A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF PACED BREATHING EXERCISE IN PAIN MANAGEMENT DURING FIRST STAGE OF LABOR AMONG PRIMI GRAVIDA MOTHERS ADMITTED IN LABOR UNIT

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Abstract: A study was conducted to assess the effectiveness of paced breathing exercise in pain management during first stage of labor among primi gravida mothers admitted in labor unit of selected maternity hospital, Jaipur, Rajasthan. Aim: The aim of the study was to assess the effectiveness of paced breathing exercise in pain management during first stage of labor among primi gravida mothers. Materials and Methods: A quasi experimental non-randomized control group design. The study was carried out in the labor unit of NIMS and Rajnish Hospital, Jaipur, Rajasthan. 60 primi mothers (30 in experimental group and 30 in control group) in first stage of labor were conveniently selected for the study. The primi mothers in first stage of labor in experimental group practiced paced breathing exercise and mothers in control group practiced normal breathing. The data collection was done with the help of Demographic Proforma 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 assess the effectiveness of paced breathing exercise on pain management among women in first stage of labor and comparison between pain and paced breathing exercise in experimental and control group was done using paired T test method. Association between demographic variables with pain score of primi mothers in first stage of labor was tested using p value and Chi square test. Results: Results revealed that the experimental mean post-test pain score 3.5 was lower than mean pre-test pain score 5.5 and mean in experimental group (3.4) was lower than mean in control group (4.7) . Calculated p value is .0003 which showed the significant difference between control group pain level and experimental group pain level. Calculated Hedge's G is 0.96 which showed that paced breathing exercise cause large effect on pain management which can be observed easily. Conclusion: Study revealed that Paced Breathing Exercise is one of the important and effective method for pain management during first stage of labor in primi gravida mothers.

Keywords: Paced Breathing Exercise, pain management, effectiveness, labor unit, primi mothers

1. Introduction

Pregnancy and childbirth is a very special time in every women's life which bring physical and emotional changes in the body. Women experience a wide range of pain in labor and exhibit an equally wide range of responses to it. An individual's reaction to labor pain may be influenced by the circumstances of her labor, as well as the environment and support provided to her during this period. [1]

The level of discomfort a woman experiences while giving birth varies from individual to individual. Some women may experience all over body cramps, including in the abdomen, groin and back, while other women feel pain on their sides and thighs. Women may describe pain during labor as being similar to menstrual cramping, while some describe it as feeling extreme pressure on their bodies[2]

When a mother is asked 'how painful is childbirth', it is already apparent that the question is causing her to experience anxiety or fear of the unknown, which is the leading cause of discomfort in labor. When ladies giving birth are anxious, the body's normal response to stress, which is to send more blood and oxygen to the major organs and away from the extremities is triggered. For the laboring women, this means that blood and oxygen are diverted from her uterus and her baby, both of which can lead to birth complications, such as decreased fetal heart rate or increased discomfort for the mother. If the cycle continues unchecked, the mother may eventually require more and more interventions which increase risks to herself and her child. [3]

Need for the study

Studies have shown that exercising during pregnancy decreased labor time by 33%. So time spent exercising during pregnancy will pay itself off by causing the delivery of little one much easier by reducing the quantity of time spent in labor consequently assisting to ease labor pain in general. Exercise in pregnancy has quite a few additional advantages as well. From a more healthy baby to a far more fit maternity, exercising while pregnant is an all around smart option for just about any expecting mother. [4]

There is no significant data that links labor pain management to maternal mortality. However, there is evidence indicating that the support women receive during childbirth reduces the number of required interventions, the use of pharmacologic pain relief, and shorten duration of labor (Hodnett, Gates, Hofmeyer, & Sakala; Simkin & O'Hara). Since pain is inevitable in labor, its effective

management is key to a positive birth experience. This narrative inquiry will contribute to the body of knowledge with regards to labor pain and highlight areas of pain management that needs to be strengthened. [5]

Number of researches said that breathing and relaxation therapy are effective to reduce labor pain perception level. [6] Considering the above factors there was a need for women in practicing paced breathing techniques to reduce labor pain and to avoid pharmacological methods which will be of importance in educating antenatal mothers to modify their action towards paced breathing. Improving the practice helps to prevent complications thus to lead safe delivery. So the researcher felt the need to educate the primi gravida mothers regarding paced breathing techniques.

Objectives

1. To assess the pain level among primi gravida mothers during first stage of labor before practicing paced breathing exercise.
2. To assess the pain level among primi gravida mothers during first stage of labor after practicing paced breathing exercise.
3. To compare the pain level among primi gravida mothers during first stage of labor in control and experimental groups.
4. To determine the association between selected demographic variables and pain level among primi gravida mothers during 1st stage of labor.

Hypothesis

H_{01}. There will be no significant difference between pain and paced breathing exercise among primi gravida mothers among control group and experimental group at 0.05 level of significance.
H_{02}. There will be no significant association between paced breathing exercises and selected demographic variables.

Conceptual Framework

The framework of this study is based on Betty Neuman's System model provides a comprehensive flexible holistic and system based perceptive for nursing.

2. Methodology
Research Approach- A quantitative evaluative research approach using pre assessment and post assessment was adopted for the study in order to accomplish the objectives for the study.

Research Design- A quasi experimental research design with non-randomized control group design was selected for the study.

- **Independent variable-** study paced breathing exercise for management of labor pain
- **Dependent Variable-** the labor pain among primi mothers in first stage of labor.
- **Setting-** The study was conducted in NIMS and Rajnish Hospital, Jaipur.
- **Sample Size-** The sample size for this study was 60 primi mothers in first stage of labor (30 in experimental group and 30 in control group).
- **Sampling Technique-** The Sampling Technique adopted for this study was non-probability convenient sampling technique.
- The statistical method for the demographic variables was presented by using frequencies and percentages. Mean, Standard Deviation and Hedge's G was used to assess the effectiveness of paced breathing exercise on pain management among women in first stage of labor and comparison between pain and paced breathing exercise in experimental and control group was done using paired T test method. Association between demographic variables with pain score of primi mothers in first stage of labor was tested using p value and Chi square test.

Tool

The Tool was divided into 2 sections-

Section A- Includes demographic Proforma consist of 4 items Age, Level of education, years of married life and dietary pattern.

Section B- Numerical pain intensity scale which consists of 4 parts no pain, mild pain, moderate pain and severe pain with their scoring from 0-10.

Content Validity and Reliability

Content validity of the tool was obtained from experts of nursing and medical department of obstetrics and gynaecology. After receiving the opinion from the experts and consultation with the guide some modification were done in framing of the items and same were incorporated into the tool. Some of the questions were changed and deleted

The reliability of pain scale was obtained by Karl Pearson Coefficient Correlation method. The reliability coefficient obtained for the tool was =0.715. Hence the tool was found highly reliable for the study.

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 and oral consent of patients was obtained.

Data Collection Process

Pre-test of pain was conducted among primi mothers in experimental and control group who fulfilled inclusion criteria. Paced Breathing Exercise was taught to the primi mothers of experimental group. Intervention i.e paced breathing exercise was practiced by the primi mothers in experimental group whenever she had pain and contractions for 30 minutes and normal breathing was practiced by the mothers in control group. After 30 minutes post-test of pain was conducted among primi mothers of both experimental and control group.

3.Results

Findings related to Frequency an percentage distribution of demographic variables

Table No.1: Frequency And % Distribution Of respondents of demographic variables

DEMOGRAPHIC VARIABLES	CONTROL GROUP		EXPERIMENTAL GROUP	
	NO.	%	NO.	%
1. AGE				
Below 21	1	3	2	7
21-25	9	30	15	50
26-30	14	47	10	33
31 And Above	5	17	3	10
2. EDUCATION				
Illiterate	5	17	5	17
Under Graduate	17	57	15	50
Graduate	6	20	8	27
Post-Graduate	2	7	2	7
3. YERS OF MARRIED LIFE				
<2 Years	14	47	6	20
2-4 Years	14	47	19	63
5-7 Years	1	3	5	17
8-10 Years	1	3	0	0
4. DIETRY PATTERN				
Vegetarian	15	50	17	57
Non-Vegetarian	15	50	13	43
Mixed	0	0	0	0

Findings related to pain assessment before and after intervention

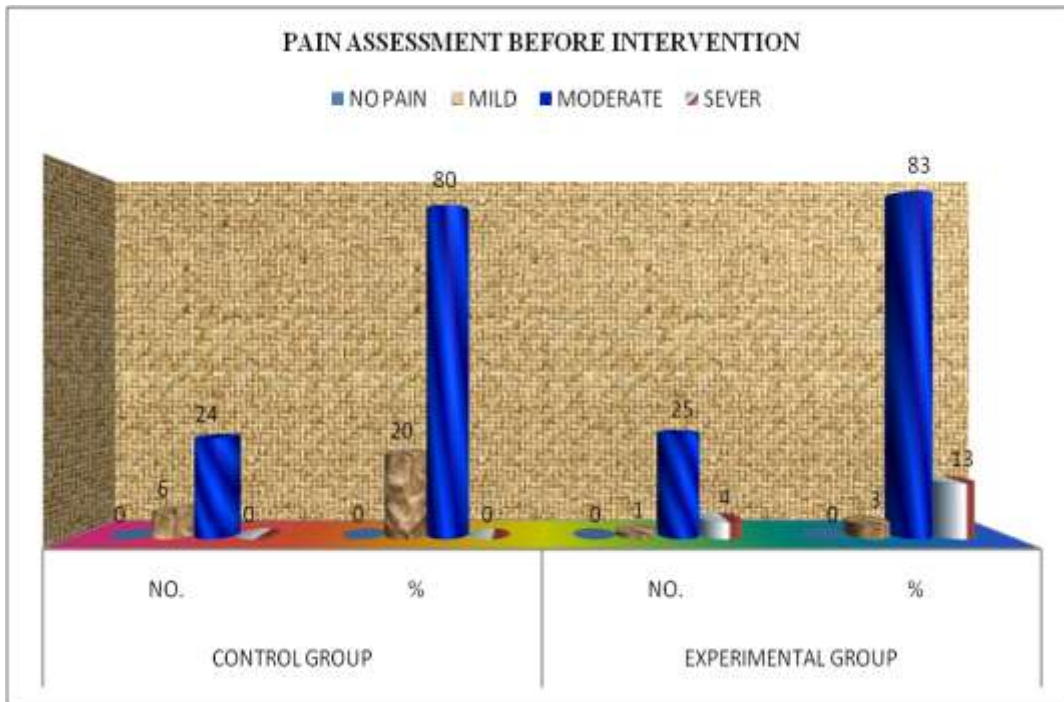**Fig. No.1: pain assessment before intervention**

Figure 1 shows before intervention 24(80%) belongs in control group and 25(83%) were in experimental group had moderate pain where as in mild pain 6(20%) respondents were in control group and 1(3%) were in experimental group respectively. 0(0%) respondents were in control group suffered severe pain while as 4(13%) were in control group suffered severe pain. No pain was present in both control and experimental group respectively.

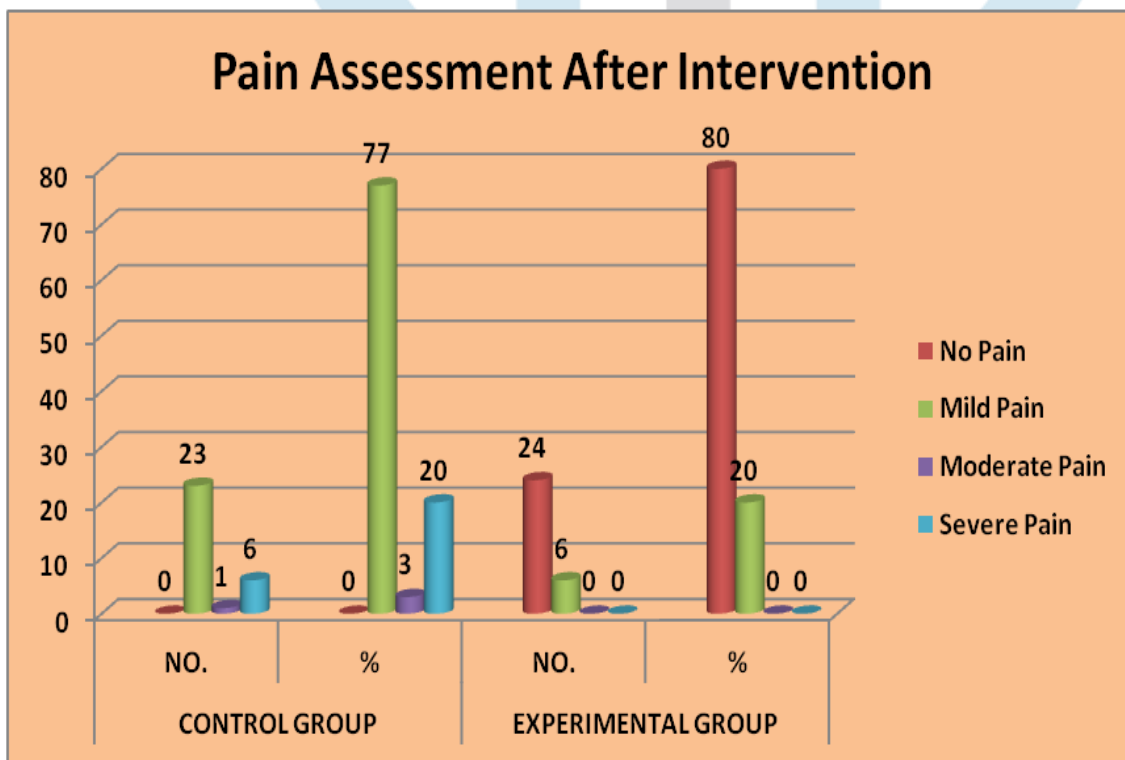**Fig. No. 2: Pain assessment after intervention**

Figure 2 shows that showed that 00(00%) belongs in control group and 24(80%) were in experimental group had no pain where as in mild pain 23(77%) respondents were in control group and 6(20%) were in experimental group respectively. 1(3%) respondents

were in control group suffered moderate pain while as 0(0%) were in experimental group suffered moderate pain. 6(20%) in control group and 00(00%) in experimental group had severe pain.

Findings related to evaluation of effectiveness of paced Breathing Exercise in pain management

Table 2: PAIN ASSESSMENT OF CONTROL GROUP IN PRE TEST AND POST TEST

PAIN LEVEL	PRE TEST		POST TEST	
	NO.	%	NO.	%
NO PAIN	0	0	0	0
MILD PAIN	6	20	23	77
MODERATE PAIN	24	80	1	3
SEVERE PAIN	0	0	6	20
TOTAL	30	100	30	100

Table 2 shows that in pre test, 24 (80%) had moderate pain in control group whereas 6 (20%) had mild pain and in post test 1(3%) had moderate pain in control group , 23 (77%) had mild pain and 6(20%) had severe pain. No pain was present in both pre test and post test of control group.

Table 3: PAIN ASSESSMENT OF EXPERIMENTAL GROUP IN PRE TEST AND POST TEST

PAIN LEVEL	PRE TEST		POST TEST	
	NO.	%	NO.	%
NO PAIN	0	0	24	80
MILD PAIN	1	3	6	20
MODERATE PAIN	25	83	0	0
SEVERE PAIN	4	14	0	0
TOTAL	30	100	30	100

Table 3 shows that in pre test, 25 (83%) had moderate pain in experimental group, 1 (3%) had mild pain whereas 4 (14%) had severe pain and in post test, 6(20%) had mild pain in experimental group whereas 24 (80%) had no pain.

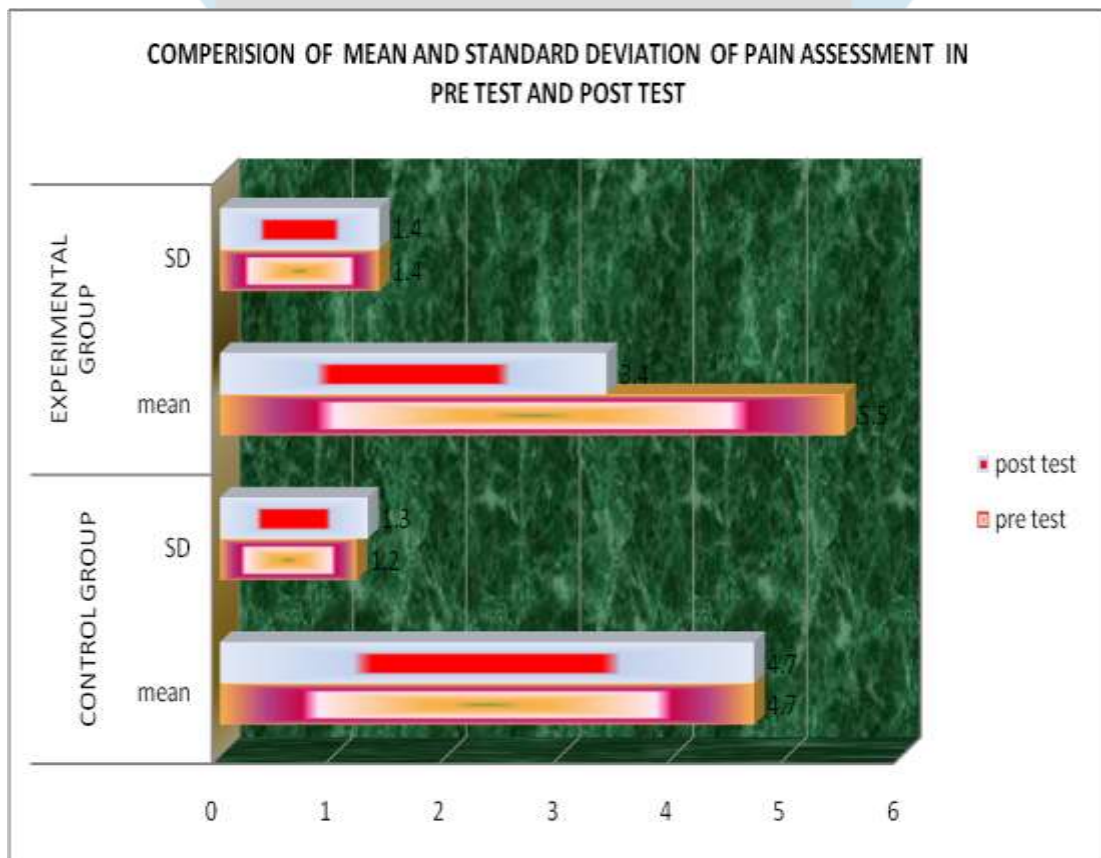**Fig. No. 3: - Mean And Standard Deviation Of Pain Assessment Score In Pre And Post Test**

Fig 3 shows that in control group mean post test (4.7) is same as mean pre test (4.7) as no intervention was given to the control group whereas in experimental group the mean post-test (3.4) was lower than mean pre-test (5.5) in which paced breathing exercise was given, which showed that P.B.E is effective in decreasing the pain level.

Table No. 4: Mean And Standard Deviation Of Pain Assessment In Control Group and Experimental Group

PBE EFFECTIVENESS	MEAN	SD	t value	p. Value	Df	Hedges G
Control Group	4.7	1.3	3.63	0.0003	29	.96
Experimental Group	3.4	1.4				

Table 4 reveals that there was a significant difference between pain and paced breathing exercise among primi gravida mothers among control group and experimental group as the calculated p value is 0.0003 which is less than established p value. Hence stated null hypothesis H_{01} is rejected and the alternative hypothesis is accepted.

Association between selected demographic data and pain assessment score

There was no significant association between paced breathing exercises and selected demographic variables as calculated p value is more than established p value. Hence stated null hypothesis H_{02} is accepted and the alternative hypothesis is rejected.

Discussion

The study showed that 14(47%) are 26-30years of age in control group and 10(33%) in experimental group, 9(30%) are 21-25 age group in control group and 15(50%) in experimental group, 31yrs and above are 5(17%) in control group and 3(10%) in experimental group. Remaining 1(3%) in control group and 2(7%) in experimental group belong to below 21 years of age.

The study showed that 17(57%) are in control group, 15(50%) were in experimental group was undergraduate where as 6(20%) in control group and 8 (27%) in experimental group was graduate. The 5(17%) in control group and 5(17%) in experimental group was Illiterate where as 2(7%) in control group and 2(7%) in experimental group was Post Graduate in their Education.

A similar Quasi experimental study to assess the effectiveness of a planned teaching program on knowledge regarding Non pharmacological techniques of relieving labor pain in primigravida women in selected hospitals at Gulbarga, Karnataka. The tool comprised of knowledge questionnaires and the demographic data of age and education level. In pre-test the sampled subjects were having poor knowledge on non pharmacological techniques of managing labor pain. i.e. about 34%. Regarding the post-test the sampled subject had an improved knowledge on non pharmacological techniques of managing labor pain i.e. about 83.9%.[7]

The study showed that the years of married life of respondents in which 14(47%) are in control group and 19(63%) in experimental group had 2-4 years of married life where as 14(47%) in control group and 6(20%) in experimental group had less than 2 years of married life .The 1(3%) in control group and 5(17%) in experimental group had 5-7 years of married life where as 1(3%) in control group and 0(0%) in experimental group had 8-10 years of married life.

The study showed that 15(50%) in control group and 17(57%) in experimental group was completely vegetarian and 15(50%) in control group and 13(43%) in experimental group was Non-Vegetarian and 0(0%) in both control and experimental group was Mixed in dietary pattern.

In the pre test, 24(80%) belongs in control group and 25(83%) were in experimental group had moderate pain where as in mild pain 6(20%) respondents were in control group and 1(3%) were in experimental group respectively. 0(0%) respondents were in control group suffered severe pain while as 4(13%) were in control group suffered severe pain. No pain was present in both control and experimental group respectively.

In post test, that 00(00%) belongs in control group and 24(80%) were in experimental group had no pain where as in mild pain 23(77%) respondents were in control group and 6(20%) were in experimental group respectively. 1(3%) respondents were in control group suffered moderate pain while as 0(0%) were in experimental group suffered moderate pain. 6(20%) in control group and 00(00%) in experimental group had severe pain.

This study was similar to another findings conducted in Coimbatore indicating there was a significance difference between the mean pain scores of experimental group (4.28) was lower than the mean pain scores of control group (6.22) which shows that that the slow paced breathing initiated by the investigator was effective in reduction of pain during the first stage of labor. [8]

In the comparison between control group and experimental group pain level, the mean in experimental group (3.4) was lower than mean in control group (4.7). Calculated p value is .0003 which showed the significant difference between control group pain level and experimental group pain level. Calculated Hedge's G is .96 which showed that pace breathing exercise cause large effect on pain which can be observed easily. There was a significant difference between pain and paced breathing exercise among primi gravida mothers among control group and experimental group as the calculated p value is 0.0003 which is less than established p value. Hence stated null hypothesis H_{01} is rejected and the alternative hypothesis is accepted.

A similar study was conducted by Jayabharathi.B to assess the effectiveness of relative nursing interventions (such as breathing exercise, massage and positions) on pain during labor among primiugravida mothers. In this study the post-assessment level of labor pain perception of primi mothers showed a mean value of 3.33 with SD of 1.86 in experimental group and mean value of 5.69 with SD of 2.59 in control group. The mean value (3.33) of experimental group was comparatively lower than the mean value (5.69) of control group. Therefore the study concluded that selected nursing interventions (such as breathing exercise, massage and positions) to the primi mothers were effective in reducing their labor pain perception in experimental group. [9]

The chi-square analysis was done to find out association between pain level among primi gravida mothers during 1st stage of labor with the selected demographic variables. There was no significant association between pain level among primi gravida mothers during 1st stage of labor when compared to age, education level, years of married life and dietary pattern as it was greater than established p value (0.05 level). There was no significant association between paced breathing exercises and selected demographic variables as calculated p value is more than established p value. Hence stated null hypothesis H_{02} is accepted and the alternative hypothesis is rejected.

A similar study was done by using experimental approach on 48 subjects (24 in experimental group and 24 in control group) randomly allotted. The experimental group received breathing exercise during contraction at a rate of 45 mins interval 3 times during the active phase of labor whereas routine care was provided to the subjects in the control group. Pain level was assessed after each contraction with wong weber's facial pain scale and behavioural checklist. The result showed that there was a significant difference between the mean pain score of the experimental and control group. There was no association found between age and education since the p value is > 0.05. [10]

Recommendations

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

* A similar study can be undertaken with a large sample to generalize the findings.
* A similar study can be undertaken with Multi Gravida Mothers.
* This study can be conducted among nursing student to enhance their knowledge level for their future care.
* A comparative study can be conducted on knowledge of staff nurses in government and private hospital regarding various non pharmacological methods for labor pain management..

Conclusion

The result from this study reveals that Paced Breathing Exercise is one of the important and effective method for pain management during first stage of labor in primi gravida mothers.

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