

## Research Article

# Effect of Ice Pack Massage in Reducing Labor Pain Perception During the First Stage of Labour Among Primi Mothers in a Selected Hospital in Chennai.

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**Received: 22.03.2025**

**Revised: 25.03.2025**

**Accepted: 26.03.2025**

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### ABSTRACT

**Background:** The perception of labor pain is a significant factor affecting the childbirth experience for Primi mothers. Effective pain management strategies, particularly non-pharmacological methods such as ice pack massage, are increasingly recognized for their potential benefits.

**Aim:** The present study aimed to evaluate effect of Ice Pack Massage in Reducing Labour Pain Perception During the First Stage of Labour Among Primi Mothers in a Selected Hospital in Chennai.

**Methods:** A total of 60 Primi mothers participating in this study were randomly distributed between experimental and control groups that included thirty mothers each. The researcher conducted convenient sampling for participants who matched the study requirements.

**Results:** The results showed a significant change in pain perception was observed in the experimental group of Primi mothers between pre-test and post-test assessments ( $t = 7.82$ ,  $P = 0.001$ ).

**Conclusions:** The results suggest that ice pack massage is an effective non-pharmacological technique for alleviating labor pain. The study concludes that it significantly reduces the perception of pain during labor.

**Keywords:** Ice pack massage, Labour pain, Pain perception, Primi mothers.

## INTRODUCTION

The perception of labor pain is a significant factor affecting the childbirth experience for Primi mothers. Ice pack massage, as a form of non-pharmacological pain relief, has been supported by various studies that highlight the benefits of such interventions. Beyable et al. emphasize the effectiveness of non-pharmacological approaches, noting that these interventions can significantly benefit mothers

without introducing additional risks (Beyable et al., 2022). Non-pharmacological strategies like massage and the application of cold therapy have been reported as effective methods to improve pain management during labor (Beyable et al., 2022; , Hossemi et al., 2016). Specifically, Hossemi et al. point to the efficacy of massage, which promotes relaxation and helps mothers cope better with labor pain (Hossemi et al., 2016).

In a qualitative study conducted by Boateng et al., the experiences of midwives revealed that the use of non-pharmacological interventions, including massage and cold applications, significantly enhances the labor experience, aiding in pain management and improving the mother's emotional state (Boateng et al., 2019). Additionally, Mwakawanga et al. found that many midwives utilize various non-pharmacological methods, such as back massage and warm compresses, to assist mothers during labor, highlighting the importance of provider knowledge and willingness to employ these techniques (Mwakawanga et al., 2021).

The specific application of ice packs can lead to pain relief through various physiological mechanisms, such as reducing inflammation and providing a numbing effect. Ice therapy has been documented as a helpful adjunct in pain management across various clinical settings (Thomson et al., 2019). It is important to note that patient-centered approaches, wherein healthcare providers adequately communicate with and guide mothers in self-administering pain relief methods like ice pack massage, can boost efficacy and maternal satisfaction (Nguyen et al., 2024).

Furthermore, ice pack treatment is commonly part of comprehensive pain management strategies that include breathing techniques and other relaxation methods. Lalhriatpuii and Mahakarkar have found breathing exercises to effectively reduce pain perception, indicating that integrating various non-pharmacological strategies may enhance overall outcomes (Lalhriatpuii & Mahakarkar, 2021). This combination suggests a multifaceted approach to pain management, accommodating different preferences and physiological responses among women in labor.

While pharmacological interventions remain prevalent, there is growing acknowledgment that non-pharmacological methods might offer safer and equally effective alternatives for maternal care (Czech et al., 2018; , Mousa et al., 2018). In light of these findings, there is a clear recommendation for healthcare professionals to be well-informed about diverse pain relief strategies, including ice pack massage, and their appropriate application during childbirth.

In summary, ice pack massage presents as a viable non-pharmacological option for managing labor pain perception among Primi mothers. Augmenting traditional approaches with such methods may lead to improved maternal satisfaction and outcomes during labor, emphasizing the need for further education and training among healthcare providers regarding the integration of these approaches.

## METHODOLOGY

The study utilized an experimental design with 60 mothers, split into two groups of 30—experimental and control. It took place at a hospital in Chennai, focusing on mothers in the first stage of labor. The target group consisted of first-time (primi) mothers experiencing labor, and participants were chosen using a convenience sampling method based on specific inclusion criteria.

### ***Inclusion Criteria:***

- Primi mothers aged between 18-35 years.
- Gestational age of 37 weeks to 41 weeks.
- Primi mothers who are in the first stage of labor.
- Cervical dilatation between 3-7 cm, as assessed through vaginal examination.

### ***Exclusion Criteria:***

- Multiparous mothers (those who have had prior deliveries).
- High-risk mothers (e.g., those with medical complications like preeclampsia, gestational diabetes, etc.).

### ***Data Collection Tool:***

Structured observation checklist was used to document pain during labor and data was collected by measuring perception of labor pain using a standardized pain assessment tool (such as, Visual Analog Scale (VAS)).

### ***Intervention:***

The experimental group received ice pack massage during the first stage of labor. The ice pack was applied to the lower back or other pain-sensitive areas for 15-20 minutes, as per the study protocol. The control group received standard care, without the use of ice pack massage, during the first stage of labor.

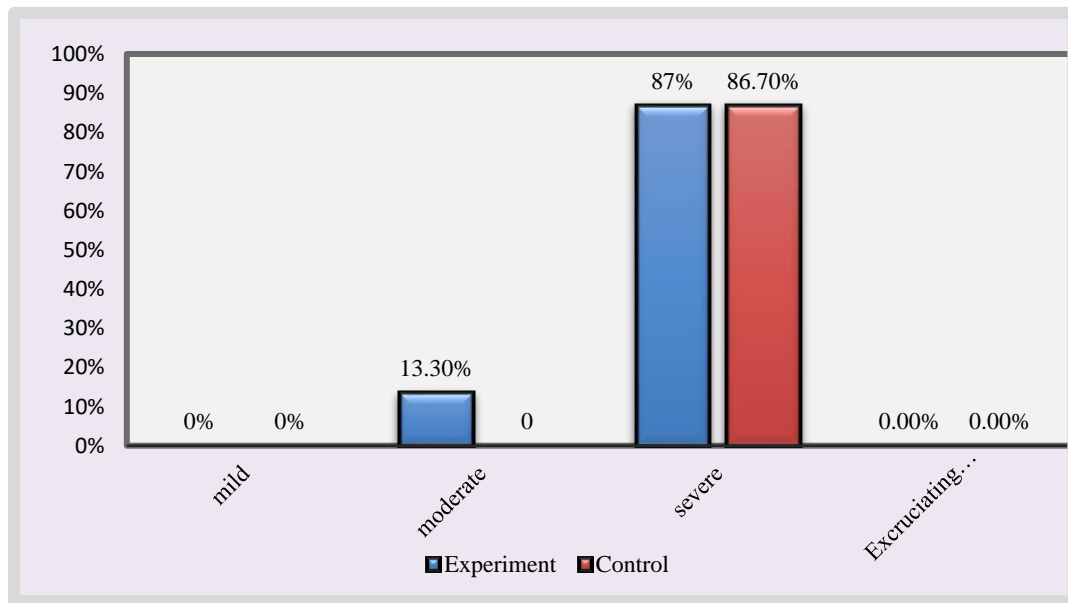
### ***Data Collection Procedure:***

After obtaining informed consent, mothers were assigned to either the experimental or control group. Pain perception was measured at regular intervals using the VAS before, during, and after the intervention. The data were recorded in a structured format by trained nurses. Descriptive and inferential statistics were used in analyzing the collected data.

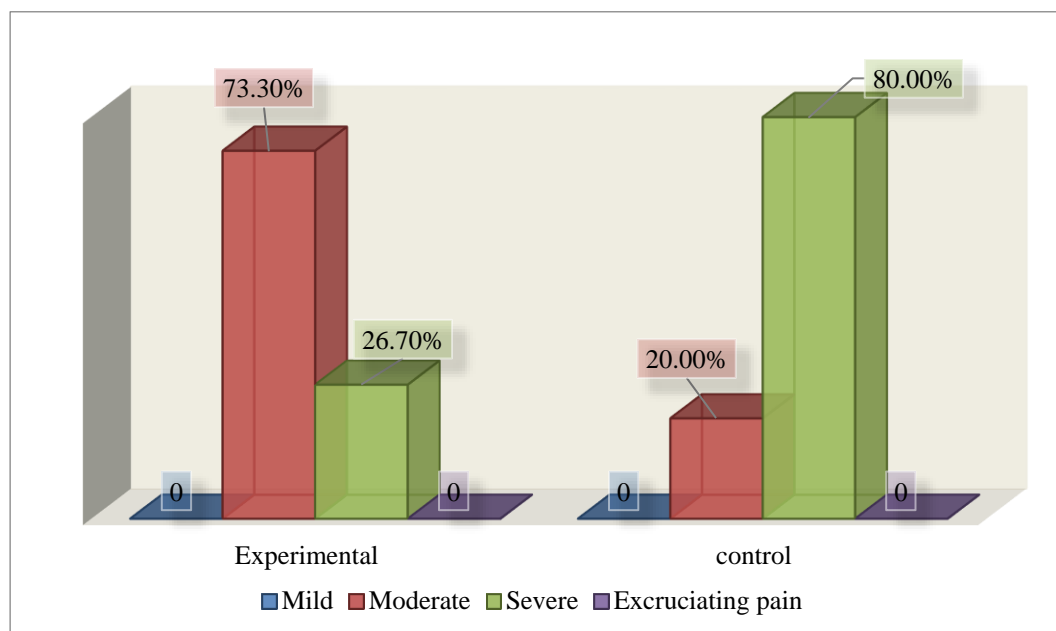
## RESULTS

The graph confirms that Primi women in both groups experienced strong (severe) or moderate pain during early labor but did not report mild or extreme pain. Thirteen-point three percent of experimental group participants had moderate pain compared to eighty-six-point seven percent who experienced severe pain before receiving the ice pack massage. The control group included 13.3% moms who reported moderate pain and 86.7% who felt severe pain. (Figure 1)

**Figure 1: Pain perception among primi gravida mothers in Pretest**

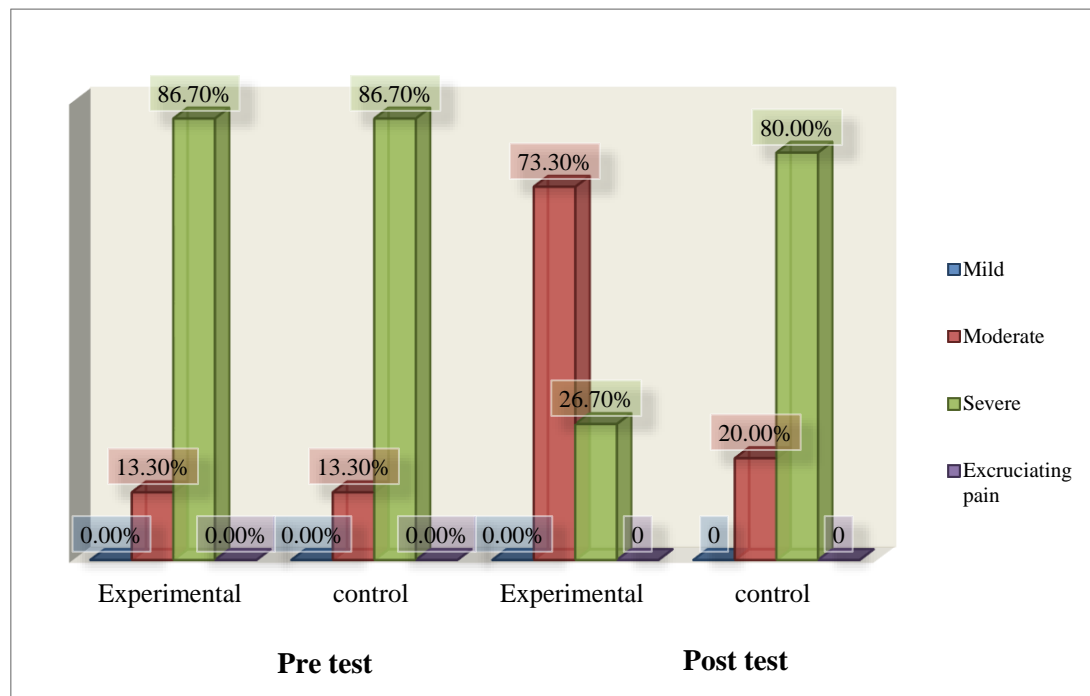


**Figure 2: Pain perception among primi gravida mothers in Posttest**



In the experimental group, 73.3% experienced moderate pain while 26.7% experienced severe pain, as shown in the above figure 2. On the other hand, 80.0% of the control group still felt severe pain and 20.0% moderate pain. None of the mothers in either group felt mild or excruciating pain.

**Figure 3: Comparison of the level of pain perception between the pre-test and post-test.**



In the experimental group, 73.3% reported moderate pain and 26.7% severe pain. In the control group, 80.0% experienced severe pain and 20.0% moderate pain. (Figure 3)

**Table 3: Comparison of pretest and posttest level of pain perception score**

	Experimental	Control	Paired ' t' test
Pre test	8.50 ± 0.84	8.30 ± 0.80	t=0.98 P=0.36
Post test	6.03±1.67	7.24±0.65	<b>t=7.67</b> <b>p=0.000**</b>
Paired ' t' test	<b>t=7.63</b> <b>P=0.000***</b>	t=1.47 P=0.18	

\*\* p≤0.05 S= Significant

The results of pre-test showed that the experimental group scored  $8.50 \pm 0.84$ ; while the control group scored  $8.30 \pm 0.80$ , without a significant difference ( $t = 0.98$ ,  $p = 0.36$ ). In the post intervention, the experimental group had significantly less pain perception  $6.03 \pm 1.67$  compared to the control group which was reduced by a slight amount  $7.24 \pm 0.65$ . It was found that the groups were significantly different from the post-test ( $t = 7.67$ ,  $p = 0.000^{**}$ ). In order to verify this improvement, paired t-test showed significant improvement of the experimental group ( $t = 7.63$ ,  $p = 0.000^{**}$ ) while there was no significant change of the control group ( $t = 1.47$ ,  $p = 0.18$ ). (Figure 3)

## DISCUSSION

The results suggest that ice pack massage significantly reduces pain perception during the first stage of labor for Primi mothers, reinforcing the idea that non-pharmacological pain management methods can provide effective relief during childbirth. Before the intervention, an overwhelming majority (86.7%) of mothers in both the experimental and control groups reported severe pain, illustrating the high intensity of labor pain that typically accompanies the first stage of childbirth (Al-Battawi et al., 2017). However, following the application of ice pack massage, a noticeable shift in pain perception occurred within the experimental group, with 73.3% reporting moderate pain post-intervention. In contrast, the control group exhibited less improvement, as 80% continued to experience severe pain post-test (Chaillet et al., 2014).

The significant changes observed in the experimental group, indicated by a p-value of 0.000, suggest a robust effect of the ice pack massage intervention. This aligns with findings from Al-Battawi et al., who reported that ice application could reduce pain intensity during the active phase of labor and enhances maternal coping and satisfaction (Al-Battawi et al., 2017). Similarly, Chaillet et al. conducted a meta-analysis that underscored the effectiveness of non-pharmacologic methods, including cold therapy, in pain management during labor (Chaillet et al., 2014).

The comparative reduction in pain perception in the experimental group reinforces the notion that non-pharmacological strategies, such as ice pack massage, serve as an effective adjunct to conventional pain management practices in obstetric care. This finding is consistent with other studies indicating that cold therapy can be beneficial in alleviating pain associated with childbirth (Nehbandani et al., 2019). Furthermore, the beneficial outcomes observed underscore the necessity of integrating such methods into routine obstetric practices, as highlighted by Chang et al. in their systematic review demonstrating the efficacy of non-pharmacological coping strategies in reducing labor pain (Chang et al., 2022).

While the control group did exhibit a slight decrease in severe pain cases post-intervention (from 86.7% to 80.0%), the lack of a statistically significant change

( $p = 0.18$ ) suggests that without active interventions, the perceived pain remains largely unchanged. This is corroborated by other studies that emphasize the effectiveness of active techniques compared to standard care practices (Czech et al., 2018; , Boateng et al., 2019). The positive outcomes associated with the use of ice pack massage could also be attributed to its mechanism of action, where cold induces analgesia by modulating pain pathways. Nehbandani et al. noted that cold therapy activates descending pain inhibitory pathways, which can effectively help mitigate labor pain (Nehbandani et al., 2019).

## CONCLUSION

This present study showed that there was an advantage to the reduction of pain perception among Primi mothers when in first stage labor. The results showed that reduction of pain perception and good labour progress occurred during the experimental group of Primi mother who received ice pack massage. Thus, the researcher concluded that ice pack massage can reduce the pain perception and promote good labour progress.

## RECOMMENDATION

Future studies can explore the long-term impact of stress reduction techniques on caregivers using a larger sample size. Implementing structured stress management programs in special schools can further support caregiver well-being.

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**Cite this article as:** Raja Rajeshwari, Jain Vanitha NS, Devi JK, Arpita Kabiraj (2025). Effect of Ice Pack Massage in Reducing Labor Pain Perception During the First Stage of Labour Among Primi Mothers in a Selected Hospital in Chennai. *International Journal of Nursing and Health Studies*, 1(1), 5-10.