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KNOWLEDGE OF PREGNANT WOMEN REGARDING NON-PHARMACOLOGICAL METHODS OF PAIN RELIEF AVAILABLE DURING LABOUR IN TSHWANE DISTRICT HOSPITALS

BY

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A dissertation submitted in full of the requirements for the degree of

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DECLARATION

I, **Seemole Eniffer Matabane,** declare that the research titled **KNOWLEDGE OF PREGNANT WOMEN REGARDING NON-PHARMACOLOGICAL PAIN RELIEF METHODS AVAILABLE DURING LABOUR IN TSHWANE DISTRICT HOSPITALS** is my own work. I further declare that this study was never previously submitted to any University.

Seemole E Matabane Date: February 2024

DEDICATION

I dedicate this study to the following people who supported me throughout my life and study.

- My parents who instilled in me a deep love for education. Dad and Mom, thank you for giving me something you never had.

- My beloved husband, Andries Matabane, your support and motivation have been a constant source of strength for me, to the extent of even assisting with household chores.

- To my daughter, Boipelo, your sense of humour strengthened me when my studies challenged me. You motivated me to persevere.

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ABSTRACT

Introduction: The ability of women to cope with labour pain is influenced by how knowledgeable they are about different types of pain relief methods. The most important identified method in coping with labour pain and stress is non-pharmacological pain relief. Still, it is scarcely used and rarely offered to pregnant women in labour wards. With the gap identified, the study determined the knowledge of pregnant women regarding available non-pharmacological pain relief methods during labour.

Research design and methods: A quantitative cross-sectional descriptive method was used in this study. The study was conducted in four district public hospitals in Tshwane. Stratified random sampling was used to select 384 pregnant women. Data were collected using a self-administered questionnaire. SPSS version 28 was used to analyse the data. Descriptive statistics including Frequency distribution tables and figures were used to present the results.

Results: The majority of respondents who participated in the study were pregnant women aged between 31 and 35 years with two or more pregnancies. The study results showed that 52.1% (n=200) of pregnant women lack knowledge regarding non-pharmacological pain relief methods, while a minority of 26.3% (n=101) had some knowledge about them. Approximately 19% (n=73) were uncertain about these methods, and 2.6% (n=10) did not comment. The mentioned non-pharmacological methods include massage, breathing techniques and walking/mobility. In terms of the effectiveness of Antenatal education on pain relief methods, most of the respondents, 60% (n=232), stated that they had never received education about the various types of methods available to manage pain during labour during Antenatal Care (ANC). In comparison, 34% (n=131) agreed they had received such education, and 6% (n=21) decided not to comment. Furthermore, the study findings revealed a significant association was found (p=0.032), between age, education, parity and knowledge regarding non-pharmacological pain relief.

Conclusions: The study findings confirmed that most pregnant women attending antenatal care at provincial district hospitals are not prepared for labour pain. Pregnant women are not knowledgeable about different non-pharmacological pain relief methods available during labour. Again, Antenatal care is not utilised effectively in preparing women for labour pain. Our study supports the establishment of in-service training for healthcare professionals (including midwives) on the different non-pharmacological pain relief methods as they are associated with positive birth outcomes and childbirth experiences.

Key terms: knowledge, labour pain, non-pharmacological methods, pain, pregnant women

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LIST OF ABBREVIATIONS/ACRONYMS

ABBREVIATIONS/ACRONYMS	
Abbreviation/ acronym	**Meaning**
ANC	Antenatal care
BANC	Basic Antenatal Care
COVID-19	Corona Virus Disease of 2019
DoH	Department of Health
MOU	Midwifery Obstetric Unit
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

The World Health Organization (WHO, 2018:5) recommends that midwives give information regarding pain relief methods from the antenatal and intrapartum periods for a positive childbirth experience. Pregnant women often refer to their childbirth experience with mixed feelings: feelings of excitement about giving birth to a child, fear of labour pains and whether they can cope with labour pain and childbirth (Anarado, Ali, Nwonu & Chinwembu 2018:568). Labour pain is defined as intermittent, regular, rhythmic pain which occurs during the process of childbirth. In most cases, it is associated with feelings of anxiety, fear and tension, leading to the release of stress hormones (catecholamines), which may worsen the pain and result in complications such as prolonged labour (Anarado et al. 2018:568). A study in Nigeria highlighted that effective labour pain control is associated with a more pleasant labour experience (Anarado et al. 2018:568). Hence, pain relief is a priority during labour and involves both pharmacological and non-pharmacological methods (Ohaeri, Owolabi & Ingwu 2018:1). Pharmacological methods involve the use of drugs, whilst non-pharmacological pain relief methods involve therapeutic touch and massage walking, rocking, application of heat or cold, water therapy, aromatherapy and imaginary music (Vijipriya 2019:113). It also includes breathing techniques, acupuncture, position changes and Transcutaneous Electrical Nerve Stimulation (TENS) (Arslan & Temiz 2019:78).

According to Biana, Cecagno, Porto, Cecagno, Marques and Soares (2021:6), massage is a non-pharmacological pain relief method, and it is prevalent and demonstrates positive results such as improved blood flow and assists with relaxation during labour. Hosseni, Pilevarzadeh and Vazirinasab (2016:703) indicate that massage activates large nerve fibres and shuts the gates of pain transmission. Another theory regarding massage is that pain can be reduced by stimulating the secretion of endorphins. Studies show that non-pharmacological pain relief methods could promote relaxation during labour and delivery (Hosseni et al. 2016:703) and reduce drug dependency (Jira, Weyessa, Mulatu, & Alemayehu, 2020:2917). These methods also prevent postpartum depression (Getu, Getie, Gela, Maseresha, Feleke, & Muna, 2020:2) and accelerates the progress of labour (Suruce, Ozturk, Vurgec, Alan & Akbas 2018:101). Non-pharmacological methods are inexpensive and increase women's participation in decision-making about their care (Arslan & Temiz 2019:78).

On the contrary, Thomson, Feeley, Moran, Downe and Oladapo (2019:15) state that pharmacological pain relief methods provide quick relief for pain to the pregnant woman in labour. However, pharmacological methods have side or adverse effects, such as nausea, numbness, itching, coldness and a decrease in blood pressure. Drugs such as pethidine, used for pain relief

during labour, are associated with depressing the respiratory system of the neonate (Thomson et al. 2019:2). Given this, many pregnant women choose to bear the labour without opting for pharmacological relief of pain. The pharmacological and non-pharmacological pain management methods which are included as a standard of quality care by the (WHO 2018:6) help pregnant women to cope and relieve pain during labour (McCauley, Danna, Mrema & van den Broek 2018:2). Women should be part of the decision-making process when discussing pain relief methods to be used during labour. Being involved in the decision-making process and having adequate knowledge about the different methods available is crucial to the outcome of the labour and memories left behind (McCauley et al. 2018:2).

In South Africa (SA), the best possible pregnancy outcome for women and their babies is promoted through Antenatal Care (ANC) (Ngxongo 2019:3). Konlan, Afaya and Mensah (2021:9) indicated that pregnant women should be provided with adequate ANC, which includes knowledge about labour and different methods of alleviating pain. Moreover, Heim, Miquelutti and Makuch (2019:560) indicate that antenatal education on non-pharmacological pain relief methods is important and should be observed. Additionally, the author states that women with information on non-pharmacological methods are more confident and relaxed during labour. Furthermore, the study recommends ANC as a strategy to deal with uncertainties of pregnancy and labour. Ohaeri, Owolabi and Ingwu (2019:2) state that managing pain effectively is a fundamental right that eventually favours the birth outcome. Labour pain can be devastating and disturbing emotionally and psychologically to pregnant women if not managed appropriately. According to Baransel (2021:7) there are limited studies in the literature on the relief of labour pain using non-pharmacological methods. More studies and literature information are needed regarding non-pharmacological pain relief methods. Furthermore, the author stated that pregnant women should be made aware on non-pharmacological methods during antenatal care and research is needed regarding these methods. Thus, the aim of the study is to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour.

1.2 PROBLEM STATEMENT

Labour is associated with one of the most severe pains (Bishaw, Sendo & Abede 2020:2). Failure to manage labour pain has the potential to compromise placental perfusion, leading to late decelerations and asphyxia, which results in foetal distress. This compromised placental perfusion occurs due to the constriction caused by the tightening and shortening of the uterine muscle fibers (Dippennaar & da Serra 2018:485). Study conducted by Baransel (2021:30) revealed that almost all women who gave birth experienced severe pain during labour, and this appears as normal.

The researcher, as a midwife who worked in the labour ward, found that midwives are not offering pregnant women non-pharmacological methods of pain relief during labour. Through various conversations with women, they reported that labour is perceived as being a very painful experience, and the majority shared that it affected their desire to have more children.

Likewise, in Uganda, 88% of 1293 pregnant women wanted the pain to be relieved during labour, and only 7% indicated that they had insight into various available options (McCauley, Stewart & Kebede 2017:5). In SA, severe pain during labour was reported amongst 56% of 151 pregnant women during the previous labour, and 65% believed that this was unacceptable and unbearable (McCauley et al. 2017:5). According to Vijipriya (2019:117), non-pharmacological techniques for pain relief during labour are new to most pregnant women. Effective teaching on different non-pharmacological pain relief methods can result in a positive labour and delivery outcome. Midwives play an important role in educating pregnant women attending ANC about other non-pharmacological methods that can be utilized during labour to relieve them from pain.

The WHO (2016:101) recommends that pregnant women have a minimum of eight (8) antenatal care visits to reduce perinatal mortality. Most pregnant women comply with this recommendation. However, the researcher is concerned about pregnant women's knowledge regarding non-pharmacological pain relief available during labour. The perception that labour pain is natural and cannot be relieved is common among pregnant women (Raven, Van den Broek, Tao, Kun & Tolhurst 2015:5).

1.3 RESEARCH QUESTION(S) AIM AND OBJECTIVES/HYPOTHESIS

1.3.1 Aims

The aim of the study was to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane District Hospitals.

1.3.2 Hypothesis

Pregnant women have inadequate knowledge regarding non-pharmacological methods of pain relief available during labour.

1.3.3 Research questions

The research question was:

- What knowledge do pregnant women have regarding non-pharmacological methods of pain relief available during labour?
- What antenatal care education do pregnant women receive in preparation for non-pharmacological methods of pain relief available during labour?

1.3.4 Objectives

The study objectives were:

- To determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour.
- To determine the effectiveness of antenatal care in preparing pregnant women for non-pharmacological methods of pain relief available during labour.

1.4 DEFINITION OF KEY TERMS/CONCEPTS

1.4.1 Labour pain

Labour pain is a natural process felt by mothers about to give birth, which is caused by uterine contractions, cervical dilatation and perineal distension (Hasanah, Murti & Prasetya 2021:295). In this study, labour pain was referred to as pain felt by pregnant women leading to constriction of blood supply to the foetus due to tightening and shortening of the uterine muscle fibres, and labour is associated with pain.

1.4.2 Knowledge

Knowledge is a highly valued state in which a person is in cognitive contact with reality (Zagbeski 2017:92). The level of knowledge in this study refers to knowledge about different non-pharmacological methods, including knowledge of how to apply these methods.

1.4.3 Non-pharmacological methods

Non-pharmacological methods do not involve drugs during labour (Rashed, Khalil, & Shereda 2019:8). In this study, non-pharmacological methods are methods like massage, mobility, distraction and many more.

1.4.4 Pain

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage (Ohaeri et al. 2019:1). In this study, labour pain will be pain felt by pregnant women who need pain relief.

1.4.5 Pregnant women

Pregnant women are women carrying a developing foetus in their womb (Rashed et al. 2019:9). In this study, the pregnant women will be respondents who are within the childbearing age of 18 years and 35 years and from 37 to 40 weeks of gestation.

1.5 CONTEXT/SETTING

The proposed study was conducted within the City of Tshwane Metropolitan Municipality of Gauteng Province, SA. The study was conducted in antenatal care clinics of five (5) district hospitals located in Tshwane. According to Tshwane district profile, Tshwane is having five (5) district hospitals, one (1) in region one (1), one (1) in region two (2), two (2) in region three (3), and one (1) in region six (6). The district hospitals provide antenatal care, labour and delivery and postnatal care services.

According to South African Maternity Care Guidelines (2016:18), district hospital staffing includes advanced midwives, midwives, enrolled nurses, full time medical officers and visiting specialist obstetricians. Antenatal clinics manage obstetric emergencies, offer childbirth education, and perform special investigations. District hospitals refer complicated problems for further management of care to regional or tertiary hospitals. The low-risk patient comes as self-referral patients because their place of delivery must be the Midwifery Obstetric Unit (MOU). Low-risk patients are those patients with singleton pregnancies with no active complications and no maternal and foetal factors that place the pregnancy at risk for complications. These low-risk pregnant women can receive care from Midwives (Perinatal Education Programme 2012:33). The researcher opted to conduct the study in a district hospital because the district hospital refers pregnant women with complications to tertiary institutions. Furthermore, the researcher assumed that the application and demonstration of knowledge regarding non-pharmacological pain relief is expected at that level of care.

1.6 ASSUMPTIONS

The basic principle believed to be true is based on logic or reason, without proof or verification (Polit & Beck 2021:778). The researcher assumed that pregnant women have basic knowledge regarding non-pharmacological pain relief methods, which self-administered questionnaires determined.

1.7 DELINEATION

The study was conducted in five (5) district hospitals within Tshwane, the City of Tshwane Metropolitan Municipality of Gauteng Province, SA. The targeted population was pregnant women attending antenatal clinics in the selected hospitals. This study did not include pregnant women younger than 18 years and pregnant women whose planned method of delivery was a Caesarean section.

1.8 SIGNIFICANCE/CONTRIBUTION

The study is significant, as it determined the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour. The study will benefit pregnant women by enhancing the management of pain during labour and enabling pregnant women to make informed choices regarding non-pharmacological pain relief methods. This, in turn, increases patient satisfaction.

The study results will be published and communicated to the DoH and district hospitals where the study was conducted. The published study outcome will serve as a good opportunity for utilisation by healthcare workers and pregnant women.

1.9 RESEARCH DESIGN

The research design applied for this study was a cross-sectional descriptive design. According to Fain (2017:154), research design guides the researcher to answer questions or test the hypothesis, including the specific plan. The plan included strategies to conduct the study, such as methods to approach the respondents, scheduling of time to prepare and brief respondents about the study prior to data collection and issuing of data collection tool. The cross sectional descriptive was utilised because it identifies problems with the current practice, and data is collected only on one occasion with different participants (Brink, van der Walt & van Rensburg 2018:97). Descriptive design is used in studies where more information is required in a particular field of study (Brink et al. 2018:96).

The researcher obtained ethics approval from the University of Pretoria Faculty of Health Sciences Ethics Committee (see Annexure A), permission to conduct research in healthcare facilities from the Tshwane Department of Health district office (see Annexure F1 and F2) and a letter of approval from Chief Executive Officer (CEO) (see annexure G-J) of all five (5) district hospitals.

1.10 CHAPTER OUTLINE

Chapter One: Orientation to the study
Chapter Two: Literature review
Chapter Three: Research design and methodology
Chapter Four: Data collection, analysis and interpretation of results
Chapter Five: Conclusion and recommendations.

1.11 CONCLUSION

This chapter provided an overview of the study. The study was introduced, and a detailed research design and methodology will be described in Chapter 3. The problem statement, research questions, aim and objectives indicated why the researcher was enthusiastic about conducting this study were also outlined. The next chapter presents a literature review of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Chapter 1 provided an overview of the study. The study's research problem, aims, objective, and significance were discussed. The methodology and design were also introduced. This chapter discusses in detail the literature reviewed for the study about the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour including their benefits.

A literature review is an interpretive, organised and written presentation of what the researcher has read. It answers the questions about what is known about the topic (Burns & Grove 2021:152). A literature review also provides the scope and complexity of the identified research problem (Polit & Beck 2020:82). The WHO intrapartum care guidelines (2018) recommend the utilisation of non-pharmacological pain relief methods and further recommend that pregnant women must be given information or must be prepared during their ANC follow up. Evidence reveals that barriers interfere with using non-pharmacological methods (Boateng, Kumi & Diji 2019:9).

2.2 THE SCOPE OF THE LITERATURE REVIEW

The scope of the literature reviewed covers all the relevant aspects regarding non-pharmacological pain relief methods available during labour. This will include different available non-pharmacological methods, non-pharmacological methods recommended by WHO, provision of information about non-pharmacological pain relief and theories about pain.

2.3 SEARCH STRATEGY

The electronic database used for this study is Google Scholar and PUBMED. The searched literature included studies about non-pharmacological pain relief methods and published midwifery guidelines with information relevant to this study, published from 2018 to 2022.

2.4 DISCUSSION ON FINDINGS OF THE LITERATURE REVIEW

2.4.1 Aetilogy of labour pain

2.4.1.1 Global perspective

Labour is a dynamic process of delivering a foetus. It is characterised by regular painful contractions that progress in number and severity (Burns 2021:4). The whole process results in intense pain (Arslan & Temiz 2019:78). This process leads to labour pain which is described as a natural process felt by mothers who are about to give birth and is caused by uterine

contractions, cervical dilatation and perineal distension (Hasanah, Murti, & Prasetja 2021:295). The contractions occur regularly with an intensity that is getting stronger and stronger when labour progresses (Ulfa 2021:426). Pregnant women who experienced labour pain described it as unique, most painful pain and overwhelming. Although the pain can be severe, it is part of the physiological process (Walgari, Mekonneni, Lema, Negasu, Lulu, & Ababe 2020:1). Pain experienced during labour can also inhibit normal breastfeeding, diminish the mother's ability to care for the newborn post-delivery and threaten the establishment of a good quality mother-baby relationship (Arslan & Temiz 2019:78), hence relieving pain is essential.

Labour pain has two (2) types: somatic and visceral (Terfasa, Bulto & Irenso 2022:2). The visceral occurs during the first stage of labour and is connected with the tension exerted on the cervix, which causes dilatation. The somatic occurs at the end of the first stage and last in the second stage (Alzurifi & Ogaili 2021:674). It appears as the result of the force exerted on the perineum as a result of the descended fetus (Chuanxiang, Florenly, Liena & Purba 2022:58). Furthermore, Chuanxiang et al. (2022:563) indicate that about 10% of labour pain occurs as back pain, 20% low back pain and 70% appear on the lower part of the abdomen.

According to Kacar and Keser (2021:1), from the European perspective, labour pain is perceived as not being linked to pathology but rather as an aspect of welcoming new life. It occurs physically, psychologically and in the cultural sociology of women. Although the pain is not life-threatening, it may result in the stimulation of the sympathetic nervous system, leading to maternal hypertension and oxygen consumption, affecting uteroplacental blood flow. Besides this, labour pain can also contribute to postpartum depression and post-traumatic stress disorder (Geltore, Taye & Kelbore 2018:3090). Hence, the study conducted by Eyeberu, Debela, Getachew, Dheresa, Alemu and Dessie (2022:3) reports that pain is associated with this, and pain control is needed to reduce such consequences. Furthermore, Ulfa (2021:425) states that the pain the mother experiences during labour can stimulate fear and anxiety, leading to a physiological response that reduces the ability of the uterus to contract and consequently prolongs labour. The stress generated by labour pain influences the diminished oxytocin level and prolongs labour.

A study conducted in Tanzania by Mwakawanga, Mselle, Chikwala and Sirili (2021:2) indicates that labour pains bring more worries and concerns to the pregnant woman and the family when approaching labour and delivery. This makes pain relief a priority and an essential aspect of care for all women accessing healthcare delivery services. It remains the responsibility of the health care providers to inform, provide and advocate for access to pain relief for pregnant women during labour. (Melesse, Wayessa & Bonkiye 2021:3) and the choice and culture of women regarding pain management must be respected (Melesse et al. 2021:3). According to Kia, Allanbakhshian,

Ilkhani and Nasiri (2021:1), pain is the third most common healthcare problem, and its management remains an important aspect of care. In response to the growing concern, research and advocacy, SA has adopted the WHO's Better Birth Initiative strategy centred around Mother and Baby-Friendly Birthing Facilities (MBFBF). By implementing the MBFBF strategy, women can have a better experience of childbirth (Malatji & Madiba 2020:2).

According to Melesse et al. (2021:3), globally, every year, there is about 140 million vaginal birth that occurs with no identified risk factors. But more than a third of maternal deaths from pregnancy related complications are due to complications that arise during childbirth. Labour pain should be appropriately managed to avoid obstetric complications and increased medical interventions (Najafi & Nong 2020:1). However, if appropriately managed, the pain lasts only for a particular period (Arslan & Temiz 2019:78).

Ghaubari-Homaine, Meedya, Mohammed et al. (2021:2) indicate that negative childbirth experience is associated with women who did not receive pain relief. It is essential to offer pain relief because the childbirth experience can be remembered even after numerous years. Psychological factors such as stress, anxiety, fear, a sense of loss of control and a sense of abandonment contribute to the level of severity of pain experienced by women.

2.5 THEORIES OF PAIN RELIEF DURING LABOUR

According to Dippennaar and Da Serra (2018:415), the midwife must understand the cause and origin of pain and give direction on how to offer appropriate pain control measures. Understanding the theories of pain will assist in guiding how pain is perceived individually from one person to another (Baransel 2020:27).

2.5.1 The endorphin system theory

Endorphins are natural opiate like substances that are manufactured by our bodies during the presence of pain and act as natural analgesia. When the pain is felt, the brain and pituitary gland release endorphins. The released endorphins travel to the opiate receptors, fit like a key in a lock and block the transmission of pain impulses. By so doing, the sense of discomfort decreases. The presence of endorphins is the main reason some women look drowsy and feel relaxed and tired when in labour. Endorphins can provide internal protection against the intensity of labour and giving birth. When the woman is anxious about the outcome of labour, the body releases adrenalin to trigger the fight response. This, in turn, causes endorphin levels to decrease (Dipppennaar & Da Serra 2018:415).

2.5.2 The pain-gate control theory

The pain gate control theory explains how a person can block a painful stimulus by using touch, heat or cold application on the body. The neural fibres that transmit pain are thin compared to those that share other sensations such as touch, heat and cold. When large A-beta skin nerves (which sense touch, heat, cold and pressure) are stimulated, they can override the smaller A-delta and C-fibres that sense sharp burning or aching pains. The large nerve fibres carry the sensory message to the spinal cord, shutting the gate to the pain messages carried by smaller fibres (Dipppennaar & Da Serra 2018:415). Thus, heat and cold massage therapies can change and modify pain during labour. Every time the pain of labour intensifies, the gate is pushed to open, increasing the sensation of pain. If the gate closes the impulse does not reach the level of consciousness and the pain sensation is not experienced (Nursanti 2020:28). Other ways to stimulate gate control are changing position, walking, standing, hugging, rolling the hips and rocking the pelvis.

2.5.3 Cognitive control of pain

The fear experienced by women during labour causes tension, which causes the body to react in ways that increase pain. Coping with labour pain is an emotional and complex process and can give women a feeling of fulfilment and achievement. Cognitive coping strategies can enhance the inhibitory pathways.

- The woman replaces feelings of anxiety and fear of pain with knowledge of childbirth.
- The woman controls her mind and body activity through relaxation, music and self-hypnosis.
- The women's reaction to pain can also be modified through techniques such as conscious release, attention, focusing, guided imagination, distraction or physical activity (Dippennaar & Da Serra 2018:415).

2.6 RESPONSIBILITIES OF MIDWIVES IN THE MANAGEMENT OF PAIN

Midwives have an important role in providing pain control measures and increasing professional efficiency to ensure that women and their families are well informed about the non-pharmacological pain relief methods to be utilised during labour during prenatal training (Baransel 2020:30). On the other hand, midwives operate within a scope of practice that requires them to deliver safe and high-quality midwifery care in a scientific, integrated and evidence-based manner across all healthcare settings (SANC R.2127). Furthermore, SANC (R.2488) urged midwives to remain with pregnant women throughout labour.

2.7 PROVISION OF INFORMATION REGARDING PAIN MANAGEMENT

According to Dippennaar and Da Serra (2018:415), pain management should be discussed with women during the antenatal period. The midwife supports the patient's plan and provides the women with options. Hospitals and birth units should provide non-pharmacological pain control measures if requested by women. Discussion and education, including methods to reduce or manage discomfort or pain, should start during the antenatal period.

2.8 NON -PHARMACOLOGICAL METHODS

Non-pharmacological pain intervention measures aim to treat the affective, cognitive, behavioural and sociocultural dimensions of pain. According to Khalil (2018:34), non-pharmacological methods increase pain tolerance, decrease physical stress, reduce the feeling of weakness and reduce the use of analgesia. The use of these methods depends on the women's choice and healthcare infrastructure (Dias, Santos, Candido, Pinto, Resende & Baldon 2022:2). These benefits occur differently according to different methods (Kacar & Keser 2021:2). Non-pharmacological techniques can be used correctly by women with adequate knowledge and guidance (Heim & Makuch 2021:2) and can be used both complementary and independently (Kia et al. 2021:2).

2.8.1 WHO recommendations

The WHO (2018:3) recommends the following non-pharmacological pain relief methods for a positive childbirth experience:

- A birth companion of choice throughout labour and childbirth
- Relaxation techniques include progressive muscle relaxation, breathing techniques and music.
- Application of warmth and cold as part of manual technique.

A positive childbirth experience is defined as childbirth that fulfils or exceeds a woman's prior personal and sociocultural beliefs and expectations, including giving birth to a healthy baby in a clinically and psychologically safe environment with continuity of practical and emotional support from a birth companion(s) and kind, technically competent clinical staff (WHO 2018:12).

2.8.2 Types of non-pharmacological methods used during pregnancy and childbirth

2.8.2.1 Hydrotherapy

Hydrotherapy is also called water immersion. The woman is immersed in the water bath at the temperature maintained at the body temperature level or below (Alghatis, Faheem & Sijeeni 2020:349). The use of warm water also includes a warm shower, which is more realistic to those

women who have no other forms of immersion in water (Heim & Makuch 2021:4). It does not matter whether the women's membranes are intact or ruptured. Hydrotherapy is utilised in uncomplicated pregnancies for women who prefer physiological and avoiding pharmacological pain relief interventions (Gautham & Devi 2020:257).

Warm water provides soothing stimulation of nerves in the skin, promoting vasodilatation, reversal of the sympathetic nervous response and reduction in catecholamines. It is safe, enhances relaxation, accelerates labour, decreases blood pressure, increases the feeling of control and reduces labour pain (Alghatis et al. 2020:350). It also reduces perineal trauma or tears induced labour by its buoyancy of the water, which enables a woman to move more quickly, facilitating the neurohormonal interactions of labour and optimising the progress of labour (Gautham & Devi 2020:257). Women are comforted by the combination of warmth, water pressure and the sound of water (Alghatis et al. 2020:349).

2.8.2.2 Birthing ball

This physical therapy can be utilised in various positions (Mutoharoh, Kusumastuni & Indriyani 2020:285). The birth ball used for labour pain relief is large, commonly with a diameter of 55cm or 65cm. It provides a soft surface for women to sit on or lean against while carrying out simple exercises (Yeung 2019:1). It is strong enough to support the weight of the woman (Farrag & Omar 2018:2). Techniques such as rocking on the ball hugging the ball during contraction, sitting relaxed on the ball and shaking it to feel comfortable assist in progressing labour by using gravity while increasing the release of endorphins (Ulfa 2021:425). The curvature of the ball position stimulates the pelvis receptors responsible for secreting endorphins (Ulfa 2021:419).

The pelvic rocking exercise encourages the rotation of the foetus. The rocking movement is proven to decrease lower back tension and also helps to relieve back discomfort and pain. The position is well maintained by sitting with the leg at 90 degrees with the legs spread apart to keep the foetus aligned in the pelvis to encourage the descent of the foetal head and to widen the pelvis (Farrag & Omar 2018:4). The sitting position also reduces pressure in the nervous fibres in the sacroiliac articulation, causing relieve of pain in the lumbar region (Delgado, Maid, Melo & Lemos 2019:10). The assumed position is similar to the squatting which opens the pelvis and accelerates labour (Mutoharoh et al. 2020:285).

According to Ulfa (2021:419), during intrapartum care, the use of a birth ball increases self-efficacy, reduces pain, shortens the labour duration by making it easier for the foetus to move in the pelvis, prevents women from constantly lying on her back, reduce the incident of caesarean section and women gain positive labour experience.

2.8.2.3 Birth companion or doula support

It is an integral part of sensitive and responsive women centred care, which improves women's and newborns' health outcomes by offering support during labour and childbirth. Support can be provided by any person chosen by the women (Konlan 2021:2). A Doula is someone who is trained in providing labour support (Schytt 2020:2). The roles and responsibilities include the provision of emotional support, advice regarding coping techniques, promotion of adequate fluid intake and output and advocacy (Summerton 2021:2; Balde, Nasiri, Mehitash, Soumah, Borhen, et al. 2020:1). In the study conducted in SA about Respectful Maternity Care (RMC), one of the key component of RMC is to encourage pregnant women to have birth companion of their choice during labour and birth. The study conducted by Balde et al. (2020:2) indicates that birth companion is linked with increased satisfaction with maternity care services.

- **The challenge with birth companion**

In other developing countries, women giving birth in healthcare facilities are less likely to have birth companions during labour and birth. This is due to poor infrastructure that cannot accommodate birth companions and a lack of knowledge about the benefits of birth companions. In SA, midwives do not support or encourage the presence of birth companions since they interfere with clinical duties. Birth companions are perceived to have adverse effects such as overcrowding and cross infection (Summerton 2021:2). According to Dynes, Binzeni, Twentyman, Nguyeni, Lobis, et al. (2019:93), midwives do not allow birth companions because they feel they make women less co-operative and provide women with traditional herbs and medicines which interfere with medical interventions. Another study conducted in SA revealed that out of 25 pregnant women who were accompanied to a health facility by their birth companion, only 22,2% were allowed, and 58,3% wanted a birth companion and were denied (Malatji & Madiba 2020:7).

2.8.2.4 Relaxation methods

Relaxation methods include music, breathing techniques, and different forms of massage, these methods calm and reduce pain using distraction (Thompson, Feeley, Moran, Downe & Oladapo 2019:2). Furthermore, relaxation facilitates other methods to create a peaceful birth environment (Thompson et al. 2019:11)

- *Massage*

Massage relieves pain at the site where it is applied, including psychological relaxation. During the massage, the applied pressure blocks the transmission of pain impulses to the brain while stimulating the local release of endorphins (Lai, Wong, Tong, Chu, Lau, et al. 2021:406). The endorphin system theory of pain explains that endorphins are naturally opiate like and are manufactured by our body, and they act as natural analgesia. The released endorphins travel to

the opiate receptors, fit like a key in a lock, block the transmission of pain impulses and decrease the women's discomfort (Dippennaar & da Sierra 2018:415). Massage involves therapeutic touch (Young 2021:8), and can be applied in different ways, such as cold or warmth and on the feet and can be done manually or mechanically (Kacar & Keser 2021:2).

- *Music therapy*

Music therapy is described as the use of music and or musical melodies, sound and rhythm (Sontivanez-Acosta, Tapia Lopez & Santero 2020:1). It is recognised as a non-invasive intervention that can be utilised due to its distractive nature and its positive effects on physiological responses. The gate control theory supports this therapy. Non painful sensory input can close the nerve "gate". Music listening is also suggested to stimulate the pituitary gland to release endorphins to decrease pain while altering pain perception through affect and cognition. (Mc Caffrey, Cheung, Barry, Punch & Dore 2020:2). Furthermore, music promotes health and the wellbeing of women due to its destructive nature and its positive effects on psychological response. The psychological benefits of music are that it promotes relaxation, reduces stress, promotes an increased sense of control and reduces women's anxiety (McCaffrey et al. 2020:11).

2.8.2.5 Acupuncture and acupressure

These are the two (2) important treatment modalities of Chinese medicine (TCM). Acupressure is a non-invasive method of stimulating acupuncture points using constant and firm pressure with the fingertips, thumbs or a suitable acupressure tool. The method is safe because it can be practised without a license. Still, for appropriate application, a training course is suggested (Najafi & Nong 2020:2). Acupuncture is applied through fine metal needles placed on particular body points. It is reported to affect uterine contractions, whereas acupressure during delivery increases uterine contraction. The effect of acupressure helps women to control labour pain and shorten the duration of labour (Baransel 2020:28).

2.8.2.6 Aromatherapy

Aromatherapy is the use of the essence of plant oils and fragrances to benefit from its "therapeutic" properties (Baransel 2020:29). The directed intake of essential oils is not recommended (Mascarenhas, Caroci-Becker & Riesco 2022:659). Hence, this method is applied by massaging the skin, inhaling and burning the odour of oils (Baransel 2020:29). According to Mascarenhas et al. (2022:659), aromatherapy is an essential health intervention that strengthens the field of nursing and midwifery to promote physical and emotional well-being and it works effectively in decreasing pain and anxiety in labour (Tabatabaeichehr & Mortazavi 2020:455).

Evidence from different countries indicates increasing rates of use of aromatherapy in pregnant women as this is growing from 13% to 78% (Tabatabaeichehr & Mortazavi 2020:450).

Tabatabaeichehr and Mortazavi (2020:453) demonstrate the effectiveness of geranium, lavender, rose, chamomile, bitter orange, jasmine, sweet orange, mandarin, peppermint and clove in aromatherapy. Peppermint and lavender are the most commonly used to reduce labour pain and anxiety. The effects of Jasmin aromatherapy on labour pain and anxiety indicate that massage with jasmine oil is more effective in relieving pain during labour than jasmine oil aromatherapy (Tabatabaeichehr & Mortazavi 2020:450). The effects of Chamomile aromatherapy on labour pain and anxiety: showed the efficacy of chamomile essential oil aromatherapy in decreasing the pain intensity and the anxiety level in nulliparous women during the first stage of labour (Tabatabaeichehr & Mortazavi 2020:453). However, midwives must be cautious that other labouring women might be sensitive to smell (Alghatis et al. 2020:351).

2.8.2.7 Transcutaneous Electrical Stimulation (TENS)

Transcutaneous Electrical Nerve Stimulation (TENS) is a non-pharmacological and low-frequency electrotherapy technique (Njogu, Qin, Chen, Hu & Yang Luo 2021:1). TENS provide electrical stimulation through the skin, resulting in the blockade of nociceptive transmission (Farra, Shalaby, Fahmy, & Nawara 2020:658). Nociceptive stimuli from uterine contractions and cervical dilatation are transmitted to the posterior nerve root ganglia at T10 through L1. These stimuli of pain that occur during the transitional and second stage of labour are conducted via the pudendal nerve through the anterior rami of S2 to S4. This pain is sharp and usually well localised (Njogu et al. 2021:2).

Farra et al. (2020:665) state that applying electric current using TENS is hypothesised to suppress pain signals by inhibiting peripheral transmission of nociceptive information to the brain and stimulating the local release of endorphins and encephalins. Further, the authors indicate that optimally, electrodes must be connected at T10-L1 and S2-S4, where the spinal centres implicated in labour pain transmission are most affected, and the women will report and feel tickling without muscle contraction or pain. This method reduces pain, anxiety, labour duration and complementary analgesia (Dias 2022:2).

2.9 CULTURAL METHODS OF PAIN RELIEF

Beyond the physiological modifiers, labour pain is influenced by many cultural and psychosocial factors (Farra et al. 2020:658). Therefore, to have positive childbirth experiences, healthcare providers must ask women about their values, needs and fears (Bohren, Tunçalp & Miller 2020:4).

Culturally, every woman is expected to be strong, endure labour pain and give birth naturally. Understanding cultural interpretations assists healthcare providers in providing emotional support and designing interventions that can address knowledge gaps regarding labour management

(Namuju, Muhindo, Mselle, Waiswa, Nankumbi & Muwanguzi 2018:10). Furthermore, Namuju et al. (2018:8) indicate that in Uganda, the practice of labouring women to be with their partners is promoted to offer support during labour. In Sweden, doulas are preferred and are hired privately (Westergren, Edin, Lindkvist & Christianson 2020:8).

In Ghana, women employed spiritual practices by praying and singing (Taylor 2020:50). Women believe praying to God during labour reduces labour pain. Culture, which includes spirituality, can provide a supportive and structured environment for a positive experience of labour pain (Taylor 2020:50). Phytotherapy uses fresh or dried forms of plants used in Turkey and a plant called "Virgin Mary's hand" is placed in the water for drinking, and its effect is to facilitate birth (Baransel 2020:28). Food such as grapes and almonds are given to women during labour to give them more energy. In contrast, Anethum graveoleon seeds are used during the active phase of labour to reduce delivery time and labour pain (Baransel 2020:28).

In Mexico and Spain, Rebozo, which is the type of shawl that the women wear on their heads and bodies during labour, is used to provide women with relaxation while also regulating breathing (Baransel 2020:28). According to Chakona & Shackleton (2019:12), in certain parts of SA pregnant women are encouraged to drink baboon urine as it is believed that it prevents complication during labour.

2.10 REASONS FOR UNDERUTILISATION OF NON-PHARMACOLOGICAL METHODS

Some barriers contribute to the underutilisation of non-pharmacological pain relief. Ingram, Bradyn & Peacock (2022:5) describe these as health facility and system related barriers, health practitioner related barriers and health consumer related barriers. According to Zeleke, Kassaw and Eshetie (2021:9), the major identified obstacles factors for the underutilisation of non-pharmacological patient pain management methods are nurses' fatigue, inadequate cooperation of physicians and nurses' insufficient motivation to use non-pharmacology pain management methods. The authors also indicate that other barriers include low salary, heavy workload, disinclination of the managers to use non-pharmacological pain management and multiple responsibilities of nurses. Mwakawanga (2021:9) indicates that the shortage of midwives affects the nurse patient ratio and the use of non-pharmacology pain management methods. According to Ingram et al. (2022:9), a staff shortage increases stress among midwives and other healthcare providers, leading to insufficient motivation to use non-pharmacological pain management methods.

Most midwives do not believe non-pharmacological pain relief works effectively compared to pharmacological pain relief (Ingram et al. 2022:2). Furthermore, the author continues that this is

mainly because there are no policies and protocols to support the utilisation of non-pharmacological pain relief. Ayeberu (2022:2) states that this is due to a lack of knowledge and skills and a strong belief in analgesia. Midwives perceive non-pharmacological pain relief as time consuming due to excessive workloads, and this is supported by the misconception regarding the efficacy of non-pharmacological pain relief (Ingram et al. 2022:9).

Another concern is the structure and the environment of labour wards that do not allow privacy and family participation. Environmental factors prevent midwives from implementing the utilisation of non-pharmacological pain relief. The process of labour pain does not allow privacy to be compromised (Boateng 2019:8). Furthermore, it was indicated that the delivery area must meet diverse client's needs. The author states that techniques, such as music, are distracting methods and are not accepted by other clients who prefer a free environment, and each preference should be respected (Boateng 2019:8).

2.11 CHALLENGES EXPERIENCED BY MIDWIVES AND PREGNANT WOMEN

Media and individual cultural beliefs challenge midwives. The media made an impact on the women's perception of birth and labour pain by contributing to the misconception regarding the use of pharmacological pain management when culture influences the choice of women regarding birth practices (Ingram et al. 2022:9). Pregnant women mainly receive information from traditional sources instead of healthcare providers (Namuju, Muhindo, Mselle, Waiswa, Nankumbi & Muwanguzi 2018:8).

In Ghana, women are told in advance that labour is painful and should harden and remain strong (Namuju et al. 2018:8), and women are labelled as emotionally weak when they are not able to endure labour pain (Konlan 2021:2). Women are challenged by issues of facing labour pain without the support of their partners as support persons such as husbands and family members are not allowed into the labour ward due to privacy issues and institutional policies that prevent patient relatives from offering direct contact with their respective labouring women (Konlan 2021:2). According to Summerton, Mtileni and Moshabela (2021:2), another challenge faced by midwives which they don't have the power to overcome and contributing to poor standard of care is the inability to provide individual care to labouring women as they are caring for more than one woman at a time.

2.12 PROPOSED STRATEGIES TO FACILITATE THE IMPLEMENTATION OF THE USE OF NON-PHARMACOLOGICAL METHODS

According to Getu et al. (2020:5), there are factors associated with poor utilisation of non-pharmacological pain relief, and to overcome such challenges, strategies must be implemented,

such as creating community awareness about the bad practices that compel women to endure pain in labour (Ohaeri, Owalabi, & Ingwu 2018:5). A study conducted by Samarkandi (2018:2) recommends pain management be included in continuous nursing education curricula. Training needs to be undertaken for healthcare workers who have negative attitudes towards the utilisation of non-pharmacological pain relief methods. Non-pharmacological methods should be explained and reinforced during simulation (Arslan & Temiz 2019:87). Ingram et al. (2022:10) recommend promoting the model that endures the midwifery philosophy of trusting women to decrease the dependence on pharmacological pain management.

The availability of labour pain management protocol must be considered an essential component of the maternity care setting (Getu et al. 2020:5). Ohaeri et al. (2018:5) recommend labour pain management to be considered as one of the prerequisites for the renewal of a license for midwives and skilled health attendants.

2.13 CONCLUSION

Chapter 2 presented the reviewed literature regarding available non-pharmacological pain relief methods. Different methods were described, including barriers and proposed strategies to facilitate the implementation of these methods. The next chapter will present the methodology used to conduct the study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter 2 presented the literature reviewed for the study on knowledge of pregnant women regarding non-pharmacological pain relief methods available during labour. This chapter explains the research methodology used to conduct the study. Topics and subtopics described are research design, research setting, sampling method, study population with inclusion and exclusion criteria, data collection and data analysis. The research methodology and research design chosen were identified to be the most suitable to address the identified problem.

3.2 RESEARCH DESIGN

The research design applied was the cross-sectional descriptive quantitative design. According to Gray and Grove (2021:248), this design allows a variable to be explored and similarities and differences between to be examined. The researcher opted for a cross-sectional descriptive design as it is used to identify problems with the current practice. Data was collected only on one occasion with different respondents (Brink, van der Walt & van Rensburg 2020:97). In this study, the data collection tool was administered to pregnant women on one occasion at the Antenatal Clinic (ANC). The study design was selected to determine the knowledge of pregnant women regarding non-pharmacological pain relief methods available during labour. The aim of the descriptive method was to determine what pregnant women know regarding non-pharmacological methods available during labour. According to Brink et al. (2020:96), descriptive designs are used in studies requiring more information in a particular field.

3.2.1 Quantitative design

Quantitative research design is a formal, objective study process that counts or measures the answer to the research question (Gray & Grove 2021:820). This design is often presented numerically using mathematical operations such as statistical rules (Feyisa 2022:115). In this study, objectives were developed so that the questions established from the problem statement could be answered. Data was presented numerically in the form of graphs and tables. The submitted data was analysed by the statistician using statistical rules.

3.2.2 Cross-sectional design

The cross-sectional design is a research design that collects data on participants at one point in time (Brink et al. 2020:197). Where data is collected in the form of survey or structured interviews (Cummings 2018:2). In this study, data was collected at a single point by visiting the selected district hospitals one at a time after receiving permission from the University Faculty of Health Care Science Research Ethics Committee reference No: 236/2022 (see Annexure A), Tshwane

district Department of Health (see Annexures F1 and F2). District hospital management and the institution's research (see annexure G-J). Cross-sectional design involves human participants facing challenges (Cummings 2018:2). The study participants were pregnant women facing painful labour and without proper preparation to make informed choices about non-pharmacological pain relief methods.

3.2.3 Descriptive design

In research design, where a phenomenon is described or the relationship between variables is examined, no attempt should be made to determine cause and effect (Brink et al. 2020:198). The study findings were described using tables and graphs, and the relationship between variables was examined by interpreting the association between the variables using the p-value.

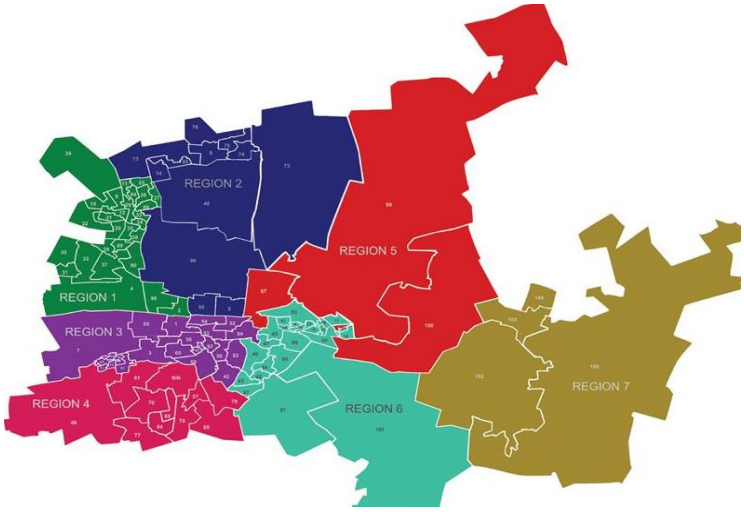
3.3 METHOD

The quantitative approach was used to conduct the study. The quantitative methods are usually connected to the positivist paradigm with the assumption that there is reality that can be studied and known (Polit & Beck 2021:8). The type of quantitative approach used was applied research, which is conducted to solve real-life problems and to generate knowledge that will improve nursing practice (Gray & Grove 2021:51).

3.3.1 Study setting

The proposed study was conducted within the City of Tshwane Metropolitan Municipality of Gauteng Province, SA. The study was conducted in antenatal care clinics of five (5) district hospitals located in Tshwane. According to Tshwane district profile, Tshwane has five (5) district hospitals, one (1) in region one, one (1) in region two, two (2) in region three and one (1) in region six. See Figure 3.1

Figure 3.1: ***Tshwane region map***



https//www.hst.org.za (Accessed 19 May 2023)

Gray and Grove (2021:53) state that a natural setting is an uncontrolled real-life environment. Data was collected in a natural setting at Antenatal clinics. The researcher did not manipulate or change the environment. The nursing care was permitted to continue as usual. Antenatal clinics were structured so that they could cater to the needs of pregnant women. The structure was divided as follows:

- Registration area where pregnant mothers were received from the referral institutions.
- Pregnant mothers waited in the area until they were called for assessment.
- Cardiotocograph (CTG) room, pregnant mothers were taken to the room for CTG monitoring.
- Vital signs were assessed in blood pressure, temperature, pulse, urinalysis and blood glucose.
- Two (2) consultation rooms, one for the doctor and another for the professional nurse.

Staffing comprises an Operational manager managing the clinic, two (2) Midwife specialists who were assessing pregnant women in the consultation room and CTG monitoring, Enrolled nurses who assisted with vital sign monitoring in the vital area and one (1) doctor assessing, confirming diagnosis and referring patient when necessary.

3.4 POPULATION

According to Gray and Grove (2021:60), population refers to “all the elements (individuals, objects or substances) that meet specific criteria for inclusion in each universe”. The study population were pregnant women in their reproductive years who were seen in the ANC clinic of district public hospitals. The exclusion criteria are described as criteria that do not possess the specified criterion.

3.4.1 Inclusion criteria

The inclusion criteria included pregnant women described below:

- Primigravida women who were in the ANC clinic during the completion of a questionnaire with a gestational age between 37-40 weeks of gestation because during this period, pregnant women are expected to have a communicated birth plan.
- Multiparous were included at any gestation age because of previous experience of pregnancy.
- Women with vaginal birth after caesarean section.
- Pregnant women sampled at the antenatal clinic who attended ANC visits four times (4) or more signed consent to participate in the study due to ethical issues.

3.4.2 Exclusion criteria

- Pregnant women who have previous obstetric history of Caesarean section delivery,
- Pregnant women who delivered normally but have a history of stillbirth or early neonatal death as it might arouse the previous emotional experience.

3.5 SAMPLING METHOD AND SAMPLE SIZE

3.5.1 Sampling method

Sampling refers to selecting a sample from a population to obtain information regarding a phenomenon in a way that represents the study population (Brink et al. 2020:115). A stratified random sampling method was used. Stratified random sampling is the method used to predetermine the desired proportion to be selected for several values of a variable (Gray & Grove 2021:824).

In this study, each district hospital was represented. According to Gray and Grove (2021:423), the study subjects can be divided into different strata when stratified random sampling is used. The selected district hospitals were stratified according to other regions of their location for the entire Tshwane municipality. The first stratum represented Hospital 1, located in Region 1. The second stratum represented Hospital 2 in Region 6. The third stratum represented Hospital 3, located in Region 2. The fourth stratum represented Hospital 5, located in Region 3. The total calculated sample size was 384 pregnant women.

The total number of pregnant women for all five (5) district hospitals seen per month was as follows:

- Stratum 1: Hospital one (1) = 393
- Stratum 2: Hospital two (2) = 886
- Stratum 3: Hospital three (3) = 337
- Stratum 4: Hospital four (4) = 481
- Stratum 5: Hospital five (5) = 327

The average number of pregnant women admitted monthly for five (5) hospitals was 485. The statistics were obtained from the Tshwane district health office; however, due to challenges encountered during data collection with one (1) of the district hospitals, hospital 4 refused to grant the researcher permission to collect data. As such, data was collected in four (4) district hospitals. The sample size was tabulated as follows:

Table 3.1: ***Sample size per stratum***

Stratums	Region	Hospital	N= Population size of each stratum	*n* = required sample size for each stratum
Stratum 1	Region 1	Hospital 1	393	81
Stratum 2	Region 6	Hospital 2	886	159
Stratum 3	Region 2	Hospital 3	337	73
Stratum 4	Region 3	Hospital 5	327	71
Total				**384**

$$n_i = n.\frac{N_i}{N}$$

N- refers to the population size

N_{i-} = Population size of each stratum

n_i = required sample size for each stratum

n = sample size

The above formula was used to calculate the required sample size for each stratum. Respondents were requested from each district hospital ANC clinic based on the estimated required sample size. Respondents were selected randomly. During data collection, the daily attendance register was utilised as a sampling frame to avoid using the same respondent more than once. The researcher verbally informed respondents not to consent for the second time. The respondents who took part in the study were recorded for future reference. The same method was applied until the required sample size was reached. The procedure was followed each time when data was collected until the required number was reached from each district hospital.

3.5.2 Sample size

Sample size refers to the number of respondents who participated in the study (Gray & Grove 2021:822). The respondents were selected during their ANC follow up. All respondents selected were selected according to the inclusion and exclusion criteria. The sample size was calculated using the confidence level and the confidence interval. The confidence interval will be the plus and the minus figure. After calculating the monthly average statistics in the five (5) district hospitals, it was found to be 485. The sample size was calculated using a calculator from Macorr Research Solutions (Brink et al. 2020:128). If the confidence level and interval are put together,

the researcher can be sure about 95% of the population response. Sample size calculation was calculated using a simplified formula of a 95% confidence level with the value of 1.96.

Sample size formula $ss = \frac{z^2 * p\,(1-p)}{C^2}$

$$= \frac{(1.96)^2 \times 0.5\,(1-0.5)}{(0.05)^2}$$

$$= \frac{3.8416 \times 0.5 \times 0.5}{0.0025}$$

$$= \frac{3.8416 \times 0.25}{0.0025}$$

$$= 384{,}16$$

A Sample of 384 was derived from the entire population of 2424.

Z = Confidence interval of 1.96 for 95% interval

P = Percentage desired level is 50% expressed in decimals

C = Confidence interval 5%

A biostatistician was consulted, and a clearance letter was granted (see Annexure B).

3.6 DATA COLLECTION AND ORGANISATION

Data collection is selecting subjects and gathering data from the respondents (Gray & Grove 2021:607). A data collection tool in the form of a questionnaire was developed. It was used for the first time to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour. The structured data collection tool was developed through a literature search and the supervisor's guidance. The content of the questions conformed to the objectives of the study.

According to (Gray & Grove 2021:500), a questionnaire is a written self-report designed to elicit information that can be obtained from a subject‘s written responses. The questionnaire included open-ended and close-ended questions. The type of close-ended question used required “yes” or “no” and “not sure answer”. The open-ended question required a written response. This study applied open-ended questions requiring respondents to suggest pain relief methods. In these instances, respondents were required to specify the given answer from the previous questions.

The five-point Likert scale was also used to determine the knowledge regarding different non-pharmacological methods. Likert scale were single close-ended questions; the respondents were expected to tick only one answer. The varying lengths of agreement and disagreement were assessed. The Likert scale questions were used to rank the level of agreement.

3.6.1 Data collection tool

The researcher developed the questionnaire from existing literature on non-pharmacological pain relief methods. A self-administered questionnaire (Annexure E) was used and handed out through face-to-face interviews with the respondents. Sections of the data collection tool were as follows:

- **Section A: Demographic data**

This section comprised five (5) items (1-5). The respondents were expected to provide demographic data in two ways: ticking one applicable answer or providing a complete answer.

- **Section B: Non-pharmacological pain relief knowledge**

This section comprised eleven (11) items (items 6-16). In this section, respondents were to provide information regarding their knowledge of non-pharmacological pain relief. The type of questions used were closed-ended with “Yes, No or Not sure” answers. The respondents were expected to tick the applicable answer and provide a rationale where necessary.

- **Section C: Types of non-pharmacological methods used during labour**

This section consisted of twelve (12) items (items 17-28). This section used the Likert scale to determine types of non-pharmacological methods used during labour known by the respondents.

- **Section D: The effectiveness of Antenatal care**

This section comprised four (4) items (29-32). This section aimed to determine the response of respondents regarding the effectiveness of ANC in preparing pregnant women regarding non-pharmacological pain relief methods available during labour.

- **Section E: Suggestions on pain relief methods**

Section C comprised three (3) items (33-35) of open-ended questions, which were analysed using a thematic data coding process. In this section, respondents were expected to suggest pain relief methods.

3.6.2 Recruitment of the respondents

The researcher visited the ANC clinic of the selected hospitals early in the morning and utilised the platform where the midwives were addressing the patient. Stratified random sampling was employed to ensure respondents from each selected district hospital were equally represented. The procedure of how the data collection process unfolded was explained to pregnant women, including an explanation of a consent form. According to Isaksson, Wester, Laska Nasman and Lundstrom (2019:1), poor recruitment can lead to ethical consequences and financial

implications. Furthermore, the author suggests predicting problems that may arise early and preventing those barriers is important.

In this study, the researcher predicted the language barrier, ensured that questions were written in simple English, and allowed more time to clarify questions to respondents who did not understand the question. Furthermore, the researcher ensured that questions were relevant to the study title.

3.6.3 Data collection process

Before conducting the study, the research was approved by the University Faculty of Health Care Science Research Ethics Committee Reference No: 236/2022 (see Annexure A). The Department of Health and permission from the district hospital's management and the institution research committee (see Annexures here F - J). After obtaining the hospital's approval, an introductory meeting was arranged with the area managers of the ANC clinic.

The first data collection phase occurred over two (2) weeks, from 12 September 2022 to 26 September 2022. The second phase took three (3) weeks, from 31 October 2022 to 7 November 2022. The whole process of data collection took five (5) weeks. The researcher had to pause in between while sorting out the challenges of not getting approval from one of the hospitals.

The data was collected using the data collection tool and then captured in the Excel spreadsheet. The researcher was in direct contact with the respondents to assist them in understanding the questions better when needed. Questionnaires in each district hospital were handed in proportion to the calculated sample size. Data from each hospital was collected until the estimated sample size was reached. The captured data was then submitted to the statistician for cleaning and analysis.

3.6.4 Pilot study

Polit and Beck (2021:170) define a pilot study as a trial run design used to test planned methods and procedures to assess eligibility criteria. The pilot study was conducted in one (1) of the four (4) selected district hospitals. According to Gray and Grove (2021:623), the aim of the pilot study is to assist with identifying problems that may interfere with study validity. For this study, the pilot study was conducted to assess the accuracy of the data collection tool and the willingness of respondents to participate.

A smaller sample was selected to pre-test the tool before a complete study was conducted. Only 5% of the sample size (384), which is 19, was sampled for piloting. Errors were identified in the data collection tool, such as repeated questions and those with the same meaning but phrased

differently. All those questions with errors were revised. Repeated questions were deleted, reducing the number to 35 items from 40. The result of piloting was excluded from the main study.

3.6.5 Distribution of data collection tool

The study aims and objectives were explained to pregnant women at the Antenatal clinic. Only those interested and willing to sign the consent form were given the questionnaire. The researcher distributed the questionnaire and remained with the respondents until the completion of the questionnaire, without manipulating the respondents to complete the questionnaire. The researcher ensured that the respondents signed the consent prior to responding to the questions. However, due to the large sample size, additional support was needed. The researcher trained one research assistant with an academic background to distribute and collect questionnaires from the respondents. The research assistant followed the same procedure as the researcher, ensuring that the consent was signed before distributing the questionnaire.

The questions were written in English and distributed to pregnant women who could read and write. For those respondents who could not read and write, the researcher read out the questions for them and noted their responses. The questions were explained in the African languages (Sepedi, Isizulu, Setswana and Xitsonga) used in the Tshwane region before the distribution of the questionnaire to ensure better understanding for those respondents who had challenges with English (see Annexure E). The ethical principles were observed throughout, as outlined in section 3.10.

3.7 DATA ANALYSIS AND MANAGEMENT

A data analysis plan in quantitative research is a plan on how data will be managed and which statistical test will be conducted (Gray & Grove 2021:62). Data obtained were captured manually in an Excel data sheet and sent to the statistician for cleaning and analysis. Descriptive statistics such as frequency percentages were used to present data, and data results were presented in tables and figures as graphs. Additionally, the Chi-Square test was used to determine the relationship between the variables.

Statistics is the best tool for analysing quantitative data (Brink et al. 2020:166). The Statistical Package for the Social Sciences (SPSS) was used, and data and the results were also displayed in the form of a graph with the assistance of the biostatistician (see Annexure B). A descriptive statistic of the frequency distribution and inferential parametric statistics were used to explain and summarise data. Inferential parametric statistics are applicable when the selected sample represents the target population and a random sample (Brink et al. 2020:178).

3.8 RIGOUR/QUALITY CONTROL

Rigour is described as striving for excellence in research, which requires discipline (Gray & Grove 2021:52). It ensures reliability and validity (Brink et al. 2020:82). These are the most important criteria that are used with quantitative research (Polit & Beck 2021:207). The instrument used during data collection should produce consistent information from the four (4) different hospitals.

3.8.1 Validity

Validity is described as the ability of the instrument to measure the variables intended to measure (Brink et al 2020:151). The main variables measured in this study are knowledge and non-pharmacological pain relief methods.

Content validity assesses how well an instrument represents components of the variable to be measured (Brink et al. 2020:152). The content of this study was about the main concepts of the study, which are non-pharmacological methods of pain relief and level of knowledge. According to Gray and Grove (2021:459), content evidence is obtained from the literature and expectations. In this study, different literature sources were consulted to guide the researcher in presenting the study and designing the questionnaire tool. The questionnaire was submitted to the supervisors as experts to evaluate and verify its suitability and whether it measures what it is supposed to. The pilot study was conducted to test the questionnaire.

Face validity is the extent to which an instrument measures what it is supposed to (Brink et al. 2020:152). In this study, face validity was the self-developed data collection tool in a questionnaire evaluated by the supervisors and biostatisticians.

Construct validity is the ability of an instrument to measure the construct that is supposed to (Brink et al. 2020:196). The data collection tool must have the ability to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour. In this study, the pilot study was conducted on 5% of the sample size to test the validity of the data collection tool.

3.8.2 Reliability

Reliability refers to the degree to which an instrument can be depended upon to yield consistent results if used repeatedly over time on the same person or if used by two (2) researchers (Brink et al. 2020:156). Reliability was measured by requesting the assistant researcher to collect data using the same data collection tool, and after that, the results were compared for consistency. A pilot study was also conducted to pre-test the tool. It assisted in identifying faults in the tool and amending where necessary. The questionnaire was submitted to the biostatistician to ensure the

statistical significance and the internal consistency of the study, and this was done using Cronbach alpha A (see table 3.2 for the description of scores).

A thorough analysis of the tool was also done by going through each item in the questionnaire and ascertaining that the instructions were explained on how to complete the questionnaire. The researcher ensured that the data collected was captured correctly. The questionnaire was explained to the respondents in the language they understood before administering it to the respondents. Self-administering of the questionnaire was done. A data collection tool is attached as Annexure E.

3.8.2.1. Cronbach alpha A score

The Cronbach alpha coefficient was used. It is described as the statistical procedure used for calculating internal consistency. Cronbach alpha ranges from 0.00, indicating no internal consistency, to 1.00, indicating perfect internal consistency with no measures of errors, 0.8 strong coefficients, 0.70 – 0.79 moderate coefficient and less than 0.6 less coefficient (Gray & Grove 2021:462). Below is the formula:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

N is equal to the number of items**, $\bar{c}$ is the average inter-item covariance among the items,** and $\bar{v}$ equals the average variance.

Table 3.2: Cronbach alpha level interpretation

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

stats.oarc.ucla.edu/spss/faq/what-does-cronbachs-alpha-mean/

3.9 ETHICAL CONSIDERATIONS

During data collection, respondents were protected from harmful effects such as previous emotional experiences that may be triggered. Fain (2017:34) indicates the need to protect

respondents from harmful effects when participating in a study. Participants' protection from harmful effects was predetermined by the inclusion criteria that excluded pregnant women with a history of stillbirth. The researcher ensured that the criterion was followed as planned.

According to Gray and Grove (2021:62), prior to data collection, permission to access the research setting for the duration of the study must be obtained. Before conducting the study, the research was approved by the Faculty of Health Care Science Research Ethics Committee (see Annexure A), the DoH and permission from the district hospital management (see Annexures F - J). The researcher communicated with the chairperson of the research committee and the department managers where the study was conducted. The ethical research that guided the study is the Nuremberg Code, the Declaration of Helsinki and the South African National Health Research Ethics Council. The Nuremberg Code protect the rights of research respondents. The Declaration of Helsinki emphasises the importance of written consent (Brink 2020:28).

The following principles were applied to protect human rights:

3.9.1 The right to anonymity and confidentiality

Anonymity and confidentiality were maintained by keeping individuals nameless and limiting access to gathered information (refer to Annexure D for informed consent), and each questionnaire had a response number. A private room was requested during data collection for privacy. The study did not mention the names of the hospitals utilised for confidentiality and anonymity. The completed questionnaires were put in sealed envelopes and stored safely by the researcher.

3.9.2 Principle of respect for the person

The researcher gave respondents complete information about the aim and benefits of the study. The individual decision of whether to participate or not was respected. It was well explained to the respondents that they could withdraw from the study whenever they wanted. A respectful relationship was maintained throughout data collection. The researcher also ensured that the rendering of care was not obstructed. The establishment of good rapport by greeting the respondents and introducing ourselves was practised throughout the study. This promoted relaxation and calmed down the respondents.

3.9.3 Principle of beneficence

The respondents were protected from physical, psychological, emotional or economic harm. All COVID-19 regulations were observed. Guidelines for pregnant women during the COVID-19 pandemic in SA (2020) emphasise the maintenance of personal hygiene and that every individual should take responsibility for preventing cross-infection. Maintaining good personal hygiene by washing or sanitising hands and a safe physical distance of 1,5 meters between the researcher and respondents was practised during data collection. The availability of hand and surface

sanitiser was ensured. The researcher was flexible with wearing masks since wearing masks was optional during the data collection.

3.9.4 The principle of justice

The principle of justice emphasises fair selection and the same treatment to all respondents. All the respondents were selected according to the inclusion criteria. All respondents were treated as anonymous, and their privacy was also maintained. The principle of justice was applied even to those who decided to withdraw from the study. Lastly, informed consent (see Annexure D) from the respondents with a clear explanation was explained, and verbal and non-verbal consent was obtained.

3.10 CONCLUSION

This chapter explained the data collection process that was followed, the challenges encountered and how the researcher communicated with clinical institutions to arrange meetings with the respondents. The next will discuss the results of the study.

CHAPTER 4: DATA ANALYSIS, PRESENTATION OF RESULTS AND DISCUSSION

4.1 INTRODUCTION

The previous chapter discussed the research design and methodology. This chapter presents the results of the study. The results are presented in accordance with sections in the data collection tool and study objectives. The study objectives were as follows:

- To determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour.
- To determine the effectiveness of antenatal care in preparing pregnant women about non-pharmacological methods of pain relief available during labour.

4.2 DESCRIPTIVE STATISTICS

A total of 384 pregnant women participated in the study as follows: Hospital 1,21.09% (n=81); Hospital 2,41.4% (n=159); Hospital 3,19.01% (n=73) and Hospital 5,18.49% (n=71).

4.2.1 Validity and reliability of the instrument

Reliability determines errors in the instrument used for data collection. A reliability coefficient of less than 0.6 is considered low and indicates consistency in measurement with high random errors (Gray & Grove 2021:462). The Cronbach alpha test was used in this study to measure internal consistency (Amirrudin, Nasution & Supahar 2021:224). The overall Cronbach alpha for all 35 items was 0.8479 with a standard alpha of 0.8823, and the internal consistency was good (see Table 3.2).

4.3 RESEARCH RESULTS

4.3.1 Section A: Demographic data

4.3.1.1 Age distribution of respondents

The mean age of respondents was 30.55, SD=6.205. The majority of respondents, 26.6% (n=102), were between the age of 31-35 years, followed by 25.8% (n=99) of respondents falling under the age group of more than 35 years, while 24.7% (n = 95) were between the age group of 26-30 years and 22.9% (n=88) were less than 25 years.

The majority of the respondents who participated in this study correspond with the findings of the study conducted by Pietrzak, Mędrzycka-Dąbrowska, Wróbel & Grzybowska (2023:4), where 50% of the respondents were between the ages of 31 and 35.

4.3.1.2 Respondents number of children

Table 4.1 shows that the majority of respondents 30.5% (n=117) had two children, followed by women with one child 26.3% (n=101) and Primigravida 21.6% (n=83), Para 3,15.9% (n=61), Para 4,4.2% (n=16), Para 5,1.3% (n=5) and Para 6,0.3% (n=1).

In addition, a study conducted in Brazil on using non-pharmacological pain relief methods in labour indicated that 55.5% (n=91) of women who participated in the study had two or more babies (Klein & Gouveia 2022). Another study in Saudi Arabia indicated that most women who participated were from para 0 to para 4 (Bashaik, Mahboub & Orabi 2022:425).

4.3.1.3 Home language of respondents

African language was the most dominating language at 89.3% (n=343 followed by English at 4.4% (n=17) and Afrikaans at 1.3% (n=5). Furthermore, 4.9% (n=19) did not comment (see Table 4.1).

Most of the population in the Tshwane district of the Gauteng province speaks an African language. Madadzhe (2019:211) indicates that amongst eleven (11) languages that are official, nine (9) are African languages, and English is declared as a universal language. Furthermore, Bostock (2018:27) states that in SA, African languages are spoken by 67% of the population. Similarly, Cutajar, Miu, Fleet, Cyna and Stein (2020:1) explain that language is important when caring for pregnant women. If not considered, it might pose a communication barrier between the midwife and the pregnant woman.

4.3.1.4 Respondents highest level of education

The majority of the respondents had matric as their highest level of education at 45.1% (n=173), post matric at 26.3% (n=101), some schooling at 19.3% (n=74) and no schooling at 3.9% (n=15). 5.5% (n=21) of the respondents did not respond (see Table 4.1).

The results revealed that most respondents had basic education. However, Klein and Gouveia (2022) argued that the school level did not influence the use of non-pharmacological pain relief methods. However, a study about Saudi women's perception and knowledge about water birth revealed that 83.2% of respondents were highly educated (Bashaikh et al. 2022:424).

4.3.1.5 Respondents type of delivery

Pregnant women who delivered normally were 65.9% (n=253) of those who were pregnant for the first time, 21.6% (n=83) and 6.8% (n=26) delivered vaginally after caesarean section. A total of 5.7% (n=22) did not comment (see Table 4.1).

This indicates that the majority of the respondents who participated in the study delivered normally. This is similar to the study conducted in Brazil about the use of non-pharmacological pain relief methods in labour where the majority of respondents 87.8% had a history of vaginal delivery (Klein & Gouveia 2022). Vaginal birth is considered as a safer method of delivery with a shorter length of hospital stay (Mascarenhans, Lima, Dantos e Silva, Negreiros, Santos, Moura, Gouveia & Jorge 2019:351).

Table 4.1: ***Demographic data***

How old are you?	**Frequency (n)**	**Percent (%)**
<=25	88	22,9
26-30	95	24,7
31-35	102	26,6
>35	99	25,8
Total	**384**	**100%**
How many babies do you have?	**Frequency (n)**	**Percent (%)**
0	83	21,6
1	101	26,3
2	117	30,5
3	61	15,9
4	16	4,2
5	5	1,3
6	1	0,3
Total	**384**	**100%**
What is your home language?	**Frequency (n)**	**Percent (%)**
African language	343	89,3
Afrikaans	5	1,3
English	17	4,4
No comment	19	4,9
Total	**384**	**100%**
Highest level of education?	**Frequency (n)**	**Percent (%)**
No schooling	15	3,9
Some schooling	74	19,3
Matric	173	45,1
Post matric	101	26,3
No comment	21	5,5
Total	**384**	**100%**
Type of delivery	**Frequency (n)**	**Percent (%)**
First pregnancy	83	21,6
No comment	22	5,7
Normal	253	65,9
Vaginal after caesarean	26	6,8
Total	**384**	**100%**

4.3.2 Section B: Non-pharmacological pain relief knowledge

4.3.2.1 Have you ever heard of non-pharmacological pain relief methods?

The results indicated that 52.1% (n=200) of pregnant women had never heard about non-pharmacological pain relief methods, 26.3% (n=101) had heard about it, while about 19% (n=73) were not sure about whether they had ever heard about it or not. About 2.6% (n=10) did not comment (see Figure 4.1).

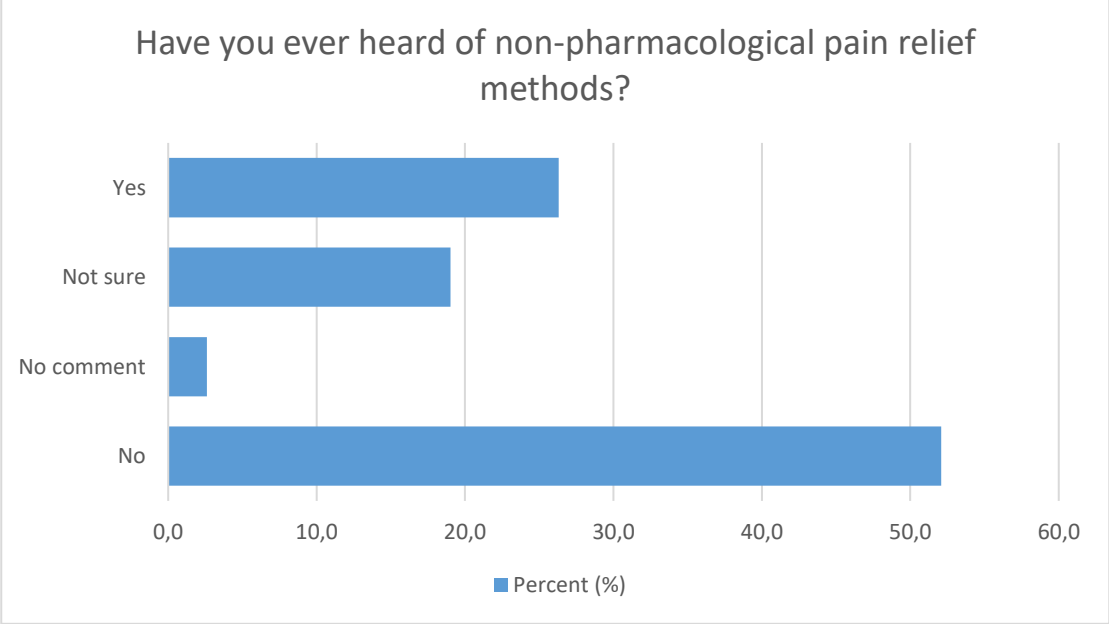


Figure 4.1: ***Have you ever heard of non-pharmacological pain relief methods?***

The study results indicated that respondents lack information regarding non-pharmacological pain relief. The majority of pregnant women have not heard about non-pharmacological pain relief methods. In their study, Heim and Makuch (2022:4) confirmed that women did not know these methods in Nigeria and India. However, the results contradict another study conducted in South Africa by Musonda and Mabathoana (2022), whereby their results indicated high usage of non-pharmacological pain relief methods because women used prayer and traditional medicine as pain relief methods.

4.3.2.2 What do you know about non-pharmacological pain relief used during labour?

The findings from the study indicate that a significant portion of the respondents, 47% (n=181), lack knowledge regarding the utilisation of non-pharmacological pain relief techniques during labour. Additionally, 29% (n=112) of the respondents expressed uncertainty about the effectiveness of these methods in relieving pain. Approximately 16% (n=60) acknowledged that these non-pharmacological approaches relieve natural pain. However, 31% (n=8) of respondents did not comment, as illustrated in Table 4.2.

Table 4.2: ***Knowledge about non-pharmacological pain relief***

What do you know about non-pharmacological pain relief used during labour	Frequency (n)	Percent (%)
Breathing technique	16	4
Exercise/Walking	7	2
I don't know	181	47
No comment	31	8
Not sure	118	31
Pain relief methods	13	3
breathing & exercise/walking	2	1
how to handle pain	4	1
hydrotherapy	1	0
labour pain	2	1
massage	4	1
massage & breathing	4	1
methods have no risk	1	0
TOTAL	**384**	**100%**

Although most respondents did not know about non-pharmacological pain relief methods, Reis, Dias, Carvalho, Alves Junior and Imoto (2022:191) indicated that non-pharmacological pain relief contributes beneficially to reducing pain. Likewise, a study conducted in Australia noted that non-pharmacological pain relief methods minimise pain and anxiety and pose minimal or no risk to the mother and the fetus (Ingram, Brady & Peacock 2022:1).

4.3.2.3 Example of non-pharmacological methods that can be used during labour

The figure demonstrates examples of non-pharmacological pain relief methods that the respondents know. Respondents, 4% (n=16), were aware of the breathing technique and acknowledged using this method as a means of pain relief during labour. This indicates that some respondents have some knowledge of this method. A limited number of respondents, 2% (n=7), recognised exercise and walking as relieving labour pain. About 47% (n=181) did not know about non-pharmacological pain relief methods. Respondents, 8% (n=31) did not comment, and 3% (n=118) were not sure. A small percentage, 5%, including breathing and exercise/walking, massage and breathing, hydrotherapy, and responses related to handling pain during labour, also demonstrated a lack of knowledge regarding these methods.

Table 4.3: ***Example of non-pharmacological methods that can be used during labour***

Examples of non-pharmacological methods	Frequency (n)	Percent (%)
Breathing technique	16	4
Exercise/Walking	7	2
I don't know	181	47

No comment	31	8
Not sure	118	31
Pain relief methods	13	3
breathing & exercise/walking	2	1
how to handle pain	4	1
hydrotherapy	1	0
labour pain	2	1
massage	4	1
massage & breathing	4	1
methods have no risk	1	0
TOTAL	**384**	**100%**

Most pregnant women did not provide examples. This indicates a need to educate pregnant women about different non-pharmacological pain relief methods. Pregnant women listed massage and breathing techniques. The results correspond with other results of the study conducted in SA, where respondents reported massage and breathing (Musonda & Mabathoana 2022). Furthermore, Heim and Makuch (2022:1) indicated that 96.5% of pregnant women were able to report at least one of these non-pharmacological pain relief methods.

4.3.2.4 Can non-pharmacological methods relieve pain during labour?

The majority of respondents, 43%% (n=167), indicated they were not sure, but 27% (n=102) agreed they can relieve pain. However, 21% (n=81) indicated that non-pharmacological pain relief methods cannot relieve pain. Additionally, 9.0% (n=34) did not comment.

Table 4.4: ***Can non-pharmacological methods relieve pain during labour***

Can they relieve pain during labour?	Frequency (n)	Percent (%)
No	81	21,0
No comment	34	9,0
Not sure	167	43,0
Yes	102	27,0
Total	**384**	**100%**

In summary, the research findings highlight that a majority of pregnant women attending ANC in Tshwane public district hospitals lack knowledge about available non-pharmacological pain relief methods. This aligns with the results of a study conducted by Heim and Makuch (2022:2), which also revealed that there are limited information and knowledge gaps among pregnant women regarding non-pharmacological techniques for pain relief during labour, as well as the sources of information.

Furthermore, the study by Musonda and Mabathoana (2022) demonstrated that despite various non-pharmacological pain relief methods being offered to women, they kept on writhing in pain, and the author assumed that they did not know about these methods.

4.3.2.5 Do you think you were given enough information during the clinic visit regarding pain relief methods?

The results indicated that the majority of pregnant women, 42.0% (n=161), believe they were not given enough information during clinic visits, whereas 37.0% (n=141) indicated that they were given enough information and 19.0% (n=74) were not sure. A total of 2.0% (n=8) did not comment (See table 4.5).

Table 4.5: *Do you think you were given enough information during the clinic visit regarding pain relief methods?*

Do you think you were given enough information regarding pain relief methods during the clinic visit?	Frequency (n)	Percent (%)
No	161	42,0
No comment	8	2,0
Not sure	74	19,0
Yes	141	37,0
Total	**384**	**100%**

According to Alhamazani, Alamazani, Almusawi, Alibrahim, Alshammari and Paryeen (2022:19), one of the methods to prepare pregnant women is to educate them about labour pain and provide antenatal education. Furthermore, the authors state that respondents had a very low level of awareness and knowledge, with a mean score of 5.70. Mwakawanga*,* Mselle, Chikwala and Sirilli *(*2022:2) indicate that insufficient ANC education and negative cultural beliefs on labour pain had been linked with low application of labour pain management by women and midwives.

4.3.2.6 Will you opt for non-pharmacological pain relief during labour?

Table 4.6 shows that pregnant women, 33.3% (n=128) are willing to opt for non-pharmacological pain relief during labour. There is only a minimal difference between 32.8% (n=126) of women who were not sure when compared to those who will opt for these methods, and 25.8% (n=99) were sure that they would not opt for these methods, while 8.1% (n=31) decided not to comment.

Table 4.6: ***Will you opt for non-pharmacological pain relief during labour?***

Will you opt for non-pharmacological pain relief during labour?	Frequency (n)	Percent (%)
No	99	25,8
No comment	31	8,1
Not sure	126	32,8
Yes	128	33,3
Total	**384**	**100%**

The study conducted by Getu, Getie, Gela, Maseresha, Feleke and Muna (2020:3) revealed that the majority of the respondents consider non-pharmacological pain relief methods as the best. Women prefer these methods because they are safer (Lai, Wong, Tong, Lau, Chu, Tam, Hui, Lao & Leung 2021:406). Furthermore, a study conducted in Tanzania revealed that the effective use of non-pharmacological pain relief methods increases satisfaction and reduces anxiety and stress in women during labour (Mwakawanga et al. 2022:2).

4.3.2.7 Will you recommend the use of non-pharmacological pain relief to a friend?

The majority of respondents, 34.0% (n=132), indicated that they would recommend the use of non-pharmacological pain relief to a friend, and 32.0% (n=122) were not sure whether they would recommend these methods to a friend. About 27.0% (n=102) were sure they would never recommend these methods to a friend. However, 7.0% (n=28) did not comment (see Figure 4.2).

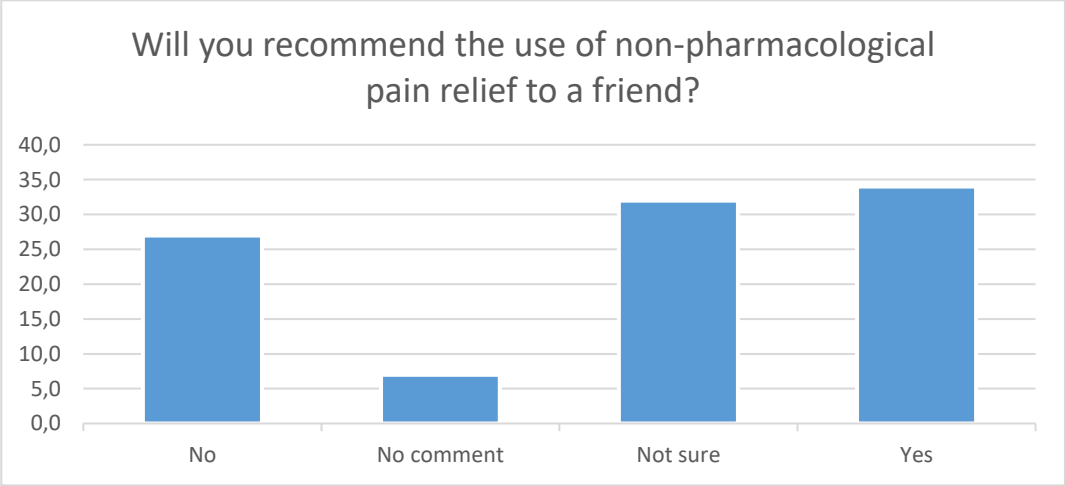


Figure 4.2*: Will you recommend the use of non-pharmacological pain relief to a friend?*

Many women are reluctant to use pharmacological methods of analgesia because they want to experience natural delivery (Rozek, Smiech, Kolacz & Kosson 2020:1342). Non-pharmacological techniques are used to relieve pain with fewer side effects (Heim & Makuch 2022:1).

4.3.2.8 What are the benefits of non-pharmacological pain relief methods?

Table 4.7 shows that the majority of respondents, 47% (n=181), don't know about the benefits of non-pharmacological pain relief methods, and 24% (n=93) indicated that they are not sure. The most rated and reported benefit at 13% (n=51) was that these methods relieve pain, while there are no side effects (n=11) and making birth easy was rated equally at 3% About 8% (n=31) did not comment.

Table 4.7: ***Benefits of non-pharmacological pain relief methods***

What are the benefits of non-pharmacological pain relief methods?	Frequency (n)	Percent (%)
I don't know	181	47
No benefits	3	1
No comment	31	8
Not sure	93	24
it is a natural method	5	1
makes birth easy	9	2
no side effects	11	3
Relieve pain	51	13
Total	**384**	**100%**

Although the majority of respondents did not know about non-pharmacological pain relief methods, including those who were not sure, pregnant women signalled that they were highly satisfied and coping well with pain using non-pharmacological pain relief methods (Eyeberu et al. 2022:2). In contrast, respondents in the study conducted in Tanzania by Mselle et al (2021:5) reported that non-pharmacological pain relief reduces pain, promotes provider-client close relationship and increase mother's comfortability and confidence during the childbirth process. Furthermore, Kia, Allahbakhshian, ilkhani, Nasiri and Allahbakhshian (2021:58) indicate that non-pharmacological pain relief methods yield benefits such as lower medical costs and increased patient satisfaction.

4.3.2.9 What are the disadvantages of non-pharmacological pain relief methods?

Of the respondents, 47% (n=181) indicated that they did not know, and 34% (n=126) reported that they were not sure. The most commonly reported disadvantage, 4% (n=15), was that these methods might not relieve pain. About 8% (n=31) did not comment. An equal distribution of 2% (n=9) was noted from respondents who reported that these methods relieve pain temporarily, there are no disadvantages, and that non-pharmacological pain relief methods might harm the baby (see Table 4.8).

Table 4.8: ***Disadvantage of non-pharmacological pain relief methods***

What are the disadvantages of non-pharmacological pain relief methods?	Frequency (n)	Percent (%)
I don't know	181	47
No comment	31	8
Not sure	126	34
can be used wrongly	4	1
may not relieve pain	15	4
might harm the baby	9	2
no disadvantage	9	2
reduce pain temporarily	9	2
Total	**384**	**100%**

The most reported disadvantage was that non-pharmacological pain relief methods might not relieve pain. Thomson et al. (2019:16) indicated that some women who used other techniques, such as relaxation/massage, reported them to be less effective. However, literature shows more benefits of non-pharmacological pain relief. It was reported that non-pharmacological methods provide active support, make women feel comfortable, boost self-esteem and ensure a positive labour experience (Arslan 2019:86)

4.3.2.10 Do you prefer pharmacological methods over non-pharmacological

The majority of respondents, 42.0% (n=160), were not sure about their preferences, 26% (n=100) agreed that they prefer pharmacological methods over non-pharmacological and 21.0% (n=82) indicated that they do not prefer pharmacological over non-pharmacological. A total of 11.0% (n=42) did not comment (see Figure 4.3).

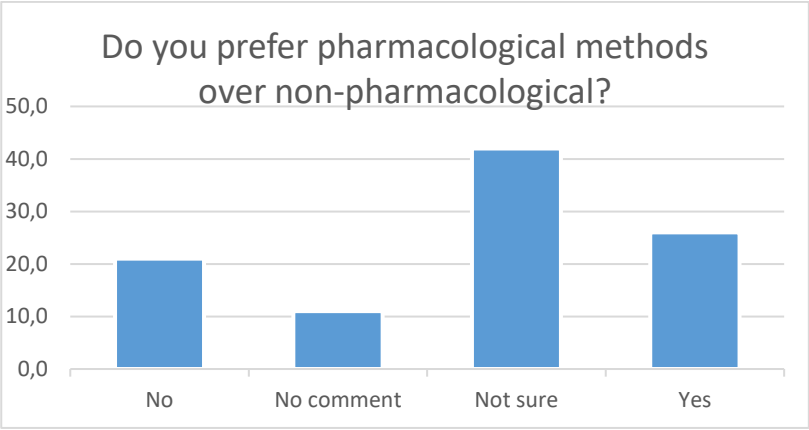


Figure 4.3: ***Do you prefer pharmacological methods over non-pharmacological ones?***

As evidenced by Jira, Weyessa, Mulatu and Alemeyehu (2020:8), pregnant women prefer pharmacological pain relief over non-pharmacological ones because non-pharmacological ones are very effective for mild to moderate pain but not severe pain. Similarly, Rozek et al.

(2020:1343) indicate that women decide on pharmacological methods because they believe they are highly effective.

4.3.3 Section C: Types of non-pharmacological methods used during labour

4.3.3.1 Have you learned about massage as one of the pain relief methods?

The results indicated that the majority of respondents 35.0% (n=133) have learnt about massage as one of the pain relief methods, 33.0% (n=128) were not sure, 11.0% (n=44) indicated that they never learnt about massage, 10.0% (n=37) strongly disagree that they have learnt about massage. In comparison, 8.0% (n=31) strongly agree that they have learnt about massage. Respondents 3.0% (n=11) did not comment (see Table 4.9).

According to Lai et al. (2022:2), massage is the most used non-pharmacological method. The systematic review indicated that the WHO recommended massage as the effective labour pain relief method (Eskandari, Mousavi, Valilani, Ghambari & Iravani 2022:7).

4.3.3.2 Have you learned about (hydrotherapy) immersion in warm water as a method of pain relief during labour?

Most respondents 34.0% (n= 131) were not sure whether they learnt about hydrotherapy or not, 31.0% (n=118) agreed that they had learnt about hydrotherapy, 20.0% (n=77) disagreed, 10.0% (n=37) strongly disagreed and 3.0% (n=13) strongly agreed. Additionally, 2.0% (n=8) did not comment (see Table 4.9).

Although most respondents were unsure about hydrotherapy, some agreed that they had learnt about this method. Evidence indicated that hydrotherapy is the method that is widely used during labour and well accepted by women (Melo, Barbieri, Westphal, Fustinoni, Henrique, Francisco & Gabrielloni 2020:3). In Brazil, hydrotherapy in the form of warm shower was reported amongst the mainly used non-pharmacological pain relief methods by 87.1% of respondents (Heim & Makuch 2021:2).

4.3.3.3 Have you learned about homoeopathy, which uses plant extracts as a method of pain relief?

The majority of the respondents, 52.0% (n=203), indicated that they are not sure that they have learnt about homoeopathy 26.0% (n=100) disagreed that they have learnt about homoeopathy, 10.0% (n=37) strongly disagreed that they learnt about homoeopathy, 9.0% (n=34) agreed that they learnt about homoeopathy and 2.0% (n=7) strongly agreed that they have learnt about homoeopathy. A small portion of 1.0% (n=3) did not comment (see Table 4.9).

The results revealed that most of the respondents were not familiar with homoeopathy. This is also supported by the study conducted by Yerigul and Bilgin (2023:35), where it was revealed that respondents reported that they had never heard about homoeopathy.

4.3.3.4 Have you learned about aromatherapy (use of natural oils) as a method of pain relief

The majority of the respondents, 43.0% (n=164), were not sure about whether they have learnt about use of aromatherapy as pain relief method, 28.0% (n=110) disagreed that they have learnt about aromatherapy, only 13.0% (n=52) agreed that they have learnt about aromatherapy, 11% (n=41) strongly disagreed that they have learnt about aromatherapy, and 2.0% (n= 6) strongly agreed that they have learnt about aromatherapy. Respondents 3.0% (n=11) did not comment (see Table 4.9).

The results contradict a study by Okyay and Sumay (2022:80) that women found using aromatherapy at birth effective. In contrast, Klein and Gouveia (2022) indicated that in Brazil, there was a low frequency of use of aromatherapy.

4.3.3.5 Have you learned about music therapy as pain relief?

The results indicated that the majority of pregnant women 28.0% (n=109) were not sure about music therapy as one of the non-pharmacological pain relief methods, 27.0% (n=105) disagreed about music therapy being pain relief, 22% (n=84) agreed that they have learnt about music therapy as pain relief, 10.0% (n=37) strongly disagreed, and 7.0% (n=25) strongly agreed. 6.0% (n=24) did not comment (see Table 4.9).

The study results showed that pregnant women disagreed that they have knowledge about music therapy as a pain relief during labour. Similarly, a study conducted in Tanzania revealed that childbirth education about non-pharmacological pain relief methods did not include music, as respondents who attended the session reported. This signifies rare use of and limited awareness of this method (Mwakawanga et al. 2022:6). In contrast, Hepp, Fleisch, Hasselbach, Fehm and Schaal (2021:357) report that healthcare workers and pregnant women appreciate music therapy because of its effect of enhancing communication between patient and healthcare workers.

4.3.3.6 Have you learned about breathing exercises as a method of pain relief?

The majority of respondents, 50.0% (n=194), agreed, 16.0% (n=61) strongly agreed, 9.0% (n=35) strongly disagreed, 7.0% (n=27) disagreed, and 15.0% (n=56) were not sure about breathing exercise as a method of pain relief 3% (n=11) did not comment (see Table 4.9).

Based on the results, the majority of respondents are familiar with breathing exercises. According to Rozek et al. (2020:1339), breathing exercises are the most known method; this is similar to the

study conducted by Heim and Makuch (2022:2), where breathing exercises were reported more frequently.

4.3.3.7 Have you learned about acupuncture as a method of pain relief?

The majority of respondents, 54.0% (n=207), indicated that they were not sure about acupuncture as a method of pain relief, 22.0% (n=83) disagreed about acupuncture as a method of pain relief, 10.0% (n=39) agreed about acupuncture as a method of pain relief, 8.0% (n=29) strongly disagreed, and 3.0% (n=13) strongly agreed. About 3.0% (n=13) did not comment (see Table 4.9).

Based on the results, most respondents have never learned about acupuncture, including those who were not sure if they learned about this method. Acupuncture is one of the most popular alternative treatments globally and improves health (Hu, Venketsamy & Pellow 2022), especially in Australia and the USA (Klein & Gouveia 2022). The structure of acupuncture programmes in SA is less advanced than in these countries. Practitioners indicated they need to improve their knowledge and skills to confidently implement theory (Hu et al. 2022:111).

4.3.3.8 Have you learned about the superficial application of heat and cold on the lower abdomen?

The results indicated that the majority of the respondents, 48.0% (n=191), are not sure about the superficial application of heat and cold on the lower abdomen, 21.0% (n=78) disagreed that they have learnt about the application of heat and cold, 16.0% (n=60) agreed that they have learnt about this method, 10.0% (n=37) strongly disagreed, and 4.0% (n=14) strongly agreed. 1.0% (n=4) did not comment (see Table 4.9).

The study results revealed that more than 30% of respondents, compared to those who agreed, are not familiar with applying heat and cold as non-pharmacological pain relief methods that can be applied during labour. The results correspond with the study conducted in Tanzania, where the use of warm showers was not reported by respondents who participated in the study (Mwakawanga et al. 2021:6). However, a study conducted by Goswami, Jelly, Sharma, Negi and Sharma (2022:2) indicated that midwives and birthing women favoured the influence of thermotherapy on labour pain. The authors also demonstrated that midwives highly recommended this method.

4.3.3.9 Have you learned about transcutaneous electrical nerve stimulation (TENS) as a pain relief method?

The majority of the respondents, 46.0% (n=177), are not sure about TENS, 31.0% (n=118) disagreed that they learnt about TENS, and 16.0% (n=60) strongly disagreed. Only a minority of

the respondents, 5.0% (n=21), agreed, and 1.0% (n=4) strongly agreed that they learnt about TENS, and 1% (n=4) did not comment (see Table 4.9).

The results showed that the majority of pregnant women in Tshwane have never learnt about TENS. The results correspond with the study conducted by Rozek et al. (2020:1342), who indicated that respondents were rated 0.9% about knowledge of non-pharmacological methods of labour pain relief. Likewise, Dias, Sontos, Candido, Pinto, Resende and Baldon (2022:7) indicated a lack of scientific evidence to support using other non-pharmacological techniques like TENS.

4.3.3.10 Have you learned about movement and birth position changes as pain relief?

The majority of the respondents 42,0% (n=163) agreed that they have learnt about movement and birth position changes as pain relief, followed by 30.0% (n=116) of respondents who were not sure, but 13.0% (n=51) disagreed they have learnt about these methods, also supported by 7.0% (n=25) of those who strongly disagreed. Those who strongly agreed were the least at 6.0% (n=23). 2.0% (n=6) did not comment (see Table 4.9).

The results revealed that position changes during birth and movement are the most common, well-known method. The result supports the evidence indicating that movement and birth position are the most applied and well known (Yildiz, Ozerdogan & Ayrama 2022:131). Likewise, Eyeberu et al. (2022:9) report that mothers could ambulate during labour to relieve pain.

4.3.3.11 Using the birthing ball as pain relief for labour?

Most respondents, 44.5% (n=171), were not sure about this method, but 22.1% (n=85) agreed that they knew it. However, 17.5% (n=67) disagreed that they know, followed by those who strongly disagreed at the rate of 7.3% (n=28) and the least of them all were those who strongly agreed at 4.4% (n=17). About 4.2% (n=16) did not comment (see Table 4.9).

Although the majority of respondents indicated that they were not sure about this method, the birth ball was rated high at 80.7% in Brazil (Heim & Makuch 2022:2). Furthermore, in a study conducted by Ulfa (2021:2031), women felt so relaxed when using birth ball as pain relief method.

4.3.3.12 Do you know about the use of a birth companion or doula (support person) during labour as a method of pain relief?

Most respondents, 47.0% (n=179), indicated that they were not sure about using a birth companion or doula during labour, followed by those who disagreed that they don't know at 20.0% (n=76). Some agreed at 17.0% (n=66), followed by those who strongly agreed at 7.0% (n=29).

The least were 7.0% (n=26) who strongly disagreed with this method. 2.0% (n=8) did not comment. (see Table 4.9).

The results contradict WHO recommendations that encourage continuous support by a companion of choice during labour (Summerton, Mtileni & Mashabela 2021:1). However, the results are supported by the study conducted in SA Limpopo that showed midwives do not encourage the presence of a birth companion during labour and childbirth. It was further indicated that the majority of pregnant women during the study period did not have a birth companion for support during labour (Summerton et al. 2021:1). In developing countries, birth companions are underutilised despite being available in the facilities (Munkhondya, Munkhondya, Msiska, Kabuluzi, Yao & Wang 2020:303).

Table 4.9: ***Non-pharmacological methods***

Have you learned about massage as one of the pain relief methods?	**Frequency (n)**	**Percent (%)**
Strongly agree	31	8,0
Agree	133	35,0
No comment	11	3,0
Not sure	128	33,0
Disagree	44	11,0
Strongly disagree	37	10,0
Total	**384**	**100**
Have you learned about (hydrotherapy) immersion in warm water as method of pain relief during labour?	**Frequency (n)**	**Percent (%)**
Strongly agree	13	3,0
Agree	118	31,0
No comment	8	2,0
Not sure	131	34,0
Disagree	77	20,0
Strongly disagree	37	10,0
Total	**384**	**100%**
Have you learned about homeopathy which are plant extracts as method of pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	7	2,0
Agree	34	9,0
No comment	3	1,0
Not sure	203	52,0
Disagree	100	26,0
Strongly disagree	37	10,0
Total	**384**	**100**
Have you learned about aromatherapy (use of natural oils) as method of pain relief	**Frequency (n)**	**Percent (%)**
Strongly agree	6	2,0
Agree	52	13,0

No comment	11	3,0
Not sure	164	43,0
Disagree	110	28,0
Strongly disagree	41	11,0
Total	**384**	**100%**
Have you learned about music therapy as pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	25	7,0
Agree	84	22,0
No comment	24	6,0
Not sure	109	28,0
Disagree	105	27,0
Strongly disagree	37	10,0
Total	**384**	**100%**
Have you learned about breathing exercises as method of pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	61	16,0
Agree	194	50,0
No comment	11	3,0
Not sure	56	15,0
Disagree	27	7,0
Strongly disagree	35	9,0
Total	**384**	**100%**
Have you learned about acupuncture as method of pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	13	3,0
Agree	39	10,0
No comment	13	3,0
Not sure	207	54,0
Disagree	83	22,0
Strongly disagree	29	8,0
Total	**384**	**100%**
Have you learned about the superficial application of heat and cold on the lower abdomen?	**Frequency (n)**	**Percent (%)**
Strongly agree	14	4,0
Agree	60	16,0
No comment	4	1,0
Not sure	191	48,0
Disagree	78	21,0
Strongly disagree	37	10,0
Total	**384**	**100**
Have you learned about transcutaneous electrical nerve stimulation as pain relief method?	**Frequency (n)**	**Percent (%)**
Strongly agree	4	1,0
Agree	21	5,0
No comment	4	1,0

Not sure	177	46,0
Disagree	118	31,0
Strongly disagree	60	16,0
Total	**384**	**100%**
Have you learned about movement and birth position changes as pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	23	6,0
Agree	163	42,0
No comment	6	2,0
Not sure	116	30,0
Disagree	51	13,0
Strongly disagree	25	7,0
Total	**384**	**100%**
Using the birthing ball as pain relief for labour?	**Frequency (n)**	**Percent (%)**
Strongly agree	17	4,4
Agree	85	22,1
No comment	16	4,2
Not sure	171	44,5
Disagree	67	17,5
Strongly disagree	28	7,3
Total	**384**	**100%**
Do you know about the use of birth companion or doula (support person) during labour as method of pain relief?	**Frequency (n)**	**Percent (%)**
Strongly agree	29	7,0
Agree	66	17,0
No comment	8	2,0
Not sure	179	47,0
Disagree	76	20,0
Strongly disagree	26	7,0
Total	**384**	**100%**

4.3.4 Section D: The effectiveness of antenatal care

4.3.4.1 How many times did you attend the clinic?

The data shows the distribution of how many times respondents attended the antenatal care. The majority of respondents attended between 2 and 5 times. The highest attendance being 3 times13.5% (n=52). A decline in attendance was noted from those who attended 4 times or more, with a smaller number of those who attended 6 times or more. The highest number of respondents, 30.7% (n=118), chose not to comment about their attendance (see Table 4.10).

Table 4.10: *Clinic attendance*

How many times did you attend the Clinic?	Frequency (n)	Percent (%)
1	16	4,2
2	35	9,1

How many times did you attend the Clinic?	Frequency (n)	Percent (%)
3	52	13,5
4	44	11,5
5	43	11,2
6	21	5,5
7	16	4,2
8	10	2,6
9	7	1,8
10	14	3,6
11	3	0,8
12	2	0,5
13	1	0,3
14	1	0,3
16	1	0,3
No comment	118	30,7
Total	**384**	**100%**

4.3.4.2 Did the sister (registered nurse) educate you on the types of pain relief methods that can be used to control pain during labour?

The majority of the respondents, 60.0% (n=232), indicated that they were never educated on types of methods that can be used to control pain during labour, followed by those who agreed that they were educated 34% (n=131). Respondents who chose not to comment were 6.0% (n=21) (see Table 4.11).

Table 4.11: ***Education on type of methods by Registered nurse***

Did the sister (registered nurse) educate you on the methods that can be used to control pain during labour?	Frequency (n)	Percent (%)
No comment	21	6,0
No	232	60,0
Yes	131	34,0
Total	**384**	**100%**

Getu et al. (2020:5) indicated that 95.5% of midwives reported not having any additional training in non-pharmacological labour pain management techniques. This is supported by the results that showed that respondents did not receive any information about non-pharmacological methods that can be used to control labour pain. It was further shown that midwives were rated 8% as the source of knowledge (Rozek et al. 2020:1342). Internet and YouTube were rated as the main sources of information about non-pharmacological pain relief for pregnant women (Heim & Makuch 2022:5).

4.3.4.3 Do you think the number of clinic attendance helps in preparing women for labour pains?

The results indicated that the majority of respondents, 65.0% (n=251), believe that the number of clinic attendance helps in preparing women for labour pain as opposed to those who disagreed at 29.0% (n=112). Furthermore, 6.0% (n=21) chose not to comment (see Table 4.12).

Table 4.12: ***Do you think the number of clinic attendance helps in preparing women for labour pains?***

Do you think the number of clinic attendance helps prepare women for labour pains?	Frequency (n)	Percent (%)
No comment	21	6,0
No	112	29,0
Yes	251	65,0
Total	**384**	**100%**

The results correspond with the evidence revealed by Mohamed, Attia and Sayed (2020:995), indicating that women who attend ANC early are more likely to use non-pharmacological methods to relieve pain during labour. The main reason for pregnant women to attend ANC is to be well prepared for labour pain and to ensure that they experience a healthy pregnancy journey. However, a study conducted by Piertzak, Dabrowska, Tomaszek and Grzybowska (2022:9) indicated poor attendance of antenatal classes at 35.7% as there is a belief that more information about labour pain preparation can be obtained from the Internet.

4.3.4.4 Why are you saying the clinic is preparing women for labour pains

The table below shows that the majority of the respondents, 68% (n=262), had no comment, and 11% (n=44) reported that the clinic preparation was not enough. Those who reported that the clinic is preparing for labour indicated that they are taught different topics as well as labour pain management at 8% (n=30), about 1% (n=4) reported that a number of clinic attendance does not help in preparing pregnant women for labour pains because midwives focus more on fetal growth monitoring. 3% (n=10) were not sure about the answer.

Table 4.13: ***Why are you saying the clinic is preparing women for labour pains***

Why are you saying the clinic is preparing women for labour pains?	Frequency (n)	Percent (%)
I don't know	4	1
Labour pain & pregnancy	30	8
No comment	262	68
Not sure	10	3
Only monitor fetal growth	4	1
Teach different topics	30	8

Why are you saying the clinic is preparing women for labour pains?	Frequency (n)	Percent (%)
preparation not enough	44	11
TOTAL	**384**	**100**

The results indicated that ANC prepares pregnant women for labour, but the challenge is that the preparation offered is not enough. This means it does not cover all expectations of pregnant women. Munkhondya et al. (2020:303) agree with the results and indicate that antenatal care in developing countries is often inadequate. Furthermore, the authors indicated that respondents reported that during ANC follow-up healthcare providers concentrated more on other routine care such as HIV screening and testing and fetal growth.

4.3.5 Section E: Suggestion on pain relief methods

4.3.5.1 What type of information must be included in the ANC education about labour pains?

Of the respondents 18% (n=68) reported that they want coping techniques to be included in the ANC education. Information about non-pharmacological was requested by respondents at 8% (n=31). Only 1% (n=4) were not sure, while 7% (n=27) indicated that they have no idea about the type of information that can be added to the ANC education to relieve pain. Majority at 61% (n=233) had no comment. Some respondents 5% (n=20) wanted pain relief methods in ANC education about labour pains (see Figure 4.4).

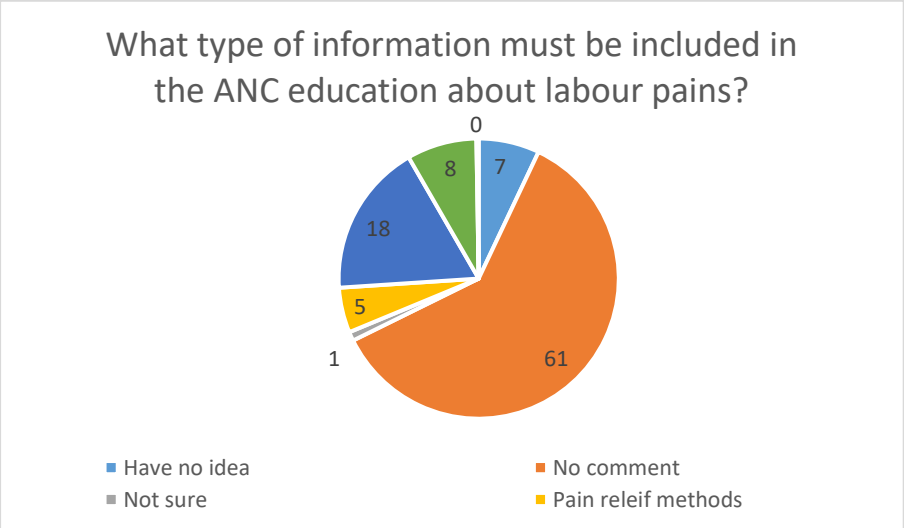


Figure 4.4: ***Information to be included in the ANC education***

In summary, the results indicated that pregnant women want to be prepared on how to cope with labour pains and information on non-pharmacological pain relief methods was also requested. Leutenegger, Baeschlin, Wieber, Daly and Milde (2022:2) indicate that pregnant women benefit from preparation that provides information about coping techniques. Additionally, Piertzak et al.

(2022:10) suggest that pregnant women should be educated on available methods that can relieve pain during labour and information that can assist in coping with labour related fears.

4.3.5.2 How do you think labour preparation can be conducted?

The table below illustrates that 17.1% (n=66) would prefer that labour preparation be conducted as a teaching moment, followed by those who indicated that they don't have an idea 9.4% (n=36). The majority, 67.4% (n=259), did not comment (see Table 4.14).

Table 4.14: ***How do you think labour preparation can be conducted?***

How do you think labour preparation can be conducted?	Frequency (n)	Percent (%)
Have no idea	26	6,8
Have teaching moment	66	17.1
I think is fine the way it is	1	0,3
No comment	259	67,4
Not sure	23	6,0
by being patient	2	0,5
do exercise during follow ups	5	1,3
forming groups during visit	1	0,3
have private place for consultation	1	0,3
Total	**384**	**100**

According to the results, pregnant women expect to be given more information in the form of teaching during antenatal visits. The findings are supported by the evidence by Spiby, Stewart, Watts, Hughes and Slade (2022:7), where it was indicated that pregnant women perceive group antenatal education as an opportunity to alleviate fear of labour pains and to get social support. Furthermore, Hassanzadeh, Abbas-Alizadeh, Meedya, Mohammad-Alizadeh-Charandabi and Mirghafourvand (2019:1) indicate that pregnant women need prenatal education to decide on pain relief methods.

4.3.6 The association between demographic data and knowledge regarding non-pharmacological pain relief

This section describes the relationship between the demographic variables and knowledge regarding non-pharmacological pain relief methods.

4.3.6.1 Age and non-pharmacological pain relief methods

This question is aimed at determining whether age influences knowledge regarding available non-pharmacological pain relief methods. Figure 4.5 shows the results.

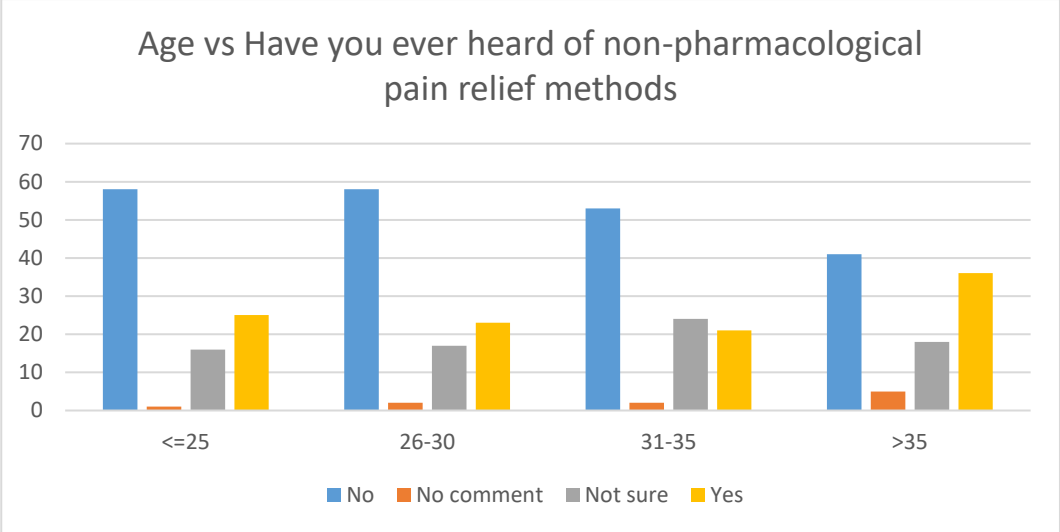


Figure 4.5: ***Age and non-pharmacological pain relief methods***

There was no association detected between the two variables. The results indicated that pregnant women had never heard about non-pharmacological pain relief methods across all age groups. This suggests that age has no effect on knowledge regarding non-pharmacological pain relief. A study conducted by Rantala, Hakala and Polkki (2022:7) revealed that in Europe, women are not always well prepared for labour and may not be aware of pain relief methods. In contrast, in a study conducted on women by Klein and Gouveia (2022), where the respondents were 15 to 35 years and older, the results revealed that women who used non-pharmacological methods had a lower mean age of 25.

4.3.6.2 Parity and non-pharmacological pain relief methods

Figure 4.6 indicates the relationship between pregnant women's parity and knowledge of non-pharmacological pain relief.

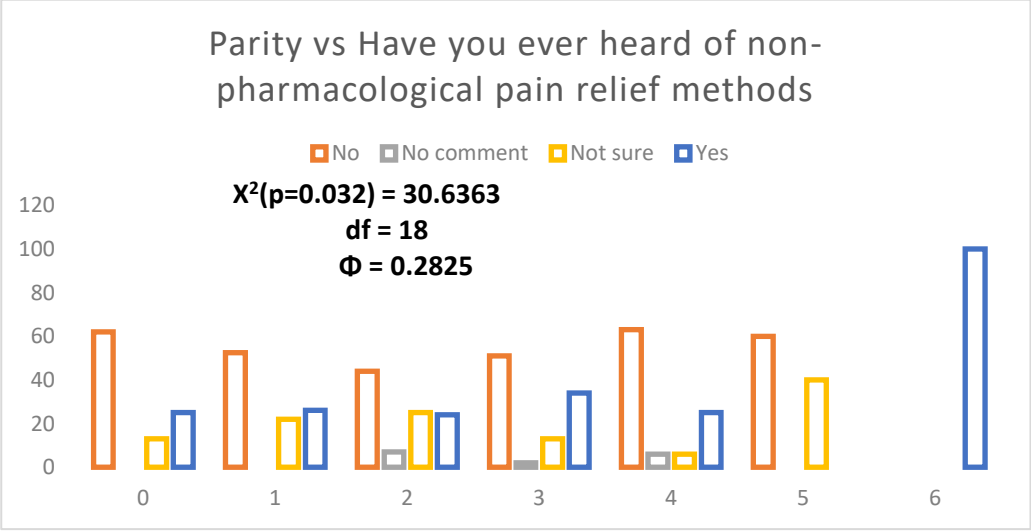


Figure 4.6: ***Parity and non-pharmacological pain relief methods***

A high percentage >45% of respondents across all parity levels except for parity of 6 indicated that they had never heard about non-pharmacological pain relief methods. Only pregnant women with more than five children are the ones who received information regarding non-pharmacological pain relief methods. The results indicated a significant association, p=0.032, between parity and knowledge regarding non-pharmacological pain relief. This implies that the women's parity influences knowledge of non-pharmacological pain relief in pregnant women. However, a study by Bashaikh et al. (2022:427) revealed no association between parity and non-pharmacological pain relief method p=0.081.

4.3.6.3 Education and non-pharmacological pain relief methods

The relationship was to determine if level of education has an effect on the knowledge level of pregnant women regarding non-pharmacological pain relief. Figure 4.7 below indicates the results.

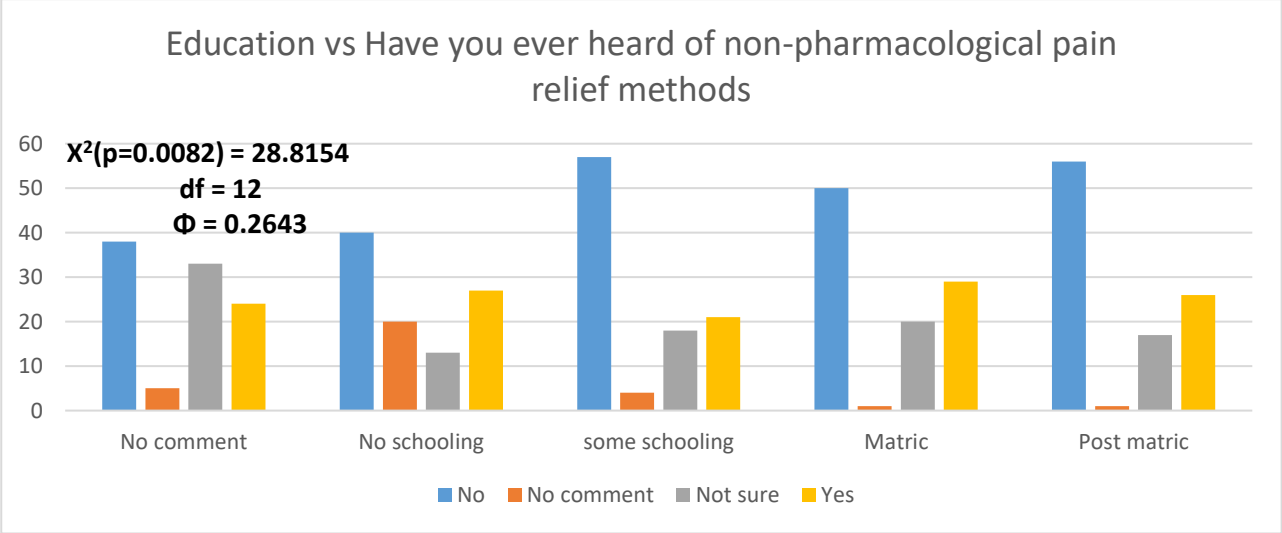


Figure 4.7: ***Education and non-pharmacological pain relief methods***

A significant relationship between the level of education and knowledge about non-pharmacological pain relief methods was noted in this study (p=0.0082). The results revealed that most respondents across all levels of education had never heard about these methods. Pregnant mothers cannot utilise these methods because they are not known. In contrast, Klein and Gouveia (2022) revealed that women who completed High school used and preferred non-pharmacological pain relief methods. Furthermore, in their study, Bashaikh et al. (2022: 427) showed no association between education level and knowledge regarding non-pharmacological pain relief methods p=0.165.

4.3.6.4 Age and knowledge about non-pharmacological pain relief

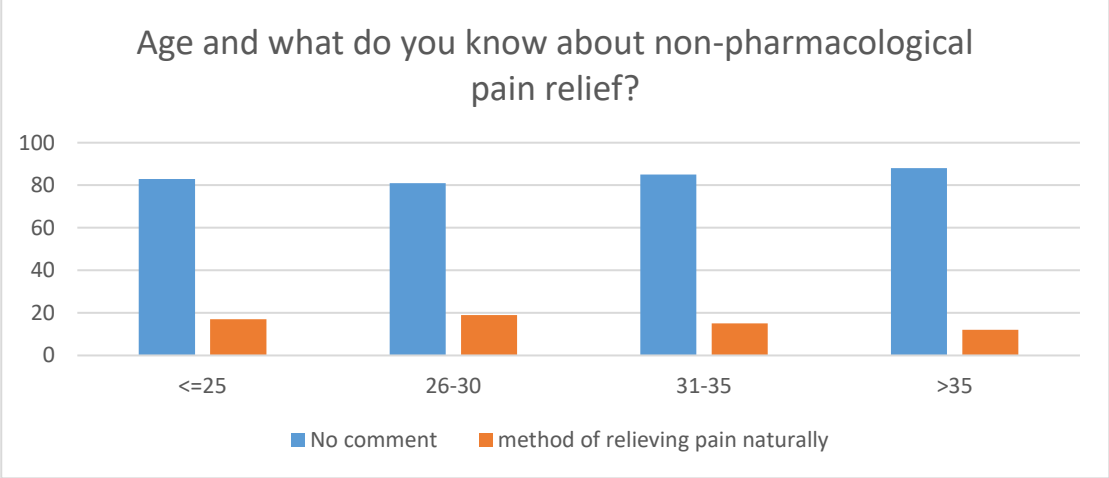


Figure 4.8: ***Age and knowledge about non-pharmacological pain relief***

The results indicated that most respondents did not know about these methods and decided not to comment. Minorities across all ages showed that it is a method of relieving pain naturally. There was no association shown between age and question knowledge about non-pharmacological pain relief used during labour. Alhamazani et al. (2022:20) report that women had a very low level of awareness and knowledge regarding non-pharmacological pain relief, but there was no association indicated between the two variables.

4.3.6.5 Parity and knowledge about non-pharmacological pain relief

Table 4.15: ***Parity and knowledge about non-pharmacological pain relief***

Parity	No comment	method of relieving pain naturally	Total (%)
0	84	16	100
1	81	19	100
2	86	14	100
3	82	18	100
4	100	0	100
5	100	0	100
6	0	100	100

The overall results of the association between parity and what respondents know about non-pharmacological pain relief used during labour indicated that the majority of pregnant women do not know about non-pharmacological pain relief used during labour. Some of the respondents indicated that it is a method of relieving pain. Alhamazani et al. (2022:20) indicated an association between the pregnant women who participated in the study and knowledge regarding various types of labour pain relief $p<0.001$. However, the study by Klein and Gouveia (2022) indicated no association between the use of non-pharmacological pain relief and pregnant women.

4.3.6.6 Education knowledge about non-pharmacological pain relief

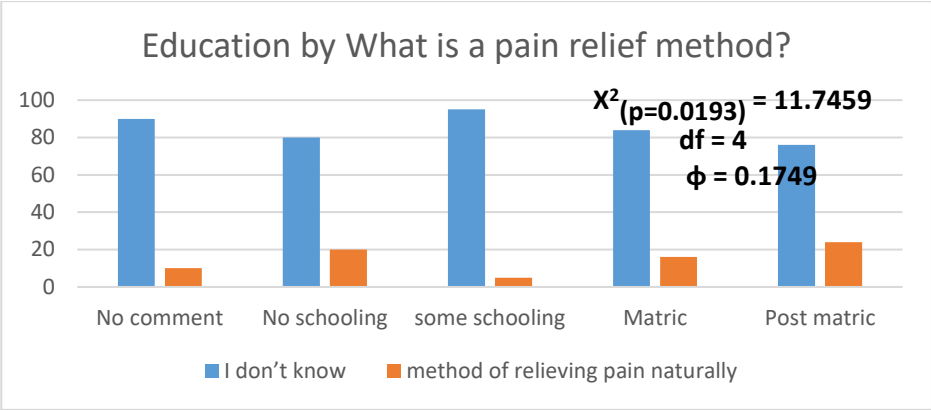


Figure 4.9: ***Education and knowledge about non-pharmacological pain relief***

The association p= 0.0193 between the level of education and non-pharmacological pain relief methods indicated that a high percentage (95%) of pregnant women with some schooling level of education do not know the reason to use non-pharmacological pain relief methods. Piertzek et al (2022:9) conducted a study that indicated pregnant women with higher education were more likely to use water immersion as a pain relief method, and there was also considerable participation of university-level pregnant women. On the other hand, a study conducted by Klein and Gouveia (2022) in Saudi Arabia found no correlation between educational level and knowledge regarding non-pharmacological pain relief.

4.3.6.7 Age group and examples of non-pharmacological pain relief that can be used during labour

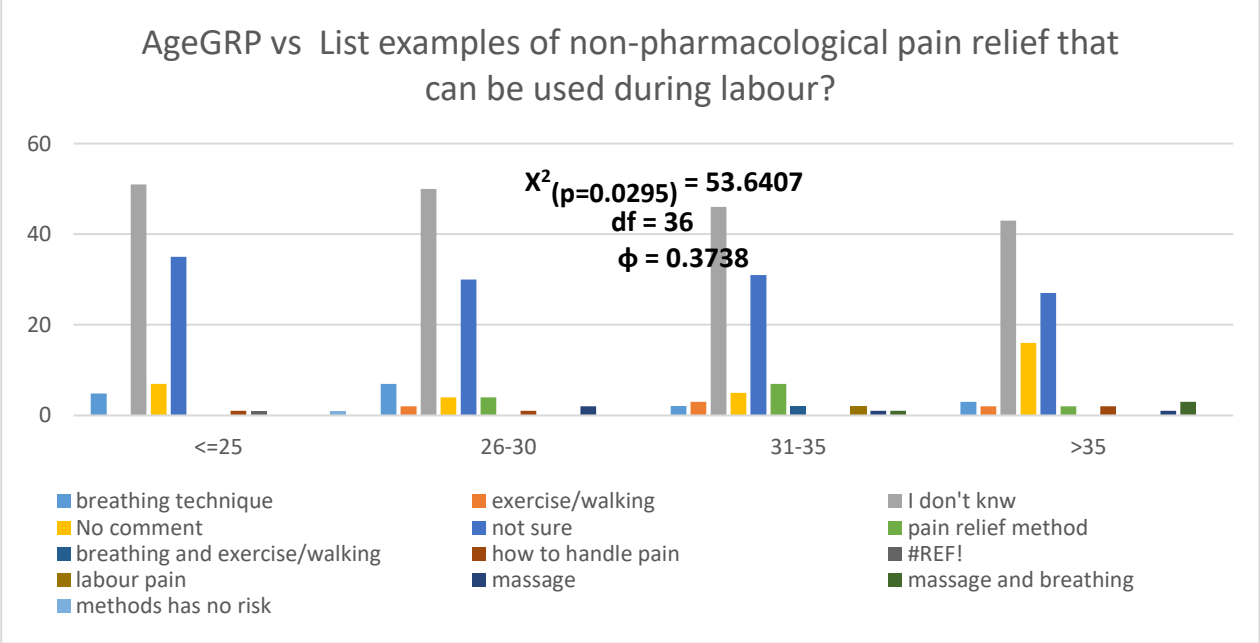


Figure 4.10: ***Age group and examples of non-pharmacological pain relief that can be used during labour***

An association of p=0.0295 was detected between age group and the ability of respondents to list examples of non-pharmacological pain relief methods. Respondents of all ages could not list examples of non-pharmacological pain relief. The majority of respondents indicated that they do not know. The study results correlate with the findings by Alhamazani et al. (2022:20), indicating a significant association with knowledge regarding various types of pain relief p<0.001.

4.3.6.8 Education and examples of non-pharmacological pain relief that can be used during labour

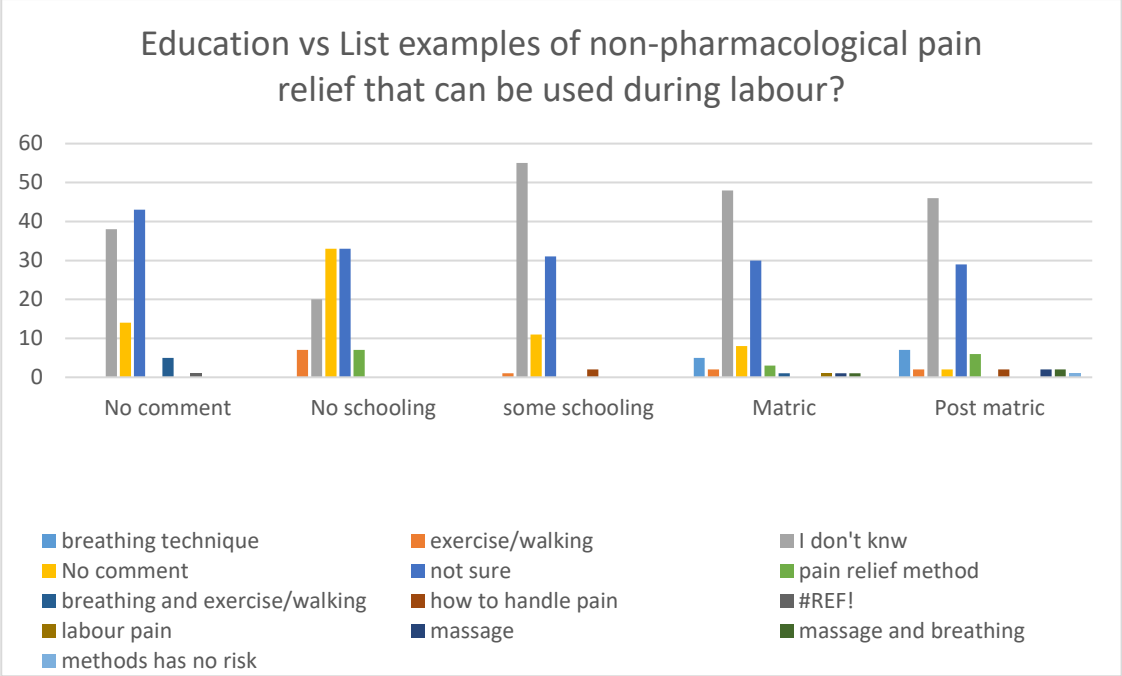


Figure 4.11: ***Education and examples of non-pharmacological pain relief that can be used during labour***

The results revealed that most respondents did not know and were not sure about examples of non-pharmacological methods used during labour. Massage was reported by respondents with no schooling at 1%, respondents with some schooling at 2%, respondents with matric at 2% and respondents with post matric at 2%. The breathing technique was known by respondents with matric at 5% and respondents with post matric at 7%.

There was no significant relationship between the two (2) variables. However, Bashaik et al. (2022:422) indicate a significant relationship p<0.05 between education and knowledge of participants about non-pharmacological pain relief.

4.3.6.9 Age and pain relief during labour

The question was to determine the relationship between age and how knowledgeable pregnant women are that non-pharmacological pain relief can relieve pain during labour. Figure 4.12 indicates the results.

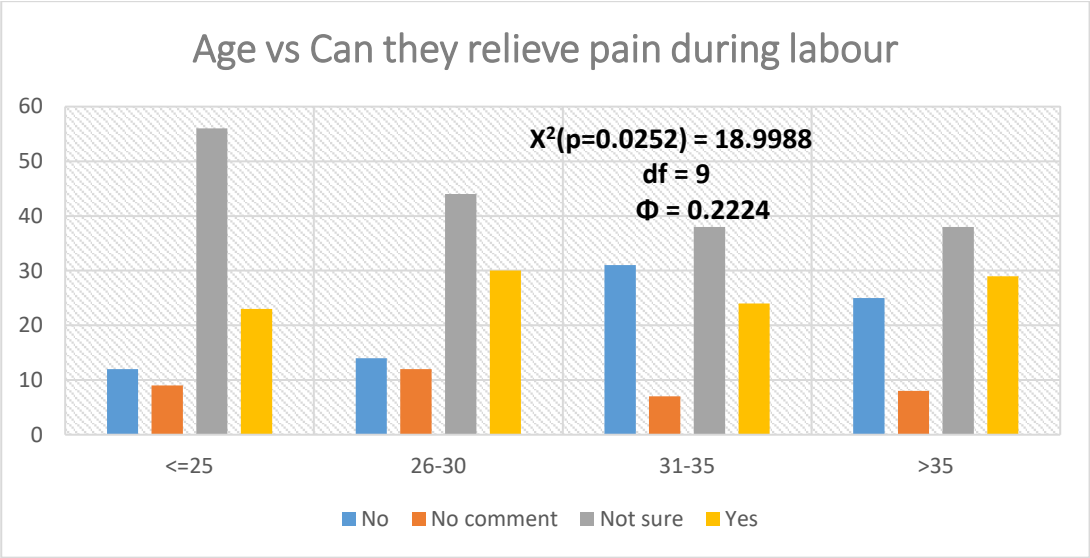


Figure 4.12: ***Age and pain relief during labour***

The results revealed that across all ages, the majority of respondents were not sure that non-pharmacological methods can relieve pain. The Chi-Square test indicated an association $p<0.05$ between respondents' age and knowledge that non-pharmacological methods can relieve pain during labour. A significant association was evident between age and knowledge that non-pharmacological methods can relieve pain during labour $X^2(p=0.0252)$. This indicates that pregnant women's age may influence their perception of non-pharmacological pain relief methods. The results correspond with the study by Alhamazani et al. (2022:21), which showed a significant association $p<0.001$ between non-pharmacological pain relief methods.

4.3.6.10 Parity and pain relief during labour

The information described the association between parity and the belief that non-pharmacological methods can relieve pain during labour.

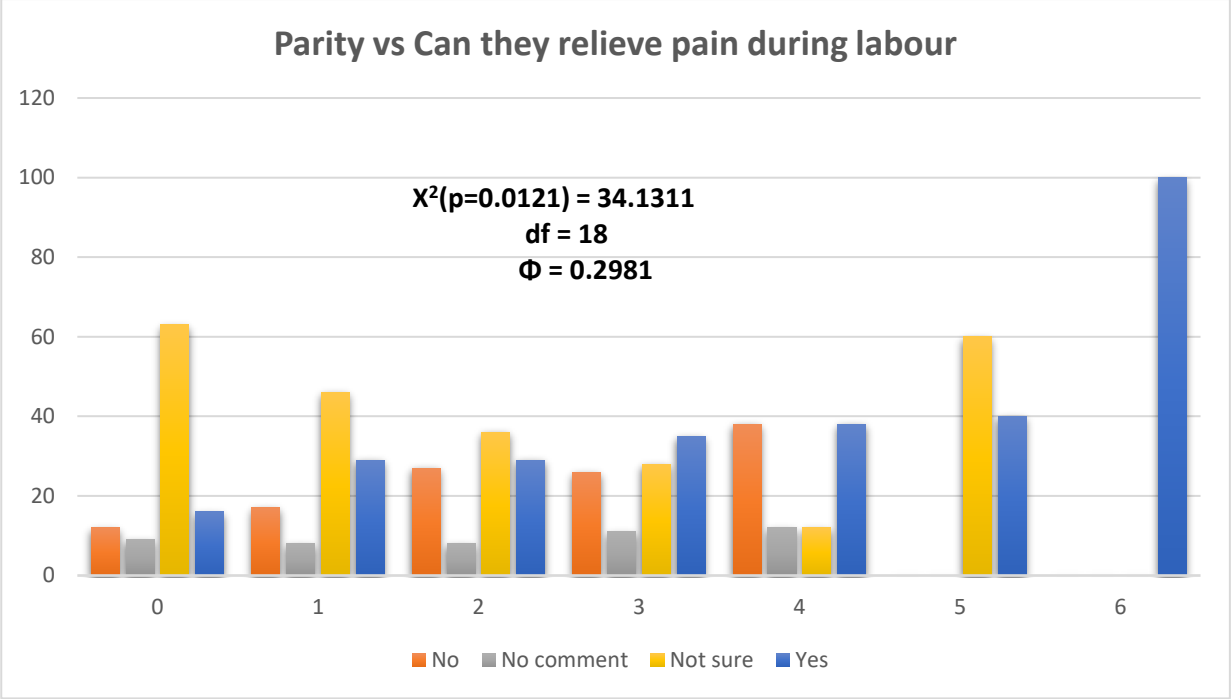


Figure 4.13: ***Parity and pain relief during labour***

The Chi-square test also showed that there is an association $X^2(p=0.0121)$ between respondents' parity and knowledge that these methods can relieve pain during labour. This indicates that women's parity can influence the belief that non-pharmacological methods can relieve pain during labour. Musonda and Mabathoana (2022) reveal no significant relationship between demographic features and patient satisfaction with non-pharmacological pain management during labour.

4.3.6.11 Education and pain relief during labour

The question was to determine the relationship between the level of education and knowledge that non-pharmacological pain relief methods can relieve pain during labour.

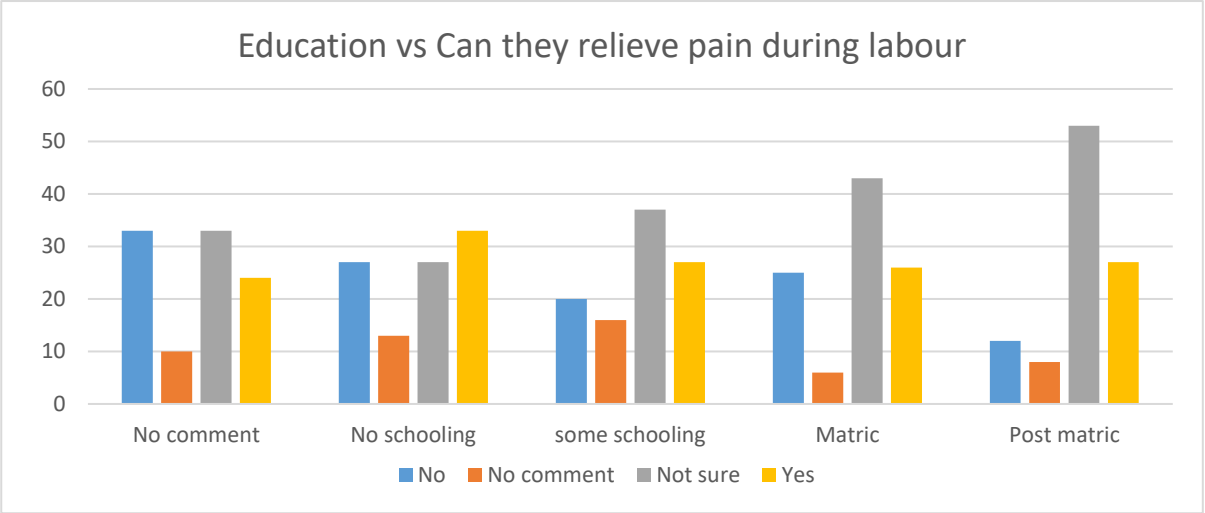


Figure 4.14: ***Education and pain relief during labour***

Musonda and Mabathoana (2022) report that higher education may be associated with higher pain perception levels than those who are less educated. However, no significant relationship was noted between the two variables in this study.

4.3.6.12 Age: Do you think you were given enough information about pain relief methods?

The question was to determine if there is any relationship between age and information given to pregnant women during clinic visits regarding pain relief methods.

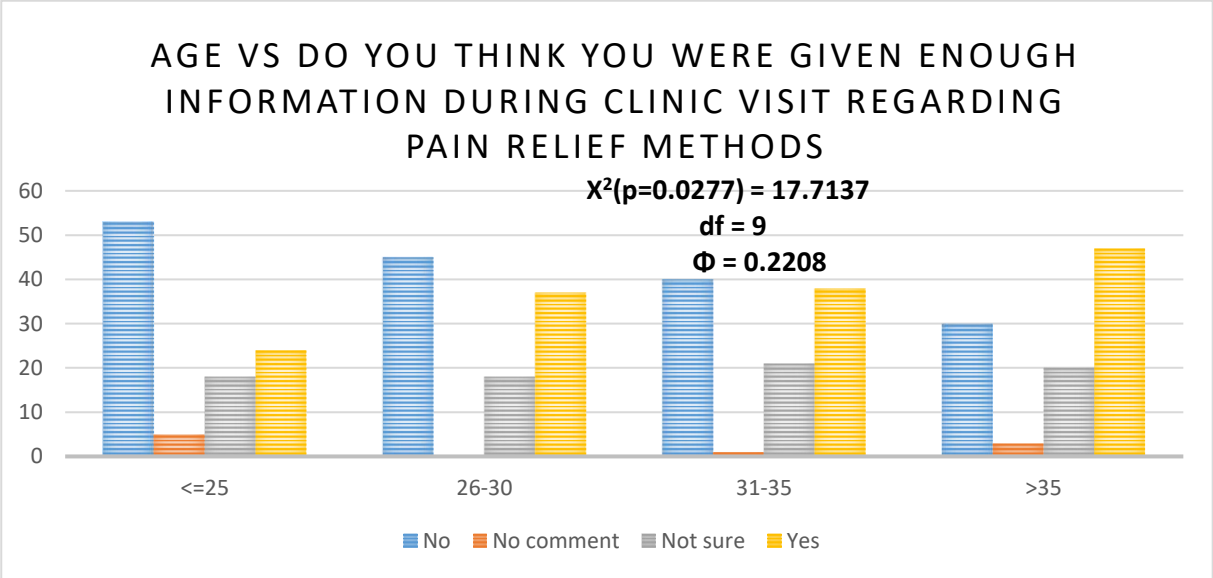


Figure 4.15: ***Age and information about pain relief methods***

The figure illustrates that the majority of pregnant women <= 25 years at 53%, 26-30 years at 45%, and 31-35 years at 40% who participated in the study revealed that they were not given enough information regarding pain relief methods. However, women above 35 years at 47% indicated that they were given enough information. It is evident that women above 35 years received information during clinic visits more than pregnant women below 35 years of age. Musonda and Mabathoana (2022) reported that teaching, advising the patient on negotiated delivery plans and educating pregnant women about the available pain relief methods must be an intervention carried out during antenatal visits.

The Chi-Square test $X^2(p=0.0277) = 17.7137$ indicated the association between age and the response of participants, indicating whether they were given enough information during clinic visits regarding pain relief methods. This is evidenced by $P<0.05$, signifying that women's age has an influence on the type of information given during antenatal care.

4.3.6.13 Parity and adequacy of information about pain relief methods

The table below illustrates the relationship between parity and information received during antenatal follow up regarding pain relief methods.

Table 4.16: ***Parity and adequacy of information about pain relief methods***

Parity	No	No comment	Not sure	Yes	Total %
0	46	2	22	30	100
1	50	2	18	30	100
2	36	2	21	41	100
3	36	2	10	52	100
4	31	7	31	31	100
5	60	0	20	20	100
6	0	0	100	0	100

The results indicate that most respondents were not given enough information regarding non-pharmacological pain relief methods during clinic visits. There was no association between parity and the responses of participants indicating whether they were given enough information during clinic visits regarding pain relief methods.

4.3.6.14 Education and adequacy of information about pain relief methods

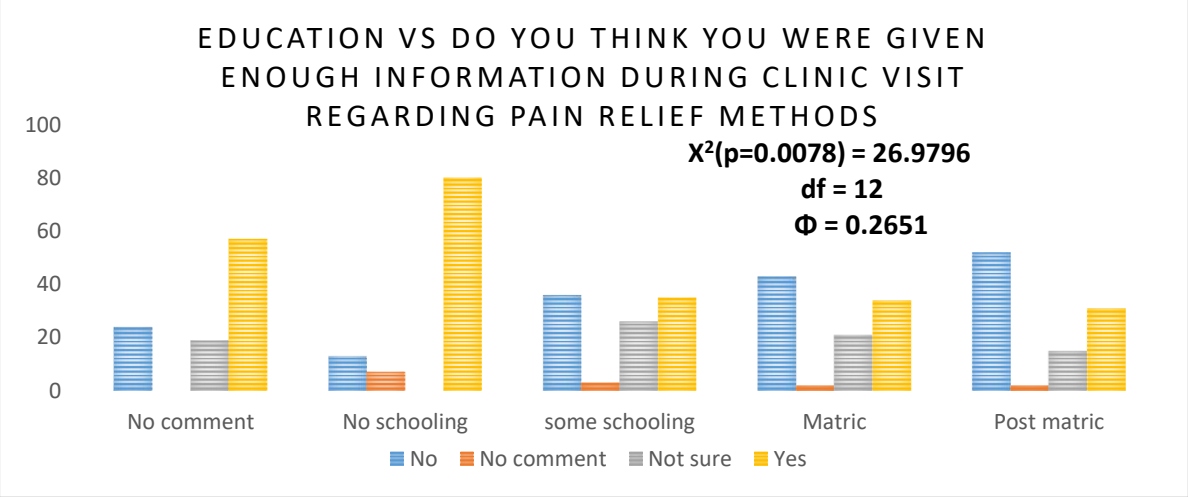


Figure 4.16: ***Education and adequacy of information about pain relief methods***

The result revealed that respondents with post matric level of education were the highest at 54% to report that they were not given information during antenatal visits regarding pain relief methods. Meanwhile, those with no schooling, at 86%, were the majority to report that they were given information during antenatal follow-up visits. The Chi-Square test $X^2(p=0.0078) = 26.9796$ indicated an association between level of education and the response of participants indicating whether they were given enough information during clinic visits regarding pain relief methods.

This indicates that women with different levels of education may grasp information differently during antenatal care. In contrast, the study by Bashaikh et al. (2022:427) revealed no significant association between the two variables, p >0.05.

4.3.6.15 Age and option for using non-pharmacological pain relief during labour

The figure illustrates the relationship according to the age category of respondents who will opt for non-pharmacological pain relief.

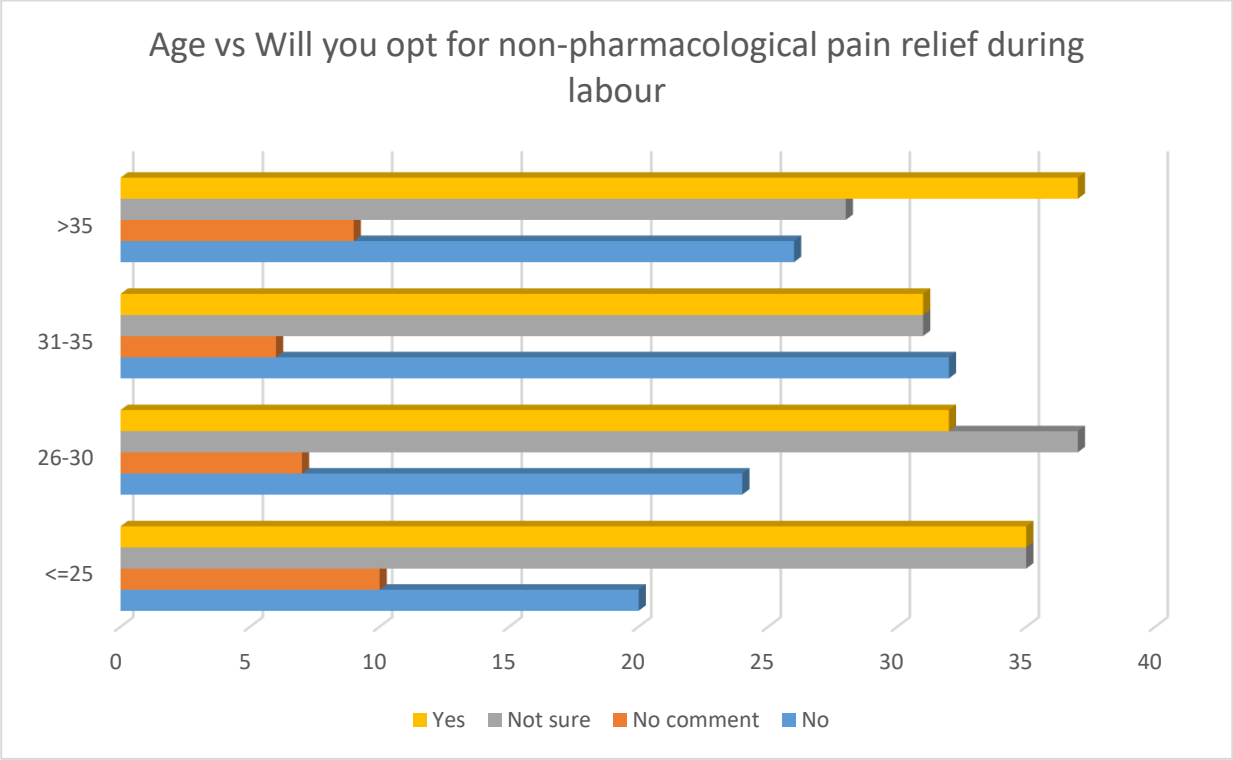


Figure 4.17: ***Age and option for using non-pharmacological pain relief during labour***

The overall results indicated almost equal distribution between respondents who opted for non-pharmacological pain relief and those who were not sure. This signifies a need for education regarding the use of non-pharmacological pain relief methods. There was no relationship noted between the two variables. Boateng et al. (2019:7) indicated that pregnant women refuse non-pharmacological methods because of the perceived negative conception.

4.3.6.16 Parity and option for using non-pharmacological pain relief during labour

The question was to determine if there is a relationship between parity and the usage of non-pharmacological pain relief during labour.

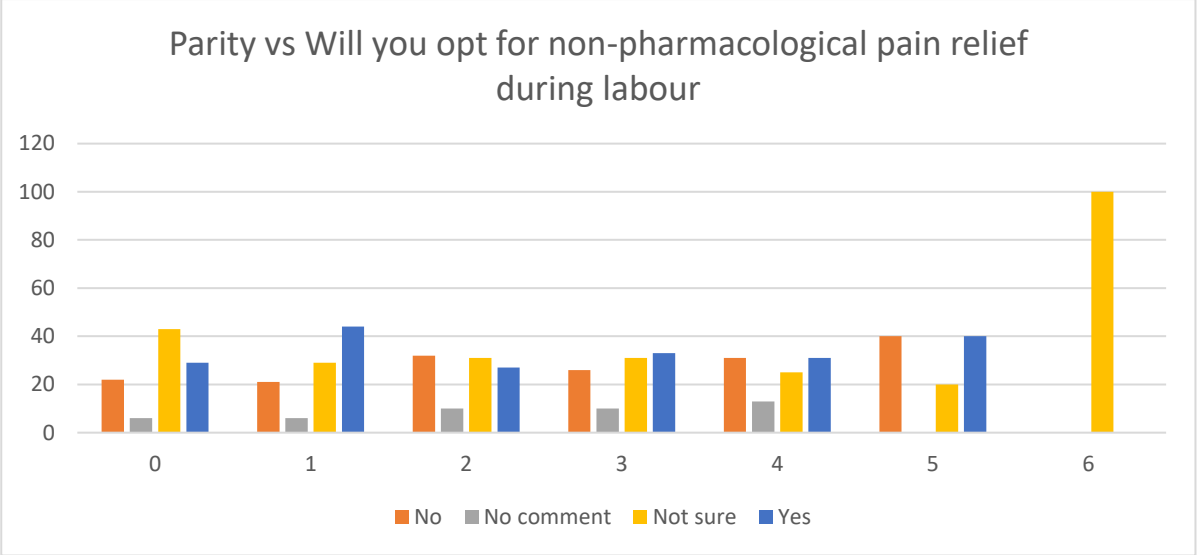


Figure 4.18: ***Parity and option for using non-pharmacological pain relief during labour***

The para 1 at 44% were the majority to indicate that they will opt for these methods. This signifies that the para 1 women willing to opt for these methods are more than those who are opposed to the use of non-pharmacological pain relief methods. Also, amongst the Para 3 respondents' the majority opted for the use of non-pharmacological pain relief. The Para 4 at 31% who opted for the use of non-pharmacological pain relief were equally distributed with those who disagreed with the use of non-pharmacological pain relief. The Para 6 respondents indicated clearly at 100% that they are not sure whether to opt for the use of non-pharmacological pain relief or not. In this study, there was no relationship noted between the two variables.

4.3.6.17 Education and option for using non-pharmacological pain relief during labour

The figure illustrates the relationship between the level of education and pregnant women who will opt for non-pharmacological pain relief.

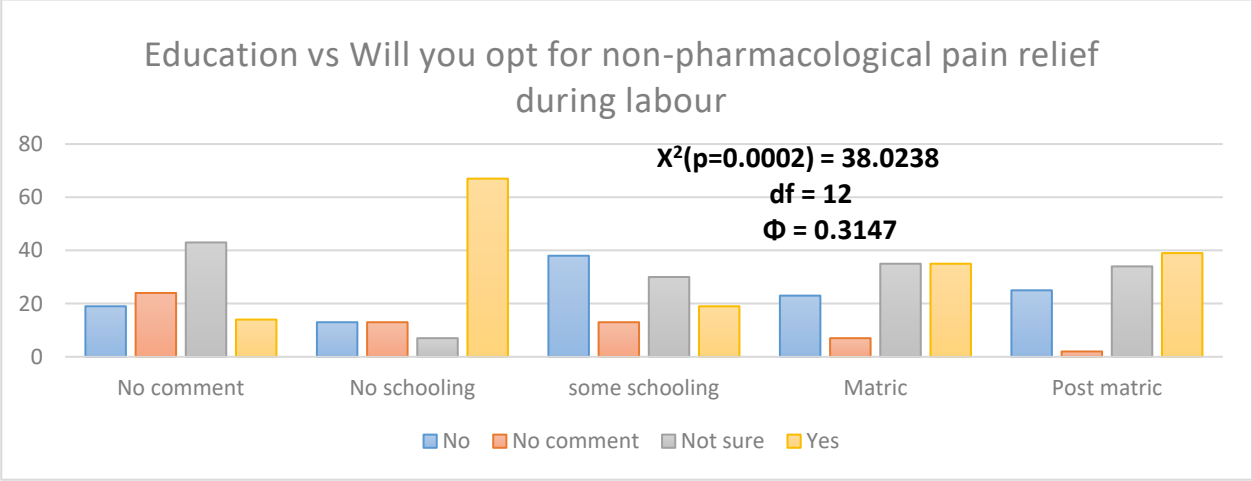


Figure 4.19: ***Education and option for using non-pharmacological pain relief during labour***

The figure illustrates that the respondents with no schooling at 67% will opt for non-pharmacological pain relief, followed by respondents who have post matric at 39%. The respondents with some schooling were the most at 38% to report that they will not opt for non-pharmacological pain relief. This indicates that pregnant women with some schooling do not prefer non-pharmacological as compared to pregnant women with no schooling and those with post matric. The Chi-Square test $X^2(p=0.0002) = 38.0238$ indicated an association between education level and the option to use non-pharmacological pain relief during labour. The study results correspond with a study conducted by Klein and Gouveia (2022), which indicated a relationship between demographic data and the use of non-pharmacological pain relief.

4.3.6.18 Age and recommendation for the use of non-pharmacological pain relief

The table below indicates the relationship between age and recommendation for the use of non-pharmacological pain relief to a friend.

Table 4.17: ***Age and recommendation for the use of non-pharmacological pain relief***

Age group	No	No comment	Not sure	Yes	Total (%)
<=25	24	9	35	32	100
26-30	24	8	35	33	100
31-35	25	4	34	37	100
>35	33	8	23	36	100

The results indicated positive responses between 32% to 37% of respondents across all age groups would recommend the use of non-pharmacological pain relief to a friend, this was similar to some respondents falling in the same age categories who were not sure about recommending the methods to friends. The findings detected no association between the two variables.

4.3.6.19 Parity and recommendation for the use of non-pharmacological pain relief

The table below illustrates the relationship between parity and recommendation for the use of non-pharmacological pain relief.

Table 4.18: ***Parity and recommendation for the use of non-pharmacological pain relief***

Parity	No	No comment	Not sure	Yes	Total (%)
0	26	4	40	30	100
1	20	9	30	41	100
2	33	8	28	31	100
3	21	11	33	35	100
4	44	0	19	37	100
5	20	0	60	20	100
6	0	0	0	100	100

The overall results showed no association between the Para categories and the recommendation of non-pharmacological methods to friends. Even though a high percentage of 100% of respondents within Para 6, followed by Para 1 at 41%, Para 3 at 35% and Para 4 at 37%, indicated that they would recommend the use to a friend, this did not have any effect on the association between the two variables.

4.3.6.20 Education and recommendation for the use of non-pharmacological pain relief

Figure 4.20 indicates the relationship between pregnant women who participated in the study according to their level of education and recommendation to a friend to use non-pharmacological pain relief methods.

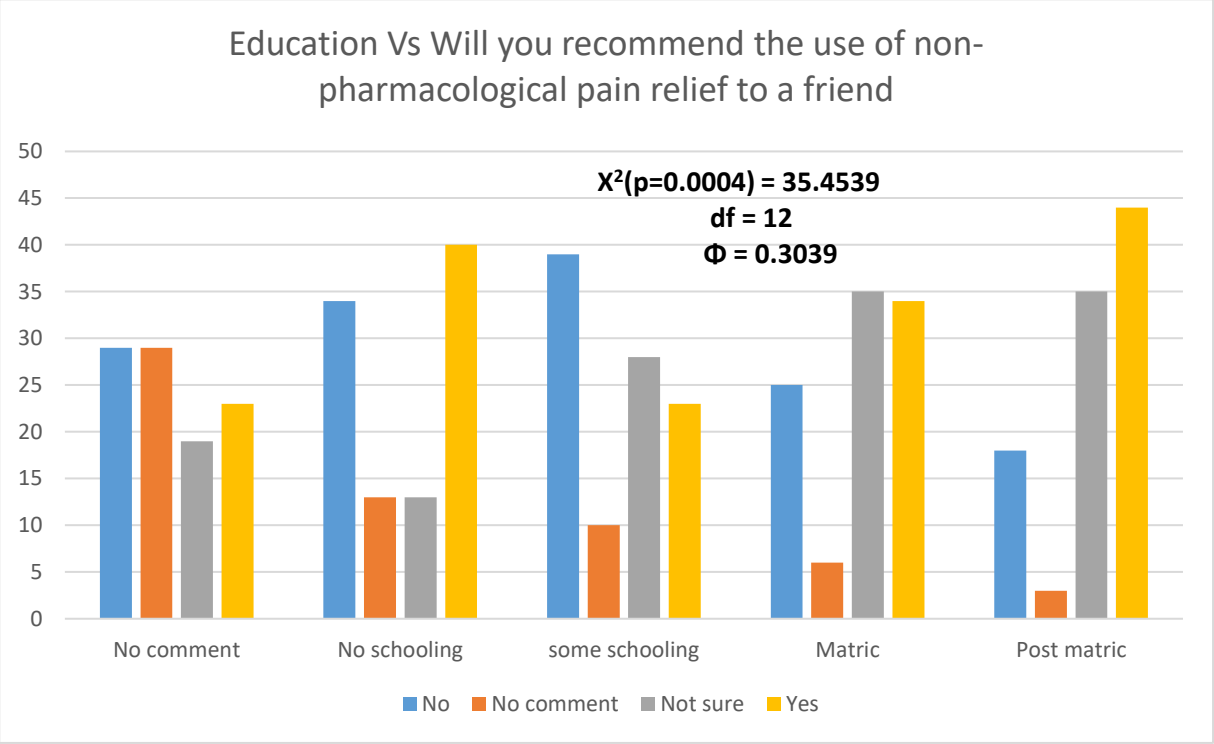


Figure 4.20: ***Education and recommendation for the use of non-pharmacological pain relief***

The Chi-Square test $p < 0.05$ indicated an association between education level and the option to recommend the use of non-pharmacological pain relief to a friend. There was a high response by women with no schooling and post matric reporting that they will recommend these methods to a friend compared to other levels of education.

4.3.6.21 Age group and benefits of non-pharmacological pain relief methods

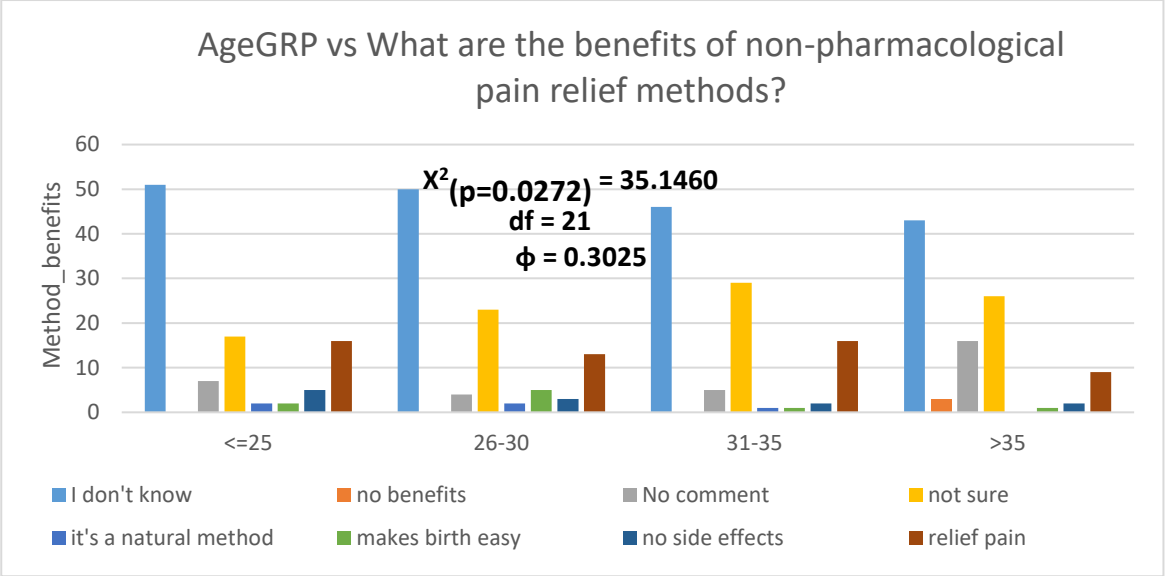


Figure 4.21: ***Age group and benefits of non-pharmacological pain relief methods***

The results showed a significant association p=0.0272 between the two variables. Most respondents indicated that they do not know the benefits of these methods. However, a minority of pregnant women indicated that these methods can relieve pain and make birth easy.

4.3.6.22 Education and benefits of non-pharmacological pain relief methods

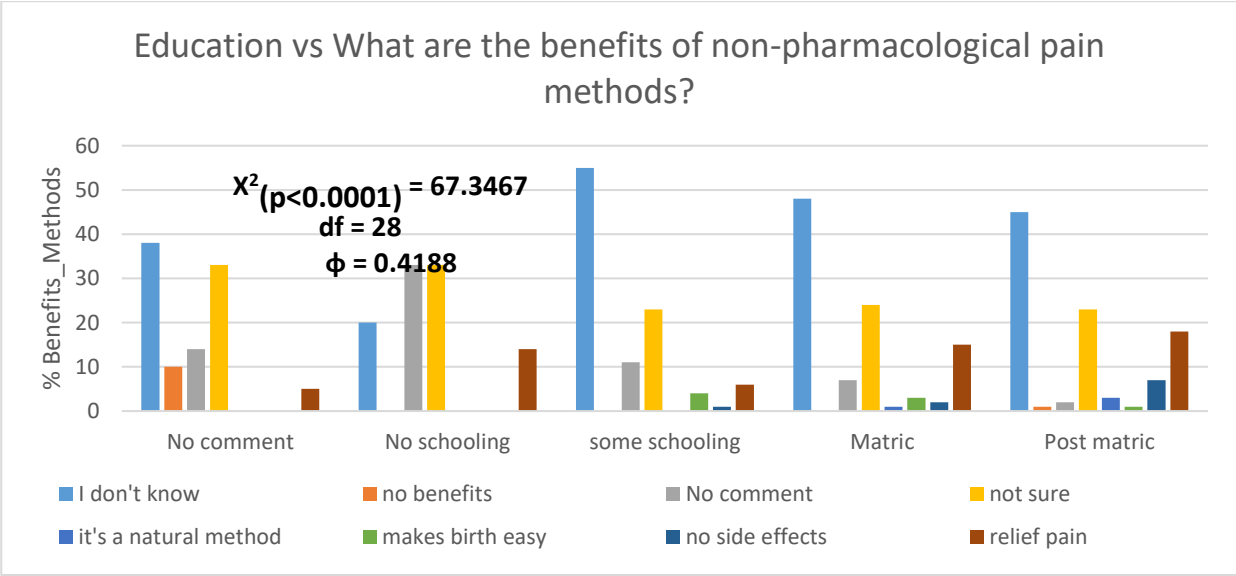


Figure 4.22: ***Education and benefits of non-pharmacological pain relief methods***

An association of p < 0.0001 was noted between education and the benefits of non-pharmacological pain methods. This signifies that pregnant women's level of education affects

their knowledge regarding the benefits of non-pharmacological pain relief. The effectiveness of non-pharmacological methods in relieving pain was noted across all levels of education. These findings correlate with the study by Ulfa (2021:2030), where women reported a feeling of relaxation when using non-pharmacological pain relief. However, no literature supported the results, indicating an association between the two variables.

4.3.6.23 Age and preference of pharmacological methods over non-pharmacological

The figure below illustrates the relationship between age and the preference of pregnant women between pharmacological and non-pharmacological methods.

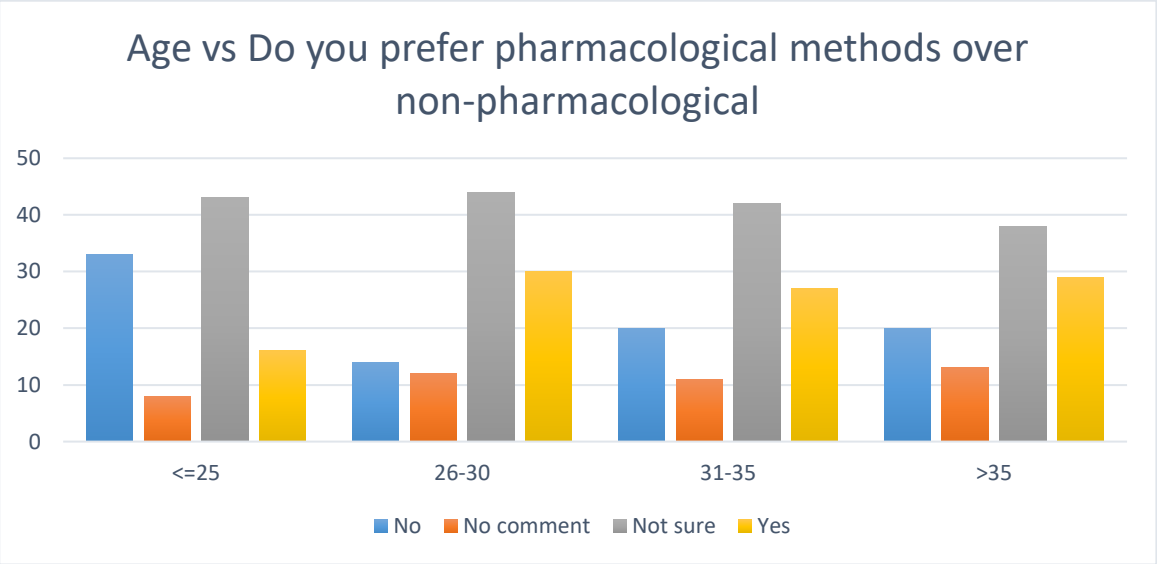


Figure 4.23: ***Age and preference of pharmacological methods over non-pharmacological***

The results revealed that most respondents across all age groups were not sure whether they preferred pharmacological over non-pharmacological pain relief methods. No association was detected between age and respondents' preference for pharmacological over non-pharmacological methods. The null hypothesis is accepted.

4.3.6.24 Parity and preference of pharmacological methods over non-pharmacological

Table 4.19: ***Parity and preference of pharmacological methods over non-pharmacological***

Parity	No	No comment	Not sure	Yes	Total (%)
0	25	6	49	19	99
1	20	8	40	32	100
2	19	14	43	24	100
3	21	15	33	31	100
4	19	25	37	19	100
5	40	0	40	20	100
6	100	0	0	0	100

The results indicate that most respondents Para 0 at 49%, Para 1 at 40%, Para 2 at 43%, Para 3 at 31% and Para 4 at 37% are not sure about their preference between pharmacological and non-pharmacological pain relief methods. In contrast, the Para 6 respondents indicated clearly at 100% that they will never prefer pharmacological over non-pharmacological pain relief methods. The study findings did not detect any association between the variables. The results accept the null hypothesis.

4.3.6.25 Education and preference for pharmacological methods over non-pharmacological

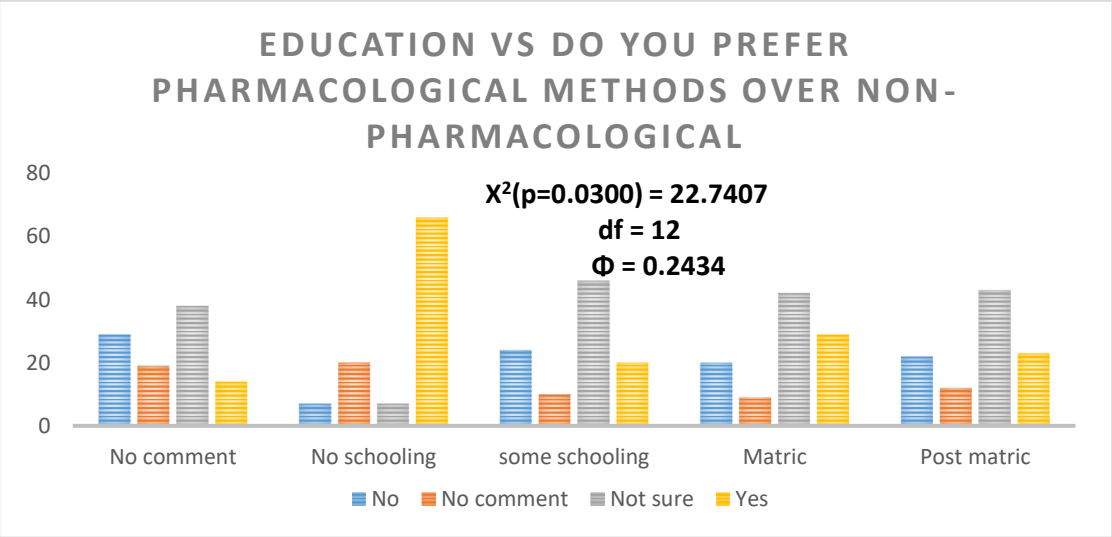


Figure 4.24: ***Education and preference of pharmacological methods over non-pharmacological***

The results indicated an association between education level and preference for using pharmacological and non-pharmacological methods as pain relief, $X^2(p=0.0300) = 22.7407$. There was a difference noted between the responses given by pregnant women. For women with no schooling, 66% indicated that they prefer pharmacological methods over non-pharmacological. In contrast, respondents with some schooling, matric and post matric revealed that they are not sure about their preferred method.

4.3.7 Association between demographic data and types of non-pharmacological methods used during labour

4.3.7.1 Age vs Have you learned about massage as one of the pain relief methods

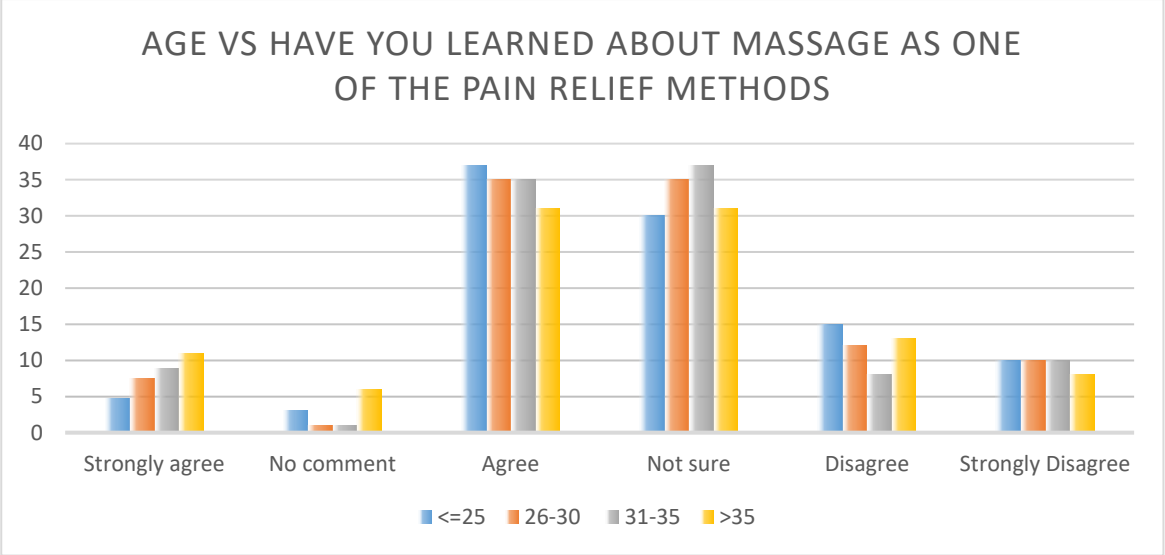


Figure 4.25: ***Age and massage as one of the pain relief methods***

The results indicated that in the category of respondents < = 25 years, the majority of respondents 37% agreed that they have learnt about massage, while between 26-30 years, there was equal distribution at 35% between those who agreed that they have learnt about massage and those who were not sure, whereas between 31-35 years majority at 37% were not sure and also among respondents above 35 years there was equal distribution between those who agreed that they have learned about massage and those who were not sure.

There was no association detected between the two variables. However, it was noted by Siva, Rodrigues, Zoldan, Nomura, Junior and Peixoto (2023:4) that pregnant women reported massage that reduces pain intensity and improves the emotional experience of labour. Likewise, Boateng et al. (2019:8) indicated that massage helps provide pain relief and psychological support during labour.

4.3.7.2 Parity and massage as one of the pain relief methods

Table 4.20: ***Parity and massage as one of the pain relief methods***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
0	6	1	37	35	15	6	100
1	8	4	34	27	16	11	100
2	10	3	36	36	7	8	100
3	7	2	31	34	10	16	100
4	0	6	38	38	12	6	100
5	40	0	0	40	0	20	100
6	0	0	0	100	0	0	100

According to the findings, respondents in Para 0 at 37% and Para 4 at 38% were the highest within their group to indicate that they learnt about massage. There was equal distribution between those who indicated that they were not sure and in Para 5 at 40% who strongly agreed that they have learnt about massage and those who are not. The Para 6 respondents, at 100%, indicated clearly that they were not sure.

The overall results showed that even though some respondents agreed that they knew about massage, some still are not sure. There was no association detected between the two variables, the null hypothesis is accepted. Musonda and Mabathoana (2022) state that massage is a very popular form of pain relief.

4.3.7.3 Education and massage as one of the pain relief methods

Table 4.21: ***Education and massage as one of the pain relief methods***

Education	Strongly Disagree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
Matric	8	4	37	30	12	9	100
No comment	10	0	33	38	9	10	100
No schooling	13	7	40	33	7	0	100
Post matric	11	2	39	27	12	9	100
Some schooling	3	1	21	49	11	15	100

The results indicated that the respondents with no schooling at 40% and the post matric level of education at 39%, followed by respondents with matric at 37%, were the majority to report that they have learnt about massage. Amongst those who were not sure were the respondents with some schooling at 49%, and they were in the majority. The literature revealed that higher education may also be associated with higher pain perception (Musonda & Mabathoana 2022). However, there was no association detected in this study.

4.3.7.4 Age and (hydrotherapy) immersion in warm water as a method of pain relief during labour

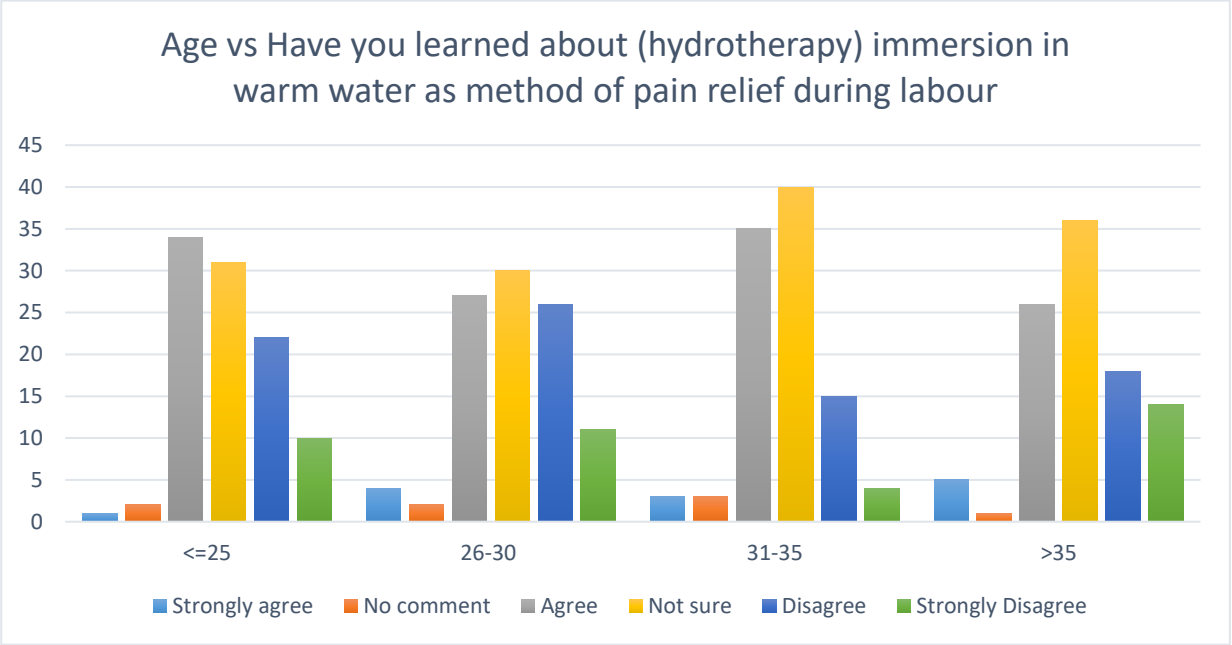


Figure 4.26: ***Age and (hydrotherapy) immersion in warm water as a method of pain relief during labour***

The results presented in Figure 4.26 revealed that the majority of respondents between 26-30 at 30%, 31-35% at 41% and those above 35 years reported that they were not sure about hydrotherapy as a pain relief method during labour. Followed by 27%, 35% and 26% from the age group of 26-30, 31-35 and >35, who agreed that they knew about it. Of the respondents less or equal to 25 years, 34% agreed that they learnt about hydrotherapy and were majority amongst their age categories.

Although the results showed that pregnant women within the early adulthood age know about hydrotherapy or immersion in water, the overall results indicated a high response of pregnant women who were not sure. In contrast, Klein and Gouveia (2022) reported that women prefer hydrotherapy during labour because of its benefits. The researcher cannot make a conclusion that pregnant women's age has an effect on knowledge about hydrotherapy. There was no association noted between age and knowledge regarding hydrotherapy. However, Bashaikh et al (2022:427) reported that there is an association between the two variables p=0.038.

4.3.7.5 Parity and (hydrotherapy) immersion in warm water as a method of pain relief during labour

Table 4.22: ***Parity and (hydrotherapy) immersion in warm water as a method of pain relief during labour***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
0	2	1	33	36	21	7	100
1	4	0	36	26	23	11	100
2	4	3	33	35	17	8	100
3	3	5	20	38	20	14	100
4	0	0	19	50	19	12	100
5	0	0	20	60	20	0	100
6	0	0	0	0	100	0	100

The table illustrates that the respondents in Para 0 at 36%, Para 2 at 35%, Para 3 at 38%, Para 4 at 50% and Para 5 at 60% were not sure they had learnt about hydrotherapy. Meanwhile, of the Para 1 respondents, 36% agreed that they have learnt about hydrotherapy. Para 6 respondents disagreed 100% that they have learnt about hydrotherapy. According to the results, it is evident that pregnant women with one child are more familiar with the use of hydrotherapy during labour. Bashaikh et al (2022:423) indicated that women who did not have water birth reported previous obstetric complications. In this study, there was no association noted. Similar to the study results, the two variables had no significant relationship (Bashaik et al. *2022: 427).*

4.3.7.6 Education and (hydrotherapy) immersion in warm water as a method of pain relief during labour

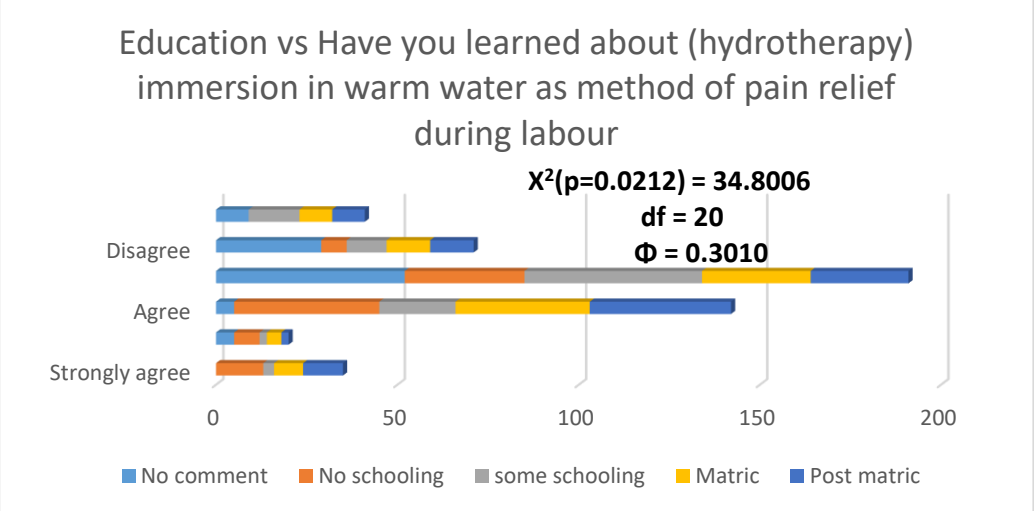


Figure 4.27: ***Education and (hydrotherapy) immersion in warm water as a method of pain relief during labour***

The p-value p=0.0212 indicates an association between the two variables. This signifies that women's level of education influences their knowledge regarding the use of hydrotherapy as non-pharmacological pain relief during labour. This rejects the null hypothesis. Pietrzak et al. (2022:9) reported that water immersion was the most effective method, and pregnant women demonstrated high satisfaction with using this method. The results contradicted the study, revealing no significant relationship between the two variables p=0.165 (Bashaikh et al. 2022:427).

4.3.7.7 Age and homoeopathy as a method of pain relief

Table 4.23: Age and homoeopathy as a method of pain relief

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	1	1	5	50	32	11	100
26-30	2	1	6	51	33	7	100
31-35	2	1	10	60	20	7	100
>35	2	0	14	51	20	13	100

The majority of respondents across all ages indicated that they are not sure about homoeopathy, with respondents of <= 25 years at 50%, between 26-30 years at 51%, between 31-35 years at 60% and respondents above 35 years at 51%. Those who disagreed were <=25 years at 32%, 26-30 years at 33%, 31-35 years at 20% and above 35 years at 20%. Table 4.23 indicates that homoeopathy is not known to the majority of respondents who participated in the study, irrespective of age. This signifies that the method is not practiced. There was no significant relationship noted between the two variables. However, the study conducted by Alhamazani et al. (2022:21) in Saudi Arabia revealed a relationship between p<0.001 as opposed to the results of this study.

4.3.7.8 Parity and homoeopathy as a method of pain relief

Table 4.24: ***Parity and homoeopathy as a method of pain relief***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
0	1	0	7	53	31	7	100
1	2	0	9	51	30	8	100
2	3	2	8	55	23	8	100
3	0	2	13	52	20	13	100
4	0	0	0	50	25	25	100
5	0	0	20	60	0	20	100
6	0	0	0	0	100	0	100

The results showed that the majority of respondents Para 0 at 53%, Para1 at 51%, Para 2 at 55%, Para 3 at 52%, Para 4 at 50% and Para 5 at 60% are not sure about the homoeopathy method, except that the Para 6 respondents at 100% disagreed that they learnt about this method. According to the results, this method is unknown to most respondents. There is insufficient literature to support the use of this method, and no association was noted between the two variables. Likewise, Yildiz et al. (2022:131) reported that the use of homoeopathy is less common and less known.

4.3.7.9 Education and homoeopathy as a method of pain relief

Table 4.25: ***Education and homoeopathy as a method of pain relief***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
No comment	0	4	10	38	38	10	100
No schooling	0	7	7	60	13	13	100
some schooling	1	0	7	60	20	12	100
Matric	2	1	11	55	24	7	100
Post matric	2	0	7	46	34	12	100

Table 4.26 revealed that a high percentage of respondents, irrespective of educational level, are not sure about homoeopathy being used as a pain relief method during labour. It is evident that homoeopathy is not known to the majority of respondents, and the study detected no significant association between the two variables. The study conducted by Yeniguil et al. (2023:35) revealed that respondents indicated that they had never heard about this method and reported that many pain relief methods could not be used effectively during labour due to a lack of knowledge.

4.3.7.10 Age and aromatherapy (use of natural oils) as a method of pain relief

Table 4.26: ***Age and aromatherapy (use of natural oils) as a method of pain relief***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	2	1	10	37	33	16	100
26-30	1	3	17	36	31	12	100
31-35	2	2	9	55	21	11	100
>35	1	5	18	42	29	5	100

The results showed that respondents were unfamiliar with aromatherapy, however, there was no association detected between the two variables. Eskandari et al. (2022:2) state that aromatherapy is common in Egypt and India. However, there was not enough literature to support the relationship between age and the use of aromatherapy as a method of pain relief during labour.

4.3.7.11 Parity and aromatherapy (use of natural oils) as a method of pain relief

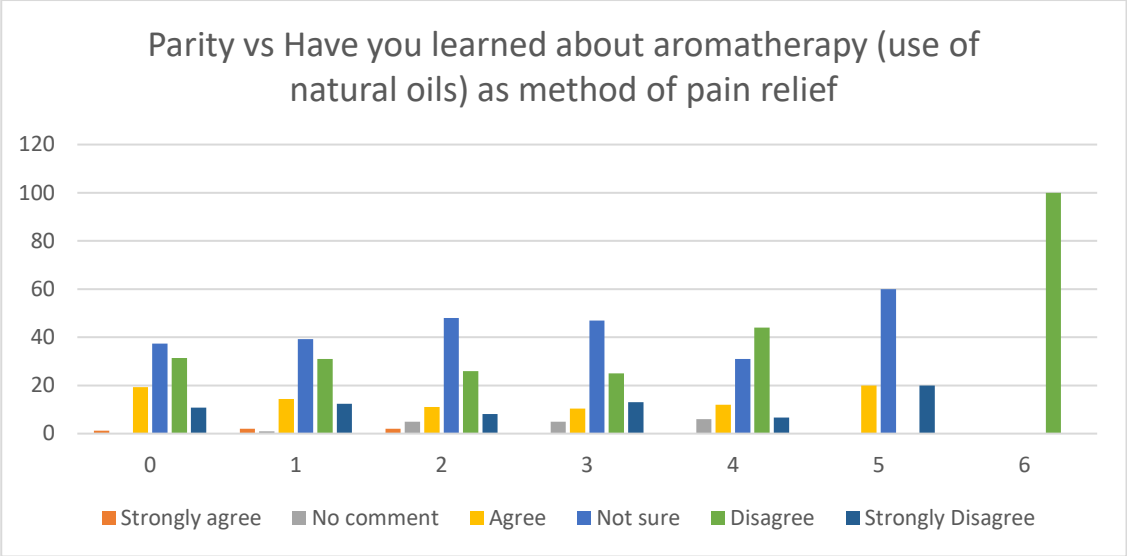


Figure 4.28: ***Parity and aromatherapy (use of natural oils) as a method of pain relief***

The results revealed that respondents from Para 0 at 37%, Para1 at 39%, Para 2 at 48%, Para 3 at 47%, Para 4 at 31% and Para 5 at 60% indicated that they are not sure about aromatherapy (use of natural oils) as a method of pain relief. Among those who disagreed on aromatherapy were the Para 4 women at 44% and Para 6 at 100%, who were dominating**.**

This indicates that the respondents are not familiar with the use of aromatherapy as pain relief. In this study, no significant relationship was noted between the two variables. There was no enough information from the literature to support the findings.

4.3.7.12 Education and aromatherapy (use of natural oils) as a method of pain relief

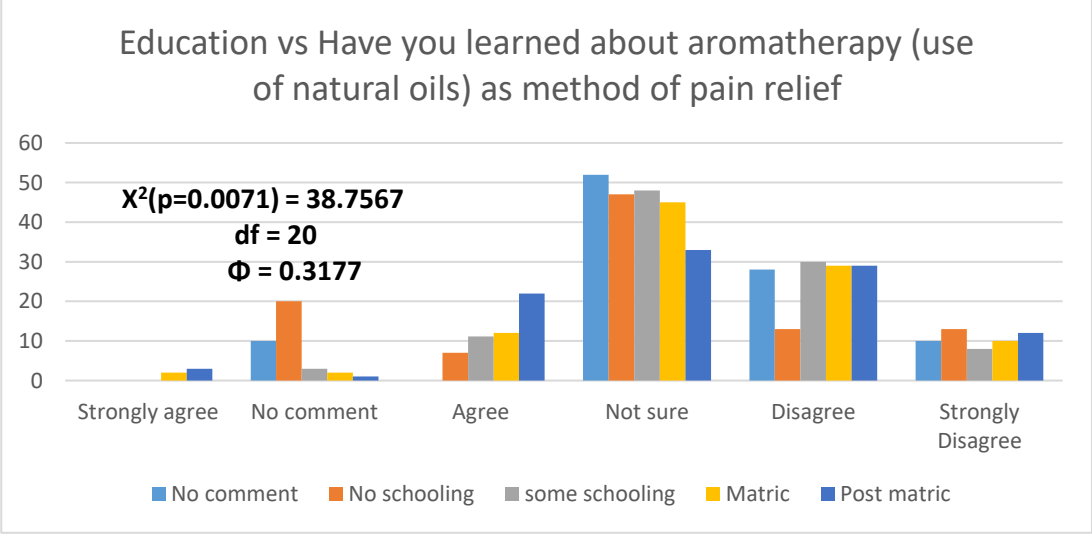


Figure 29: ***Education and aromatherapy (use of natural oils) as a method of pain relief***

The majority of respondents across all levels of education in the figure above indicated that they are not sure about the use of aromatherapy, with some schooling at 48% being the highest, followed by some schooling at 47%, matric at 45% and post matric at 33% This signify that pregnant woman were not educated about the use of aromatherapy as pain relief during labour during their clinic follow up. Association was noted between the two variables p = 0.0071. The p-value rejects the null hypothesis.

Klein and Gouveia (2022) indicated that most pregnant women who used non-pharmacological pain relief methods completed high school. The study corresponds with the result that showed 22% of pregnant women with post matric education were the majority within this study to agree that they have learnt about the use of aromatherapy as a method of pain relief.

4.3.7.13 Age and music therapy as pain relief

Table 4.27: ***Age and music therapy as pain relief***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	8	5	26	26	28	7	100
26-30	6	3	18	25	34	14	100
31-35	7	7	24	31	24	7	100
>35	4	10	20	31	24	11	100

The respondents between 26-30 years were the majority at 34% to disagree that they have learnt about music, followed by the respondents <= 25 years at 28%. The results also indicated that respondents between 31-35 years and >35 years equally reported that they were not sure about music therapy. In summary, the overall results indicated that pregnant women lack knowledge regarding the use of music as a non-pharmacological pain relief method. The study revealed no significant relationship between the two variables. According to McCaffrey, Cheung, Barry, Punch and Dore (2020:2), music has gained increased interest in the healthcare literature, and multiple findings reported about women using music during childbirth. However, there was no evidence to describe the relationship between the two variables.

4.3.7.14 Parity and music therapy as pain relief

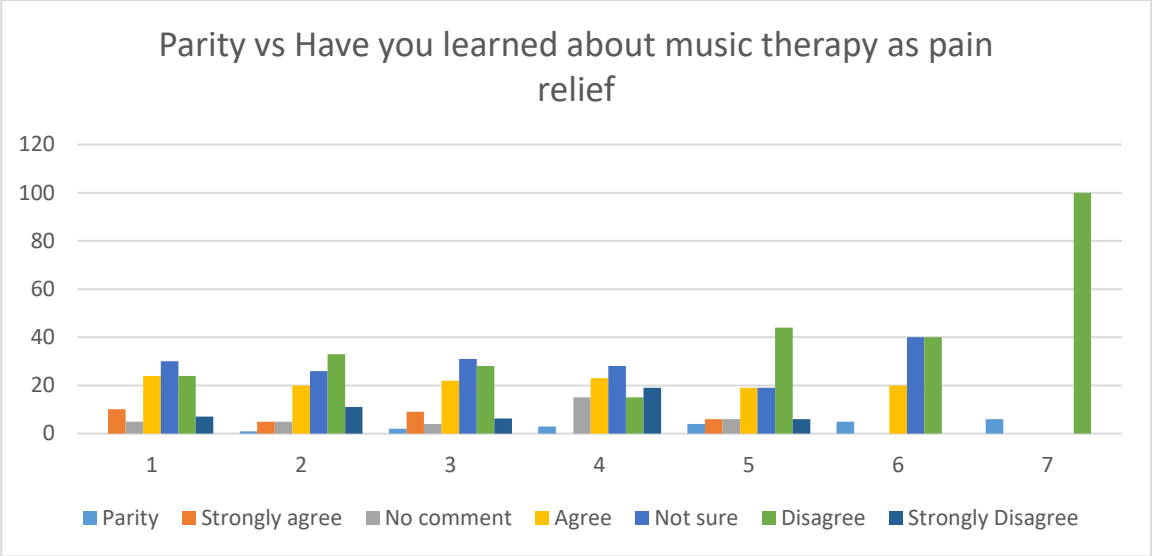


Figure 4.30: ***Parity and music therapy as pain relief***

The figure illustrated that Para 1 at 33%, Para 2 at 28%, Para 4 at 44% and Para 6 at 100% of respondents disagreed that they have learnt about music therapy. Para 5 reported not sure and disagreed with an equal response of 40%. This indicates that the majority of respondents have no knowledge about music therapy. Findings revealed no association between the two variables.

The findings contradict a study conducted by Acosta et al. (2020:9) that music therapy has beneficial effects on primiparous women.

4.3.7.15 Education and music therapy as pain relief

Table 4.28: ***Education and music therapy as pain relief***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
No comment	5	9	19	29	33	5	100
No schooling	7	20	7	40	26	0	100
some schooling	2	11	20	31	28	8	100
Matric	8	4	25	28	24	11	100
Post matric	9	4	20	24	31	12	100

The results indicated that the level of education does not have an effect on knowledge regarding the use of music as a method of pain relief during labour. The level of education showed no discrepancy regarding knowledge about music therapy. The study findings detected no association between the variables. Furthermore, the literature did not show any association between the two variables.

4.3.7.16. Age and breathing exercises as a method of pain relief

Table 4.29: Age and breathing exercises as a method of pain relief

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	11	1	58	15	7	8	100
26-30	14	3	49	15	8	11	100
31-35	20	3	47	18	5	7	100
>35	17	4	49	11	8	11	100

According to Table 4.29, the majority of respondents agreed that they have learnt about breathing exercises as a method of pain relief, whereby <=25 agreed at 58%, 26-30 agreed at 49%, 31-35 agreed at 47% and respondents above 35 years agreed at 49%. The result revealed that breathing exercise is well known to the majority of respondents. The majority of respondents indicated that they have learnt about these methods. However, there was no relationship detected between the two variables since the level of agreement was almost the same between the age groups. Reviewed literature indicated that breathing exercises are most commonly reported by pregnant women who are satisfied with the birth preparation (Hassanzadeh et al. 2022:2562).

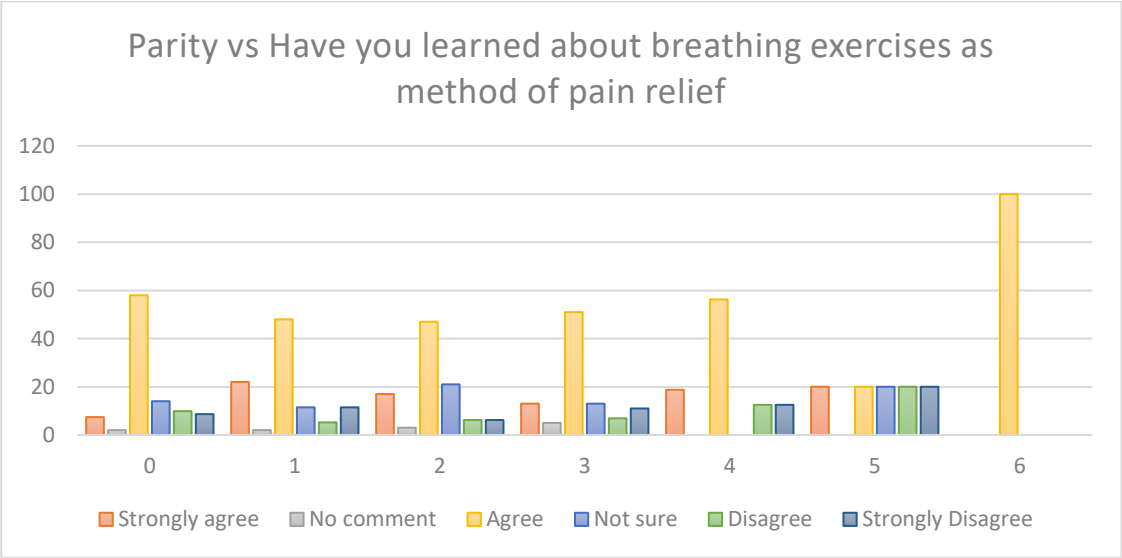


Figure 4.31: ***Parity and breathing exercises as a method of pain relief***

The results indicated that the majority of respondents from para 0 to para 6 agreed that they had learnt about breathing exercises. This indicates that breathing exercise is a well-known non-pharmacological method. Respondents of different parity gave similar responses. The study findings showed no association between the two variables.

4.3.7.18. Education and breathing exercises as methods of pain relief

Table 4.30: ***Education and breathing exercises as a method of pain relief***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
No comment	10	10	33	33	4	10	100
No schooling	7	7	40	20	13	13	100
some schooling	10	3	48	23	10	7	100
Matric	16	2	54	12	6	10	100
Post matric	24	2	50	9	6	9	100

The table indicates that respondents at all levels of education including those with no schooling agreed that they have learnt about breathing exercise as method of pain relief during labour. It becomes evident that breathing exercise is well known as method of pain relief. Likewise, Leutenegger et al. (2022:10) indicated that there is an existing knowledge about breathing techniques. However, in this study there was no association detected between the two variables.

4.3.7.19 Age group and acupuncture as method of pain relief

Table 4.31: ***Age group and acupuncture as method of pain relief***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	1	1	10	52	26	9	100
26-30	4	3	10	44	27	12	100
31-35	4	2	11	61	19	3	100
>35	4	7	10	57	15	7	100

According to the results pregnant women who participated in the study were not familiar with acupuncture as method of pain relief. Majority indicated that they are not sure about acupuncture as pain relief and again disagreed that they have learnt about this method.

The finding revealed that there is no application and lack of knowledge regarding acupuncture. Furthermore, the study revealed no relationship between the two variables. Bashaikh et al. (2022:422) reveal that women wanted more information regarding non-pharmacological pain relief methods and recommended that more education.

4.3.7.20 Parity and acupuncture as method of pain relief

Table 4.32: ***Parity and acupuncture as method of pain relief***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
0	1	1	11	53	28	6	100
1	2	3	11	49	25	9	100
2	5	3	8	62	15	7	100
3	3	8	10	46	21	12	100
4	6	0	13	69	13	0	100
5	20	0	40	20	20	0	100
6	0	0	0	100	0	0	100

The result revealed that the majority of respondents were not sure about acupuncture and again disagreed that they have learnt about acupuncture except the Para 5 respondents at 40% agreed that they have learnt about acupuncture.

The result revealed that women who had more chances of attending antenatal clinic have more knowledge as compared to those with less attendance. However, the study findings detected no relationship between the two variables.

4.3.7.21 Education and acupuncture as method of pain relief

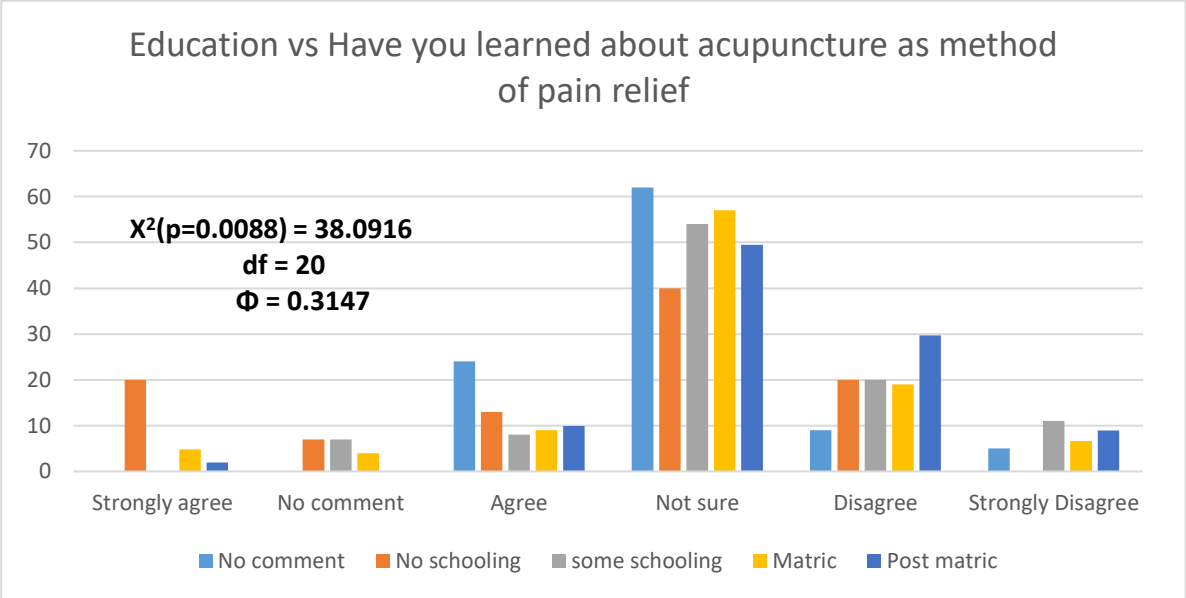


Figure 4.32: ***Education and acupuncture as method of pain relief***

The Chi- Square test $X^2(p=0.0088) = 38.0916$ indicated association between education level and question for respondents to indicate that they have learnt about acupuncture. The majority of respondents indicated that they are not sure about acupuncture, followed by respondents who

disagreed. The respondents with post matric were able to respond to all parameters of the question. However, there was no literature found to support the findings. The null hypothesis is rejected.

4.3.7.22 Age group and superficial application of heat and cold on the lower abdomen

Table 4.33: Age group and superficial application of heat and cold on the lower abdomen

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	3	1	14	41	28	13	100
26-30	5	1	19	44	19	12	100
31-35	4	1	13	58	18	6	100
>35	2	1	17	54	16	9	100

Table 4.33 indicate that the majority of respondents across all ages were not sure about superficial application of heat and cold, some of the respondents disagreed that they have learn about this method. The findings contradicted the findings by Musonda and Mabathoana (2022) that the application of heat and cold to be cost effective and is known by majority of pregnant women. There was no relationship noted between the two variables.

4.3.7.23 Parity and superficial application of heat and cold on the lower abdomen

Table 4.34: ***Parity and superficial application of heat and cold on the lower abdomen***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
0	1	0	18	49	23	8	100
1	6	2	13	42	26	11	100
2	5	2	18	55	14	6	101
3	2	0	11	54	18	15	100
4	0	0	13	50	25	13	100
5	0	0	20	60	0	20	100
6	0	0	0	0	100	0	100

There was no relationship noted between parity and knowledge on the use of superficial application of heat and cold as a pain relief method. The results showed most of the respondents from para 0 to para 5 were not sure if they have knowledge about this method or not. In addition, the overall percentage of disagreement was high as compared to agreement.

4.3.7.24 Education and superficial application of heat and cold on the lower abdomen

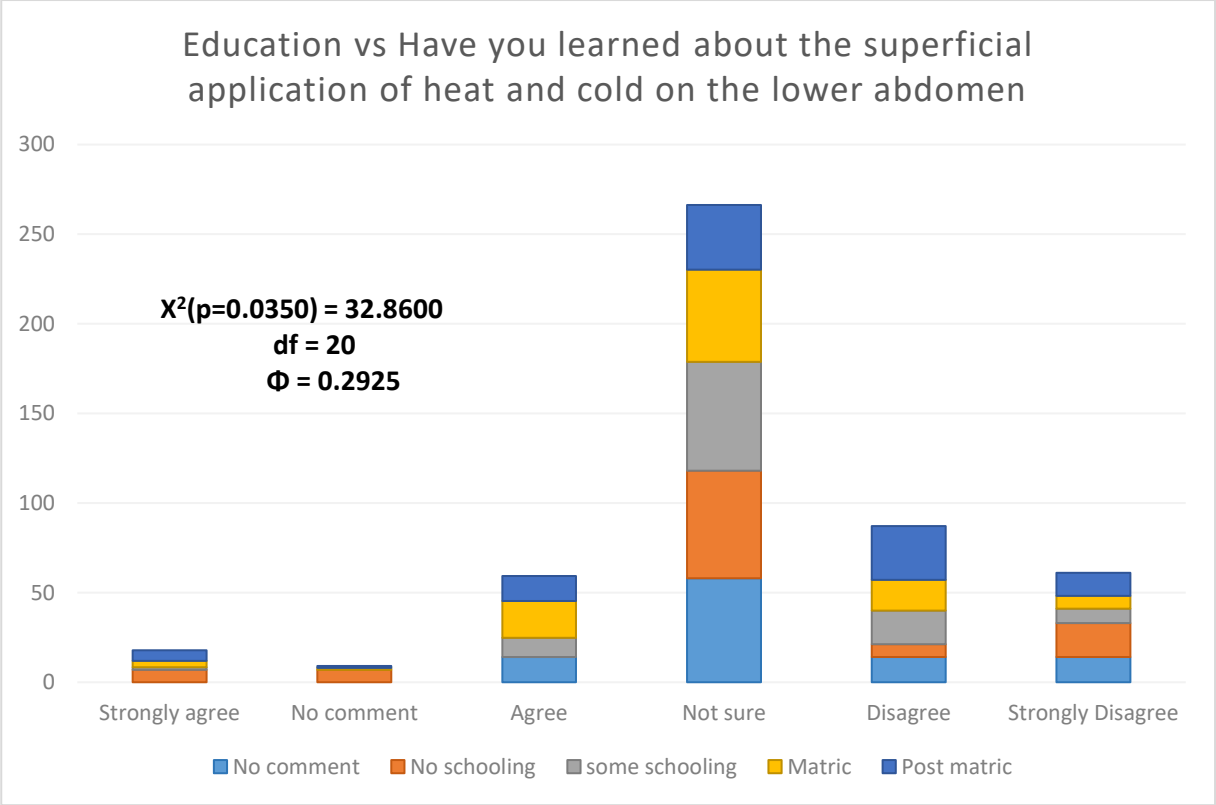


Figure 4.33: ***Education and superficial application of heat and cold on the lower abdomen***

The figure above indicated that the majority of respondents with different educational levels were not sure about superficial application of heat and cold. No schooling reported at 60%, some schooling at 61%, matric at 51% and post matric at 36%. Also, the respondents with post matric at 30% were the majority to disagree that they heard about this method. Association was noted between education and superficial application of heat and cold on the lower abdomen $X^2(p=0.0350) = 32.8600$ implying that education affected respondents' knowledge about the superficial application of heat and cold as a pain relief method. However, there is no literature to support the association between the variables.

4.3.7.25 Age and Transcutaneous Electrical Nerve Stimulation (TENS) as pain relief method

Table 4.35: ***Age and TENS as pain relief method***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	0	1	3	41	38	16	100
26-30	0	2	7	38	35	18	100
31-35	3	2	7	51	25	12	100
>35	0	0	4	54	25	17	100

Table 4.35 shows no association between age and knowledge regarding TENS. The results revealed that the respondents were not sure and disagreed that they had learnt about this method. Silvera des Reis, Dias, and Carvhalo (2022:191) reported that non-pharmacological pain relief methods contribute in a beneficial way to reducing pain during labour. In contrast, the authors indicated that there is no evidence that supports that TENS reduce pain during labour.

4.3.7.26 Parity and TENS as a pain relief method

Table 4.36: ***Parity and TENS stimulation as a pain relief method***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
0	0	1	4	41	41	12	100
1	0	0	6	41	32	21	100
2	2	2	8	50	25	13	100
3	0	3	0	51	28	18	100
4	6	0	0	56	25	13	100
5	0	0	20	20	40	20	100
6	0	0	0	100	0	0	100

The question about the association between parity and knowledge about TENS as pain relief detected no relationship between the two variables. This signifies that parity has no effect on knowledge regarding TENS. Most respondents disagreed or were not sure if they had learned about the TENS method for relieving pain. A small percentage agreed to strongly agree that they learnt about the TENS, except for Para 5 at 20% who strongly agreed.

4.3.7.27 Education and TENS as a pain relief method

Table 4.37: ***Education and TENS as a pain relief method***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
No comment	0	5	5	48	33	9	100
No schooling	0	0	7	73	0	20	100
some schooling	0	3	5	58	23	11	100
Matric	1	1	8	45	30	15	100
Post matric	1	1	2	35	40	21	100

The results revealed no association between the variables. However, the overall results showed respondents' lack of knowledge regarding TENS irrespective of educational level. However, there was no literature found to indicate the null hypothesis.

4.3.7.28. Age and movement and birth position change as pain relief?

Table 4.38: ***Age and movement and birth position change as pain relief***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
<=25	3	0	43	31	16	7	100
26-30	5	1	46	24	15	9	100
31-35	8	3	44	29	12	4	100
>35	7	2	36	36	12	7	100

There was no association noted between the age group and knowledge of movement and birth position as a method of pain relief. The results indicated that movement and birth position are well known by the majority of the respondents across all age groups, followed by those who were not sure and those who disagreed. The percentage agreement with each age category follows the same pattern. However, there was no literature found to support the findings.

4.3.7.29 Parity and movement and birth position changes as pain relief

Table 4.39: ***Parity and movement and birth position changes as pain relief***

Parity	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
0	1	0	43	34	17	5	100
1	7	2	41	28	15	7	100
2	9	2	44	33	8	4	100
3	3	3	39	30	15	10	100
4	6	0	50	13	18	13	100
5	20	0	60	0	20	0	100
6	0	0	0	100	0	0	100

Table 4.39 showed that all respondents within each parity level agreed that they have learnt about movement and birth position as a method of pain relief. There was a positive outcome from respondents regarding these methods. However, Hacivelioglu, Tavsanli, Senyuva and Kosova (2023:9) indicated that nurses preferred different birth positions in India and wanted women to have choices. In this study, no significant association was detected.

4.3.7.30 Education and movement and birth position changes as pain relief

Table 4.40: ***Education and movement and birth position changes as pain relief***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
No comment	5	2	45	29	11	8	100
No schooling	5	0	57	33	5	0	100
some schooling	7	0	40	20	13	20	100
Matric	6	1	41	31	16	5	100
Post matric	8	1	34	34	18	5	100

The results indicated no significant association, as pregnant women with different levels of education agreed that they are aware of movement and birth position as methods of pain relief. The results indicated that pregnant women know movement and birth positions at all educational levels. Hacivelioglu et al. (2023:1) also reported that maternal positions and movements are critical to enhancing a positive birth experience.

4.3.7.31 Age and birthing ball as pain relief for labour

Table 4.41: ***Age and birthing ball as pain relief for labour***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
<=25	3	0	21	41	26	9	100
26-30	7	5	21	43	17	7	100
31-35	2	4	21	51	4	8	90
>35	5	7	26	43	12	7	100

There was no significant association noted between the variables. The results indicated that most respondents were not sure about using the birthing ball method. Some agreed with the use of birth balls as pain relief, while others disagreed. This indicates a need for educating pregnant women about birthing balls as pain relief for labour during antenatal follow up.

4.3.7.32 Parity and birthing ball as pain relief for labour

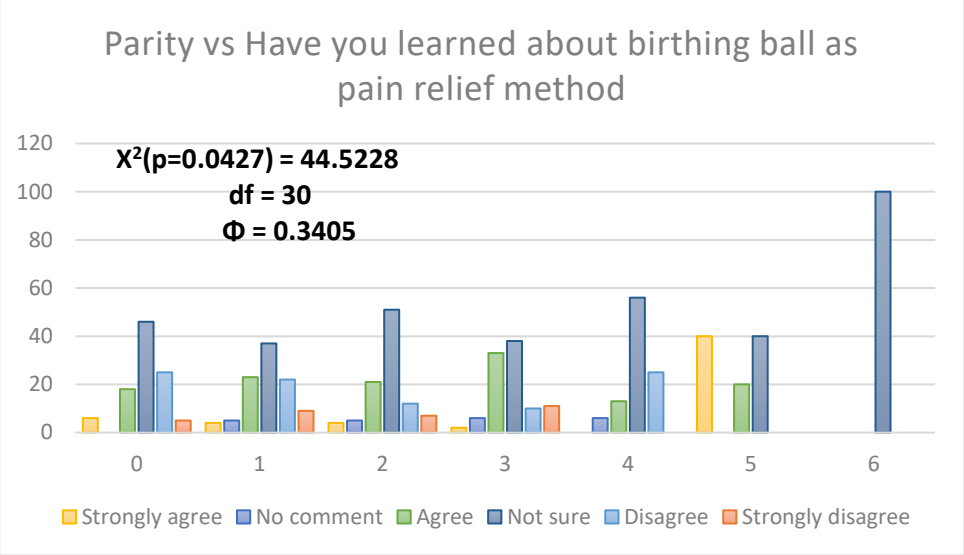


Figure 4.34: ***Parity and birthing ball as pain relief for labour***

The Chi-Square test with a p-value of 0.0427 revealed a significant association between parity and the utilisation of a birth ball as a means of pain relief during childbirth. The rejection of the null hypothesis indicates that there is indeed a relationship between these two variables. It was evident that respondents within the parity categories displayed have uncertainty regarding the

effectiveness of the birth ball as a pain relief method. However, the highest level of agreement with this pain relief method 40% was observed among women who were in the Para 5 category, as opposed to women with different parity levels.

This finding suggests that women who have experienced childbirth multiple times (Para 5) may be more inclined to strongly endorse the use of a birth ball for pain relief compared to those with lower parity levels.

4.3.7.33 Education and birthing ball as pain relief for labour

Table 4.42: ***Education and birthing ball as pain relief for labour***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
No comment	5	13	10	57	10	5	100
No schooling	12	0	27	47	7	7	100
some schooling	3	7	13	53	15	9	100
Matric	3	4	24	42	20	7	100
Post matric	7	1	28	39	19	6	100

There was no association noted between the educational level and using birthing balls as pain relief for labour. The level of education did not have any impact on knowledge regarding the use of a birth ball during labour. The majority of respondents with different levels of education indicated that they were not sure about the use of the birth ball. The results contradict the study conducted by Ulfa (2021:2030), where pregnant women reported that they felt relaxed and comfortable dealing with labour pains using birth balls.

4.3.7.34 Age and birth companion or doula (support person) during labour as a method of pain relief

Table 4.43: ***Age and birth companion or doula (support person) during labour as a method of pain relief***

Age group	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly Disagree	Total (%)
<=25	8	1	16	45	22	8	100
26-30	8	0	19	42	21	10	100
31-35	5	2	21	46	20	6	100
>35	9	5	12	53	17	4	100

No association was noted between respondents' age and knowledge regarding the use of birth companions. Pregnant women, irrespective of age, disagreed that they knew about birth

companions; some were not sure, while others agreed. However, Bashaikh et al. (2022:426) revealed that pregnant women preferred partners to be with them during labour.

4.3.7.35 Parity and birth companion or doula (support person) during labour as a method of pain relief

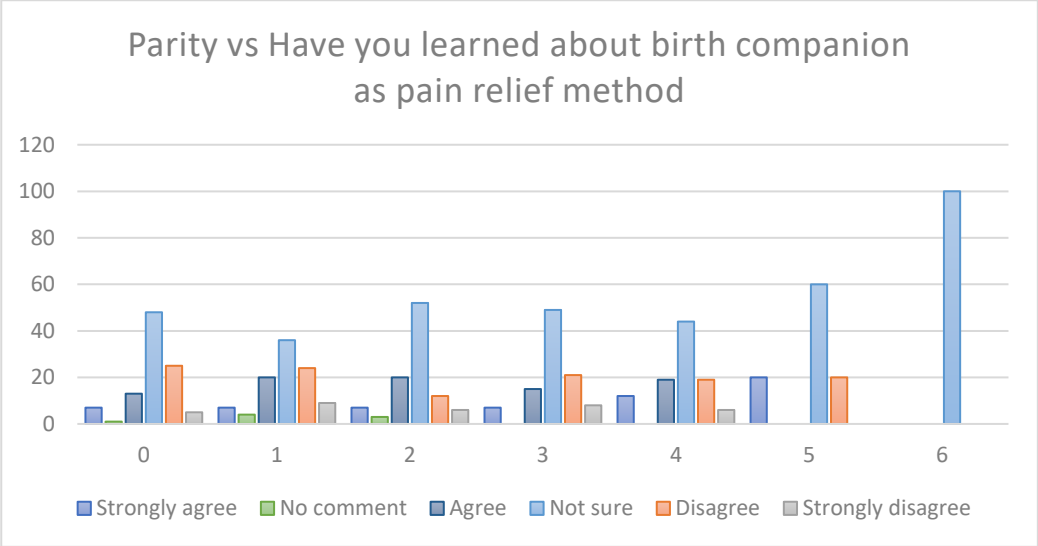


Figure 4.35: ***Parity and birth companion or doula (support person) during labour as a method of pain relief***

Figure indicated that most of the respondents between the parity in the figure above were not sure about the use of birth companion, which was followed by those who either disagreed or agreed. The study detected no association between the two variables. This signifies that parity has no effect on knowledge regarding non-pharmacological pain relief. There was no literature found to support the investigation of the relationship between the two variables.

4.3.7.36 Education and birth companion or doula (support person) during labour as method of pain relief

Table 4.45: ***Education and birth companion or doula (support person) during labour as method of pain relief***

Education	Strongly agree	No comment	Agree	Not sure	Disagree	Strongly disagree	Total (%)
No comment	14	0	24	48	14	0	100
No schooling	13	7	26	47	7	0	100
some schooling	1	3	15	54	18	9	100
Matric	8	2	17	47	19	7	100
Post matric	9	1	16	40	26	8	100

Birth companions are an effective non-pharmacological method that relieves women from anxiety of dealing with labour pain without support. However, in SA midwives display a negative attitude to support the use of birth companions (Summerton et al. 2021:3). Furthermore, in this study most of the pregnant women indicated that they are not sure about this method and there was no association detected between level of education and birth companion.

4.3.8 Association between demographic data and the effectiveness of antenatal care

4.3.8.2 Education and clinic attendance

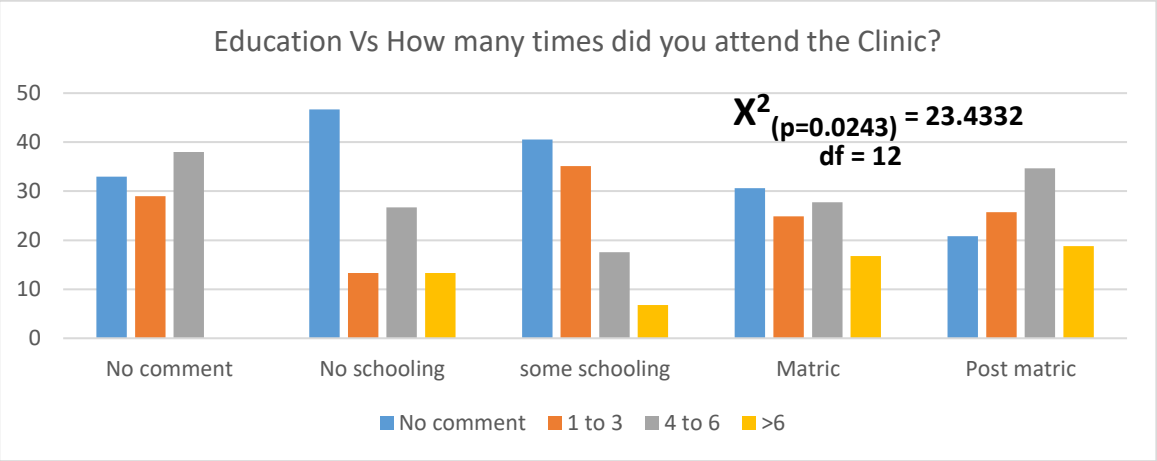


Figure 4.36: ***Education and clinic attendance***

The results indicated association $X^2(p=0.0243) = 23.4332$ between the variables of education level and how many times the respondents attended the clinic. A high percentage of 35% of respondents with post matric level indicated that they attended the clinic session at least four to six times. Similarly, of respondents with no schooling, 47% decided not to comment. The findings correlate with a study by Hassanzadehi et al. (2020:2561), indicating a significant association between pregnant women's level of education and how many times they attended antenatal care.

4.3.8.3 Age group Vs Did the sister (registered nurse) educate you on types of methods that can be used to control pain during labour?

Table 4.46: ***Age group Vs Did the sister (registered nurse) educate you on types of methods that can be used to control pain during labour?***

Age group	No comment	NO	YES	Total (%)
<=25	4	67	29	100
26-30	9	57	34	100
31-35	0	67	33	100
>35	8	53	39	100

The results indicated that the majority of respondents of the age group in the table above reported that they were never educated by the registered nurse on types of methods that can be used to control pain during labour. Furthermore, the study detected no relationship between the two variables. Hassanzadehi et al. (2020:2562) reported that there are limited studies that reported pregnant women's satisfaction in relation to childbirth preparation.

4.3.8.6 Age group Vs Do you think the number of clinic attendance helps in preparing women for labour pains?

Table 4.47: ***Age group Vs Do you think the number of clinic attendance helps in preparing women for labour pains?***

Age group	No comment	NO	YES	Total (%)
<=25	7	32	61	100
26-30	5	34	61	100
31-35	5	25	70	100
>35	5	26	69	100

According to the results, the respondents were confident that clinic attendance helps in preparing for labour pain. The findings correspond with study conducted by Hassanzadehi et al. (2020:2562) that revealed that women who attended antenatal care, learn more about non-pharmacological strategies for pain relief and relaxing exercises. However, the study did not detect any association between the variables. These signify that age does not have any effect on the clinic attendance that prepares women for labour pains.

4.3.9 Association between demographic data and suggestions on pain relief methods

4.3.9.1. Age and information that must be included in the ANC education about labour pains

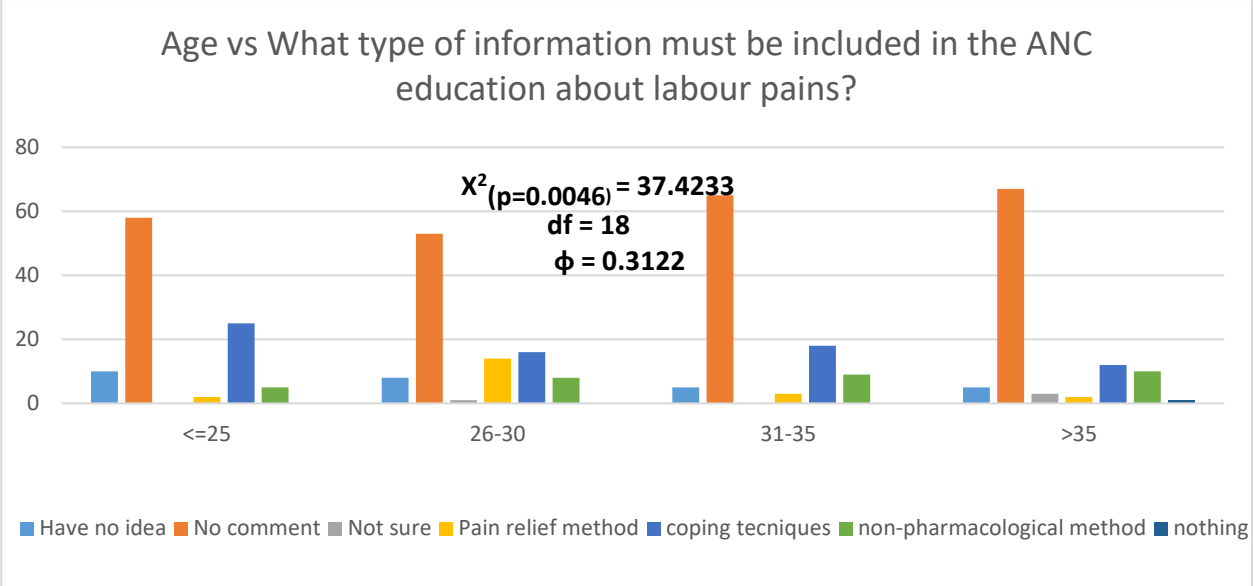


Figure 4.37: ***Age and information that must be included in the ANC education about labour pains***

Evidence of association between age and type of information that must be included in the ANC education about labour pains indicated association p= 0.0046. Some respondents reported that they need coping techniques to be included in the ANC education. Pregnant women want to be well-prepared for labour pain. This indicates that they want to approach labour being well equipped with knowledge and skills. However, most respondents decided not to comment.

4.3.9.2. Education and information that must be included in the ANC education about labour pains

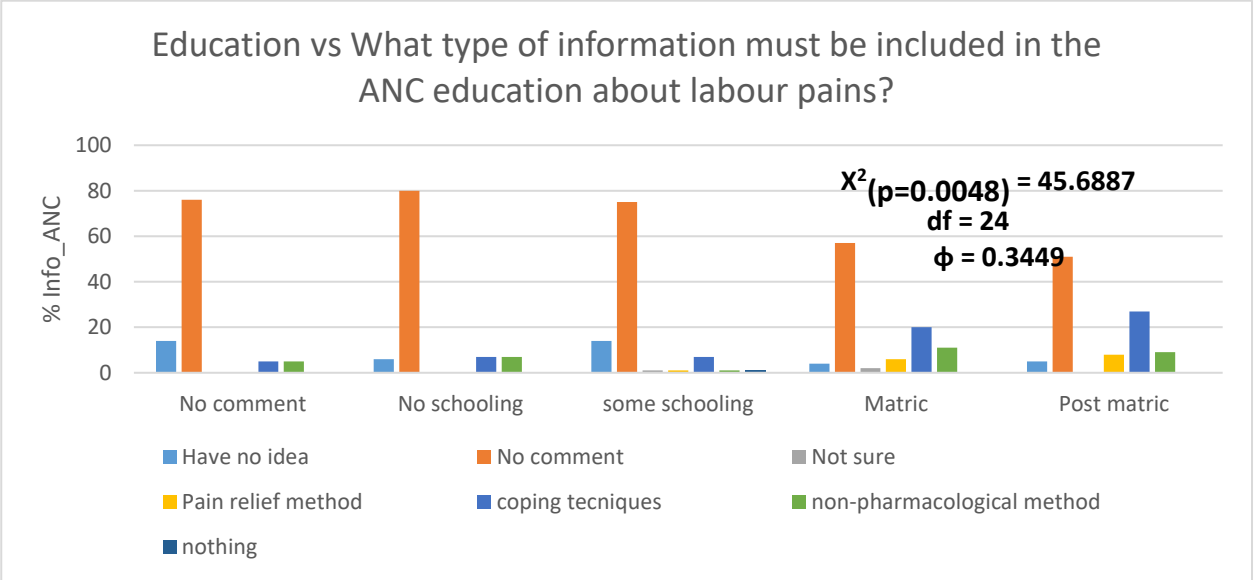


Figure 4.38: ***Education and information that must be included in the ANC education about labour pains***

Association was noted p= 0.0048 between education and suggestion regarding information to be included in ANC education about labour pains. Suggestions of coping techniques was noted from the group of pregnant women with post matric level of education followed by the respondents with matric. This suggests that more attention during antenatal visits must be given to women with a low level of education since the majority decided not to comment. Leutenegger et al. (2022:10) indicate that a great awareness of non-pharmacological methods such as breathing and relaxation are beneficial and should be shown to women as these skills might be handy during childbirth.

4.3.9.3. Age vs How do you think labour preparation can be conducted?

Table 4.48: ***Age vs How do you think labour preparation can be conducted****?*

Age group	Have no idea	Have teaching moment	I think is fine the way it is	No comment	Not sure	by being patient	do exercises during follow up	Forming groups during visits	Total (%)
<=25	9	16	0	67	3	1	3	1	100
26-30	7	23	0	58	7	1	3	1	100
31-35	6	22	1	66	3	1	1	0	100
>35	5	11	0	79	5	0	0	0	100

Based on the findings, it is evident that the majority of respondents across all age groups prefer ANC follow up to be in the form of teachable sessions. Additionally, a similar percentage of respondents had no idea and were not sure about what to include in labour preparation sessions, this ranged between 5% and 9%. Furthermore, Leutenegger et al. (2022:2) indicated that women seem to benefit from educational sessions that equip them with coping skills, and such sessions contribute to their psychological and emotional preparedness. However, this study found no statistically significant association between the variables.

4.3.9.4. Education vs How do you think labour preparation can be conducted?

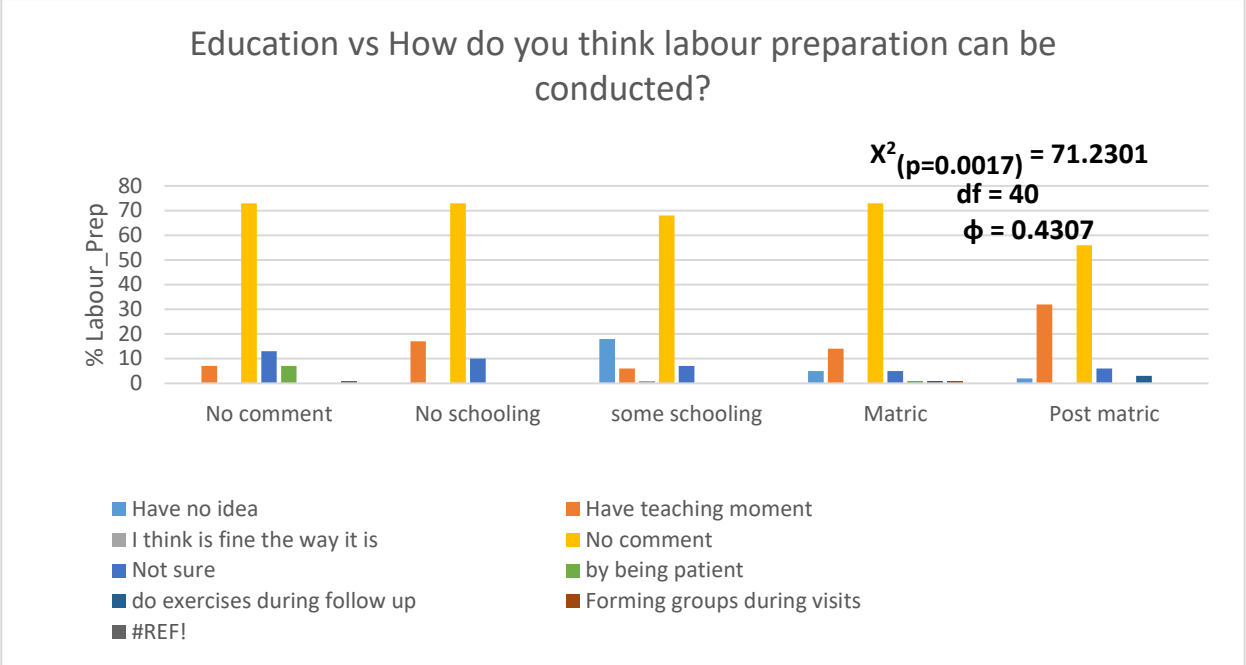


Figure 4.39: ***Education vs How do you think labour preparation can be conducted?***

A statistically significant association was noted between education levels and the recommendation for how labour preparation should be conducted, with a p-value of 0.00017. Women with post-matriculation education levels suggested teaching moments as a method. However, the majority of respondents chose not to comment.

4.3.9.6 Parity vs Is there anything that you think was omitted from this interview question that can help in coping with labour pains

Table 4.49: ***Parity vs Is there anything that you think was omitted from this interview question that can help in coping with labour pains***

Parity	No	No comment	Not sure	Yes	Total (%)
0	31	43	9	17	100
1	38	43	4	15	100
2	22	57	8	13	100
3	18	64	5	13	100
4	13	81	6	0	100
5	40	60	0	0	100
6	100	0	0	0	100

According to the results, most respondents indicated that nothing was omitted from the data collection tool that can help with coping with labour pains. The preparation of women for labour is as important as their suggestion. However, in this study, there was no relationship detected between the variables.

4.3.9.7 Education vs Is there anything that you think was omitted from this interview question that can help about coping with labour pains

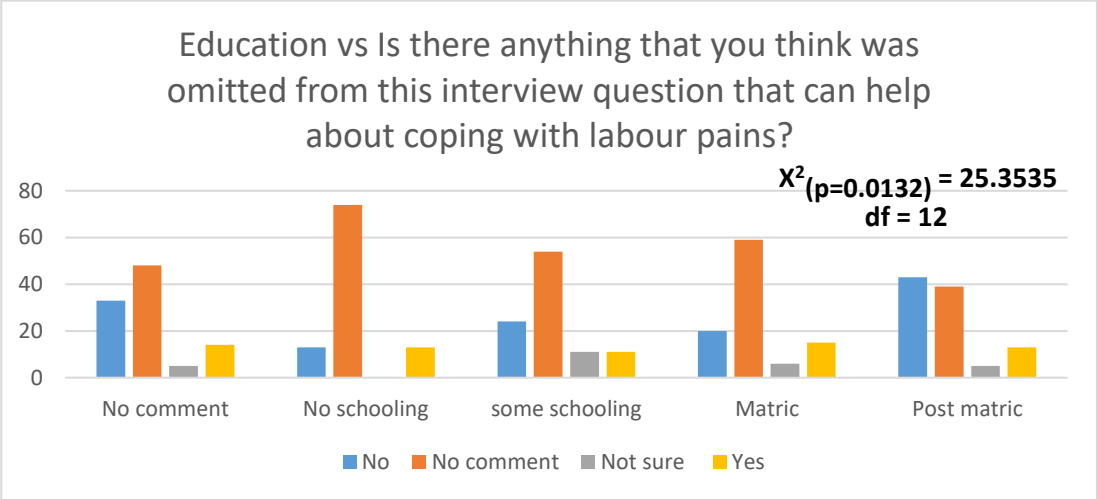


Figure 4.40: ***Education vs Is there anything that you think was omitted from this interview question that can help in coping with labour pains***

The results revealed that most respondents did not comment on this question, followed by those who indicated no information was omitted in the data collection tool. Even though the percentage of respondents who said there was no omitted information in the questionnaire was higher. The findings revealed an association between the variables p= 0.0132.

4.4 CONCLUSION

This chapter presented the outcomes of data analysis in relation to the study objectives. To facilitate discussion, the information was presented in the form of tables and graphs. Furthermore, the Chi-squared (X2) test was employed to investigate potential associations between demographic variables and knowledge and the effectiveness of antenatal care in preparing women for labour utilising non-pharmacological methods during labour.

Based on the findings presented, it is evident that pregnant women regardless of their parity or the number of antenatal classes attended, exhibit a lack of awareness concerning non-pharmacological pain relief methods. With regards to the second objective, which aimed at assessing the effectiveness of antenatal care in preparing women for labour pain, the current study revealed that pregnant women felt unprepared and reported receiving insufficient information about available non-pharmacological pain relief methods. Instead, the midwives appeared to focus on monitoring foetal growth. The next chapter looks at the limitations and recommendations of the study.

CHAPTER 5: REVIEW OF FINDINGS, RECOMMENDATIONS, LIMITATIONS OF THE STUDY AND CONCLUSIONS

5.1 INTRODUCTION

Chapter four presented the findings of the study. This chapter will discuss the findings, recommendations, limitations of the study, and conclusion. The study had two objectives: to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour. Secondly, to determine the effectiveness of antenatal care in preparing pregnant women about non-pharmacological methods of pain relief available during labour. The study conclusion and recommendations were based on these objectives. The aim of the study was to determine what pregnant women know regarding the non-pharmacological pain relief methods.

5.2 DISCUSSION OF FINDINGS

5.2.1 Demographic data

The demographic data in the data collection tool were age, parity, home language, level of education and type of delivery. The respondents who participated in the study were pregnant women between the ages of 18 and 44. The ages were grouped into five categories < = 25, 26-30, 31-35 and > 35 years. The results revealed a high participation of respondents aged 31 to 35 and above 35.

The majority of pregnant women had matric as their highest level of education. This shows that most of our respondents recognise matric as the highest level of education. In SA, matric holds significant recognition because it is a key entry for some professions.

5.3 TO DETERMINE THE KNOWLEDGE OF PREGNANT WOMEN REGARDING NON-PHARMACOLOGICAL METHODS OF PAIN RELIEF AVAILABLE DURING LABOUR

5.3.1 Knowledge regarding non-pharmacological pain relief methods

The results presented indicated that the majority of respondents were not sure about non-pharmacological pain relief methods. Pregnant women reported that they had never heard about some of the methods. However, respondents >35 years of age indicated that they were given information during antenatal visits. Pregnant women indicated that they would opt for non-pharmacological pain relief and recommend the use of these methods to a friend. The study findings suggest that providing pregnant women with more information about non-pharmacological pain relief methods may lead to increased utilisation and adoption of these techniques.

A South African study conducted by Musonda and Mabathoana (2022) revealed that women are reluctant to use pharmacological pain relief, especially the multiparous women who received pharmacological pain relief because they have witnessed resuscitation of their babies immediately after birth, which were the aftereffects of pharmacological pain relief.

The researchers observed that the majority of pregnant women from Para 0 to Para 5 who participated in the study were unaware of non-pharmacological pain relief methods. They were also uncertain about the effectiveness of these methods and indicated that they were not given enough information. However, the Para 6 women reported being informed about non-pharmacological pain relief methods and, as a result, were able to respond that the methods can relieve pain. Based on this, the researchers assume that as women experience more childbirths, they become more knowledgeable about non-pharmacological pain relief methods, likely due to accumulating information and experiences over multiple pregnancies.

In terms of pregnant women according to their level of education, pregnant women with post matric education reported that they were not taught about non-pharmacological pain relief methods. On the other hand, pregnant women with no schooling mentioned that they were taught about these methods. However, upon analysing the results, the researchers found that the responses from women with no schooling might not be entirely reliable. When asked to provide specific examples of what they were taught, they struggled to give any. This led the researchers to conclude that these women might not have fully understood the questions or the information provided to them.

Despite expressing a preference for non-pharmacological pain relief methods and even recommending them to others, the same respondents also indicated a preference for pharmacological pain relief. This conflicting information suggests that pregnant women lacked a clear understanding of these non-pharmacological methods. The main reason for this uncertainty and lack of clarity among pregnant women appears to be poor preparation and inadequate information. A study conducted in Europe revealed that women not well prepared for labour might not be aware of the pain relief methods (Rantala, Hakala & Polkki 2022:7). Furthermore, Bishaw, Melesse and Aynalem (2022:2) indicated that options for non-pharmacological pain relief can be accurate if the midwives have a good attitude towards labour pain relief.

5.3.2 Types of non-pharmacological pain relief methods

The research findings revealed that breathing exercises, massage, movement and birth positions were well-known non-pharmacological pain relief methods. However, using a birthing ball was less familiar than other techniques. These results are consistent with a study conducted in SA by Musonda and Mabathoana (2022), where deep breathing, massage and walking were the most

commonly reported methods. These methods are also widely known in Brazil, where 80.7% of respondents were familiar with birthing balls and 74.8% with breathing exercises (Heim & Makuch 2021:2).

In contrast, there was a significant lack of knowledge about homoeopathy, aromatherapy, music therapy, acupuncture, superficial application of heat and cold, TENS, and birth companions. Another study conducted by Rantala, Hakala and Polkki (2022:7) found that music was not commonly offered as a form of pain relief, as most women used their headphones for distraction during labour.

The WHO intrapartum care guidelines recommend the use of doula support, but the midwives in SA seem to overlook its utilisation. This reflects a lack of support for evidence-based practices, which contradicts the belief that a supportive environment can positively influence labour outcomes and overall satisfaction (Dippennar & da Serra 2018:419).

Pregnant women slightly knew the use of the birth ball and hydrotherapy. The results showed that respondents <=25 years agreed that they learned about hydrotherapy. The results correspond with the study conducted in Saudi Arabia by Bashaikh, Mahboub and Orabi (2022: 428), where it was shown that the women's age was significantly correlated with their knowledge about water birth. The same respondents <=25 years were the only age category that disagreed about using birth ball.

Consistently, the most common non-pharmacological pain relief methods reported by pregnant women were massage, breathing exercises, movement and various birth positions. Pregnant women with no schooling also indicated their awareness of using birth companions for support during labour.

Looking at the overall results, it becomes evident that women with no schooling agreed with most of the questions related to non-pharmacological pain relief methods. This finding raises a matter of concern that warrants further investigation to find out why pregnant women with no schooling seem to be more agreeable and knowledgeable about these methods compared to other educational groups.

5.4 TO DETERMINE THE EFFECTIVENESS OF ANTENATAL CARE IN PREPARING PREGNANT WOMEN ABOUT NON-PHARMACOLOGICAL METHODS OF PAIN RELIEF AVAILABLE DURING LABOUR

5.4.1 The effectiveness of antenatal care

The results of this study revealed that respondents with an age of less or equal to 25 attended antenatal clinics more than other age categories. Their attendance was from 4 visits to 6 visits. Respondents also expressed that the number of clinic attendances plays a role in preparing women for the pain during labour, with 66% in agreement. However, when asked about what they were explicitly taught regarding the various methods available to manage pain during labour, there was a contradiction in their responses. Their response was similar to other categories, “they had never been taught about these methods”.

Regarding women’s parity, Para 4 and Para 6 women attended antenatal clinics less. Their antenatal attendance was from 1 to 3 visits. It was noted that ANC is not practical in preparing women for labour pain.

The study also sought to ascertain the association between demographics and the effectiveness of antenatal care in educating pregnant women about non-pharmacological pain relief methods available during labour. The results revealed that neither the number of antenatal sessions participants attended nor the information they received from the sister (registered nurse) on types of methods that can be used to control pain during labour, nor the perception about the number of clinic attendance helping in preparing women for labour were significantly related to age, education and parity. However, a significant association was observed in the matric to post matric participants who indicated that they want coping techniques as a type of information to be included in the ANC education. They also indicated they would appreciate more teaching and learning sessions, implying that the respondents in the category mentioned above are interested in learning more about the pain relief methods for labour pains.

5.4.2 Suggestion on pain relief methods

According to the respondents, Antenatal Care (ANC) education should include coping techniques for managing labour pains. They recommended sharing this information through individual or group learning sessions. Importantly, all participants expressed satisfaction with the comprehensiveness of the data collection tool, stating that nothing was omitted.

The need for coping techniques was highlighted consistently across respondents, irrespective of their parity or age differences. They emphasised the importance of receiving this information during their ANC consultations. However, the overall findings revealed that the current ANC services are not effectively preparing pregnant women for labour, as evidenced by the majority

of participants requesting more effective teaching and learning sessions as part of their antenatal care.

Moreover, the respondents' educational background influenced their suggestions regarding pain relief methods. Women without schooling were uncertain and did not know how to prepare for labour. However, they did express that there were omissions in the data collection tool, indicating a possible gap in their understanding.

5.5 RECOMMENDATIONS

Recommendations are suggestions provided by the researcher proposing actions that can be taken to enhance effective antenatal care that prepares women for labour pain, especially with the use of non-pharmacological pain relief methods. The midwives are expected to ensure that pregnant women benefit from attending antenatal care and see it beneficial throughout the pregnancy journey. Numerous ways can be adopted to ensure that the knowledge is imparted. Pregnant women indicated that they want coping techniques to be included as part of information in the ANC education. They also suggested that more teachable moments are needed to receive and share knowledge.

Healthcare workers

- In-service training needs to be provided to healthcare workers about different types of non-pharmacological pain relief that can be applied during labour to relieve women from pain. Those in-services must be scheduled frequently until evidence of utilisation is proved.
- Positive attitudes towards the use of non-pharmacological pain relief must be over emphasised so that these methods are not seen as time consuming.
- Midwives' knowledge, attitudes, and utilisation of non-pharmacological pain relief methods require continuing assessment. Improving midwives' knowledge about non-pharmacological pain relief can positively impact their understanding of these methods and enhance women's childbirth experiences.

National Department of Health

- The healthcare system should align with the ideal hospital standards by establishing suitable structures in district public institutions to facilitate the utilisation of non-pharmacological pain relief methods, such as doula support. Despite the WHO's recommendation for birth companions, poor infrastructure hinders the implementation. Healthcare workers may be hesitant to allow doulas' presence due to concerns about invading other patients' privacy.

- The healthcare system must prioritise and support its employees' ongoing development and lifelong learning, enhancing their knowledge and clinical skills to promote evidence-based practice.
- Proper monitoring and balancing of human resources are essential to facilitate effective teaching and application of non-pharmacological pain relief methods.
- Collaboration between the health department and nursing education institutions can ensure the inclusion of these pain relief methods in the curriculum, providing better management for women in labour.
- Considering the high number of litigations in maternity care, it is crucial to prioritise respectful maternity care, which includes providing adequate pain relief during labour. Developing Standard Operating Procedures can guide the implementation of non-pharmacological pain relief methods and address potential barriers to adoption.
- Auditing of records should be emphasised, focusing on applying non-pharmacological pain relief methods. Records should indicate the type of relief methods offered and whether women used them during labour.
- The Department of Health (DoH) should revise the health education provided during ANC. As a result, knowledge of different non-pharmacological pain relief methods will increase. The utilisation of non-pharmacological pain relief may improve and assist in promoting comfort and independence during labour.
- DoH policies and guidelines must include information about family sessions for pregnant women. Those sessions must provide information on how family members can support pregnant women during labour.
- Community outreach programmes by DoH must conduct awareness educating pregnant women about non-pharmacological pain relief methods.

Pregnant women

- Pregnant women must be advised not only to rely on healthcare workers but also to use other platforms like YouTube and the Internet as the source of information on the available non-pharmacological pain relief methods.

5.6 STUDY STRENGTH

The researcher managed to reach the calculated sample size, and there was voluntary participation. The respondents also longed to see the application of these methods. This attests to respondents' positive attitude towards research conducted in clinical settings.

5.7 LIMITATION

The study was limited to pregnant women attending clinics at provincial district hospitals. The findings excluded pregnant women who attended antenatal care in the private institutions. Therefore, study recommendations will only apply to public institutions' maternity areas. The researcher intended to collect data in all five district hospitals. However, due to challenges encountered, only four district hospitals were utilised; in that case, the results cannot be generalised to all five district hospitals.

Data collection exceeded the planned period due to women who wanted to go home immediately after examination. Teenage pregnancy was a challenge since inclusion criteria included only pregnant women from the age of 18 years. Another challenge encountered was from women who had a history of previous caesarean section and who wanted to participate in the study. Still, it was rejected due to the set inclusion criteria.

5.8 CONCLUSION

The study wanted to determine the knowledge of pregnant women regarding non-pharmacological pain relief methods available during labour and the effectiveness of antenatal care in ensuring that women during their antenatal care are equipped with the knowledge to make informed choices regarding the kind of methods that can be used to relieve pain. The findings of the study revealed that most women lack knowledge regarding different non-pharmacological pain relief methods, and there was inadequate provision of education regarding pain relief methods.

Midwives, as healthcare providers, should conduct sessions to enhance the knowledge of pregnant women about non-pharmacological pain relief methods. These sessions should comprehensively cover the methods' benefits, barriers, advantages and disadvantages. Despite being recommended by the WHO, these methods are not commonly offered in some healthcare institutions due to potential barriers and the need for proper training of midwives. Our study highlighted the need for midwives and other healthcare professionals to educate pregnant women about methods of labuor pain relief and their benefits for both mother and baby during antenatal care.

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ANNEXURES

ANNEXURE A: UNIVERSITY FACULTY OF HEALTH SCIENCE ETHICS COMMITTEE APPROVAL LETTER

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

Institution: The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 18 March 2022 and Expires 18 March 2027.
- IORG #: IORG0001762 OMB No. 0990-0278 Approved for use through August 31, 2023.

Faculty of Health Sciences **Research Ethics Committee**

18 May 2023

Approval Certificate
Annual Renewal

Dear Mrs SE Matabane,

Ethics Reference No.: 236/2022 – Line 1
Title: Knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane district hospitals

The **Annual Renewal** as supported by documents received between 2023-04-18 and 2023-05-17 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2023-05-17 as resolved by its quorate meeting.

Please note the following about your ethics approval:

- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2024-05-18.
- Please remember to use your protocol number (236/2022) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

On behalf of the FHS REC, Dr R Sommers
MBChB, MMed (Int), MPharmMed, PhD
Deputy Chairperson *of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria*

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
University of Pretoria, Private Bag x323
Gezina 0031, South Africa
Tel +27 (0)12 356 3084
Email: deepeka.behari@up.ac.za
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Fakulteit Gesondheidswetenskappe
Lefapha la Disaense tša Maphelo

ANNEXURE B: BIOSTATISTICIAN LETTER

AGRICULTURAL RESEARCH COUNCIL

BIOMETRY

PO Box 8783, Pretoria, 0001 South Africa
Phone: (012) 427 9811 Fax: (012) 427 9743 (Int: +27 21)
E-mail: NgwaneC@arc.agric.za • Web site:
www.arc.agric.za

Letter of clearance from Statistician

This letter confirms that **Seemole Eniffer Matabane** (student no. **21823279**) studying at the University of Pretoria discussed the project titled **"KNOWLEDGE OF PREGNANT WOMEN REGARDING NON-PHAMACOLOGICAL METHODS OF PAIN RELIEF AVAILABLE DURING LABOUR IN TSHWANE DISTRICT HOPITALS"** with **Cynthia Boitumelo Ngwane** (a statistician working for Biometry at Agricultural Research Council). I hereby confirm that I assisted the student with data analysis using IBM® SPSS® Statistics. Chi-squared for equal proportion was used to describe the data in terms of frequencies and percentages. In addition, Chi-squared for independence was used to determine the association between the demographics and knowledge of the patients. Cronbach alpha was used to test the reliability of the data collection tool as well as the study.

Name Cynthia Boitumelo Ngwane **Date** 22 September 2023

Signature _____

AGRICULTURAL RESEARCH COUNCIL
P.O. BOX/POSBUS 8783
2023 -09- 22
PRETORIA • 0001
LANDBOUNAVORSINGSRAAD

ANNEXURE C: PLAGIARISM DECLARATION

Plagiarism declaration

Full names	Seemole Eniffer Matabane
Student number	21823279
Title	Knowledge of pregnant women regarding non-pharmacological methods of relief available during labour in Tshwane district hospitals

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this dissertation is my own original work. Where other people's work has been used (either from a printed source, internet or any other source), this has been properly acknowledged and referenced in accordance with the requirements as stated in the University's plagiarism prevention policy.
3. I have not used another student's past written work to hand in as my own.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Name: Matabane SE

Signature _____

ANNEXURE D: INFORMED CONSENT

PARTICIPANTS INFORMED CONSENT

STUDY TITLE: knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane district hospitals

Sponsor: No sponsor

Principal Investigators: Matabane SE

Institution: University of Pretoria (Health Science department)

DAYTIME AND AFTER-HOURS TELEPHONE NUMBER(S):

Daytime number/s: 0738347096

After hours' number: 0738347096

Dear Prospective Participant

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing research for a **Master's degree in clinical Midwifery** at the University of Pretoria. The information in this document is to help you decide if you would like to participate. Before agreeing to participate in this study, you should fully understand what is involved. Do not hesitate to ask the researcher if you have questions not fully explained in this document. You should not agree to take part unless you are completely happy about all the procedures involved.

2) THE NATURE AND PURPOSE OF THIS STUDY

This is to determine the knowledge of pregnant women regarding non-pharmacological methods of pain relief during labour. By doing so, I wish to find out the knowledge of pregnant women regarding the non-pharmacological pain relief methods available during labour. Non-pharmacological methods of pain relief are any form of pain relief which are not based on the use of medication or drugs, e.g. massage given at the area where there is pain to relieve the feeling of pain.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPECTED FROM PARTICIPANTS

This study involves answering some questions regarding your level of knowledge on non-pharmacological pain relief methods available during labour.

4) POSSIBLE RISKS AND DISCOMFORTS INVOLVED

There are no medical risks associated with the study. The only possible risk and discomfort involved is arousing bad experiences and emotional feelings.

5) POSSIBLE BENEFITS OF THIS STUDY

Although you may not benefit directly, the study results may help us to improve knowledge on pregnant women about the non-pharmacological pain relief methods available during labour and improve midwifery practice.

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) YOUR RIGHTS AS A RESEARCH PARTICIPANT

Your participation in this trial is entirely voluntary and you can refuse to participate or stop at any time without stating any reason. Your withdrawal will not affect your access to other medical care.

8) ETHICS APPROVAL

This Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, the University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval was granted by the committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2013), which deals with the recommendations guiding health care workers in biomedical research involving human/subjects. A copy of the Declaration may be obtained from the investigator should you wish to review it.

9) INFORMATION

If you have any questions concerning this study, contact:
Mrs Matabane SE
Cell: 0738347096

10) CONFIDENTIALITY

All information obtained during this study will be regarded as confidential. Each participant who is taking part will be provided with an alphanumeric coded number e.g. A01. This will ensure the confidentiality of the information collected. Only the researcher will be able to identify you as a participant. Results will be published or presented in such a fashion that patients remain unidentifiable. The hard copies of all your records will be kept in a locked facility at the **Nursing Department** at the University of Pretoria.

11) CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participating in this study.
- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalised in any way should I wish to discontinue the study and that withdrawal will not affect my further treatments.
- I am participating willingly.
- I have received a signed copy of this informed consent agreement.

Participant's name (Please print)	Date
Participant's signature	Date
Researcher's name (Please print)	Date
Researcher's signature	Date

AFFIRMATION OF INFORMED CONSENT BY AN ILLITERATE PARTICIPANT
(If suitable)

I, the undersigned, Matabane SE, have read and have explained fully to the participant the informed consent document, which describes the nature and purpose of the study in which I have asked her to participate. My explanation has mentioned both the possible risks and benefits of the study. The participant indicated that she understands she will be free to withdraw from the study at any time for any reason and without jeopardising her standard of care.

I hereby certify that the patient has agreed to participate in this study.

_____	_____
Participant's name (Please print)	Date
_____	_____
Participant's signature	Date
_____	_____
Researcher's Name (Please print)	Date
_____	_____
Researcher's Signature	Date
_____	_____
Name of the person who witnessed the informed consent (Please print)	Date
_____	_____
Signature of the Witness	Date

ANNEXURE E: DATA COLLECTION TOOL

QUESTIONNAIRE QUESTIONS
RESPONDENT NO:
SECTION A: DEMOGRAPHIC

Please tick the applicable answer

NO.	QUESTIONS	ANSWERS
1.	How old are you?	_____years
2.	How many children do you have?	
3.	What is your home language?	
4.	Highest level of education?	No schooling
		Some schooling
		Matric
		Higher certificate
		Diploma
		Bachelor's Degree
		Master's degree
		Doctoral degree
5.	Type of delivery	Normal natural birth
		Caesarean section

SECTION B: NON- NON-PHARMACOLOGICAL PAIN RELIEF KNOWLEDGE

NB! For the Yes/No and not sure answers tick the applicable

NB! Non-pharmacological methods of pain relief are any form of pain relief which are not based on the use of medication or drugs.

NO.	QUESTIONS	Yes (1)	No (2)	Not sure (3)
6.	Have you ever heard of non-pharmacological pain relief methods?	1	2	3
7.	What do you know about non-pharmacological pain relief used during labour?	Please specify		
8.	List examples of non-pharmacological pain relief that can be used during labour?	Please specify		
9.	Can they relieve pain during labour?	1	2	3
10.	Do you think you were given enough information during clinic visit regarding pain relief methods?	1	2	3
12.	Will you opt for non-pharmacological pain relief during labour?	**1**	2	3

NO.	QUESTIONS	Yes (1)	No (2)	Not sure (3)
13.	Will you recommend the use of non-pharmacological pain relief to a friend?	**1**	2	3
14.	What are the benefits of non-pharmacological pain methods?	Please specify		
15.	What are the disadvantages?	Please specify		
16.	Do you prefer pharmacological methods over non-pharmacological?	1	2	3

SECTION C: Types of non-pharmacological methods used during labour

NO.	QUESTIONS	Strongly disagree 1	Disagree 2	Not sure 3	Agree 4	Strongly agree 5
17.	Have you learnt about massage as one of the pain relief methods?					
18.	Have you learnt about (hydrotherapy) immersion in warm water as method of pain relief during labour?					
19.	Have you learnt about homeopathy which are plant extracts as method of pain relief?					
20.	Have you learnt about aromatherapy (use of natural oils) as method of pain relief					
21.	Have you learnt about music therapy as pain relief?					
22.	Have you learnt about breathing exercises as method of pain relief?					
23.	Have you learnt about acupuncture as method of pain relief?					
24.	Have you learnt about the superficial application of heat and cold on the lower abdomen?					
25.	Have you learnt about transcutaneous electrical nerve stimulation as pain relief method?					
26.	Have you learnt about movement and birth position changes as pain relief?					
27.	Using the birthing ball as pain relief for labour?					

NO.	QUESTIONS	Strongly disagree 1	Disagree 2	Not sure 3	Agree 4	Strongly agree 5
28.	Do you know about the use of birth companion or doula (support person) during labour as method of pain relief?					

SECTION D: THE EFFECTIVENESS OF ANTENATAL CARE

NB! For the Yes/No answer circle the applicable

NO.	QUESTIONS	ANSWERS
29.	How many times did you attend the Clinic?	Please specify
30.	Did the Sister (registered nurse) educate you on types of methods that can be used to control pain during labour?	Yes/ No Please specify
31.	Do you think the number of clinic attendance helps in preparing women for labour pains?	Yes/ No
32.	Why are you saying clinics is preparing or not preparing you for labour pain?	Please specify

SECTION E SUGGESTIONS ON PAIN RELIEF METHODS

33. What type of information must be included in the ANC education about labour pains?

34. How do you think labour preparation can be conducted?

35. Is there anything that you think was omitted from this interview question that can help about coping with labour pains?

Thank you for participation in the questionnaire...

ANNEXURE F1: TSHWANE RESEARCH COMMITTEE CLEARANCE CERTIFICATE (DOH)

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr. Manei Letebele-Hartell
Tel: +27 12 451 8006
E-mail: Troy.Meshabela@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

DATE ISSUED: 16/08/2022
PROJECT NUMBER: 48/2022
NHRD REFERENCE NUMBER: GP_202206_047

TOPIC: Knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane district hospitals

Name of the Lead Researcher:	Mrs Seemole Eniffer Matabane
Name of the Supervisor:	Ms M.P Mudau Prof T.M Mulaudzi
Facilities:	CDH District Hospital Mamelodi Hospital Tshwane District Hospital
Name of the Department:	University of Pretoria

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES AS APPROVED BY THE COMMITTEE.

DECISION OF THE COMMITTEE: APPROVED

.....
Dr. Manei Letebele-Hartell
Chairperson: Tshwane Research Committee

Date: 16/08/2022

.....
Mr. Mothomone Pitsi
Chief Director: Tshwane District Health

Date: 2022.08.16

ANNEXURE F2: TSHWANE RESEARCH COMMITTEE CLEARANCE CERTIFICATE (DOH)

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr Manei Le-Hartell-Letebele
Tel: +27 12 451 8008
E-mail: Tony.Mashabela@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

DATE ISSUED: 13/09/2022
PROJECT NUMBER: 48/2022
NHRD REFERENCE NUMBER: GP_202206_047

TOPIC: Knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane district hospitals

Name of the Lead Researcher:	Mrs Sesmore Lniffer Matabane
Name of the Supervisor:	Ms M. S Music Prof F M Mulaudzi
Facilities:	Jubilee District Hospital
Name of the Department:	University of Pretoria

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES AS APPROVED BY THE COMMITTEE.

DECISION OF THE COMMITTEE: APPROVED

.....
Dr. Manei Letebele-Hartell
Chairperson: Tshwane Research Committee

Date 13/09/2022

.....
Mr. Mothomone Pitsi
Chief Director: Tshwane District Health

Date: 2022-09-19

ANNEXURE G: HOSPITAL APPROVAL

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Annexure 1

Declaration of intent from the hospital CEO

I give preliminary permission to **Seemole Eniffer Matabane** to do her research on "**Knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour in Tshwane district hospitals** " in Odi District Hospital

I know that the final approval will be from the Tshwane/Metsweding Regional Research Ethics Committee and that this is only to indicate that the hospital is willing to assist.

Other conditions prescribed the hospital CEO:

1. **The name of our hospital, as the study site must be clearly stated in the study methodology.**
2. **The name of our hospital should also appear in the Tshwane District clearance certificate.**
3. **The researcher must submit all relevant documentation to the hospital research ethics committee (ODIHREC) before data collection can commence.**
4. **The researcher must submit the study findings report and present it at the annual research day on the date set by ODIHREC**

Signature
Odi Hospital CEO

Date

ANNEXURE H: HOSPITAL APPROVAL

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

MAMELODI HOSPITAL
Private Bag x 0032 P.O Retiable 0122
Tel no. +27 12 841 8300/8301

DECLERATION OF INTENT FROM THE CLINICAL MANAGER

I do give permission to: Mrs. Matabane S.E. GP_202206 047

to do research on: Knowledge of pregnant women regarding non pharmacological methods of pain relief available during labour in Tshwane district hospitals.

Other Comments or Conditions prescribed by the Clinical Manager:

1. Research results to be reported to the institution.

.....

Signature:
Clinical Manager

Date: 15 / 08 / 2022

ANNEXURE I: HOSPITAL APPROVAL

GAUTENG PROVINCE

Annexure 1

Declaration of intent from the hospital CEO

I give preliminary permission Ms S.E. Matabane to perform his research on

"Knowledge of pregnant women regarding non - pharmacological methods of pain relief available during labour at Tshwane District Hospital"

I know that the final approval will be from the Tshwane Regional Research Ethics Committee and that this is only to indicate that the hospital is willing to assist.

Other comments or conditions prescribed by the hospital CEO:

Once research is completed kindly send a copy to the hospital CEO so that the hospital can improve services based on research findings.

MS M G MOGASHOA
TSHWANE DISTRICT HOSPITAL
CEO

Ms Monene Mogashoa
Chief Executive Officer
Tshwane District Hospital
072 0944111

01/08/2022
Date

ANNEXURE J: HOSPITAL APPROVAL

ANNEXURE J

PERMISSION TO CONDUCT RESEARCH AT JUBILEE DISTRICT HOSPITAL

To:
Hospital Manager
Jubilee District Hospital

From:
The Researcher
University of Pretoria

Re: Permission to conduct research at Jubilee Hospital

To whom it may concern

I am a researcher studying with the University of Pretoria. I am requesting permission to conduct research in the maternity section Antenatal Unit. The principles of ethics will be considered by treating the responcents with respect and maintaining privacy throughout the process.

The title of the study is: Knowledge of pregnant women regarding non-pharmacological methods of pain relief available during labour.

Yours Sincerely

Matabane
Cell No:073 834 7096
Date: 27/07/2022

Permission granted: Yes / No

Mr/Mrs D.V. NTHETHWA
Hospital Manager
19/08/2022

JUBILEE DISTRICT HOSPITAL
HOSPITAL
CEO
SIGNATURE:
DATE: 19/08/2022

1

ANNEXURE K: EDITING CERTIFICATE

Unit 3 West Square Business Park
407 West Avenue
Randburg
2194

15 November 2023

TO WHOM IT MAY CONCERN

This serves to confirm that I have edited and made the necessary corrections and emendations to the thesis:

KNOWLEDGE OF PREGNANT WOMEN REGARDING NON-PHARMACOLOGICAL METHODS OF PAIN RELIEF AVAILABLE DURING LABOUR IN TSHWANE DISTRICT HOSPITALS

by

SEEMOLE ENIFFER MATABANE

Sincerely

J Musi
Editor

Tel: +27 84 513 3707• Fax: 086 532 6404• e-mail: caption@webmail.co.za • P O Box 1550 • Honeydew • 2040