Pregnant Women's Knowledge of Non-Pharmacological Techniques for Pain Relief During Childbirth

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Abstract: _Background_: _Labor pain in expectant mothers present significant psychological and physiological challenge, influencing their childbirth experience and mode of delivery. Despite the widespread availability in healthcare centres on the pharmacological treatments for pain relief, the potential risks to both the mother and newborn make their use a carefully considered decision. Non - pharmacological techniques offer safe, cost - effective alternatives with potential benefits, yet many pregnant women remain unaware of these options._ _Methods_: _A cross - sectional observational study had been conducted among 100 antenatal women (gestational age >36 weeks) attending antenatal clinics. Further, data had been collected using a structured questionnaire by assessing knowledge levels, demographic characteristics and willingness to use non - pharmacological techniques for pain relief. Descriptive and inferential statistical analyses that includes logistic regression and chi - square tests that had been applied for determining the factors influencing knowledge levels._ _Results_: _The findings had pointed out that 65% of participants had a dearth of knowledge related to non - pharmacological methods for pain relief methods. However, 80% expressed interest in learning and utilizing these techniques. Breathing exercises (55%), position changes (50%), and warm showers (45%) were the most recognized methods, whereas acupuncture (20%) and transcutaneous electrical nerve stimulation (TENS) (15%) were the least known. Higher education levels (p<0.05) and antenatal class attendance (p<0.01) were significantly associated with increased awareness. Younger women (18 - 25 years) and primigravida women exhibited greater openness to utilizing these techniques._ _Conclusion_: _A significant knowledge gap was highlighted by the stud in regards to non - pharmacological methods for pain relief among pregnant women. Antenatal education plays a crucial role in increasing awareness and encouraging these techniques' adoption. Integration of structured educational programs into routine antenatal care can promote a positive childbirth experience, enhance maternal confidence and reduce fear of labor._

Keywords: Breathing techniques; non - pharmacological pain relief; labor pain; maternal health; childbirth; antenatal education; transcutaneous electrical nerve stimulation (TENS); acupuncture

1. Introduction

For Women, physiological and psychological challenges are posed by labor and childbirth. Since the most intense and distinct pain is experienced by women, the pain in association with childbirth and labor is recognized widely. Further, significant emotional distress can be contributed by its severity and unpredictability, whereas this pain is regarded as one of the normal physiological processes. Among pregnant women, labor pain fear remains prevalent and has been identified as the decision influenced by one of the primary factors to opt for elective C - sections, by which the risk of anxiety as well as antepartum depression may be increased (Hollins Martin & Martin, 2023).

Each and everywoman has one of the distinctive perceptions of labor pain and also coping mechanism for labor pain, shaped by personal pain tolerance, cultural background, available pain relief options' knowledge and previous experiences, (Dickinson et al., 2022). In order to develop effective pain management strategies, understanding pain at the time of labor has been crucial and also the childbirth experience ca be enhanced as well the reliance on pharmacological interventions can be minimised.

Pharmacological methods such as epidural analgesia, opioids, and nitrous oxide are commonly used to alleviate labor pain, but they carry potential side effects for both the mother and the newborn, including prolonged labor, reduced mobility, and neonatal respiratory depression (Anim - Somuah et al., 2018).

To improve the well - being of women and to relieve pain during childbirth, non - pharmacological techniques can be employed. In addition, few techniques have been non - invasive, which aid in women for the development of strategies for controlling pain at the time of labor and childbirth. It has been safe for the woman as well as the newborn. Its side effects are not presented and also benefits are provided. It is reported that most of the women in childbirth and labor would employ non - pharmacological pain relief techniques, that includes position changes, warm showers, massage & heat application, aromatherapy, breathing exercises, acupuncture &acupressure, birthing ball and transcutaneous electrical nerve stimulation (TENS), among others.

In spite of the growing non - pharmacological pain relief techniques' awareness, research indicates that pregnant

women often lack adequate knowledge about these methods. A study by Olza et al. (2022) found that many expectant mothers had heard of alternative pain relief techniques but lacked a deep understanding of their application during labor. Wang et al. (2020) conducted survey had revealed that about 83.3% of pregnant women had superficial knowledge in terms of non - pharmacological techniques for pain relief and they had been unsure regarding their proper use in many different labor stages.

It is observed in previous research that antenatal education is pivotal to get pregnant women equipped with the required knowledge of the implementation of these techniques efficiently. Chaillet et al's (2019) study had demonstrated that the antenatal classes attended by women focusing on non - pharmacological pain relief who had higher levels of satisfaction and confidence significantly at the time of their labor. Accessibility to such education, is yet a challenge to them, especially, in the regions where approaches were medicalized for the childbirth dominate maternity care (Bergström et al., 2021).

It is critical that the healthcare providers' influence in guiding every woman who chose pain management options. It is suggested that options for non - pharmacological pain relief are not discussed routinely with pregnant women by any of the healthcare professionals, which leads to these beneficial underutilization techniques (Jakub et al., 2021). Some obstetric care providers' reluctance for the non - pharmacological approaches integration into maternity care had stemmed from a lack of institutional policies as well as training, by which pharmacological interventions are prioritized (Taavoni et al., 2016).

Moreover, societal norms alongside cultural beliefs had determined the degree of understanding, awareness, and knowledge that they have about non - pharmacological pain relief methods as well as their actual usage. Labor pain is considered by some of the societies as one of the essential parts in childbirth by which women are led to avoid looking for alternative methods for pain relief (Valiani et al., 2018). Holistic childbirth practices are supported by other cultures that accepts every technique such as water immersion and acupuncture because of the natural approaches involved in childbirth (Smith et al., 2023).

The awareness or understanding of non - drug pain management strategies of third trimester pregnant women are investigated in the present study as these strategies are crucial in the outcomes of maternal health. In addition, the understanding of non - medication methods for pain relief of the third - trimester pregnant women are evaluated by this research for childbirth by assessing the present levels of their knowledge regarding the methods. Better childbirth experiences, higher level of satisfaction and reduced maternal anxiety and fear will be led by this knowledge deficit identification and resolution.

2. Materials and Methods

Study Design and Participants
The current study employs a cross - sectional observational approach to evaluate the understanding of pregnant women about non - drug methods for pain management for childbirth.100 pregnant women have been qualified for the study. In addition, antenatal women in the age group of 18 - 35 years had also been included in the study. They are the ones who reached more than 36 weeks of gestational period.

Inclusion and Exclusion Criteria
In inclusion criteria, pregnant women who are visiting antenatal clinics are included and also, they had given their consent to participate. In exclusion criteria, women who had cardiac diseases, HIV or women who planned for the elective lower - segment caesarean section (LSCS) or the ones who had undergone over two previous LSCS deliveries have not been considered for the study.

Ethical Considerations
From the Institutional Ethics Committee, before the research activities were started, ethical approval was received. The study team explained the research goals to all participants before they provided written consent to participate.

Data Collection
A pre - structured questionnaire served as the data collection tool to investigate non - drug pain management methods used during labor and childbirth. The survey contained three main sections which assessed participant demographics and their existing knowledge about the non - drug approaches for pain relief and their opinions. The researchers analysed the gathered data to determine how well participants understood the topic under study.

Data Analysis
The researchers conducted statistical analysis through descriptive and inferential methods. The researchers presented data through frequency distributions together with means and standard deviations. Research included chi - square tests and logistic regression as part of comparative analysis that examined demographic - related relationships with non - pharmacological pain relief techniques awareness. The study used graphs and tables and figures to display essential findings which showed patterns in participant knowledge levels and elements affecting their comprehension of pain management alternatives.

3. Results

Research results showed that sixty - five percent of participants demonstrated poor understanding about non - drug pain management strategies before the study began. During labor experience, about 80% of participants had shown their interest in learning as well as implementing these non - pharmacological methods for pain relief. The strategies that received the most recognition included breathing methods (55%) coupled with position variations (50%) and the use of warm showers (45%). However, both acupuncture (20%) and TENS (15%) remained underrecognized techniques in this study.

These studies demonstrated that women received higher education had possessed greater understanding about non - pharmacological methods for pain control ($p < 0.05$). The participants who attended antenatal classes demonstrated significantly better knowledge scores than those who did not

participate ($p < 0.01$). The graph in Figure 1 shows how different groups of individuals understand the available pain relief options.

The graph displays the percentage rates of participants who knew about many different non - pharmacological approaches for pain relief. Breathing exercises and position changes were recognized as the most familiar non - pharmacological pain relief methods by 55% of participants, yet 15% and 20% had known about TENS and acupuncture respectively.
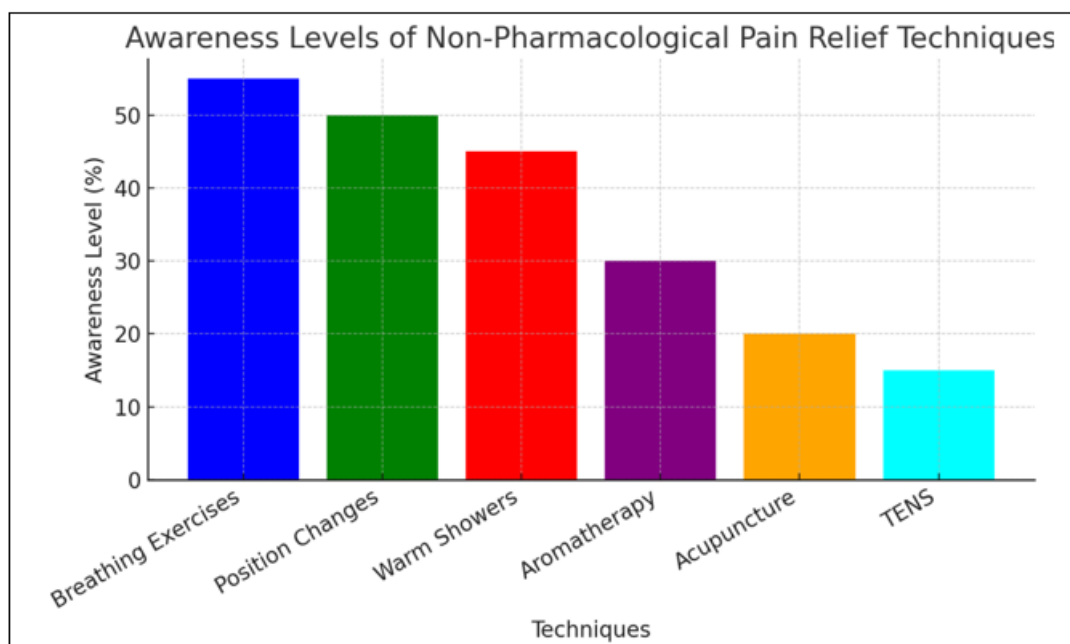

Figure 1: Awareness Levels of Non - Pharmacological Pain Relief Techniques

The above Table 1 has summarized the relationship between the knowledge of non - pharmacological pain relief methods of the participants and their demographic characteristics. The chi - square analysis demonstrated statistically significant associations between knowledge levels and factors such as educational attainment, parity, and antenatal class attendance.

Table 1: Relationship between Demographic Factors and Knowledge of Non - Pharmacological Pain Relief Techniques

Demographic Factor	High Knowledge (%)	Low Knowledge (%)	p – value
Education Level (Higher)	70	30	<0.05
Antenatal Class Attendance	75	25	<0.01
Parity (Primigravida)	65	35	0.02

Graphical analysis (Figure 2) illustrates the percentage of participants who expressed willingness to incorporate non - pharmacological techniques for pain relief during labor. Notably, younger women (18 - 25 years) and primigravida women exhibited greater openness to utilizing these techniques than multiparous women.
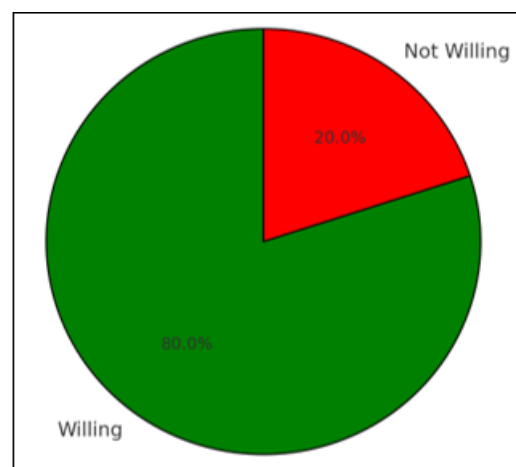

Figure 2: Willingness to Use Non - Pharmacological Pain Relief Techniques

A pie chart showing the percentage of participants willing to incorporate these techniques during labor.80% expressed interest, while 20% were hesitant.
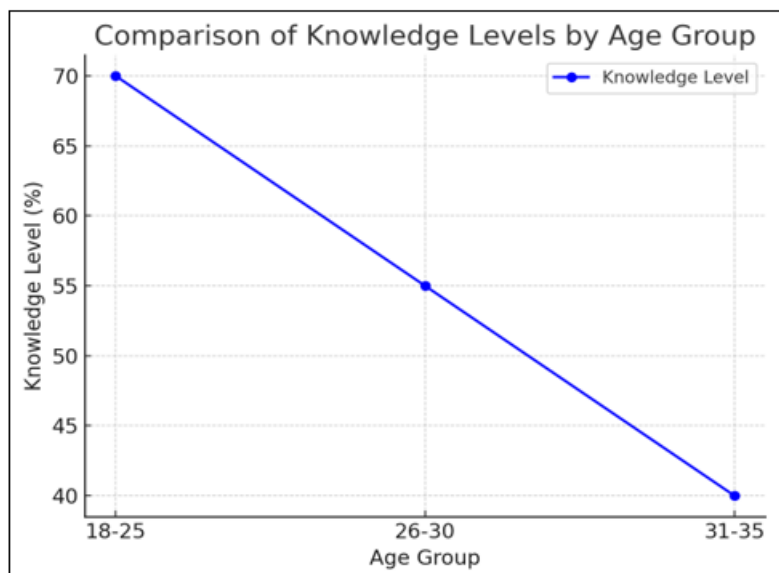
Figure 3: Comparison of Knowledge Levels by Age Group

The above line graph depicts the levels of knowledge across different age groups of participants. Younger women (18 - 25 years) exhibited greater awareness compared to older participants.
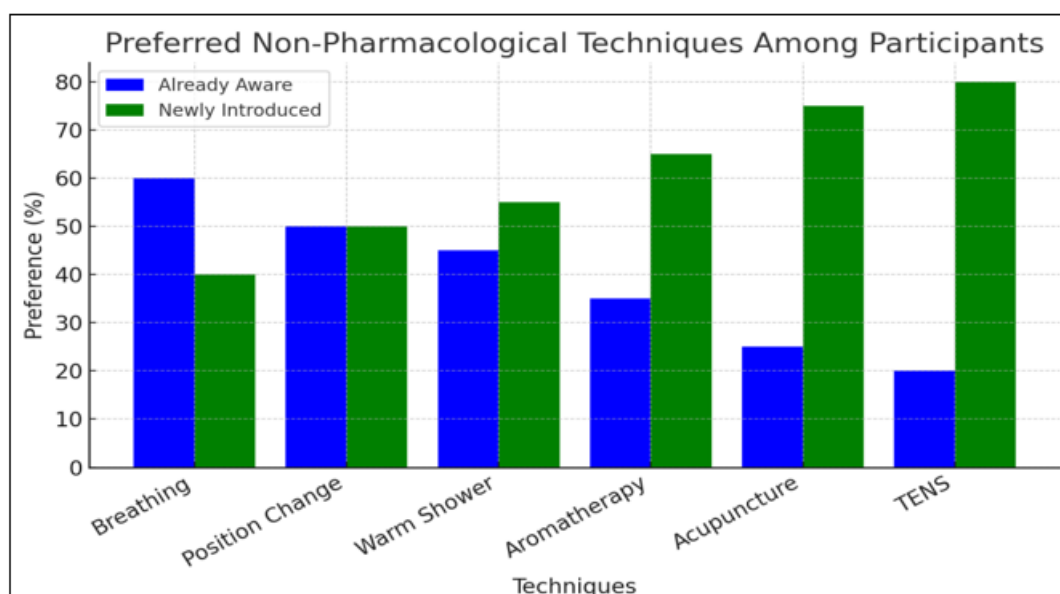
Figure 4: Preferred Non - Pharmacological Techniques Among Participants

A stacked bar chart comparing preferred methods among women who had been aware of non - pharmacological techniques for pain relief vs those newly introduced to them.

4. Discussion

The knowledge, understanding and awareness of non - medication pain relief methods have been evaluated among pregnant women during childbirth in the study. The research data shows major knowledge deficiencies together with the importance of antenatal education and how demographic variables affect both understanding and acceptance of these methods. The paper presents an extensive analysis of existing research which helps understand both benefits and practical implications that emerged from these findings.

The research showed that pregnant women identified breathing exercises as the most familiar non - pharmacological method (55%) followed by position changes (50%) and warm showers (45%) but they knew the least about acupuncture (20%) and TENS (15%). The research results match Anarado et al. (2015) who discovered that about 80% pregnant women had known about non - pharmacological techniques for pain relief yet specific methods such as acupuncture and aromatherapy received limited recognition. According to Krol et al. (2020), 57% of women possessed knowledge about such pain relief approaches yet massage (89.2%) and breathing exercises (88.1%) were the most frequently known remedies.

Women who have given birth before tend to possess better understanding of pain relief methods that do not involve medication. Research indicates that women who have delivered twice or more demonstrate better understanding of these pain relief methods (Jakub et al., 2021; Olza et al., 2022). Our study results indicate that nulliparous women have

similar knowledge levels to parous women in regards of non - pharmacological techniques for pain relief. From the findings, it is indicated that sufficient knowledge is not provided by personal experience for labor pain unless healthcare providers deliver structured education. Wright et al. (2021) reported that women who had given birth before tended to use medication for pain relief instead of investigating alternative non - drug methods.

Researchers before us investigated the relationship between maternal exercise and childbirth results. Bergström et al. (2021) discovered that pregnant women who maintained regular exercise showed decreased chances of needing a cesarean delivery. Our research did not establish a meaningful relationship between the preference for non - pharmacological methods for pain relief and prenatal exercise. The differences in physical exercise patterns between pregnant women from various regions and healthcare systems might explain this discrepancy.

Research has demonstrated that pregnant women displayed limited understanding yet expressed interest in many different non - drug methods for pain relief during childbirth. Pregnant women identified breathing exercises and massage and upright body positions as effective methods to reduce labor pain according to Krol et al. (2020). The Brazilian Ministry of Health recommends breathing exercises and massage and upright positioning for labor but healthcare providers do not consistently provide this guidance to patients. The difference between recommended policies and actual clinical practice demonstrates the necessity for better implementation strategies to provide women with proper guidance about non - medical pain management approaches throughout pregnancy and labor.

The study of 245 Nigerian women revealed that the participants of about 68.6% had known about non - drug methods of pain relief yet 53% specifically used breathing exercises during their labor experience. The Brazilian study demonstrated higher awareness levels because 96.5% of pregnant women identified non - pharmacological pain relief methods (Jakub et al., 2021). The maternal knowledge about non - pharmacological pain relief methods is highly dependent on the availability of healthcare system policies and educational program, regional differences and socio - economic factors.

Antenatal education stood out as a main element which affected knowledge acquisition. The research revealed that antenatal class attendance led to better awareness levels among 75% of participants while 25% of non - attenders remained unaware (p < 0.01). The study results match those presented by Olza et al. (2022) which demonstrated how structured antenatal programs help women acquire evidence - based pain management techniques. The research by Bergström et al. (2021) showed that women who received prenatal education demonstrated better labor pain management skills and avoided requesting pharmaceutical pain relief.

The research conducted by Wang et al. (2022) through meta - analysis showed that antenatal education decreases labor anxiety levels and increases knowledge of effective pain management practices. The study results confirm this concept by showing that women who received structured education showed better preparedness and willingness to use non - pharmacological childbirth methods.

The research established that educational background directly influenced pain relief method understanding (p < 0.05) and better education led to improved understanding. The study results confirm previous research by Hollins Martin and Martin (2023) which showed that maternal education determines how well women can access and understand childbirth information. Younger women between 18 and 25 years old showed greater interest in non - pharmacological pain relief methods than their older counterparts because they spend more time using digital health resources and social media (Wang et al., 2020).

The research showed that primigravida women scored better in knowledge tests (65%) than multiparous women (35%). The findings match Valiani et al. (2018) who discovered that first - time mothers actively pursue childbirth information while attending antenatal classes but multiparous women base their knowledge on past childbirth experiences that might not include non - pharmacological interventions.

The research results demonstrate that antenatal care should incorporate non - drug pain management methods as standard practice. According to Taavoni et al. (2016) properly structured patient education about pain management techniques leads to higher maternal satisfaction and reduced needs for epidurals while lowering the need for elective cesarean sections. The supporting research should lead healthcare professionals to drive active promotion and educational programs for expectant mothers about these methods.

Standard prenatal care should adopt non - pharmacological pain relief education as part of its educational curriculum. Healthcare providers especially midwives and obstetric nurses should receive training to educate pregnant women about these techniques because this knowledge gap affects patient - centered care.

The research delivers important findings yet researchers need to recognize specific constraints. The research findings cannot be universally generalized because it involved only 100 participants. Future research needs to conduct extensive multi - center studies which will validate these results in various population groups. Labor ward observations would offer more precise data about non - pharmacological technique usage because self - reported data could be affected by recall bias.

Future research should focus on understanding how digital education interventions affect maternal knowledge acquisition regarding pain relief methods. Previous research indicates that digital health education platforms such as mobile apps alongside virtual prenatal education platforms work effectively to transmit healthcare information (Wright et al., 2021). The assessment of digital tools for their impact on non - pharmacological pain relief technique knowledge and adoption requires additional research.

Artificial intelligence (AI) together with personalized maternal education programs have the potential to enhance both accessibility and patient involvement in antenatal care as per Smith et al. (2023). Research must investigate AI - based interventions for their capability to specialized labor pain counselling for pregnant women while aiding their choices about pain treatment methods.

5. Conclusion

The present study has underscored the antenatal education's significance to promote the awareness and willingness among women to employ non - pharmacological pain relief techniques in their labor. Despite their proven benefits, knowledge gaps persist, particularly regarding less common methods such as acupuncture and TENS. The findings highlight the need for enhanced education programs, healthcare provider training, and policy interventions to integrate non - pharmacological pain relief strategies into routine obstetric care. Future research should explore large - scale educational initiatives and digital health interventions to further improve maternal knowledge and childbirth experiences.

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