of labor. This could be controlled by relaxation technique like slow paced breathing. Hence, the investigator is interested to evaluate the effectiveness of slow paced breathing on pain perception among primigravida mothers. This study will help in providing better care during intrapartum period which gives a positive childbirth experience to the mother.[10]

2.1. Statement of the problem

A study to assess the effectiveness of slow paced breathing on pain perception during first stage of labour among primigravida mothers in a selected hospital at Indore.

3. Objectives of the Study

1. To assess the pre-test and post-test level of pain perception during first stage of labor in experimental and control group.
2. To determine the effectiveness of slow paced breathing exercise by comparing the post-test level of pain perception of experimental and control group.
3. To associate pre-test level of pain perception during labour with selected demographic variables.

3.1. Hypotheses

H1: There will be a significant difference in the post-test level of pain perception between experimental and control group.
H2: There will be a significant association between pre-test level of pain perception and selected demographic variables among primigravida mothers.

3.2. Assumptions

1. Mothers prefer pain relieving measures during labor.
2. Low paced breathing exercise may reduce pain perception during first stage of labor.

4. Materials and Methods

4.1. Research approach

The research approach used for this study was quantitative approach.

4.2. Research design

For the present study, quasi experimental pre and post test design is used.

1. O1: Assessment of level of pain perception during first stage of labor in experimental group before intervention.

Group	Pre-test	Intervention	Post-test
Experimental group	O1	Slow–paced breathing exercise	O2
Control group	O1	No intervention	O2

2. O2: Assessment of level of pain perception during first stage of labor in experimental group after slow paced breathing exercise and control group with no intervention.

4.3. Variables

4.3.1. Dependent variable

Dependent variable -pain perception among primigravida mothers during active phase of first stage of labor.

4.3.2. Independent variable

Independent variable –slow paced breathing exercise.

4.3.3. Demographic variables

Age, education, occupation, family income, type of family, social support.

4.4. Setting of the Study

The study was conducted in SAIMS Indore, which is a well-known maternity center.

4.5. Sample

The sample for the study was primigravida mothers during first stage of labor who met the inclusion criteria.

4.6. Sample size

In this study, the sample consists of 60primigravida mothers during first stage of labour with cervical dilatation between 4-7cm, in which 30 as experimental group and 30 as control group.

4.7. Sampling technique

In this study, investigator selected the samples by purposive sampling method.

5. Sampling Criteria

5.1. Inclusion criteria for sampling

1. Admitted with 4-7 cm cervical dilatation.
2. Between 21-30 years of age.
3. Know to speak & understand Tamil, and English.
4. Willing to participate in the study.
5. Completed 37 weeks of gestation.

5.2. Exclusion criteria for sampling

1. Delivered one or more child.
2. Having complicated pregnancy or labour.
3. Not willing to participate.
4. Under any form of labour anesthesia or analgesia.

5.3. Pilot study

Six primigravida mothers were selected and equally assigned to experimental and control group. The investigator practiced slow-paced breathing exercise to 3 samples of experimental group and no intervention for samples of 3 control group. Pain perception was assessed by using numeric pain rating scale before and after the intervention. Data analysis was done using descriptive and inferential statistics.

6. Result

The distribution in number and percentage of study samples according to their demographic variables. The distribution of sample according to the age in experimental group, out of 30 samples (43.3%) were 21-24 years, 53.3% were 25-27 years and 3.3% were 28-30 years of age. And in control group, 36.67% were 21-24 years, 53.3% were 25-27 years and 10% were 28-30 years of age.

With regard to educational status of mother in the experimental group out of 30 samples, 0% were illiterate, 46.67% belonged to school level and 53.3% belonged to graduate level. And in control group, 0% were illiterate, 43.3% belonged to school level and 56.67% belonged to graduate level.

Distribution of samples according to occupation in experimental group, out of 30 samples 40% were sedentary worker, majority of them 56.67 % were moderate worker and 3.3% were heavy worker. And in control group, 23.33% were sedentary worker, majority of them 70% were moderate worker and 6.67% were heavy worker.

Distribution of samples according to monthly family income in the experimental group, out of 30 samples 36.67% has a monthly family income Rs.1000- 5000, 50% has Rs.6000-10000 monthly family income and 13.33% has Rs.11000- 15000 monthly family income. And in control group, majority has Rs. 1000-5000 monthly family income, 30% has Rs. 6000-10000 monthly family income and 10% has Rs. 11000-15000 monthly family income.

Dispersion of samples according to type of family, in the experimental group majority (53.3%) belongs to nuclear family and (46.67%) belongs to joint family. In control group, majority (56.67%) belongs to joint family and (43.33%) belongs to nuclear family.

Distribution of samples according to social support, in the experimental group majority (53.33%) belongs to husband, both parents and relatives has (23.33%) social support. In control group, belongs to (53.33%) were

Table 1: Frequency and percentage distribution of samples according to demographic variables in experimental and control group. n =60

Sl. No:	Demographic Variables	Experimental group		Control group	
		Frequency	%	Frequency	%
1.	**Age in years**				
	(a) 21- 24 years	13	43.3	11	36.67
	(b) 25 - 27 years	16	53.4	16	53.3
	(c) 28 - 30 years	1	3.3	3	10.0
2.	**Education**				
	(a) Illiterate	0	0	0	0
	(b) School level	14	46.67	13	43.3
	(c) Graduate	16	53.3	17	56.67
3.	**Occupation**				
	(a) Sedentary Worker	12	40.0	07	23.33
	(b) Moderate Worker	17	56.67	21	70.00
	(c) Heavy Worker	01	3.3	2	6.67
4.	**Family income in rupees**				
	(a) D 1000 – D 5000	11	36.67	18	60.00
	(b) D 6,000 – D 10,000	15	50.00	9	30.00
	(c) D 11,000 – D 15,000	4	13.33	3	10.00
5.	**Type of family** (a) Joint	14	46.67	17	56.67
	(b) Nuclear	16	53.33	13	43.33
6.	**Social Support**				
	(a) Husband	16	53.33	07	23.33
	(b) Parents	07	23.33	07	23.33
	(c) Relatives	07	23.33	16	53.33

Table 2: Frequency and percentage distribution of samples according to pre-test level of pain perception of experimental and control group before intervention. n= 30+30

Pain Score	Experimental group		Control Group	
	f	%	f	%
No pain (0)	0	0	0	0
Mild (1-3)	19	63.33	20	66.67
Moderate (4-6)	11	36.67	10	33.33
Severe (7-9)	0	0	0	0
Worst pain (10)	0	0	0	0

relatives, both husband and parents (23.33%).

That during pre-test, majority of the mothers i.e. 63.33% has mild pain and 36.67% has moderate pain in experimental group whereas 66.67% has mild pain and 33.33% has moderate pain in control group. None of them has no pain or severe pain during pre-test. The mean score revealed that pre-test score is similar for both group.

The data presented in the Table 3 indicates that majority of the mothers i.e. 50% of experimental group has moderate pain, 43.33% has mild pain and 6.6% has severe pain whereas 56.67% of control group has severe pain, 40% 0f them has moderate pain and 3.33% has mild pain. None of them has no pain and worst pain.

Comparison of post-test level of pain perception among primigravida mothers during labour in experimental group after slow paced breathing and control group after no intervention.

Comparison of pre-test level of pain perception between experimental and control group before intervention.

That the mean pre-test pain perception score of experimental group is 1.37 whereas for control group it is 1.33. Standard Deviation of experimental group is 0.46 and for control group is 0.47. The computed unpaired „t“ value is 0.39 and table value is 2.02 at 5% significance. This indicates the calculated value is less than the table value. So it is not significant ($p>0.05$). That means both the groups are similar in nature and homogenous.

Comparison of post-test level of p ain perception among primigravida mothers during labour in experimental group after intervention and control group with no intervention.

The data represented in the above table using unpaired t test shows that there is a significant difference between mean post assessment pain perception of experimental and control group is 1.6 and 2.5 respectively. The computed unpaired t value 5.92 of the mean post assessment score is

Table 3: Frequency and percentage distribution of samples according to post-test level of pain perception of experimental group after slow paced breathing and control group after no intervention. N= 30+30

Pain Score	Experimental		Control Group	
	f	%	F	%
No pain (0)	0	0	0	0
Mild (1-3)	13	43.33	01	3.33
Moderate (4-6)	15	50	12	40
Severe (7-9)	02	6.66	17	56.67
Worst pain (10)	0	0	0	0

Table 4: Mean, standard deviation, unpaired„t "value on Pre-test level of pain perception among primi gravid mothers in experimental and control group before intervention.

Group	Mean	Standard Deviation	Mean Difference	df	Unpaired „t" value
Experimental	1.37	0.46	0.04		
Control	1.33	0.47	0.04	58	0.39*

*Not significant at 5% level of significance

Table 5: Mean, standard deviation, unpaired „t" value on Post-test level of pain perception among primi gravid mothers in Experimental after intervention and Control Group with no intervention.

Group	Mean	SD	Mean	df	Deviation
1	Experimental	1.6	0.61		
2	Control	2.5	0.56		
		0.9		58	*5.92

*significance at p<0.05

Table 6: Association between pre-test level of pain perception and the demographic variables.

Sl. No:	Demographic variables	Frequency (f)	Percentage (%)	df	^{2}	Significance level at 5%
1.	Age					
	(a) 21-24 years	24	40			
	(b) 25-27 years	32	53.33	8	0.66	15.51*
	(c) 28-30 years	04	6.7			
2.	Education					
	(a) Illiterate	0	0			
	(b) School level	27	45	8	0.6	15.51*
	(c) Graduate	33	55			
3.	Occupation					
	(a) Sedentary worker	19	32			
	(b) Moderate worker	38	63.3	8	2.48	15.51*
	(c) Heavy worker	3	5			
4.	Monthly family income					
	(a) 1000-5000	29	48.3			
	(b) 6000-10000	24	40	8	0.18	15.51*
	(c) 11000-15000	7	11.7			
5.	Type of family					
	(a) Joint	31	51.7	4	0.39	9.49*
	(b) Nuclear	29	48.3			
6.	Family support					
	(a) Husband	23	38.3			
	(b) Parents	14	23.3	8	0.42	15.51*
	(c) Relatives	23	38.3			

*Not Significant at 5%

greater than the table value 2.02 at 5% level of significance. This shows that slow paced breathing exercise is effective in labour pain perception reduction.

This section deals with association between pre-test level of pain perception during labour in experimental and control group with their demographic variables.

7. Summary

The study adopts quasi-experimental pre and post test research design to assess the effectiveness of slow paced breathing on labour pain perception during first stage of labour. The data was collected from two groups of primigravida mothers, 30 from the experimental group and 30 from control group. Samples were selected by purposive sampling technique. In this study, the independent variable was slow paced breathing exercise and the dependent variable was level of labour pain perception. Modified Ernestine Wiedenbach"s helping art of clinical Nursing Theory model (1970) systems model was used to evaluate the effect of slow paced breathing exercise on level of labour pain perception. The tools used in the study consist of two parts. Section A was demographic variables and Section B was numeric pain rating scale to assess the pain perception level. The data were collected and analyzed using descriptive and inferential statistics. The level of significance was assessed by $p<0.05$ to test the hypotheses.

8. Conclusion

Labour pain is highly unpleasant and very personal sensation that cannot be shared with others. To ease the pain and improve the behavioral response of the mother non-pharmacological management can be used which will give better results.

The study findings revealed that slow paced breathing exercise helps in reducing the level of pain perception among primigravida mothers in the experimental group. So this can be practice in various settings during labour.

9. Source of Funding

None.

10. Conflict of Interest

None.

References

1. Jacob A. A comprehensive text book of Midwifery & Gynecological Nursing. New Delhi: Jaypee Publications; 2006. p. 579–89.
2. Kozier B. Fundamentals of Nursing. 7th ed. and others, editor; 2007. p. 1081.
3. Basavanthappa BT. Text book of Midwifery & Reproductive Health Nursing. 1st ed. New Delhi: Jaypee Publications; 2010. p. 296–310.
4. Chamberlain G. Text book of Obstetrics. 2nd ed. Edinburg: Churchill Livingstone; 1996. p. 236–7.
5. Daftary SN, Chakravarty S. Manual of Obstetrics. 2nd ed. and others, editor; 2003. p. 560–3.
6. Dawn CS. Text book of Obstetrics, Neonatology, Reproductive and Child Health Education. 16th ed. Calcutta: Dawn Publications; 1993. p. 562.
7. Denise FP. A text book of Nursing Research. 8th ed. Philadelphia: Lippincott Wilkins Publication; 2008. p. 456–7.
8. Fraser MD, Cooper AM. Myles text book for Midwives. 14th ed. New York: Churchill Livingstone. Pg; 2003. p. 688–9.
9. Dutta DC. Text book of Obstetrics. 7th ed. and others, editor. Calcutta: New Central Book Agency.; 2007. p. 708.
10. Jenson M, Bobak I. Maternity and Gynecological Care. 3rd ed. and others, editor. Mosby Company; 1985. p. 354–6.

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