



## Original Research Article

# A quasi-experimental study to assess the effectiveness of slow-paced breathing exercise on Labor pain perception during first stage of Labor among primi gravid women in a selected Hospital of Dehradun

### Article History:

#### Name of Author:

Jyoti Mishra<sup>1</sup>, Dr. Dineshwori Chanu Paonam<sup>2\*</sup>

**Affiliation:** <sup>1</sup> M. Sc Nursing, Dept. Of Obstetrics and Gynaecological Nursing, SGRR University, SGRRIMCHS College of Nursing, Dehradun, Uttarakhand, India

<sup>2</sup> Professor, Corresponding Author, Dept. Of Obstetrics and Gynaecological Nursing, SGRR University, SGRRIMCHS College of Nursing, Dehradun, Uttarakhand, India

#### CORRESPONDING AUTHOR:

Dineshwori Chanu Paonam

**Received:** 11-11-2025

**Revised:** 25-11-2025

**Accepted:** 08-12-2025

**Published:** 29-12-2025

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Noncommercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**Abstract:** Labor pain is a complex physiological and psychological phenomenon experienced by women during childbirth. Primi gravid women often experience higher levels of anxiety and pain perception during the first stage of labour. Non-pharmacological interventions such as breathing exercises are simple, cost-effective, and safe methods that can help in reducing labour pain and improving maternal coping during childbirth. The objective is to establish a consistent rhythm, usually at a pace of 6–10 breaths per minute, which is slower than the normal breathing rate of 12–20 breaths per minute. One group pretest post-test design was adopted. Sample was collected by using purposive sampling technique. 60 primi gravid women in first stage of labour were selected out of which 30 were experimental group and 30 were control group. The calculated chi-square value ( $\chi^2 = 13.54$ ) was higher than the table value ( $\chi^2 = 5.991$ ,  $df = 2$ ) at 0.05 level of significance. And the paired t test value ( $t = 9.95$ ), This indicates a statistically significant reduction in labour pain perception levels after the intervention. Therefore, Hypothesis 3 is accepted.

**Keywords:** Slow-paced breathing exercise Labor pain perception Primi gravid women First stage of Labor.

## INTRODUCTION

Labor pain can be quite painful for women and is caused by cervical dilatation and uterine contractions. To manage a woman in Labour, obstetricians and midwives, who are health care protectors, must provide contemporary maternity services. Most women have a difficult time giving birth, and in many

cases, analgesia is required to ease the pain. For pain alleviation, there are numerous pharmacological and non-pharmacological methods. However, there could be adverse effects from these medication therapies. Breathing deeply and slowly during the early stages of labour can help the woman maintain her composure and save energy for the later, more intense stages.

Slow-paced breathing exercises are a fundamental part of several childbirth preparation techniques, these workouts entail taking deep, deliberate breaths that are longer than usual. This technique aids in triggering the parasympathetic nervous system, which calms the body and inhibits the stress reaction. Because stress hormones like adrenaline can otherwise intensify pain perception and prolong labour, slow breathing thereby lowers their production. Recent studies show that by strengthening the psycho-emotional and spiritual aspects of care, the non-pharmacological approach reduces suffering. Making the pain go away is not the main objective of this approach. Instead, the woman's caregivers, childbirth educators, and support staff educate and help her to actively participate in decision-making and use non-pharmacological and self-comforting approaches to reduce discomfort and speed up the Labor process.

#### Objectives:

1. Assess the level of Labor pain perception of primi gravid women among experimental and control group in terms of pretest.
2. Evaluate the effectiveness of slow-paced breathing exercises on Labor pain perception by comparing the post-test level pain perception among experimental and control group.
3. Find out the association between the pretest score with selected demographic variable.

## MATERIAL AND METHODS

#### Research Methodology:

One group pretest and posttest design was adopted for the study. The study was conducted in a selected hospital of Dehradun. A total of 60 primi gravid women were selected using non-probability purposive sampling technique and divided into experimental (n=30) and control (n=30) groups. Data were

collected using a structured demographic and obstetric proforma and Numerical Pain Intensity Scale (0–10). Slow-paced breathing exercise was administered to the experimental group during the first stage of labor, whereas the control group received routine care. Data were analyzed using descriptive and inferential statistics.

#### Instruments

Data were collected using the following tools Section A

Structured demographic and obstetric variables proforma consisting of age, religion, residential area, type of family, nutritional status, height, duration of married life, health-related information, weeks of gestation, mode of labor, duration of first stage of labor, and previous history of surgery.

#### Section B

Numerical Pain Intensity Scale (0–10) to assess the level of labor pain perception.

Pain intensity was categorized as: 0 – No pain 1–3 – Mild pain 4–6 – Moderate pain 7–10 – Severe pain

#### Ethical Consideration

The study was accepted by our research committee and formal permission was obtained from the principle of Sri Guru Ram Rai University College of Nursing Patel Nagar, Dehradun, to conduct research study in SMIH Hospital Dehradun. Written permission was obtained from the medical superintendent of the hospital prior to the data collection. confidentiality was assured to all subject to get their cooperation informed consent of each subject was obtained before administering research tools to them and subject were informed that their participation was voluntary and had the freedom to withdraw from the study.

## RESULTS

**TABLE-1 Classification of Respondents on Pretest Labor Pain Perception Levels among Experimental and Control group**

| Labor Pain perception Level | Category   | Classification of Respondents |      |         |      | $\chi^2$ Test |
|-----------------------------|------------|-------------------------------|------|---------|------|---------------|
|                             |            | Experimental                  |      | Control |      |               |
|                             |            | N                             | %    | N       | %    |               |
| Mild pain                   | 1- 3 score | 0                             | 0.0  | 0       | 0.0  | 2.78<br>NS    |
| Moderate pain               | 4-6 score  | 8                             | 26.7 | 3       | 10.0 |               |
| Severe pain                 | 7-10 score | 22                            | 73.3 | 27      | 90.0 |               |

NS: Non- significant,  $\chi^2$  (0.05, 1df) = 3.841

Table 1 shows the comparison of respondents' pre-test labour pain perception levels between the experimental and control groups. In the experimental group, none of the respondents (0%) reported mild pain, 8 respondents (26.7%) experienced moderate pain, and the majority, 22 respondents (73.3%), reported severe pain. In the control group, none of the respondents (0%) reported mild pain, 3 respondents (10.0%) experienced moderate pain, and the

majority, 27 respondents (90.0%), reported severe pain. The chi-square test value ( $\chi^2 = 2.78$ ,  $p > 0.05$ ) indicated that the difference in pre-test Labor pain perception between the two groups was statistically non-significant.

**TABLE-2 Aspect wise pretest Labor Pain Perception Scores among Experimental and Control Group**

| N=60 |              |            |             |                   |                             |      |          |                |
|------|--------------|------------|-------------|-------------------|-----------------------------|------|----------|----------------|
| No.  | Study Group  | Sample (n) | Max . Score | Labor Pain Scores | Independent sample 't' Test |      |          |                |
|      |              |            |             |                   | Mean                        | SD   | Mean (%) | SD (%)         |
| I    | Experimental | 30         | 10          | 7.13              | 0.82                        | 71.3 | 8.2      | <b>0.38 NS</b> |
| II   | Control      | 30         | 10          | 7.17              | 0.59                        | 71.7 | 5.9      |                |

NS: Non-significant,  $t(0.05, 58df) = 1.96$

Table 2 shows the comparison of mean pre-test labor pain perception scores between the experimental and control groups. In the experimental group ( $n = 30$ ), the mean score was 7.13 with a standard deviation of 0.82, whereas in the control group ( $n = 30$ ), the mean score was 7.17 with a standard deviation of 0.59. The independent t-test value ( $t = 0.38$ ,  $p > 0.05$ ) indicated that there was no statistically significant difference in pre-test labor pain perception scores between the two groups, showing that both groups were comparable before the intervention.

**TABLE – 3 Overall Pre-test and Post test Mean Labor Pain Perception Scores among Experimental group**

| Aspects            | Max.S core | Pain perception Scores |             |             |             | Paired 't' Test |
|--------------------|------------|------------------------|-------------|-------------|-------------|-----------------|
|                    |            | Mean                   | SD          | Mean (%)    | SD (%)      |                 |
| Pre test           | 10         | 7.13                   | 0.82        | 71.3        | 8.2         | 9.95 *          |
| Post test          | 10         | 5.07                   | 1.64        | 50.7        | 16.4        |                 |
| <b>Enhancement</b> | <b>10</b>  | <b>2.07</b>            | <b>1.14</b> | <b>20.7</b> | <b>11.4</b> |                 |

\* Significant at 5% level,  $t(0.05, 29 df) = 2.045$

Table 3 presents the comparison of mean labour pain perception scores of the experimental group before and after the intervention. The maximum possible score was 10.

In the pre-test, the mean pain score was 7.13 (SD = 0.82) with a mean percentage of 71.3%, indicating higher pain levels before the intervention. In the post-test, the mean pain score reduced to 5.07 (SD=1.64) with a mean percentage of 50.7%. The calculated enhancement (reduction in pain) was 2.07 points.

**TABLE –4 Overall Pretest and Post test Mean Labor Pain Perception Scores among Control group**

| N=30               |            |                        |             |            |            |              |
|--------------------|------------|------------------------|-------------|------------|------------|--------------|
| Aspects            | Max Scores | Pain perception Scores |             |            |            | Pair'T' Test |
|                    |            | Mean                   | SD          | Mean (%)   | SD (%)     |              |
| Pre test           | 10         | 7.17                   | 0.59        | 71.7       | 5.9        | 0.91 NS      |
| Post test          | 10         | 7.13                   | 0.63        | 71.3       | 6.3        |              |
| <b>Enhancement</b> | <b>10</b>  | <b>0.03</b>            | <b>0.18</b> | <b>0.3</b> | <b>1.8</b> |              |

NS: Non-significant,  $t(0.05, 29 df) = 2.045$

Table 4 shows the comparison of mean labour pain perception scores in the control group before and after the intervention period. The maximum possible score was 10.

In the pre-test, the mean pain score was 7.17 (SD=0.59) with a mean percentage of 71.7%. In the post-test, the mean pain score was 7.13 (SD = 0.63) with a mean percentage of 71.3%. The calculated enhancement (reduction) in pain score was only 0.03 points, corresponding to 0.3% improvement. The paired 't' test value

( $t = 0.91$ ) was not significant at the 0.05 level, indicating there was no meaningful change in pain levels from pre-test to post-test in the control group.

## DISCUSSION

Description of level of labour pain perception of primi gravid women among experimental group and control group in terms of pretest. The distribution of respondents according to their pretest perception score in experimental group. 22 respondents experienced 73.3% severe pain. 8 respondents experienced 26.7% moderate pain. Based on the findings, Hypothesis (H1) was accepted.

Distribution of respondents according to their pre-test labour pain perception scores in the control group. The majority, 27 respondents (90.0%), reported severe pain. while 3 respondents (10.0%) experienced moderate pain. Based on the findings, Hypothesis (H $\square$ ) was rejected and Hypothesis (H $\square$ ) was accepted.

Tiwari V, Kumar V. Anu (2023) – A Quasi experimental study conducted in Madhya Pradesh. 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 groups. 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.

Description of post-test labour pain perception score among experimental group. In the pre-test, 9 respondents (30%) experienced severe pain, 21 respondents (70%) reported moderate pain, and none reported mild pain. After the intervention, in the post-test, the pain distribution shifted—5 respondents (16.6%) reported severe pain, 14 respondents (46.7%) reported moderate pain, and 11 respondents (36.7%) reported mild pain. The calculated chi-square value ( $\chi^2 = 13.54$ ) was higher than the table value ( $\chi^2 = 5.991$ ,  $df = 2$ ) at 0.05 level of significance. the paired  $t$  test value ( $t = 9.95$ ), This indicates a statistically significant reduction in labour pain perception levels after the intervention. Therefore, Hypothesis (H3) was accepted.

Tiwari and Kumar (2023)- Conducted quasi-experimental research at the Department of Obstetrics

and Gynaecology, All India Institute of Medical Sciences (AIIMS), Bhopal, and assessed the effectiveness of slow-paced breathing exercises on labour pain perception among primigravida mothers. involved 60 participants, divided into experimental and control groups. The experimental group practiced slow-paced breathing exercises during contractions, while the control group received standard care. Pain perception was measured using the Numeric Pain Rating Scale before and after the intervention. The results indicated a significant reduction in pain perception in the experimental group, with a mean post-test score of 1.6 compared to 2.5 in the control group. Statistical analysis revealed a  $t$ -value of 5.92, which was greater than the critical value at a 5% significance level, confirming the effectiveness of slow-paced breathing in reducing labour pain perception.

## CONCLUSION

The study concluded that both experimental and control group were comparable in their demographic and obstetric characteristics during the pretest. Slow-paced breathing exercises were found to be highly effective in reducing the labour pain perception among primi gravid women, as the experimental group reported significantly lower pain scores post intervention, while no meaningful changes was observed in the control group. The association between pretest pain scores and selected demographic variables was not significant, indicating sample homogeneity. Overall, the finding suggest that slow-paced breathing is a simple, safe and non-pharmaceutical intervention that can be effectively incorporated into maternity care to minimize labour pain and enhance maternal comfort.

Conflict of interest:

None

## References:

1. Dutta DC. Textbook of Obstetrics. 8th ed. New Delhi: Jaypee Brothers Medical Publishers; 2015.
2. Basavanthappa BT. Essentials of Nursing Research. New Delhi: Jaypee Brothers Medical Publishers; 2010.
3. Sharma SK. Nursing Research and Statistics. New Delhi: Elsevier; 2017.
4. Lowdermilk DL, Perry SE, Cashion MC. Maternity and Women's Health Care. 11th ed. St. Louis: Mosby Elsevier; 2016.
5. Simkin P, Bolding A. Update on nonpharmacologic approaches to relieve labor pain and prevent suffering. *J Midwifery Women's Health*. 2004;49(6):489–504.
6. Smith CA, Levett KM, Collins CT, Armour M, Dahlen HG, Suganuma M. Relaxation

- techniques for pain management in labor. *Cochrane Database Syst Rev*. 2018;3:CD009514.
7. Brown ST, Douglas C, Flood LP. Women's evaluation of intrapartum nonpharmacological pain relief methods used during labor. *J Perinat Educ*. 2001;10(3):1-8.
  8. Hodnett ED. Pain and women's satisfaction with the experience of childbirth: a systematic review. *Am J Obstet Gynecol*. 2002;186(5): S160-S172.
  9. Adams J, Frawley J, Steel A, Broom A, Sibbritt D. Use of complementary and alternative medicine during pregnancy: a critical review of the literature. *Birth*. 2011;38(1):8-15.
  10. Koyucu RG, Demirci N. Effects of breathing exercises applied during labor on pain, anxiety, and childbirth satisfaction. *J Psychosom Obstet Gynaecol*.
  11. Mutambirwa J. Pregnancy, childbirth, mother and child care among the indigenous people of Zimbabwe. *Int J Gynaecology Obstet*. 1985 Sep;23(4):275-85.
  12. Homas, Liji. (2020, April 14). An Overview of Pregnancy. *News-Medical*. Retrieved on June 24, 2025 from <https://www.news-medical.net/health/An-Overview-of-Pregnancy.aspx>.
  13. World Health Organization. Care in normal birth: A practical guide. Geneva: World Health Organization; 1996 [cited 2025 Jun 24]. Available from: <https://apps.who.int/iris/handle/10665/63167>
  14. Pillitteri A. *Maternal and Child Health Nursing: Care of the Childbearing and Childrearing Family*. 8th ed. Philadelphia: Wolters Kluwer; 2018.
  15. Homson G, Feeley C, Moran VH, Downe S, Oladapo OT. Women's experiences of pharmacological and non-pharmacological pain relief methods for labour and childbirth: a qualitative systematic review. *Reprod Health*. 2019 May 30;16(1):71.
  16. Konlan KD, Afaya A, Mensah E, Suuk AN, Kombat DI. Non-pharmacological interventions of pain management used during labour; an exploratory descriptive qualitative study of puerperal women in Adidome Government Hospital of the Volta Region, Ghana. *Reprod Health*. 2021 Apr 23;18(1):86.
  17. Jones L, Othman M, Dowswell T, Alfirevic Z, Gates S, Newburn M, et al. Pain management for women in labour: an overview of systematic reviews. *Cochrane Database Syst Rev*. 2012;2012(3):CD009234.