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A quasi experimental study to assess the effectiveness of slow paced breathing on pain perception during first stage of labor among primigravida mothers in selected hospitals of District Kangra, Himachal Pradesh

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Abstract
The study was conducted to assess the effectiveness of slow paced breathing on pain perception during first stage of labor among 60 primigravida mothers which shows that i n experimental group 11 (36.7%) belongs to age group of 21-24 years, 14 (46.7%) were graduated, 16 (53.3%) were homemakers, 11 (36.7%) have monthly income more than 30,001, majority 19 (63.3%) have joint family, 28 (93.3%) were Hindu, 20 (66.7%) were residing in rural, majority 28 (96.7%) primigravida mothers had regular checkups. In comparison of post test score in experimental and control group the calculated "t" value was found to be statistically very highly significant (7.366) at P less than 0.001 level of significance which shows the significant difference between post-test scores regarding pain among primigravida mothers in experimental group and control group. Study findings revealed that there was no significant association of post-test scores with their socio-demographic variables. Therefore, selected socio-demographic variables had no impact on pain perception during first stage of labor among primigravida mothers.
Conclusion: Slow paced breathing was an effective strategy in improving the pain perception during first stage of labor among primigravida mother.

Keywords: Slow paced breathing, pain perception, primigravida mothers

Introduction

Childbirth is one of the graceful time in every woman's life which brings physical and emotional changes in the body. It 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. Natural childbirth is a profound powerful human experience which is a mixture of feeling of empowerment and accomplishment.

There are four stages to labor events. The first stage, known as the cervical stage, begins with the onset of actual labor pain and concludes with the entire dilation of the cervix. The fetus is expelled from the birth canal at the end of the second stage, which begins with the cervix fully dilatation. The placenta and its membranes separate and are expelled in the third stage, while the fourth stage entails observation for at least an hour following delivery.

The latent phase, active phase, and transitional phase are the three further divisions of the first stage of work. A cervical dilatation of 3-4 cm is attained during the about 6-8-hour latent period. Cervical dilatation progresses more quickly during the active period, totaling 7 cm. moms who are primigravida (first-time moms) dilate at a pace of 1 cm per hour, whereas women who are multigravida (second-time mothers) dilate at a rate of 1.5 cm per hour.

Every woman enters labor with a unique set of expectations, including fear, readiness, pain threshold, personality and behavioral characteristics, and methods of perceiving what is occurring to her. These expectations must be successfully maintained.

Abdominal, groin, and back cramps, together with a fatigued, achy sensation throughout the body, are the primary symptoms of labor pain. Some women may get discomfort in their thighs or sides. Stretching of the birth canal and vagina, as well as pressure from the head on the bladder and bowels, are other reasons for discomfort during labor.

The primary responsibility of midwives is to care for women who are experiencing labor discomfort. Decisions about childbirth are impacted by family members and

customs, which frequently lead to a dislike of drugs used to ease labor pain. Therefore, in order to get comfort, midwives were promoting walking and posture. Both pharmaceutical and non-pharmacological methods are used to lessen labor discomfort. However, both the mother and the fetus may be at danger from drugs used during childbirth. Non-pharmacologic methods are affordable and safe ways to assist moms manage their labor pain.

Breathing slowly helps boost lung capacity and activate anti-inflammatory pathways, which in turn improves aerobic endurance and is very helpful in reducing general physical discomfort and pains. About half of the woman's typical breathing rate is used for slow-paced breathing. It offers optional oxygenation and promotes relaxation. These breathing methods can help the abdominal muscles relax during the early stage of labor, which expands the abdominal cavity. By using this method, the pain caused by friction 6 between the abdominal wall and uterus during contractions is reduced. The treatment is safe, free from side effects, giving lasting cure, economical and it is compatible with other forms of treatment.

The prevalence of cesarean sections is rising in both industrialized and developing nations, according to recent studies. Due to psychological symptoms, the majority of women (68%) are demanding cesarean sections. 38% of women consented for a normal vaginal birth, and the frequency of cesarean sections was lower among those who received sufficient psychological support and used relaxation methods.

Due to the mother's opinion that the level of discomfort during a typical vaginal birth during the initial stage of labor is extremely high, the frequency of cesarean sections is rising daily. The researcher aimed to raise knowledge about the impact of slow breathing on pain and to assist in making better decisions during the intrapartum phase that will provide the mother with a happy birthing experience.

Materials and Methods

- **Research Approach:** A quantitative research approach was used to assess the effectiveness of slow paced breathing on pain perception during first stage of labour among primigravida mothers in selected Hospitals of District Kangra, Himachal Pradesh.
- **Research Design:** A quasi experimental two group pre and post-test design was used to accomplish the objectives of the study.
- **Research Settings:** The study was conducted at following areas of District Kangra, Himachal Pradesh.
- **Population:** The population of the present study was primigravida mothers during first stage of labor.
- **Target population**: The target populations were the primigravida mothers during first stage of labor in the selected hospitals of District Kangra, Himachal Pradesh.
- **Accessible Population:** The accessible populations were primigravida mothers admitted in the hospitals of District Kangra, Himachal Pradesh and meet the specific criteria and available at the time of study.

Sample and sampling technique

Sample: A sample of 60 primigravida mothers admitted at selected hospitals of district Kangra (Himachal Pradesh) in the first stage of labor who fulfilled the criteria were selected (30 samples for the experimental group and 30 samples for the control group) Total number of samples includes 60.

- **Group 1:** 30 primigravida mothers in the first stage of labor in experiment group
- **Group 2:** 30 primigravida mothers in the first stage of labor in Control group
- **Sampling technique**: Non-probability purposive sampling technique was used in the present study for selecting the samples.

Criteria for sample collection

A. Inclusion Criteria: The study includes pregnant women:

- Admitted in the first stage of labor.
- Know to speak and understand Hindi and English.
- Willing to participate in the study.

B. Exclusion Criteria: The study excludes women:

- Delivered one or more child.
- Having complicated pregnancy or labor.
- Under any form of labor anesthesia or analgesia.

Research Variables

- **Dependent variable:** The dependent variable is pain perception among primigravida mothers during first stage of labor.
- **Independent variable:** The independent variable is slow paced breathing exercise.
- **Demographic variables**: The demographic variables are: Age, education, occupation, family income, type of family, religion, area of living, regularity of antenatal checkups.

Selection and development of the tool

- **Description of tool:** The tool consists of two parts.
- **Section A:** A structured questionnaire schedule to collect the demographic variables such as age, education, occupation, family income, type of family, religion, area of living, regularity of antenatal checkups.
- **Section B:** Numerical pain intensity rating scale to assess the level of pain, scoring was given as mentioned below

No pain (0), mild pain (1-3), moderate pain (4-6), severe pain (7-9), worst possible pain (10).

Testing of the tool content validity

Ten experts were from specialties Obstetric and Gyneacological nursing. Initially the tool consists of 2 sections. Section A includes 8 socio demographic variables, section B consist of numeric pain intensity rating scale. There suggestions were incorporated after consultation with the research supervisors. Permission to use the Numerical pain intensity rating scale was obtained from Mrs. Herr Keela Professor in University of Iowa for this research study.

- **Language Validity:** The developed tool was given to an English and Hindi language expert for the correction in the language of tool. As per the suggestions, the modification was implemented.

- **Pilot Study:** Findings of pilot study revealed that it was feasible to conduct the main study and criteria measures were found to be reliable. The plan of data collection remained same for the final study because the investigator did not face any major problem in conducting the pilot study.
- **Reliability of the tool:** Numeric pain rating scale is a standardized tool.
- **Data Collection:** There were thirty primigravida mothers in each of the experimental and control groups, which were created from the samples. To begin with, the samples were interviewed to gather demographic information. Using a numerical pain rating scale, the pre-test score of the pain perception level was determined and recorded for both the experimental and control groups during the active period of labor. The researcher then demonstrated slow-paced breathing for the experimental group and gave them instructions to do it throughout each contraction for two hours. The control group did not get this kind of intervention at the same time. The post-test scores for the experimental and control groups were evaluated after two hours. After then, the data was gathered, and both descriptive and inferential statistics were used for analysis.
- **Duration of data collection:** The duration of data collection was 1 month.
- **Data Analysis**: The obtained data was planned to be analyzed by both descriptive and inferential statistics on the basis of objectives of the study.

Descriptive statistics:

- Frequency and percentage distribution was used to describe the socio-demographic variables and level of labor pain perception.
- Mean, mean percentage and standard deviation was used for pre-test level of labor pain perception.

Inferential statistics

- Paired t-test-to compare pre-test and post-test level of pain perception among experimental and control groups.
- Unpaired t-test to compare post-test level of pain perception among experimental and control groups.
- Chi-square-to determine the association between pre-test levels of labor pain perception with selected socio-demographic variables

Ethical Considerations

- A written permission will be taken from principal, Neta Ji Subhash College of Nursing, Palampur.
- Ethical clearance will be taken from ethical clearance committee of Netaji Subhash College of Nursing, Palampur.
- Written permission will be taken from medical officers of selected hospitals of Kangra Himachal Pradesh.
- Written informed consent will be taken from each study sample anonymity and confidentiality of each sample will be assured and maintained throughout the study.

Analysis and interpretation of data

The result of analysis of data have been organized and presented under following sections:

- **Section-I:** Finding related to selected socio demographic variables of primigravida mothers in experimental and control group.
- **Section-II:** Finding related to pre-test and post-test level of pain perception during first stage of labor among primigravida mothers in experimental and control group.
- **Section-III:** Finding related to comparison of post-test level of pain perception during first stage of labor among primigravida mothers in experimental and control group.
- **Section-IV:** Finding related to association between mean post test level perception during first stage of labor among primigravida mothers in experimental and control group with their selected socio demographic variables.

Major findings

1. Finding related to selected socio-demographic variables

Experimental Group: It was depicted that in accordance with the age group, majority of primigravida mothers 11(36.7%) belongs to age group of 21-24 years, 10(33.3%) belongs to 28-30 years and minority of primigravida mothers 9(30%) belongs to age group of 25-27 years. In relation to educational status majority of primigravida mothers 14(46.7%) were graduated, 8 (26.7%) were post graduated, and minority of primigravida mothers 8 (26.7%) had received higher education. As per occupation, majority 16(53.3%) were home makers. 11(36.7%) have private jobs, and minority of primigravida mothers in the first stage of labor 3(10.0%) have government job. According to the family income majority, 11(36.7%) have monthly income more than 30,001, 9(30.0%) have monthly income 20,001-30000, 9(30.0%) have monthly income 10, 001-20000 and minority of primigravida mothers in the first stage of labor 1(3.3%) have monthly income less than10000. According to type of family, out of 30 primigravida mothers, majority19 (63.3%) have joint family and minority 11 (36.7%) of primigravida mothers have nuclear family in relation with religion majority primigravida mothers 28(93.3%) are Hindu and minority of primigravida mothers 1(3.3%) are Muslim, 1(3.3%) are Sikh. According to the area of residency, majority 20(66.7%) primigravida mothers were residing in rural and minority of primigravida mothers in the first stage of labor 10(33.3%) were residing in urban As per Regularity of antenatal checkup majority 28(96.7%) primigravida mothers had regular checkups and minority of primigravida mothers 2 (3.3%) had irregular checkups.

Control Group: It was depicted that in accordance with age group, out of 30 primigravida mothers, majority of primigravida mothers 14(46.7%) belongs to age group of 28-30 years.10(33.3%) belongs to 25-27 years and minority of primigravida mothers in the first stage of labor 6(20.0%) belongs to 21-24 years. In relation to education status, out of 30 primigravida mothers majority of primigravida mothers 11(36.7%) were post graduated 10(33.3%) received higher education, minority of primigravida mothers 9(30.0%) were graduated. As per occupation, out of 30 primigravida mothers, majority of primigravida mothers 15(50.0%) were

home maker, 10(33.3%) have private job and minority of primigravida mothers in the first stage of labor 5(16.7%) have government job. According to family income out of 30 primigravida mothers majority 14(46.7%) have monthly income above Rs 30,001, 9(30.0%) have monthly income in between Rs 20,001-30,000, 6(20.0%) have monthly income between Rs 10,001-20,000) and minority of primigravida mothers in the first stage of labor 1(3.3%) have monthly income below Rs 10,000. According to type of family, out of 30 primigravida mothers, majority 19(63.3%) have joint family and minority of primigravida mothers 11(36.7%) have nuclear family in relation with religion majority primigravida mothers 28(93.3%) are Hindu and minority of primigravida mothers 1(3.3%) are Sikh, 1(3.3%) are Christian. According to the area of residency, majority of 20(66.7%) primigravida mothers were residing in rural and minority of primigravida mothers 10(33.3%) were residing in urban. As per Regularity of antenatal checkup majority 28(93.3%) primigravida mothers in the first stage of labor had regular checkups and minority of primigravida mothers in the first stage of labor 2(6.7%) had irregular checkup.

Table 1: Demographic variables and association

Demographic Variables		Association						
Variables	**Opts**	**Experimental**	**Control**	**Chi Test**	**P-Value**	**DF**	**Table Value**	**Result**
Age in years	21-24 years	11	6	2.190	0.335	2	5.991	Not Significant
	25-27 years	9	10					
	28-30 years	10	14					
	30 years & above	0	0					
Education	No formal education	0	0	1.783	0.410	2	5.991	Not Significant
	Higher education	8	10					
	Graduation	14	9					
	Post-graduation	8	11					
Occupation	Homemaker	16	15	0.580	0.748	2	5.991	Not Significant
	Private Job	11	10					
	Government job	3	5					
Family income	<Rs 10000	1	1	0.960	0.811	3	7.815	Not Significant
	Rs 10,001-20000	9	6					
	Rs 20,001-30000	9	9					
	>Rs 30,001	11	14					
Type of family	Joint	19	19	0.000	1.000	1	3.841	Not Significant
	Nuclear	11	11					
Religion	Hindu	28	28	2.000	0.572	3	7.815	Not Significant
	Muslim	1	0					
	Christian	0	1					
	Sikh	1	1					
Area of living	Urban	10	10	0.000	1.000	1	3.841	Not Significant
	Rural	20	20					
Regularity of antenatal checkup	Regular	29	28	0.351	0.554	1	3.841	Not Significant
	Irregular	1	2					

2. Findings related to pre-test score and post-test in experimental and control group

In pre experimental group majority of primigravida mothers in the first stage of labor had severe pain 16(53.3%), worst possible pain 11(36.7%) and minority of primigravida mothers in the first stage of labor had moderate pain 3(10%). In pre-control group majority of primigravida mothers in the first stage of labor had severe pain 17(56.7%), worst possible pain 10(33.3%) and minority of primigravida mothers in the first stage of labor had moderate pain 3(10%). In post experimental group majority of primigravida mothers in the first stage of labor had severe pain 16(53.3%), moderate pain 13(43.3%) and minority of primigravida mothers in the first stage of labor had worst possible pain 1(3.3%). In post-control group majority of primigravida mothers in the first stage of labor had severe pain 17(56.7%), worst possible pain 12(40%) and minority of primigravida mothers in the first stage of labor had moderate pain 1(3.3%).

3. Findings related to comparison of mean post-test score in experimental and control group

In post experimental group majority of primigravida mothers in the first stage of labor had severe pain 16(53.3%), moderate pain 13(43.3%) and minority of primigravida mothers in the first stage of labor had worst possible pain 1(3.3%). In post-control group majority of primigravida mothers in the first stage of labor had severe pain 17(56.7%), worst possible pain 12(40%) and minority of primigravida mothers in the first stage of labor had moderate pain 1(3.3%). In comparison of post test score in experimental group and control group the calculated "t" value was 11.673 which was statistically significant at P 0.001 level which shows the significant difference between post-test scores regarding pain among primigravida mothers. Hence, the research hypothesis H1 was accepted and null hypothesis H01 was rejected.

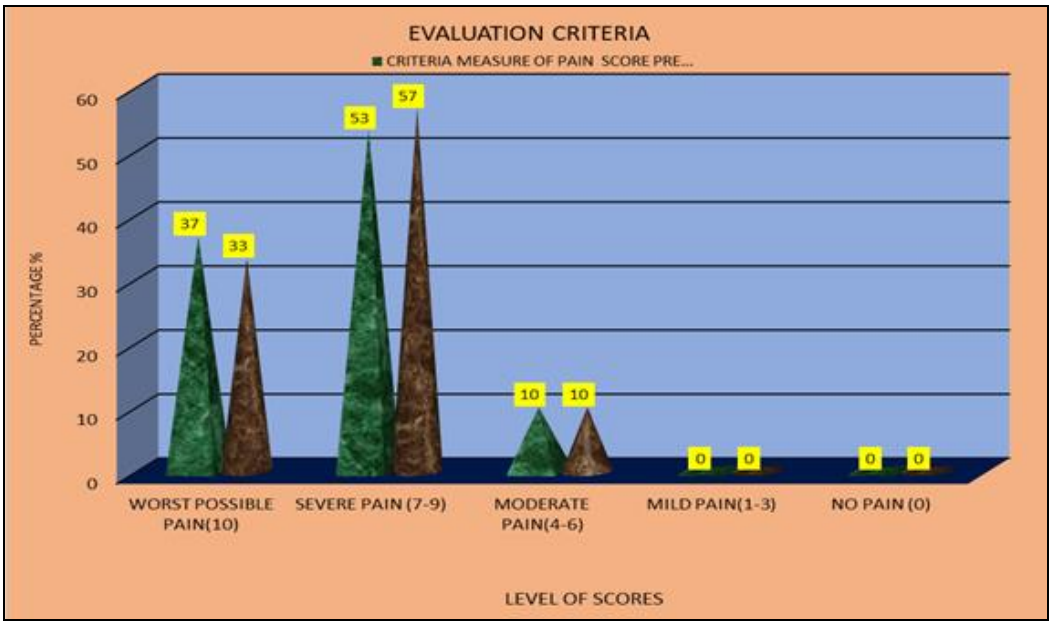

Fig 1: Evaluation Criteria

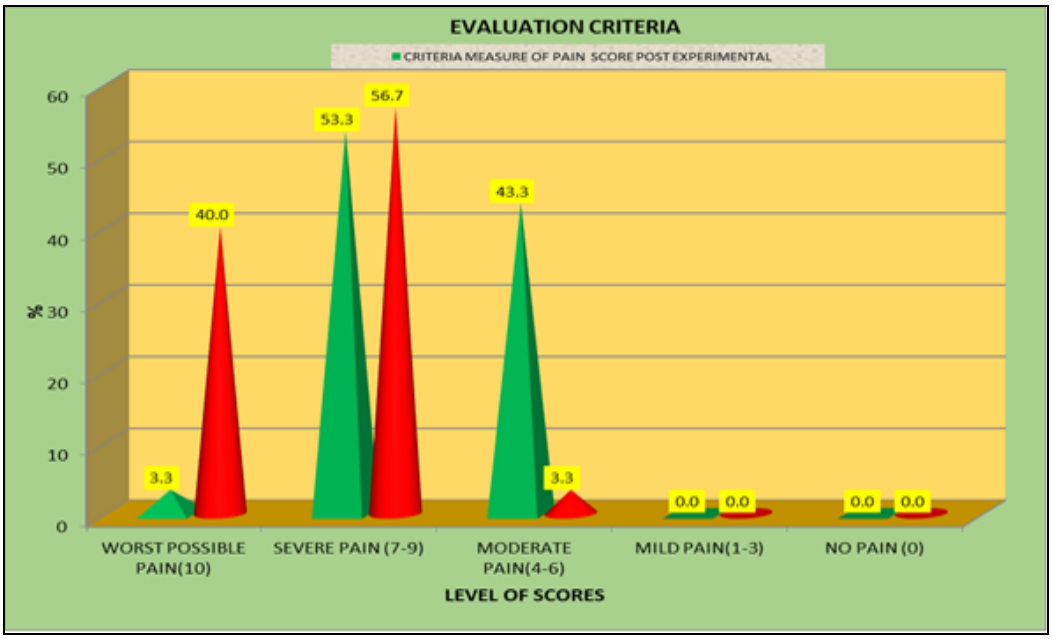

Fig 2: Evaluation Criteria post-control group majority

4. Findings related to association of mean post-test level of pain perception during first stage of labor among primigravida mothers with their selected socio demographic variables

The data revealed that there was no significant association of post-test score with their selected socio-demographic variables i.e. Age, education, occupation, family income, type of family, religion, area of living, regularity of antenatal checkups. Therefore, selected socio-demographic variables had no impact on pain perception among primigravida mothers in experimental and control group. Hence, the research hypothesis H2 was rejected and null hypothesis H02 was accepted as research hypothesis.

Limitations

- The sample size of the patient for the experimental and control group was only 30 and hence generalization not possible.
- The data collection period was only one month.
- Extraneous variable are controlled to some extend only.

Recommendations

On the basis of the findings of the study the following recommendations have been made:

- A similar study can be undertaken with a large sample to generalize the findings.
- 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.
- A descriptive study can be conducted to assess the knowledge and attitude of nurse midwives on complementary alternative therapies for labor pain

management.

- A comparative study can be conducted between primi gravid women and multi gravid women to assess the effectiveness paced breathing exercise.
- A comparative study can be done with one group pharmacological method of pain relief with other group non-pharmacological method for pain relief.

Conclusion

Objective 1: To assess the pre-test and post-test level of pain perception during first stage of labor among primigravida mothers in experimental and control group. In pre experimental group majority of primigravida mothers in the first stage of labor had severe pain 16(53.3%), worst possible pain 11(36.7%) and minority of primigravida mothers in the first stage of labor had moderate pain 3(10%). In pre-control group majority of primigravida mothers in the first stage of labor had severe pain 17(56.7%), worst possible pain 10(33.3%) and minority of primigravida mothers in the first stage of labor had moderate pain 3(10%). In post experimental group majority of primigravida mothers in the first stage of labor had severe pain 16(53.3%), moderate pain 13(43.3%) and minority of primigravida mothers in the first stage of labor had worst possible pain 1(3.3%). In post-control group majority of primigravida mothers in the first stage of labor had severe pain 17(56.7%), worst possible pain 12(40%) and minority of primigravida mothers in the first stage of labor had moderate pain 1(3.3%).

Summary

The present study was undertaken by the investigator to assess the effectiveness of slow paced breathing on pain perception during first stage of labor among primigravida mothers in selected hospitals of District Kangra, Himachal Pradesh.

Conflict of Interest

Not available

Financial Support

Not available

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