MEDICAL EDUCATION IMPLICATION ON KNOWLEDGE, ATTITUDE, PRACTICES AND BARRIERS TO IMPLEMENTATION OF NON-PHARMACOLOGICAL PAIN MANAGEMENT DURING LABOR

BY

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A THESIS SUBMITTED TO THE SCHOOL OF MEDICINE IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN MEDICAL EDUCATION

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DECLARATION BY CANDIDATE

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ACKNOWLEDGEMENTS

"My help comes from the LORD, who made heaven and earth". Psalm 121:2

I am thankful to 'God' for giving me the potential, energy, opportunities, courage to join in the PhD programme and showering me with His blessings throughout this endeavor.

I extend my heartfelt thanks to University of Eastern of Africa, Barton for allowing me to do this programme.

I express my profound and sincere thanks to Moi University for allowing me into the programme and all the faculty members in the department of Medical education. Special thanks to Prof. Simon Kang'ethe and Dr. F. O . Boibanda for the encouraging words and the patient guidance.

Most sincere appreciation is expressed to each of my supervisors Prof. Arthur V.M. Kwena, Dr. Ashraf Emarah and Prof. Simon Kang'ethe.

My whole hearted thanks to Prof. Elizabeth Role of the University of Eastern Africa Baraton and Mr. Stephen Wafula of the Great Lakes University, who tirelessly helped me with statistical analysis during the studies.

I recognize and appreciate the cooperation, willingness, invaluable time and information by the health care providers in County General Hospital, Kakamega where the pilot study was conducted. I acknowledge the participation of the MTRH and JOOTRH during the implementation of the study.

My sincere heartfelt gratitude goes to Dr. Amenya Hulda for editing my thesis.

I am greatly thankful to my family members for their prayers, love and support.

It is with a deep sense of pride that I extend recognition to my husband Prof. Paul Samuel Francis and my children Joella Paulyn Francis, Jotham Paulson Francis and Joetta Paulina Francis for their love, understanding and encouragement. I appreciate all my friends and colleagues for their prayerful support and encouragement.

ABSTRACT

Background: Health care providers have a key role in pain management. Health care providers often use non-pharmacological measures to facilitate comfort for patients within the hospital setting. However, guidelines for use of these measures are commonly inadequate or absent. The medical education implication of knowledge, attitude, practice and barriers is important in addressing consequence of how the mother's labor pain is going to be managed. If the training is not comprehensive enough, there is a likelihood of discrepancy in labor pain management. Knowledge, attitude, practice and barriers can affect the quality of care provided to a pregnant mother in labor, especially when pain during labor has to be addressed.

Objectives: The objective was to determine the medical education implication of the health care providers' knowledge, attitude, practices and barriers regarding non-pharmacological pain management during labor in Moi Teaching and Referral Hospital, Eldoret and Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya.

Methods: This study employed a non-experimental cross-sectional descriptive survey design. The total sample size was 266 and study population included the health care providers. The tool consisted of self-administer structured questions to assess the knowledge, 3 point Likert scale to identify the attitude and checklist to determine the practice and barriers for using non-pharmacological pain management during labor. Data were summarized using frequencies, percentage, mean and standard deviation. Chi-square test was used to test the relationship between demographic characteristics and implementation of non-pharmacological management of pain during labor in teaching hospitals. Mann Whitney U-test was used to compare mean differences between the study sites in terms of attitude, practice and barriers. Chi-square test of independence was used to check for significant relationship between knowledge level and study site. Findings are presented in form of tables, charts, graphs and narrative.

Results: Eighty six percent of the healthcare providers had inadequate level of knowledge on non-pharmacological management of pain during labor. Health care providers had a positive attitude towards non-pharmacological pain management during labor. All participants responded that majority of health care providers practice/encourage massage, breathing exercise, different position and encourage the relatives to supporting the laboring women. In terms of the health care system related barriers, 92(34.6 %) of the participants responded that the main barrier was lack of time. For health care provider related barrier, 75(28.2%) of the participants responded that it is lack of knowledge and of patient related barriers, 85(32%) of the participant responded that the main barrier was patient unwillingness. There was a significant difference in mean rank in terms of practice and barriers to non-pharmacological management of pain during labor ($p<0.05$). Health care providers from Eldoret had higher mean rank compared to those from Kisumu.

Conclusion: Majority of the healthcare providers 230(86.5%) had inadequate knowledge of non-pharmacological pain management during labor. Health care providers had a positive attitude towards non-pharmacological pain management during labor. Most of the health care providers practiced massaging, breathing exercise and encourage different laboring positions during labor. The main barriers were lack of time, knowledge and patient unwillingness. The management of mothers' pain in labor was uncomprehensive.

Recommendations: Training aspects should focus more to the health care providers about various complementary and alternative therapies for pain management in labor; health care providers understand the importance of reduction of pain perception during labor and develop skills in providing efficient practice for effective pain management during labor; collaborate with governing bodies to formulate standard policies and protocol to emphasize care during labor. Finally, to improve the curriculum for non-pharmacological pain management during labor.

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LIST OF ABBREVIATIONS

ERC	Ethics Review Committee/ Ethics Research Committee
HCP	Health Care Providers
IREC	Institutional Research Ethics Committee
JOOTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
KAP	Knowledge, Attitude and Practices
MTRH	Moi Teaching and Referral Hospital
OB/GYN	Obstetrics/Gynecology
PBI	Present Behavioral Intensity
SPSS	Statistical Package for Social Sciences
TENS	Transcutaneous Electrical Nerves Impulse
URL	Uniform Resource Locator

DEFINITIONS OF TERMS

Attitude: It refers to the respondents subjective feelings towards non-pharmacological pain management during labor.

Barriers: Obstacles that prevent progress of practicing non-pharmacological measures during labor.

Continuous Labor Support: The term "continuous labor support" refers to non-medical care of the laboring woman throughout labor and birth by a trained person.

Effleurage: Stroking movement in massage. During child birth, a light circular stroke of the lower abdomen, done in rhythm to control breathing, to aid in relaxation of the abdominal muscles, and to increase concentration during a uterine contraction.

Health care providers: This is a term used to describe the variety of people who provide health services to health care consumers. In this study it refers to Consultants, Medical Officers. Clinical Officers, Residences, Staff Nurses and Student Nurses.

Health care system: It refers to the organization of the people, institutions and resources that deliver health care services to meet the health needs of the clients.

Implication: The action or state of being involved in the care of the mother with non-pharmacological pain management during labor.

Knowledge: It refers to the understanding, information and awareness of responds respondents on non-pharmacological pain management during labor.

Medical Education: The process of receiving or giving systematic instruction, especially at a medical school or university.

Multigravida: A pregnant woman who has had one or more previous pregnancies.

Non-pharmacological pain management: It refers to safe, simple, effective, inexpensive therapies that help in reducing the labor pain.

Practice: Practice is the act of doing something regularly or repeatedly to improve the skills at doing it. It is the method of learning and of acquiring experience.

Primigravida: A woman pregnant for the first time.

Vertex Presentation: A fetal presentation in which the vertex of the fetus is the part nearest to the cervicalos and can be expected to be born first.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This study was on Medical Education Implication of Knowledge, Attitude, Practices and Barriers to Implementation of Non-Pharmacological Pain Management during labor in Teaching hospitals in Western Kenya. This chapter has provided on introduction to the study, including the background, statement of the problem, objectives, significance and other related concepts.

1.1. Background of the Study

Pain is an unpleasant, complex, highly individualized phenomenon with sensory and emotional components especially for mothers. Mother afraid from the pain they will experience during labor and how to cope with that pain (Blackburn, 2013). Labor can seem to be like a painful experience for many mother during labor the mother is about to undergo one of the most meaningful and stressful event in her life (Thomas & Dhiwar, 2011).

Labor is defined as the series of events that take place in the female genital organ in an effort to expel the viable products of conception, out of the uterus through the vagina into the outer world. Labor is traditionally divided into three stages, first stage which begins with the initiation of true labor contractions and ends when cervix is fully dilated. The first stage has three phases: latent phase, active phase, and transition phase. The average duration of first stage is twelve hours in primigravida and six hours in multigravida. The second stage of labor extends from the time of full dilation of cervix until the baby is born. The duration is two hours in primigravida and thirty minutes in multigravida. The

third stage of labor lasts from the birth of the fetus until the placenta is delivered; duration is about fifteen minutes in both primi and multi gravida (Pillitteri, 2007).

Labor is a dynamic process that most women go through during childbirth. As a woman's labor progresses and changes, so does the pain that accompanies it. The perception of pain is influenced by a variety of factors including the woman's culture, her individual ability to cope with pain, her body, her surroundings and her support systems. In order to adequately assist laboring mothers who are coping with labor pain so that they can achieve the most gratifying birthing experience, health care workers need to thoroughly understand labor pain (Amanda, 2015)

The World Health Organization (WHO, 2018) defines of the latent and active first stages of labor is recommended for practice is the latent first stage is a period of time characterized by painful uterine contractions and variable changes of the cervix, including some degree of effacement and slower progression of dilatation up to 5 cm for first and subsequent labors. The active first stage is a period of time characterized by regular painful uterine contractions, a substantial degree of cervical effacement and more rapid cervical dilatation from 5 cm until full dilatation for first and subsequent labors.

During the process of giving birth to new life, the mother has to undergo enormous pain. Labor pain is an unpleasant, complex, highly individualized phenomenon with both sensory and emotional components. Childbirth while primarily a joyful event predisposes the mother to one of the most severe forms of pain ever reported (Barthalomea, 2012).

The causes of labor pain can be either physical or psychological. Physical factors include uterine contractions, cervical dilatations and cervical effacements among others. Psychological factors include fear and anxiety, previous experiences and inadequate

support and knowledge. The Pain perceived during labor may be different for each woman (Orshan, 2008).

Pain management is the alleviation of pain or a reduction in pain to a level that is acceptable to the client. It includes two basic types of medical interventions: pharmacologic and non-pharmacologic. However, misconceptions and biases can affect pain management. These may involve knowledge and attitudes of the health care providers or the client. In addition, effective pain management is an important aspect of health care providers care in promoting healing, preventing complications, reduce suffering and preventing the development of incurable pain states (Berman *et al*., 2008).

For several decades, medical educators have focused on the alleviation or reduction of pain and suffering during the childbearing experience. Wide arrays of non-pharmacological pain relief measures like relaxation, breathing techniques, positioning and movement, massage, hydrotherapy, hot and cold therapy, music, guided imagery, acupressure, and aromatherapy are some self-help comfort measures women may initiate during labor to achieve an effective coping level for their labor experience (Nichols & Humenick, 2000).

Non-pharmacological or natural therapies are methods that help decrease the pain but do not involve taking medicines. People have employed "natural" ways to help with pain and healing from the very beginning of time and non-pharmacologic interventions include cognitive behavioral therapy, relaxation therapy, biofeedback, patient education, self-management, and social support interventions. These types of interventions aim to change behavior, cognitions and emotions by targeting the psychosocial processes that are implicated in the perceptions and response to pain. There is evidence that these

interventions can be effective in managing pain, particularly in relation to the cognitions surrounding pain; this, however, is predominantly short term (Demir, 2012; Reuters, 2012; James *et al.,* 2011).

Each day millions of people suffer from pain whether they are in the hospital, at homes, or assisted living facilities. The experience of pain negatively influences their daily lives. As nurses and physicians interact with patients and families, they assess and treat the pain. Nurses and physicians knowledge and attitudes of pain management can affect their patient's treatment options. Most of the time drugs including narcotics and non-steroid anti-inflammatories are prescribed to relieve the pain. However, pain is often under-treated and patients continue to suffer from the ill effects of pain and lack of its management(Helmrich*et al.,* 2001).

Health care providers are essential in pain diagnosis and treatment in all health care settings. They are closest to the patients and their families and provide constant emotional, spiritual and personal support. They have an important role in assessing and monitoring pain management (Kumar 2007; Shugarman*et al.,* 2010).

To provide optimal patient care, nurses require appropriate knowledge, skills and attitudes towards pain, pain assessment and its management. This must be based on the best available evidence to prevent patients from suffering harm (Nursing and Midwifery Council, 2008).

The health care providers should have knowledge of the use of non-pharmacological approaches such as the use of hot and cold mechanisms, acupuncture, massages and breathing measures among others employed in pain management. In addition to the areas of pain management required of health care providers, knowledge of the existing

standards of pain management as well as the already established recommendations is considered to be vital, as health care providers have the potential to play a vital role in pain management and education. A major prerequisite of effective care delivery is nurses who are prepared at a fundamental level of current knowledge, competence and confidence in understanding and managing pain. A pathway is created with the development of this knowledge and a skills framework which will promote consistent evidence-based practice and will thus contribute to improved management during labor (King, 2011&Kipkorir, 2011).

The health care providers have a key role in pain management. The promotion of comfort and relief of pain are fundamental to health care providers practice. They often use non-pharmacological measures to facilitate comfort for patients within the hospital setting. However, guidelines for non-pharmacological use of these measures are commonly inadequate or absent. Health care providers can educate patients, families, and other clinicians to use non-pharmacological strategies such as relaxation, massage, and heat/cold to manage pain. They can investigate patients' attitudes and beliefs about, preference for and experience with non-pharmacological pain-treatment strategies. They can thus tailor non-pharmacologic techniques to the individual (Horgas & Yoon, 2008; Williams *et al.*, 2009).

Non-pharmacological pain management supposed to document in the curriculum in a detailed way. So it can be followed by the health care providers for their training.

1.2. Statement of the problem

A woman experiences great pain during labor and she needs physical and emotional support to pass over this plateau. The health care provider is the ideal person to assist the

woman in this crucial hour, combining her skills and knowledge with abundant humanity. The topic of labor pain management occupies a unique place in the evaluation of effectiveness of maternity care (Bolding &Simkin, 2004).

Non-pharmacological pain management should be adopted according to the women's need and expanding options available should be a primary focus of maternity care. The main goal should be to provide a safe and acceptable alternative to women.

Hence the importance of understanding and applying these modalities of pain relief should be stressed among the health care providers in order to accelerate the standards of maternity services provided. The health care providers are essential in pain diagnoses and treatment in all health care settings. They are closest to the patients and their families and provide constant emotional, spiritual and personal support. They have an important role in assessing and monitoring pain management. To provide optimal patient care the health care providers required appropriate knowledge skills and attitude towards pain, pain assessment and its management.

Medical and midwifery professions come up with the guidelines to address the total management of the mother at conception, during and after delivery. The implementation of what has been described can be best revealed by the recipient of the services in terms of outcomes so in view of that the researcher would like to find out what the situation is regarding non-pharmacological pain management during labor.

1.3. Research Objectives:

General Objectives

This study set to assess the medical education implications of knowledge, attitude, practices and barriers to implementation of non-pharmacological pain management during labor in teaching hospitals.

Specific Objectives

1. To assess the knowledge of the health care providers on the non-pharmacological management of pain during labor.
2. To identify the attitude of the health care providers on the non-pharmacological management of pain during labor.
3. To determine the practice of the health care providers on non-pharmacological management of pain during labor.
4. To identify the barriers to non-pharmacological management of pain during labor.
5. To assess the knowledge, attitude, practice and barriers between the study site of the health care providers on non-pharmacological management of pain during labor.

1.4. Research Variables

Study Variable:

In general variables or qualitative properties and or characteristics of persons, things or situations that are studied in research process. The variables in quantitative research are narrow and specific in focus and are capable of being quantified.

In the present study, the researcher is interested to measure and describe the variables namely medical education implication of knowledge, attitude, practice and barriers to implementation of non-pharmacological pain management during labor. Being a descriptive study these variables will only be measured and described, and not manipulated in the study.

1.5. Justification for the study

Childbirth has a deep significance not only to mother and her partner but also to the whole family. It is a profound physiological, psychosocial and spiritual event. It is this joy and expectation from the entire family that drives the mother to face the pain and all the suffering associated with it (Barthalomea, 2012).

The management of labor pain is one of the main goals of maternity care. Although pain and suffering occur together, one may suffer without pain or have pain without suffering. The goal of eliminating labor pain not only requires pain medication but also require other techniques/modalities to preserve health and maintain coping strategies. This requires highly skilled personnel to control any undesirable side effects. The effectiveness of most widely used alternative modalities is discussed with a view to educate the primary care providers, the midwives (Bolding &Simkin, 2004).

A systematic review on non-pharmacological approaches to relieve labor pain and sufferings was conducted in University of Mexico. A systematic review on randomized trials was conducted and thirteen methods were found to be effective. Systematic review of randomized controlled trial of methods like continuous labor support, hydrotherapy, intra-dermal water blocks, movement and positioning, touch and massage, acupuncture, hypnosis, transcutaneous electric nerve stimulation, aromatherapy, heat and cold,

childbirth education, self-help techniques such as breathing and relaxation, music and audio analgesia were taken (Bolding &Simkin, 2004).

A study to assess the effectiveness of non-pharmacological aspects in relieving labor pain was conducted in a public maternity center in Brazil. Clinical trials were taken before and after therapeutic interventions like hydrotherapy, massages, hot and cold applications, acupressure, trans-cutaneous electric nerve stimulation, aromatherapy etc. It was conducted among parturient ($n = 100$). A significant difference was observed in pain relief showing reduced pain with the help of visual analogue scale (Marie *et al.*, 2008).

The non-pharmacological pain management has fewer or no side effects and requires very few safety precautions. They can be combined or used sequentially to enhance their total effect. Surveys suggest that women prefer alternative modalities for pain relief during labor.

Women tend to rate alternative modalities of pain relief highly in terms of satisfaction and desire to repeat them in future labor, even though their pain relieving capability is short lived. It can be practiced in any setting as it is easy and affordable.

Alternative modalities focus on preventing suffering rather than completely eliminating pain. It helps the mother in building up self-confidence, improving her coping abilities and perceptions of child birth. In fact the element that best predicts a woman's experience of labor pain is her level of confidence and the ability to cope with the pain. Satisfaction, fulfillment and a sense of accomplishment are often high when a woman copes well, even when the pain she is experiencing is great. A single modality can't meet the needs of every woman (Bolding & Simkin, 2004).

Although effectiveness of alternative modalities is proved by various studies it is not practiced in many of our hospitals and maternity centers. There is a need to increase awareness among midwives about women's preferences for alternative modalities to relieve pain during labor. The health care providers should consider alternative modalities a valid form of pain relief and coping. However, if possible women should be provided with alternative modalities through a skilled person. The health care providers should be aware of the need for practicing these modalities as women are highly satisfied with these alternative modalities of pain relief.

The investigator's previous clinical experience and also many studies conducted in different settings show that alternative modalities are effective to relieve pain during labor. With the effectiveness of various alternative modalities proved by different studies, the investigator wants to assess the medical education implication of knowledge, attitude, practices and barriers to implementation of non-pharmacological pain management during labor in Teaching hospitals in western Kenya.

Alternative modalities are very effective in minimizing pain during labor. Health care providers are with the mother during the entire process of labor and hence they are at a position to provide relief to the woman from labor pain. Hence, the investigator wishes to select them to assess their medical education implication of knowledge, attitude and practice and to find out the barriers that prevent health care providers from using non-pharmacological pain management during labor. Non-pharmacological methods could be incorporated in the current curriculum of training the health care providers.

1.6. Significance of the study

Although there is an increase of knowledge and developments in technological resources regarding pain, many patients still experience pain. Inadequately managed pain can lead to adverse physical and psychological patient outcomes and also impact on their families. This situation causes a reduction in living quality and the functional situation of the patients. Non-pharmacological therapies may help in reducing pain and must be encouraged as part of the comprehensive pain management effort. Also, these methods increase the individual's feeling of control, decrease the feeling of weakness, improve the activity level and functional capacity, reduce stress and anxiety, and improve quality of life. As a result, the dosage of analgesic drugs needed can be reduced decreasing the side effects of the treatment and reducing health care costs by reducing doctor visits and reliance on costly medications.

1.7. Scope of the study

This study was conducted in two settings: Moi Teaching and Referral Hospital, Eldoret and Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya. This descriptive study focused on exploring the health care providers' knowledge, attitude, practice and barriers regarding non-pharmacological pain management among health care providers. In addition, the relationship among the health care providers' knowledge, attitude, practice and barriers were examined. The possibility of incorporating non-pharmacological pain relief methods in the training curriculum of health care providers was also examined. The subjects involved in this study were all health care providers who were giving care in selected labor units.

1.8. Limitation of the study

This research was carried among of health care providers in two locations: Moi Teaching and Referral Hospital, Eldoret and Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya. Thus, the findings may not be generalized to all practicing nurses in Kenya. On the flipside however, it is highly likely that health care providers practicing in Kenya have gone through similar training experiences. Assessment of medical education implication of knowledge, attitude, practice and barriers regarding non-pharmacological pain management during labor among health care providers only as the correct responses given by the respondents to the items in the tool. The tool prepared for the study will be sufficient for collection of the information on medical education implication of knowledge, attitude, practice and barriers regarding non-pharmacological pain management during labor.

1.9. Assumptions of the study

This study was based on the following assumptions:

1. Health care providers may have updated their knowledge, attitude, practice and barriers regarding non-pharmacological pain management during labor.
2. Health care providers would provide responses that were a true reflection of their perceived abilities and not based on what they thought should be the “right” responses.
3. The level of knowledge, attitude, practice and barriers regarding non-pharmacological pain management during labor among health care providers may vary with their selected demographic variables.

1.11. Conceptual frame work of modified knowledge, attitude and practice model (KAP) on non-pharmacological pain management during labor and its barriers developed by the principal investigator after reviewing different literature

The conceptual frame work of this study was based on taxonomy of educational objectives developed by Bloom. In addition to the knowledge, attitude, practice (KAP) model; the literature reviews of barriers of non-pharmacological pain management during labor were used to guide the relationship between knowledge, attitude and practice of non-pharmacological pain management during labor.

Bloom's taxonomy of learning objectives was selected to guide this present study because the researcher wanted to examine whether health care providers have been trained to achieve learning outcomes which are needed to manage labor pain with non-pharmacological pain management during labor. Three domains of learning objectives are classified as cognitive, affective and psychomotor. Knowledge, attitude and practice represent those three domains respectively. Cognitive domain has two dimensions: Knowledge and cognitive process (Anderson & Krathwohl, 2001). Knowledge refers to factual, conceptual, procedural and metacognitive thought. Cognitive process refers to the mechanism in which one reaches such different levels of knowledge.

In this study, under the cognitive domain, the researcher has included varies aspects like general information regarding labor, non-pharmacological pain management during labor including aromatherapy, massage, breathing exercise, intra-dermal water blocks, hydrotherapy, continuous labor support, movement and positioning, acupressure, heat and cold, plus music therapy.

Attitude is an internal or covert feeling and emotion or selective nature of intended behavior which represents the affective domain. Attitude can be defined as human perception and cognitive reaction to a condition or event. In this study, under attitude the researcher has categorized: Agreement and outcome expectancy of non-pharmacological pain management during labor, motivation to do non-pharmacological pain management, perceived self-efficacy to development, confidence and skills to deal with non-pharmacological pain management during labor. Practice represents the psychomotor domain. It refers to the physical movement, co-ordination, and use of motor or neuromuscular activities. Practice is the application of rules and knowledge that leads to action.

In this study, under the psychomotor domain, the researcher has planned to assess the feasibility: Feasibility of doing non-pharmacological pain management during labor, services provided by Health care providers regarding non-pharmacological pain management during labor, support provided by Health care providers to do non-pharmacological pain management during labor.

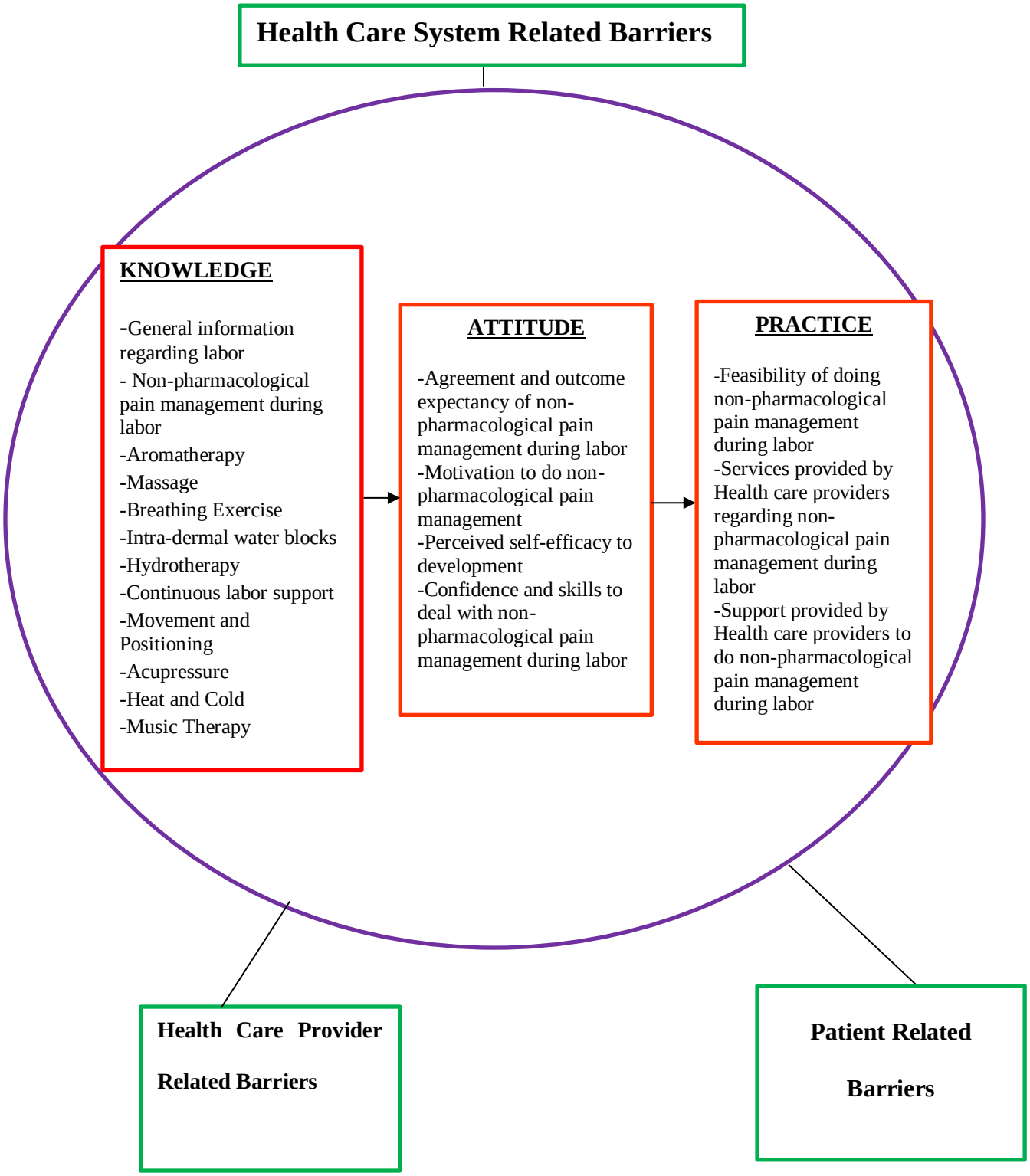
Barriers are a thing that obstructs or impedes (Houghton, 2002). In this study, the researcher has focused mainly on the three barriers like health care system related barriers, health care provider related barriers and patient related barriers which mainly affect the knowledge, attitude, practice of the health care providers in carrying out non-pharmacological pain management during labor.

Therefore, in this study, knowledge, attitude and practice were the key concepts representing health care providers' non-pharmacological pain management during labor.

According to the KAP model (Launiala, 2009),there are interrelations among knowledge,

attitude and practice. Certain knowledge can influence an individual's ability to perform actions. The attitude affects an individual towards practice. Knowledge and attitude bring changes in human behavior. Therefore, integral components of knowledge, attitude and practice represent the quality of healthcare provider practice.

1.12. Figure - Conceptual frame work of implication of health care providers knowledge, attitude, practice and barriers of non-pharmacological pain management during labor



CHAPTER TWO

LITERATURE REVIEW

2.0. Overview

This chapter reviews empirical and theoretical studies that were related to the objectives discussed in chapter one. A review of literature refers to activities involved in identifying and searching for information on a topic and also developing and understanding the state of knowledge on the topic. A review of literature was undertaken to gain in depth knowledge of the various aspects of the problem under study (Polit & Hungler, 2008).

The investigator carried out an extensive review of literature on the research topic in order to gain an insight into the selected problem under study as well as collecting maximum relevant information for building up the study.

Review of literature for the present study has been organized under the following headings.

2.1. Labor pain management

Labor is a dynamic process that most women go through during childbirth. As a woman's labor progresses and changes, so does the pain that accompanies it. The perception of pain is influenced by a variety of factors including the woman's culture, her individual ability to cope with pain, her body, her surroundings and her support systems. In order to adequately assist laboring mothers who are coping with labor pain so that they can achieve the most gratifying birthing experience, health care workers need to thoroughly understand labor pain. There are several factors that influence a woman's perception of labor pain. A woman's culture, ethnicity, level of education, preparation for childbirth, previous pain experiences and ability to cope all affect her ability to manage the pain of

labor (Zwelling*et al.*, 2006).It is impossible to change a woman's culture, ethnicity or previous experiences with pain, but health care workers can educate and prepare laboring mothers to cope with the pain. In Japan, childbirth is considered a woman's number one contribution to society, so feeling the pain and successfully coping with it is considered admirable (Behruzi*et al.*, 2014). In the United States, on the other hand, women often want to feel the least amount of pain possible. Socio-cultural views like these ultimately affect the definition of "coping" with labor as well as the methods used to cope. Non-pharmacological methods for pain relief do not remove the pain entirely, but helps to empower laboring mothers to cope with the pain they are experiencing in a more natural way. In order to understand how to reduce labor pain non-pharmacologically, it is imperative to know how pain physiologically occurs. In the first stage of labor, pain is a result of the lower uterus distending, the cervix stretching during dilation and the baby's descent causing pressure on nerves and surrounding tissues (Zwelling *et a*l., 2006). The pain of the uterine contractions spreads to the stomach, lower back, hips, thighs and gluteal muscles. As the uterus contracts, ischemia also causes pain (Almushait & Ghani, 2014). During the second stage of labor, the vagina distends and the tissues around the pelvic floor and perineum stretch (Zwelling *et al*., 2006). The pain of labor is also affected by the baby's position, how quickly it descends into the birth canal, the position of the mother, how tired she is, and the length and frequency of the contractions. The laboring mother and her support people need to be educated on what is happening in her body that is causing pain so that she can cope better with it. Understanding exactly what the pain is from can also help health care workers to choose an appropriate method of relieving the pain non-pharmacologically.

2.2. Methods for pain management during labor

There are two main classifications of pain relief methods: pharmacological and nonpharmacological. The goal of non-pharmacological methods is to increase the ability of the woman to cope with pain, whereas the goal of pharmacological methods for pain relief is to relieve labor pain (Jones *et al*., 2013). Some examples of current pharmacological methods used frequently in labor include inhaled nitrous oxide and oxygen, non-opioid drugs or sedatives, epidural anesthesia, combined spinal-epidurals, local anesthetic nerve blocks and parenteral opioids. In general, pharmacological methods tend to manage pain effectively but can have adverse effects on the mother and on delivery outcomes. Non-pharmacological methods, on the other hand, have been shown to improve the management of pain with few negative effects, but minimal research has been conducted on these methods to prove their efficacy. Labor and delivery clinicians may be less educated on non-pharmacological methods for pain relief during labor, which results in an overall poor understanding of its benefits. This gap in literature is why it is important to research the role of non-pharmacological methods for pain relief in labor.

2.3. Current birthing process

The birthing process has evolved considerably over time. The cesarean section rate rose60% between 1996 to 32.9% in 2009, but are currently remaining steady around 32.7% in 2013 (Hamilton *et al.*, 2014). This change over a thirteen year time span is drastic and shows how childbirth has devolved from a natural, healthy aspect of womanhood, into a medicalized process that requires intervention. Birth plans are often disregarded when mothers enter the hospital setting and surrender to the medical version of childbirth. Too often mothers are being treated with increased interventions and

epidurals instead of being coached and empowered to cope with the pain. In order to reverse this medicalized child birth trend, the current issues need to be clearly identified. As childbirth has shifted from the home to the hospital setting, the perspective of childbirth in the United States has also changed. In many countries, pregnancy is equated with a pathology that needs to be fixed by doctors instead of a natural part of being a woman (Behruzi *et al.*, 2014). Pregnancy is not an illness, but rather a normal, natural and healthy process in a woman's life. In order to decrease this stigma around childbirth, healthcare workers need to revert control to laboring mothers, empower them and emphasize that childbirth is not a sickness that needs to be medically managed. Despite Japan's more natural approach to childbirth, their low infant mortality rate is competitively rated with the U.S. and is a mere 2.7 per 1000 live births. Japan was even listed as the "best place to give birth in 2009 (Behruzi *et al.*, 2010)." These statistics show that a medicalized birth is not the only way to have a safe birth. The larger question here is how can the U.S. revert back to a primarily natural birthing process and convey that women are capable of delivering their children.

2.4. Review of non-pharmacological pain management during labor

The study conducted at North America (Bolding & Simkin, 2004) to assess the effectiveness of non-pharmacological approaches to relieve labor pain and prevent suffering. Thirteen methods were updated. Randomized controlled trials included 60 women, 30 received the alternative modalities and the other 30 women were in the control group with usual care. The experimental group had a statistically significant lower pain intensity score. The results of these studies indicate that with appropriate skill and attention, alternative modalities are effective in reducing pain during labor. Hence,

the effectiveness of alternative modalities in relieving pain during labor was proved by this study.

The study conducted at Children's Hospital, Australia on the effectiveness of alternative modalities in labor pain relief. Meta-analysis was performed using relative risks for dichotomous outcomes and weighed mean differences for continuous outcomes. Women receiving alternative modalities were more satisfied with their pain management in labor compared with controls. Hence alternative modalities are effective in reducing labor pain (Smith *et al,* 2006)

2.5. Effectiveness of aromatherapy in pain management during labor

The study conducted at Oxford Brookes University to explore the effects that essential oils can have on helping a mother mentally cope with labor. During the eight-year study involving 8,000 mothers, they found that aromatherapy was effective in managing labor pains. They found that using essential oils lessened maternal anxiety and fear while inducing a sense of well-being. Fear and anxiety are two factors which can slow labor and make the mother unable to cope with the pain of labor. The study showed a drop in the use of opiate pain relief by those mothers who used aromatherapy during labor. The normal uptake of opiate pain relief would have been expected to be 30% however in the Oxford study this dropped to 0.4% (Burns *et al.*, 2007*)*.

One large, uncontrolled prospective study reported on the use and effectiveness of aromatherapy in a large referral maternity unit in the United Kingdom. During this time, 8058 women received aromatherapy during labor under the supervision of midwives trained in aromatherapy. Sixty-one percent of the women received aromatherapy (lavender, rose, or frankincense) to relieve anxiety and fear. Rose oil was rated helpful by

most (71%), followed by lavender (50%). Lavender and frankincense were used for pain by 537 women, of whom 54% found lavender helpful and 64% found frankincense helpful. In conclusion, aromatherapy is inexpensive and popular with laboring women and midwives.

2.6. Effectiveness of massages in pain management during labor

The retrospective descriptive survey design study was conducted on "10 Non Pharmacological pain relief techniques" for 46 women who were at least 18 years old in North California. Of the 10 Non Pharmacological strategies rated by the sample, breathing techniques relaxation, acupressure and massage were found to be most effective. Results found that a greater use of techniques were safe and effective and enhanced patient satisfaction during birth experience (Jayalakshmi *et al.,* 2008).

Massage is also a well-known method of natural pain relief. Touch is used worldwide to support positioning, decrease muscle spasms, relieve labor pain and to soothe the laboring woman as it reduces anxiety and improves labor outcomes, (Zwelling *et al.*, 2006). The mothers who use massage to cope with labor pain may have shorter labors, decreased postpartum depression and shorter hospital stays This simple intervention can be used when talking to the mother, recording her history and while observing contractions, making it a convenient way to reduce labor pain and increase patient satisfaction. There are zero risks for the mother and the baby, so it is an excellent intervention to decrease labor pain. Having a massage on every labor and delivery unit or having all nurses trained specifically in massage would save money in the long run and increase patient satisfaction. Massage for pain relief during labor found that

overall, massage seems to be beneficial for decreasing pain, decreasing anxiety, and increasing satisfaction with the birth (Amanda, 2015).

A study was conducted to assess the effect of massage therapy on severity of pain and outcome of labor at selected hospitals in Tehran. The results demonstrated that the mean of pain severity at the first stage of labor was significantly different among the experiment group and the control group. Massage therapy could be introduced as a useful method during delivery; because of its supportive role in reducing labor pain (Karami *et al.*, 2009).

2.7. Effectiveness of breathing exercises in pain management during labor

Breathing techniques were reported as the most effective pain relieving technique used during labor. The antenatal women require education in preparation for childbirth and pain reduction strategies. The mothers feel unawareness, fear, anxiety as a result in an uncooperative attitude and a stressful childbirth experience. So we need to teach mothers an alternative therapy like breathing exercise to cope with labor pain (Kaur *et al.*,2013).

The most commonly known natural method of coping with pain is breathing. It is the most used intervention because mothers can do it without staff accompaniment, it does not require much practice and it is easy to perform (Almushait & Ghani, 2014). Due to the inability of nurses to stay with laboring mothers constantly, it is vital for mothers to educate themselves prenatally on various interventions they can perform alone so that they having coping methods to rely on at all times. On the other hand, health care workers should examine what other alternative methods fit these qualifications so that more interventions can be taught at childbirth classes for mothers to perform independently.

2.8. Effectiveness of intra-dermal water blocks in pain management during labor

The application of sterile water injection is effective for relieving back pain in the first stage of labor and has a sufficient satisfaction lev el among women. Sterile water injection is an alternative nonpharmacological method used to treat severe visceral organ pain (such as chronic myofascial pain, urinary colic, and labor pain). Sterile water injection has increased in popularity for labor pain treatment, especially in the last two decades. This method does not involve the use of medications. Also, it does not restrict maternal mobilization. Additionally, it is easy to administer and is cost-effective. Therefore, this novel clinical study aimed to assess the satisfaction level and effectiveness of sterile water injection for back pain among women in labor. Participants were randomly assigned to the study group (four intradermal injections of 0.1 mL of sterile water into the skin surrounding the rhombus of Michael is over the sacral area). The rhombus of Michael is a diamond-shaped area, over the posterior aspect of the pelvis, formed by the dimples of the posterior superior spines of the ilia, the lines formed by the gluteal muscles, and the groove at the distal end of the vertebral column. The first injections were given on the posterior superior iliac spines (both sides) and the second injections 1 cm medial and 1–2 cm inferior to the first injections (on both sides), using an insulin needle (Genc *et al.,* 2018).

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One of the trials compared the efficacy of three different treatments to decrease low back pain: intradermal water blocks, TENS, and usual care (massage, water immersion, movement as needed). Even though the water blocks were effective in decreasing low back pain, women in the usual care group had the lowest requests for pain medication (Martensson *et al.,* 2000).

2.9. Effectiveness of hydrotherapy in pain management during labor

Hydrotherapy, also known as hydrothermal therapy (Wardle, 2013), is one of the non-pharmacologic methods used in vaginal delivery which is implemented to reduce pain and to relax pelvic arch and perineal muscles (Tiainen, 2014). Generally hydrotherapy for vaginal delivery is used in two ways; the first way is to use hot tub and the second way is to use handheld showers to pour water on the body of mother or normal shower to use during labor and delivery (Avery, 2013).Hydrotherapy is suggested to be a safe and efficacious method to alleviate labor pain during the first stage of labor. There is also a pressing need to create a nursing practice guideline for the implementation of hydrotherapy during labor as none presently exist (Cowan, 2017).

An experimental study was conducted in Columbia to determine the effectiveness of hydrotherapy on labor. Using a randomized, pre-test – post-test control group design with repeated measures, 18 terms parturient were assigned to a control and an experimental group. Experimental subjects were placed in a tub of 37^0 C water for 1 hour during early labor. After 15 minutes bathers' pain scores were decreased compared to non-bathers. After 15 minutes of immersion, bathers had a significantly greater increase in plasma volume than non-bathers. The findings offer preliminary support for therapeutic effects of bathing in labor for acute, short term anxiety and pain reduction. Findings from the study support the therapeutic effects of water immersion as an alternative or supplemental intervention for clients who need fast, short acting anxiety and pain relief (Benfield *et al.*, 2001).

2.10. Continuous labor support in pain management during labor

The word "continuous," as it pertains to labor support, has been defined in various ways. Continuous support by a midwife or nurse during labor has positive effects on the duration of active labor, use of pain relief and frequency of Caesarian section. Also, these women experience more control during childbirth, have fewer negative feelings about the birth and will often prefer to have such support in a future labor (Hodnett *et al.*, 2013).

In a meta-analysis of trials of labor support, "continuous" was defined as "without interruption, except for toileting, from shortly after admission to the hospital or entry into the study, and during the birth of the child. Terms such as "doula," "labor assistant," "birth companion," "labor support specialist," "professional labor assistant," and "monitrice" refer to providers of this type of support. None of the included studies examined the effects of support by the woman's partner or husband, although untrained female family members or friends did fill that role in one published trial (Madi, *et al.*, 2009).

2.11. Effectiveness of maternal movement and positioning

There is clear and important evidence that walking and upright positions in the first stage of labor reduces the duration of labor, the risk of caesarean birth, the need for epidural, and does not seem to be associated with increased intervention or negative effects on mothers' and babies' well-being. Given the great heterogeneity and high performance bias of study situations, better quality trials are still required to confirm with any confidence the true risks and benefits of upright and mobile positions compared with recumbent positions for all women. Based on the current findings, we recommend that women in

low-risk labor should be informed of the benefits of upright positions, and encouraged and assisted to assume whatever positions they choose (Lawrence, 2013).

In fact, "Listening to Mothers," a national survey of childbearing experiences in the United States between the years 2000 and 2002, (Decleq *et al.*, 2002) found that after admission to the hospital, most women (71%) did not walk around. The most common reason they gave was that they were "connected to things" (67%), followed by "unable to support self-due to pain medication" (32%), and "told not to walk around" (28%). Sixty percent, however, did report changing positions (presumably while in bed) to relieve pain during labor. Pelvic dimensions vary with differences in maternal positions, according to a study of 35 non-pregnant nulliparous and parous women using magnetic resonance imaging. (Michel *et al.*, 2002) Both squatting and kneeling while leaning forward increased the anterior-posterior and transverse diameters in both the mid pelvis and pelvic outlet, compared with the supine position. The findings noted in this study can be expected to be even more dramatic in pregnant women who have more joint mobility. Pelvic dimensions change with movement such as walking, swaying, lunging, or flexing and extending the legs. Such movements are thought to facilitate fetal rotation or descent, which could, in turn, mitigate the pain associated with abnormal positions or prolonged labor (Simkin, 2003).

2.12. Application of heat and cold

(Rania, 2014) revealed that, mothers in the study group had shorter second stage duration than mothers in the control group. We can explain this result as mothers in the study group may experience sense of control that is effective in labor progression. Increasing endorphin and oxytocin may lead to appropriate uterine contractions and shorter second

stage duration, heat and cold application can improve the local blood circulation and therefore increase the number, duration, and intensity of uterine muscle contractions.

A controlled study where using a before and after the study design evaluated the pain relief experienced by 49 women after applying ice massage to an acupuncture point on the hands.(Waters & Raisler, 2003) The Hoku point, also called Large Intestine 4, is located in the web space between the index finger and thumb on the hand. A washcloth filled with ice was rubbed over the Hoku point on the palmar surface of the hand during contractions and discontinued between contractions. The ice massage was carried out on one hand for 20 minutes and then was repeated on the other hand. The results revealed a significant reduction in pain when measured on a visual analog scale after the ice massage was applied. Precautions and contraindications for cold application include cryoglobulinemia (gelling of blood), cold urticaria/hypersensitivity (cold-induced blisters, hives, prolonged "goose bumps," itching), hypertension (because of vasoconstriction), Raynaud's phenomenon (blanching and paresthesias of the digits), or sickle cell anemia. Furthermore, cultural proscriptions and women's personal choice are factors to consider in the use of cold. With both heat and cold, placing one or two layers of cloth between the woman's skin and the hot or cold pack is required to protect her from the possibility of skin damage. In addition, it is imperative that the woman has intact sensation if heat or cold is to be applied. If a woman has an epidural/regional block, applying heat or cold to the anesthetized region is absolutely contraindicated because it could damage her skin. Because a woman may tolerate more extreme temperatures during labor than usual, partners or caregivers should test the temperature of the hot or cold pack first on themselves. If they can comfortably tolerate the hot or cold pack

pressing on their forearm for several seconds, then it is safe to apply it to the mother with intact sensation. In conclusion, except for one trial of ice massage, heat and cold have not been studied for their effectiveness in relieving labor pain. Efficacy has been established in reducing pain under other conditions, however, as well as reducing inflammation, edema, and muscle spasm. With appropriate safety precautions, heat and cold offer comfort and relief, and their use should be dictated by the desires and responses of the laboring woman (Bolding & Simkin, 2004).

2.13. Music and audio-analgesia

Audio analgesia uses auditory stimulation such as music. Music as a treatment for pain is easily provided, low cost, and safe. Although the magnitude of benefit from listening to music is small, and it should not be considered as the first line of treatment for pain relief, it can be used as a beneficial adjunct for pain relief management for women in labor. Studies of primiparous women show music may be beneficial in the latent and active first stage of labor (Woman and newborn health service, 2016).

Music is often overlooked, but still affects the mothers emotionally positive lyto relieve pain. Music can decrease sensation and pain from active labor for up to 3 hours, as it improves the mother's concentration, relaxation, distracts her from pain and allows her to focus on her breathing (Zwelling *et al*., 2006). This is another intervention that can be used without the help of a nurse, and the mother can even listen to certain music at home prenatally to help practice focusing on her breathing.

Audioanalgesia is the use of auditory stimulation, such as music, white noise, or environmental sounds to decrease pain perception. Its use is popular for the relief of pain during dental work, after surgery, and for other painful situations. It is also used during

labor; in fact, many hospital maternity departments and birth centers provide CD/DVD tape players. Some women prefer to use headphones with a portable player, because the music provides more compelling distraction, and the woman is in constant control of the volume. Before labor, the woman selects her own music (sometimes with the help of a music therapist) or environmental sounds, based on her reactions to them. She may use these to rehearse relaxation or self-hypnosis, which then makes it easier for her to get into a relaxed or hypnotic state in labor. Choosing music that helps her relax, lift her spirits, or greet her baby personalizes the birth event and may give her a greater sense of control (Browning, 2000).

2.14. Knowledge, attitude and practice of health care providers regarding non-pharmacological pain management during labor

A study was conducted on "Midwife's utilization of non-pharmacological pain management methods during the first stage of labor". The data was obtained using of a structured questionnaire which was given to midwives working in the Maternity wards of the Christian Hospital Association of Lesotho. The midwives indicated that they were taught non-pharmacologic methods of pain management, however they expressed that they inadequately use these methods during the first stage of labor due to shortage of staff, lack of privacy and space, a high midwife-mother ratio, culture and hospital policies. In the light of these findings, recommendations were made for maximizing the use of non-pharmacologic methods during the first stage of labor (Roets *et al.,* 2005).

A descriptive survey was conducted in a large Canadian hospital on 97 registered staff nurses regarding nurse's attitude towards providing continuous labor support. Scores measuring nurses' attitudes, subjective norms, and intentions regarding continuous labor

support for women with epidural analgesia were significantly lower than those for women without epidural analgesia ($p<.0001$).Top perceived organizational barriers to continuous labor support included unit acuity and method of patient assignment. Nurses view organizational barriers as important factors influencing their ability to provide continuous labor support (Payant *et al.*2008).

A study was conducted across the United States on nursing students and faculty member's knowledge of experience with and attitudes towards complementary or alternative therapies. The study was designed to describe and compare the knowledge, experience and attitude of nursing faculty and student's .The results revealed that 85% of the participants desired more education about complementary and alternative medicine. Faculty and nursing students expressed positive attitude towards generating complementary therapy into undergraduate nursing curriculum and nursing practice (Kim *et al.,* 2006).

A primary component of humanized care is continual, open communication between staff and patients. According to a study that assessed women's perceptions of the care they received, the nurses' ability to comfort and soothe them was more important to the women than the nurse's technical skills (Almushait & Ghani, 2014). The women in this study noted that the nurses did not spend enough time with them during the first stage of labor, and were too preoccupied with charting, other patients and shift changes to form a meaningful and supportive connection with the mothers (Almushait & Ghani, 2014). Although technical skills are vital to nursing, interpersonal communication needs to be emphasized to boost client satisfaction. If the nurse to patient ratio were lower, there would be less stress on the nurses and patients resulting in an enhanced quality of care.

Caregivers need to be trained in the psychological aspects of coping with pain and be able to implement coping techniques while supporting women (Escott *et al.,* 2009). This type of support will allow the women to feel comfortable enough to attempt alternative methods for relieving pain.

2.15. Barriers to use of Non-pharmacological pain management

In order to revert back to predominantly natural childbirth techniques, the barriers to the use of non-pharmacological interventions must first be identified so that they may be overcome. These barriers can be grouped into three categories: patient related barriers, health care providers related barriers and barriers within the health care system as a whole.

In one study, the most prevalently perceived barriers to using non-pharmacological methods for pain relief during labor were not having enough time, “regulatory issues”, lack of knowledge of the options for alternative pain relief, patient unwillingness and strong beliefs of analgesia (Almushait & Ghani, 2014). Other noted barriers include the difficulty of measuring “coping” with pain as compared to relieving pain, the doctor or nurse being unwilling to offer alternative pain relief methods, lack of equipment and the pain being perceived as “too severe (Bicek, 2004)” Improved education and more frequent use of alternative methods will remove many of these perceived barriers.

Perceived barriers can be broken up into three categories: barriers related to the patient, the health care providers and the health care system as a whole. Surprisingly, the existing literature suggests there are few barriers to the use of non-pharmacological methods of pain relief during labor related to patients other than their personal beliefs or attitudes and

their ability to cope with pain. Therefore, the health care providers and health care system based barriers will be the primary focus when enacting change (Amanda, 2015).

The health care providers involved with a mother's labor and birth have a large impact on how natural the birthing process can be. All of the staff that affects the mother's experience, such as midwives, nurses and providers, can affect the interventions being used. Barriers to using natural methods for pain relief at this level include the health care providers belief that analgesia should primarily be used for labor pain, their attitudes and knowledge towards alternative methods for pain relief, the different viewpoints of midwives versus medical doctors and the lack of decision making power given to laboring women. These barriers show how integral the opinions of health care providers on alternative methods for pain relief are in the current birthing process. If the health care providers working with laboring mothers are not willing to use these methods for any reason, this will prevent their use in the hospital setting. In order to increase the use of non-pharmacological methods for pain relief during labor, the perceptions of the nurses, midwives and providers on these methods needs to be understood. This research study will examine the current methods used for pain relief, the attitudes towards non-pharmacological methods for pain relief during labor, as well as the perceived facilitators and barriers to their use. By identifying the barriers, a plan can be created to overcome them so that mothers can deliver naturally in the hospital setting if they so desire (Behruzi*et al.*, 2014).

2.15. Current curriculum on non-pharmacological pain management during labor

The Bachelor of Midwifery program in Alberta, Mount Royal University's four-year degree prepares to care for families during pregnancy, childbirth and in the first six

weeks of their babies' lives by combining theoretical knowledge and extensive practical experience. The graduate from this comprehensive, research-informed program ready to take the Canadian Midwifery Registration Examination. Midwives can work as independent practitioners, either alone or with groups of other midwives in a private practice. Prenatal care, intra –partum care, postnatal care and newborn care is provided in homes or at clinics. Labor and birth care is offered to families – in either hospitals, birth centers, homes or collaboratively in primary care networks (Mount Royal University, Canada).

The labor support program course provides the first phase of nurse-midwifery students with theoretical and practical knowledge in preparation for provision of support to women in labor. The course includes a year-long practicum during which the student provides supervised labor support in different methods of non-pharmacological pain management during labor. Previously known as Doula Training Program (Columbia University Medical Centre, New York).

The non-pharmacological pain management during labor in the current curriculum of bachelor science of nursing and diploma in nursing students training file 2013 in the Nursing Council of Kenya has mentioned in one sentence like pain relief during labor. Hence is uncomprehensive.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0. Overview

This chapter looks at the design and methods that were employed in order to achieve objectives of this study. It therefore described the research philosophical orientation, research methods; research design; the area of study; the target population; the sample and sampling techniques; data collection instruments; data collection procedures and methodologies and data analysis procedures.

3.1. Research Philosophical Worldview

(Creswell, 2008) asserts that a research philosophical orientation ought to form a major part of any research design. He notes that although the philosophy behind a research study remains largely hidden, it still does influence the practice of research and therefore, must be included as part of a proposal. He defines a research worldview (also referred to as a paradigm or philosophical orientation) as a "general orientation about the world and the nature of research that a researcher holds". The study adopted the pragmatic philosophical paradigm, derived from the work of Pierce, James, Mead and Dewey. Pragmatism as an orientation arises out of actions, situations and consequences rather than antecedents. It is concerned with what works, as well as solution to problems. This study was primarily concerned with assessing the knowledge, attitude and practice of health care providers on non- pharmacological pain management during labor. The health care providers performance of these tasks could very well be determined by the perception they have of their abilities (self-efficacy), the training they received or it could

be a function of the administrative, personal and social challenges they may be experiencing as they attempt to perform non-pharmacological pain management during labor. Pragmatist researchers focus on the 'what' and 'how' of the research problem and places the research problem as central, applying all approaches to understanding the problem (Creswell, 2009). The Question of what works in this study is clearly evident: Are the health care providers performing non-pharmacological pain management during labor effectively? Is the curriculum sufficient in preparing them to perform non-pharmacological pain management during labor? Does the system work to ensure the health care providers are effective?

3.2. Research Design and Method

This study employed a non-experimental cross-sectional descriptive survey design. The chosen study design allows for extraction of valuable information about the totality of the process of acquiring knowledge, attitude and eventually translating these in practicing. The study also sought to assess the barriers that prevent health care providers from using non-pharmacological pain management during labor.

3.3. Geographical Location of the Study

The study was conducted in medical institutions providing health care services in Eldoret Town, Uasin Gishu County of the Rift Valley Province of Kenya. Eldoret town is located about 300km North West of Nairobi on the Trans – African Highway and 65km north of the Equator. Currently it is the fifth largest town in Kenya (Eldoret Municipal Council, 2011).

Moi Teaching and Referral Hospital is both a teaching and referral hospital whose core services are clearly spelt out as: provision of health services; teaching and research. It was an appropriate choice as a location for this study for several reasons. First, it is the second largest referral hospital in Kenya and the largest in the North Rift Region. As such it carries a population that is varied enough to be a true representation of the situation in the entire North Rift Region, and indeed countrywide. Second, health care providers practicing at Moi Teaching and Referral Hospital (MTRH) are likely to be drawn from varies parts of the country in order to serve the varied clientele that utilizes the services of the hospital. As such, they are likely to provide a true representation of the state of health care providers performance for the entire region and the country as a whole. Furthermore, the patients that seek the services of Moi Teaching and Referral Hospital (MTRH) are likely to be referred there from various parts of the country and therefore would provide plenty of opportunities for health care providers to practice non-pharmacological pain management during labor.

Kisumu is about four hours by road from Eldoret. Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) is located 5.6kilometer from the city center of Kisumu.

The Hospital is the Major Referral Hospital in Nyanza, Western & North Rift Kenya, Serving a population in excess of 5million; average annual out-patient visits are 197,200 and in-patient admissions of about 21,000.

3.4. Study Population

(Gurmu, 2011) defined a research population as the universe of units from which a sample is to be selected, consisting of the set of all measurements in which the

investigator is interested. To achieve the objectives of this study, the research population included: all workers practicing as health care providers in labor room at Moi Teaching and Referral Hospital (MTRH) and Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH).

3.5 Target Population – All Health care providers in MTRH and JOOTRH.

Table 3.1 Number of respondents at MTRH and JOORTH

Population	**MTRH**	**JOOTRH**
Staff Nurses	**44**	**24**
Student Nurses: **MTRH** (KMTC– 40, MTRH– 4, UEAB – 46, MOI– 14) **JOOTRH** (KMTC– 12, Mission hospital – 12, Kendu Adventist Hospital– 14, UEAB – 26, Great Lake University – 15, Uzima – 12)	**104**	**91**
Interns:	**1**	**3**
Medical Officer:	**4**	**5**
Clinical/House Officers:	**6**	**4**
Total	**159**	**127**
Overall total respondents	**159+127**	**286**

SAMPLE SIZE: Total research study population in the two hospitals - 286

Health care providers from the two institutions were selected to get the key information regarding non-pharmacological pain management during labor.

Inclusion & Exclusion Criteria

Inclusion Criteria

- Health care providers working in the labor ward.
- Student nurses that studying the maternity course and were then posted at the two referral hospitals .
- Health care providers and student nurses posted at the two referral hospitals.
- Those who are willing to participate in the study.

Exclusion Criteria

- Health care providers who were not available during the data collection period.
- Health care providers who are on annual leave.

3.5. Sampling Techniques and Sampling Procedure

Census sampling was used to gather the information from the health care providers regarding non-pharmacological pain management during labor.

A sample is the segment of the population selected for investigation (Gurmu, 2011). Sampling is the process of selection of a subset of individuals within a population to be involved in data collection for a research study. The data is then used in making predictions regarding the whole population based on statistical methods. According to (Kothari, 2004) sampling involves selecting some elements of a population, having similar features to the underlying population, as representative of the total population so

as to make certain observations of elements and make conclusions regarding the entire population. Sampling therefore uses a subset of the population to represent the whole population.

3.6. Data Collection Instruments

Questionnaire: The instrument used in this study was a self-structured questionnaire which was compiled by the researcher by using review of literature and the text books.

Section A: Demographic data of the respondents: Age, Gender, Highest qualification, Current position, Additional training, Year of experience, etc.

Section B: Consist of parts I to XII, which are knowledge questions on general information regarding labor, non-pharmacological pain management during labor including Aromatherapy, Massage, Breathing Exercise, Inter-dermal water blocks, Hydrotherapy, Continuous labor support, Movement and Positioning, Acupressure, Health and Cold application and Music therapy.

Section C: Three point "Likert scale" for measuring the respondents attitude through statements will be used.

Section D:A check list was used to determine the practice of the health care providers on non-pharmacological pain management during labor.

Section E: A check list was used to determine the barriers for using non-pharmacological pain management during labor.

3.7. Validity and Reliability of the Research Instruments

Validity of an instrument is a determination of the extent to which the instrument actually reflects the abstract constructs being examined (Burns & Groves, 2005).

(Lee, 2010) defined validity as the extent to which a test measure the construct or variables which it purports to measure. Lee contends that content validity is an appropriate method of establishing the validity of a test seeking to ascertain performance. Content validity is the extent to which the measurement adequately samples the content domain. After constructing the questionnaire by modifying it based on review of recent literature, the researcher sought opinion from the supervisors with extensive experience in medical and nursing practice and training to ascertain whether the questionnaire was indeed relevant. Feedback from the supervisors and the recommendation from IREC was incorporated into the questionnaire and corrections made accordingly.

Reliability, on the other hand, refers to the extent to which assessments are free from error, accurate and provide consistent results (Lee, 2010). Lee suggests the use of the test-retest reliability coefficient as effective in ascertaining reliability of a test. A test-retest reliability coefficient is obtained by administering the same test on two different occasions, then correlating the scores obtained on each occasion. Lee further recommends the use of the Pearson Product Moment Correction to calculate the reliability coefficient. In line with this, the researcher administered the test to a group of 50 health care providers in County General Hospital, Kakamega within the duration of two weeks. The correlation coefficient was calculated based on the two sets of scores obtained from this population. The Cronbach's alpha was found to be 0.84. Lee

recommends that correlation values higher than 0.80 are sufficient to qualify the test as reliable.

3.8. Data Collection Procedures

Approval to conduct research at Moi Teaching Referral Hospital was granted by the IREC at the College of Health Sciences, Moi University, Eldoret and Jaramogi Oginga Odinga Teaching and Referral Hospital granted by Ethic Research Committee, Kisumu. Thereafter, the researcher contacted the head of the department. Due to time and logistical constraints, the researcher engaged the services of a research assistant in the distribution of the questionnaires. The researcher trained two (2) research assistants. Training entailed use of research instruments, data collection techniques and ethical issues. This was done before the commencement of the research activities. Self-administered questions on knowledge, attitude, practice and barriers regarding non-pharmacological pain management during labor were given to the health care providers who were asked to complete the self-administered questions during their break time (30-40 minutes), so as not to interrupt patient care and other daily duties. This process took a period of four weeks.

3.9. Data Management

The data in the questionnaires were by removing those that are not correctly filled in, especially section A that deals with the demographic data of the participants including: age, gender, position, etc. After data cleaning, the remaining questionnaires were subject to further analysis.

The completed coded data were entered into the computer using Statistical Package for Social Sciences (SPSS Version 20.0).

3.9.1Data Analysis

Data were summarized using frequencies, percentage, mean and standard deviation. Chi-square test was used to test the relationship between demographic characteristics and implementation of non-pharmacological management of pain during labor in teaching hospitals. Mann Whitney U-test was used to compare mean differences between the study sites in terms of attitude, practice and barriers. Chi-square test of independence was used to check for significant relationship between knowledge level and study site.

3.9.2 Data Presentations

Findings are presented in form of tables, charts, graphs and narrative.

3.10. Pilot Study

A pilot study was conducted between March 30 to April 15, 2016 among 50 health care providers in County General Hospital, Kakamega. The pilot study was meant to determine clarity of questions, the effectiveness of instructions, completeness of response set, time required to complete the questionnaire, to evaluate the success of data collection technique and for the researcher to get acquainted with the respondents (Burns and Grove, 2005). The data from the pilot study was used to establish the reliability of the questionnaire using the Cronbach's alpha reliability coefficient. The reliability of 0.84 was obtained for knowledge, attitude, practice and barriers respectively.

3.11. Ethical Considerations

The proposal was approved after presentation to the Moi University School of Medicine, Department of Medical Education. A research permit number: 0001515 to conduct the study was obtained from the Institutional Research and Ethics Committee, of Moi University and the Moi Teaching and referral Hospital permit number: ELD/MTRH/R.6/VOL.II/2008. Further approval was sought from Moi Teaching and Referral Hospital, Eldoret and Ethical Research Committee permit number: ERC.IB/VOL.I/280 at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu. All participants were asked to provide and sign informed consent form **(Appendix 1)**. They were also instructed not to indicate their names anywhere on the questionnaire. Participants were assured of confidentiality, which was highly observed throughout the study, through secure password and safe storage of questionnaires and collected data.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings of the study. It outlines the response rate, demographic characteristics of the respondents and presents the data based on the set specific objectives of the study

4.1 Demographic characteristics

The distribution of respondents was MTRH (n=147) and JOOTRH (n=119) making a total of 266 respondents.

4.1.1 Age

MTRH (n=147) Majority of the respondents 75(51%) were in the 15 to the 24 year age group, JOOTRH for (n=119) most respondents 58(48.7%) belonged to the 25-34 age group.

4.1.2 Gender

For MTRH females comprised the highest percentage 109(74.1%), while in the case of for JOOTRH most of the respondents were males.

4.1.3 Highest qualification and Current position

For both MTRH 94(63.9%) and JOOTRH 86(72.3%) Most of the respondents were students who were involved in pre-service education and the same applied to the question on current position followed by staff nurses and midwives. Among the employed staff, one person from MTRH 1(0.7%)had attained a PhD, while there no PhD holder in JOOTRH. Staff with medical degree were more in JOOTRH 9(7.6%) than MTRH 8(5.4%)

4.1.4 Training in non-pharmacological pain management

JOOTRH had a higher number of respondents 22(18.5%) with additional training in non-pharmacological pain management compared to MTRH 19(12.9%)

4.1.5 Years of experience

In both hospitals most of the respondents had worked for 0 to 5 years as shown for MTRH 111(75.5%) and JOOTRH 102(85.7%).

4.1.6 for non-pharmacological education

Most of the respondents In MTRH 140(95.2%) and JOOTRH 112(94.1%) felt that there was need for education on non-pharmacological pain management.

Table 4.2 Demographic characteristics

Characteristic	**MTRH (n=147)**	**JOOTRH (n=119)**	**Total (n=266)**
Age-group (yrs.)			
15-24	75(51%)	53(44.5%)	128(48.1%)
25-34	51(34.7%)	58(48.7%)	109(41%)
35-44	17(11.6%)	7(5.9%)	24(9%)
45+	4(2.7%)	1(0.8%)	5(1.9%)
Gender			
Male	38(25.9%)	60(50.4%)	98(36.8%)
Female	109(74.1%)	59(49.6%)	168(63.2%)
Highest qualification			
Fellowship/PhD	1(0.7%)	0(0%)	1(0.4%)
Medical Degree	8(5.4%)	9(7.6%)	17(6.4%)

Registered staff nurse/midwife	44(29.9%)	24(20.2%)	68(25.6%)
Other	94(63.9%)	86(72.3%)	180(67.7%)
Current position			
Consultant	0(0%)	1(0.8%)	1(0.4%)
Resident doctor	1(0.7%)	0(0%)	1(0.4%)
Medical officer	4(2.7%)	4(3.4%)	8(3.0%)
House officer	2(1.4%)	4(3.4%)	6(2.3%)
Registered staff nurse/midwife	44(29.9%)	24(20.2%)	68(25.6%)
Student nurse/midwife/upgraders	94(63.9%)	86(72.3%)	180(67.7%)
Other	2(1.4%)	0(0%)	2(0.8%)
Had additional training in non-pharmacological pain management	19(12.9%)	22(18.5%)	41(15.4%)
Years of experience (yrs)			
0-5	111(75.5%)	102(85.7%)	213(80.1%)
6-10	24(16.3%)	12(10.1%)	36(13.5%)
11-15	6(4.1%)	4(3.4%)	10(3.8%)
Above 15	6(4.1%)	1(0.8%)	7(2.6%)
Needed on non-pharmacological education	140(95.2%)	112(94.1%)	252(94.7%)

Objective 1: Knowledge of the health care providers on non-pharmacological management of pain during labor.

4.2.1 What is normal labor

MTRH had 144(98%) and JOOTRH had 116(97.5%) respondents who defined labor correctly.

4.2.2 Other name for normal labor and who is parturient

In both hospitals MTRH 142(96.6%) and JOOTRH 117(98.3%) most of the respondents were not able to give an alternative name for normal labor. When asked about who is parturient most of the respondents at MTRH 126(85.7%) and JOOTRH 104(87.4%) also gave an incorrect answer.

4.2.3 Stages in normal labor

MTRH had 102(69.4%) and JOOTRH 87(73.1%) of the respondents had correct answer.

4.2.4 Onset of the first stage of labor

In MTRH 81(55.1%) and JOOTRH 73(61.3%) of the participants had correct answer.

4.2.5 Duration of first stage of labor in primi mothers

In JOOTRH had 60(50.4%) of the respondents correct answer, while MTRH 80(54.4%) of the respondents had incorrect answer.

4.2.6 Location of pain modulation gate

In both hospitals MTRH 112(76.2%) and JOOTRH 92(77.3%) of the respondents were not able to correct answer for the location of pain modulation gate.

4.2.7 Characteristics of true labor pain

In MTRH 109(74.1%) and JOOTRH 90(75.6%) of the respondents had correct answer.

4.2.8 Meaning of non–pharmacological pain management during labor

In both MTRH 125(85%) and JOOTRH 98(84.2%) of the participants were responded the correct meaning of non–pharmacological pain management during labor.

4.2.9 Non-pharmacological pain management minimizes labor pain

In both hospitals MTRH 82(55.8%) and JOOTRH 61(51.3%) of the respondents were not able to give the correct answer.

4.2.10 Aromatherapy works and oil used in latent phase of first stage of labor

In both hospitals MTRH 85(57.8%) and JOOTRH 75(63%) of the respondents were not able to give how aromatherapy works in the laboring women. When asked about the oil used in latent phase of first stage of labor most of the respondents at MTRH 140(95.2%) and JOOTRH 115 (96.6%) also gave an incorrect answer.

4.2.11 Defining massage

MTRH had 93(63.3%) and JOOTRH 70(58.8%) of the respondents had who defined massage correctly.

4.2.12 Effleurage in labor and meissners corpuscles

MTRH 84(57.1%) and JOOTRH 76(63.9%) of the respondents were not able to give the effleurage in labor. When asked about the messiners corpuscles most of the respondents at MTRH 117(79.6%) and JOOTRH 97 (81.5%) also gave an incorrect answer.

4.2.13 Breathing exercises minimizes labor pain

In both hospitals MTRH 124(84.4%) and JOOTRH 100(84%) of the participants were not able to give the correct answer for how breathing exercise minimizes the labor pain.

4.2.14 Slow-paced breathing and Light accelerated breathing

MTRH 122(83%) and JOOTRH 92(77.3%) of the respondents were not able to give the answer for slow paced breathing exercise. When asked about the light accelerated breathing exercise at MTRH 133(90.5%) and JOOTRH 107(89.9%) also gave an incorrect answer.

4.2.15 Intra-dermal water blocks

In MTRH 91(61.9%) and JOOTRH 61(51.3%) of the participants had correct answer.

4.2.16 Points used for intra-dermal water blocks and Precaution taken after water blocks

In both hospitals MTRH 111(75.5%) and JOOTRH 94(79%) of the respondents were not able to give the point used for intra-dermal water blocks during labor. When asked about the precaution taken after water blocks during labor at MTRH 131(89.1%) and JOOTRH 99 (83.2%) also gave an incorrect answer.

4.2.17 What is hydrotherapy

In MTRH 122(83%) and JOOTRH 94(79%) of the participants had the correct answer.

4.2.18 Ideal time to start water immersions and mother stay in water tub during immersion

MTRH 123(83.7%) and JOOTRH 108(90.8%) of the respondents were not able to give the ideal time to start water immersions, while asked about how long mother stay in water tub during immersion at MTRH 100(68%) and JOOTRH 91(76.5%) also gave an incorrect answer.

4.2.19 Provider of labor support

In both hospitals MTRH 79(53.7%) and JOOTRH 69(58%) of the respondents were not able to give the correct answer.

4.2.20 Approach in continuous labor support

In MTRH 76((51.7%) and JOOTRH 69(58%) of the respondents had incorrect answer.

4.2.21 Meaning of continuous labor support

MTRH had 128(87.1%) and JOOTRH 99(83.2%) of the respondents had the correct meaning of continuous labor support.

4.2.22 Squatting position labor helps in

In MTRH 83(56.5%) and JOOTRH 62(52.1%) of the participants had correct answer about squatting position labor helps in rapid decent of fetus.

4.2.23 Help of Side-lying position during labor

In MTRH 94((63.9%) and JOOTRH 75(63%) of the respondents had incorrect answer.

4.2.24 Best position used during laboring in case of hemorrhoids

MTRH had 89(60.5%) and JOOTRH 74(62.2%) of the respondents had the correct position used during laboring in case of hemorrhoids.

4.2.25 Acupressure reduces labor pain and how acupressure applies pressure

In both hospitals MTRH 76(51.7%) and JOOTRH 76(63.9%) of the respondents were not able to give the correct answer for how acupressure reduced labor pain, while MTRH 116(78.9) and JOOTRH 95(79.8%) of the respondents had incorrect answer.

4.2.26 Acupressure points for inducing labor

In MTRH 123((83.7%) and JOOTRH 102(85.7%) of the respondents had incorrect answer.

4.2.27 Heat and cold application during labor

MTRH had 87(59.2%) and JOOTRH 76(63.9%) of the respondents had the incorrect answer.

4.2.28 Options for applying heat and cold therapy

MTRH 106(72.1%) and JOOTRH 83(69.7%) of the respondents were not able to give the options for heat therapy, while asked about the options for cold therapy at MTRH 124(84.4%) and JOOTRH 103(86.6%) also gave an incorrect answer.

4.2.29 Music therapy helps

MTRH 111(75.5%) and JOOTRH 89(74.8%) of the respondents were able to give the correct answer for music therapy helped in experiences less pain perception.

4.2.30 Music perceived by the right brain and positive outcome of music therapy

In both hospitals MTRH 96(65.3%) and JOOTRH 70(58.8%) of the respondents were able to give a music perceived by the right brain stimulated the pituitary gland to release endorphine. When asked about the positive outcome of music therapy at MTRH 104(70.7%) and JOOTRH 90(75.6%) also gave an incorrect answer.

Table 4.3: Knowledge on non-pharmacological management of pain during labor

Question	MTRH		JOOTRH		Total	*p*-value
	Correct	incorrect	Correct	Incorrect		
What is normal labour	144(98%)	3(2%)	116(97.5%)	3(2.5%)	260(97.7%)	0.793
Other name for normal labor	5(3.4%)	142(96.6%)	2(1.7%)	117(98.3%)	7(2.6%)	0.383
Who is parturient	21(14.3%)	126(85.7%)	15(12.6%)	104(87.4%)	36(13.5%)	0.690
Stages in normal labour	102(69.4%)	45(30.6%)	87(73.1%)	32(26.9%)	189(71.1%)	0.506
Onset of first stage of labor	81(55.1%)	66(44.9%)	73(61.3%)	46(38.7%)	154(57.9%)	0.305
Duration of first stage of labor in primi mothers	67(45.6%)	80(54.4%)	60(50.4%)	59(49.6%)	127(47.7%)	0.432
Location of pain modulation gate	35(23.8%)	112(76.2%)	27(22.7%)	92(77.3%)	62(23.3%)	0.830
Characteristics of true labor pain	109(74.1%)	38(25.9%)	90(75.6%)	29(24.4%)	199(74.8%)	0.782
Meaning of non-pharmacological pain management during labor	125(85%)	22(15%)	98(84.2%)	21(17.6%)	223(83.8%)	0.555
How non-pharmacological pain management minimizes labor pain	65(44.2%)	82(55.8%)	58(48.7%)	61(51.3%)	123(46.2%)	0.462
How aromatherapy works	62(42.2%)	85(57.8%)	44(37%)	75(63%)	106(39.8%)	0.389
Oil used in latent phase of first stage of labor	7(4.8%)	140(95.2%)	4(3.4%)	115(96.6%)	11(4.1%)	0.568
Oil used in active phase	28(19%)	119(81%)	22(18.5%)	97(81.5%)	50(18.8%)	0.907
Defining massage	93(63.3%)	54(36.7%)	70(58.8%)	49(41.2%)	163(61.3%)	0.460
What is effleurage in labor	63(42.9%)	84(57.1%)	43(36.1%)	76(63.9%)	106(39.8%)	0.265
Meissners corpuscles	30(20.4%)	117(79.6%)	22(18.5%)	97(81.5%)	52(19.5%)	0.694
How breathing exercise minimises labor pain	23(15.6%)	124(84.4%)	19(16%)	100(84%)	42(15.8%)	0.943
What is slow spaced breathing	25(17%)	122(83%)	27(22.7%)	92(77.3%)	52(19.5%)	0.245
Light accelerated breathing	14(9.5%)	133(90.5%)	12(10.1%)	107(89.9%)	26(9.8%)	0.878
What are intra dermal water blocks	91(61.9%)	56(38.1%)	61(51.3%)	58(48.7%)	152(57.1%)	0.081
Points used for intra-dermal water blocks	36(24.5%)	111(75.5%)	25(21%)	94(79%)	61(22.9%)	0.502
Precaution taken after water blocks	16(10.9%)	131(89.1%)	20(16.8%)	99(83.2%)	36(13.5%)	0.160
What is hydrotherapy	122(83%)	25(17%)	94(79%)	25(21%)	216(81.2%)	0.406
Ideal time to start water immersions	24(16.3%)	123(83.7%)	11(9.2%)	108(90.8%)	35(13.2%)	0.089
Stay in water tub during immersion	47(32%)	100(68%)	28(23.5%)	91(76.5%)	75(28.2%)	0.128

Provider of labor support	68(46.3%)	79(53.7%)	50(42%)	69(58%)	118(44.4%)	0.489
Approach in continuous labor support	71(48.3%)	76(51.7%)	50(42%)	69(58%)	121(45.5%)	0.306
Meaning of continuous labor support	128(87.1%)	19(12.9%)	99(83.2%)	20(16.8%)	227(85.3%)	0.374
Squatting position in labor helps in	83(56.5%)	64(43.5%)	62(52.1%)	57(47.9%)	145(54.5%)	0.478
Help of side lying position during labor	53(36.1%)	94(63.9%)	44(37%)	75(63%)	97(36.5%)	0.877
Best position used during labouring in case of haemorrhoids	89(60.5%)	58(39.5%)	74(62.2%)	45(37.8%)	163(61.3%)	0.785
How acupressure reduces pain	71(48.3%)	76(51.7%)	43(36.1%)	76(63.9%)	114(42.9%)	0.046
How acupressure applies pressure	31(21.1%)	116(78.9%)	24(20.2%)	95(79.8%)	55(20.7%)	0.854
Acupressure points for inducing labor	24(16.3%)	123(83.7%)	17(14.3%)	102(85.7%)	41(15.4%)	0.647
Heat and cold application during labor	60(40.8%)	87(59.2%)	43(36.1%)	76(63.9%)	103(38.7%)	0.436
Options for applying heat	41(27.9%)	106(72.1%)	36(30.3%)	83(69.7%)	77(28.9%)	0.673
Options for cold therapy	23(15.6%)	124(84.4%)	16(13.4%)	103(86.6%)	39(4.7%)	0.614
Music therapy helps	111(75.5%)	36(24.5%)	89(74.8%)	30(25.2%)	200(75.2%)	0.892
Music perceived by right brain	96(65.3%)	51(34.7%)	70(58.8%)	49(41.2%)	166(62.4%)	0.278
Positive outcomes of music therapy	43(29.3%)	104(70.7%)	29(24.4%)	90(75.6%)	72(27.1%)	0.373

As indicated in table 4.3, there was a significant difference in proportion of the healthcare providers who correctly responded to the question on how acupressure reduces labor pain ($p=0.046$). Higher proportion of those from MTRH study site 71(48.3%) responded correctly compared to 43(36.1%) of those from JOOTRH study site. However, no significant difference was noted in all other questions (all $p>0.05$).

In general, majority of the healthcare providers 230(86.5%) had inadequate level of knowledge on non-pharmacological management of pain during labor as in figure 4.1

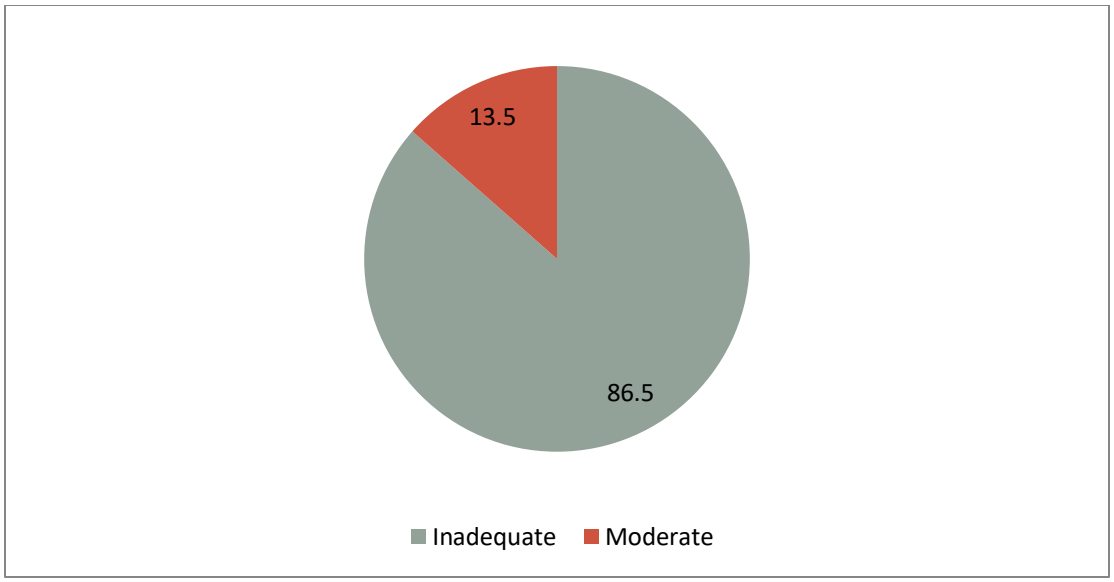

Fig 4.1: knowledge on non-pharmacological management of pain during labor.

This was similar in the study sites majority had inadequate knowledge on non-pharmacological management of pain during labor, 84.4% and 89.1% for MTRH and JOOTRH respectively as in fig 4.2

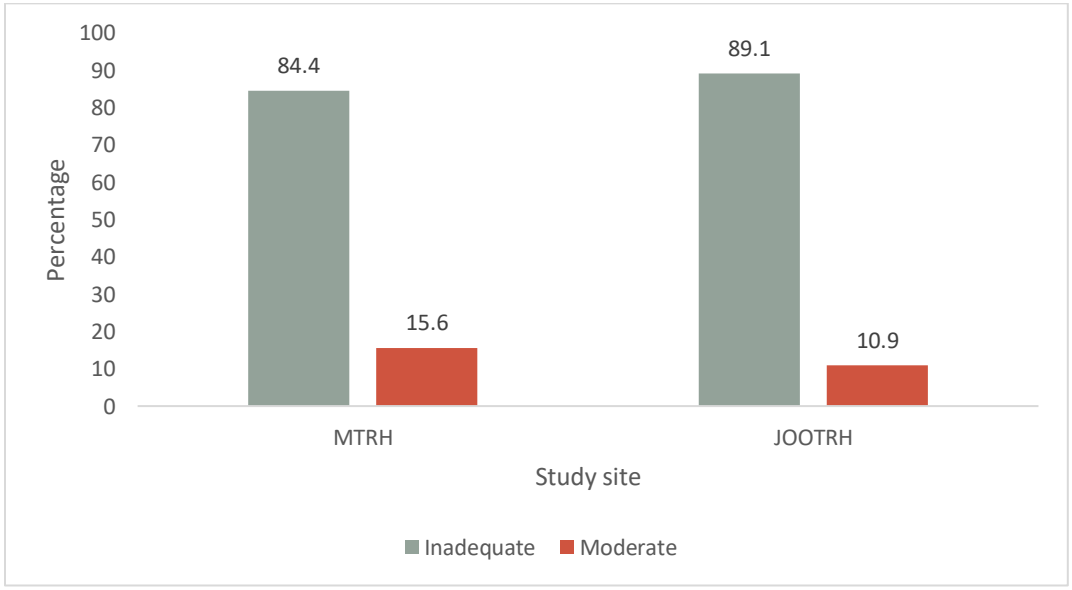

Fig 4.2: knowledge on non-pharmacological management of pain during labor by study site

Overall the chi-square test of independence indicated that there was no statistically significant difference in level of knowledge on non-pharmacological management of pain during labor between healthcare providers in the two study sites (MTRH vs JOOTRH) ($\chi 2=1.253$, $p=0.263$). Higher proportion of the health care providers had inadequate level of knowledge in the two study sites (84.4% and 89.1%) for MTRH and JOOTRH respectively as seen in the table 4.4.

Table 4.4: Relationship between level of knowledge and study site (comparative analysis)

Study site	**Level of knowledge**		**χ2-value**	**p-value**
	Inadequate	**Moderate**		
MTRH	124(84.4%)	23(15.6%)	1.253	0.263
JOOTRH	106(89.1%)	13(10.9%)		

Objective 2: Attitude of the health care providers on the non-pharmacological management of pain during labor

Table 4.5: Attitude of the health care providers on the non-pharmacological management of pain during labor

Item	MTRH			JOOTRH			p-value
	Not sure	Disagree	Agree	Not sure	Disagree	Agree	
Aromatherapy helps to reduce the level of labor pain	38(25.9%)	10(6.8%)	99(67.3%)	51(42.9%)	8(6.7%)	60(50.4%)	0.012*
Think massage helps in release of endorphine	25(17%)	60(40.8%)	62(42.2%)	20(16.8%)	13(10.9%)	86(72.3%)	<0.001*
Back massage warms up women in labor	25(17%)	30(20.4%)	92(62.2%)	32(26.9%)	18(15.1%)	69(58%)	0.120
Think breathing exercise helps the baby to provides more oxygen	21(14.3%)	22(15%)	104(70.7%)	28(23.5%)	19(16%)	72(60.5%)	0.126
Recommend breathing exercise during labor	10(6.8%)	22(15%)	115(78.2%)	16(13.4%)	6(5%)	97(81.5%)	0.010*
Think hydrotherapy helps during labor to reduce pain	35(23.8%)	59(40.1%)	53(36.1%)	37(31.1%)	8(6.7%)	74(62.2%)	<0.001*
Water immersion help in increased circulation	39(26.5%)	26(17.7%)	82(55.8%)	52(43.7%)	17(14.3%)	50(42%)	0.013*
Think heat and cold application helps in reducing the labor pain	30(20.4%)	32(21.8%)	85(57.8%)	41(34.5%)	14(11.8%)	64(53.8%)	0.012*
Will recommend continuous labor support	14(9.5%)	62(42.2%)	71(48.3%)	21(17.6%)	6(5%)	92(77.3%)	<0.001*
Acupressure help muscle fibers elongate and relax allowing blood to flow more freely	42(28.6%)	28(19%)	77(52.4%)	53(44.5%)	11(9.2%)	55(46.2%)	0.009*

Think semi sitting position during labor is comfortable	36(24.5%)	53(36.1%)	58(39.5%)	40(33.6%)	29(24.4%)	49(41.2%)	0.106
Will recommend squatting position for rapid descent during labor	19(12.9%)	17(11.6%)	111(75.5%)	27(22.7%)	20(16.8%)	72(60.5%)	0.029*
Music therapy help to reduce the level of labor pain	16(10.9%)	25(17%)	106(72.1%)	24(20.2%)	10(8.4%)	85(71.4%)	0.024*
Soothing music increase catecholamine levels thus help to maintain heart rate and blood pressure	45(30.6%)	30(20.4%)	72(49%)	43(36.1%)	25(21%)	51(42.9%)	0.562
***Significant**							

4.3.1 Helps to reduce the level of labor pain

Most of the respondents in MTRH 99(67.3%) compared to 60(50.4%) in JOOTRH agreed that Aromatherapy helps to reduce the level of labor pain.

4.3.2 Massage helps in release of endorphine

With regard to massage and release of endorphins more JOOTRH 86(72.3%) of the respondents were agreeable compared to these in MTRH 62(42.2%).

4.3.3 Back massage warms up women in labor

MTRH 92(62.2%) and JOOTRH 69(58%) agreed that back massage warms up women in labor.

4.3.4 Breathing exercise helps the baby to provides more oxygen

In both hospitals MTRH 104(70.7%) and JOOTRH 72(60.5%) agreed that breathing exercise helps the baby to provides more oxygen.

4.3.5 Recommend breathing exercise during labor

MTRH 115(78.2%) and JOOTRH 97(81.5%) agreed to recommend breathing exercise during labor.

4.3.6 Hydrotherapy helps during labor to reduce pain

JOOTRH 74(62.2%) of the respondents agreed that that hydrotherapy helps during labor to reduce pain, while MTRH 59(40.1%) of the respondents disagreed.

4.3.7 Water immersion help in increased circulation

MTRH 82(55.8%) and JOOTRH 50(42%) of the respondents agreed that water immersion were helped in the increased circulation.

4.3.8 Heat and cold application helps in reducing the labor pain

In both hospitals MTRH 85(57.8%) and JOOTRH 64(53.8%) of the participants agreed that heat and cold application were helped in reducing the labor pain.

4.3.9 Recommend continuous labor support

Most of the respondents in MTRH 71(48.3%) compared to 92(77.3%) in JOOTRH agreed that the recommended continuous support during labor.

4.3.10 Acupressure helps muscle fibers elongate and relax allowing blood to flow more freely

MTRH 77(52.4%) and JOOTRH 55(46.2%) of the respondents agreed that with regard to acupressure helped muscle fibres elongate and relax allowing blood to flow more freely.

4.3.11 Semi sitting position during labor is comfortable

In MTRH 58(39.5%) and JOOTRH 49(41.2%) of the respondents agreed that the semi sitting position were comfortable during labor.

4.3.12 Recommend squatting position for rapid descent during labor

Most of the respondents in MTRH 111(75.5%) compared to 72(60.5%) in JOOTRH agreed that the squatting position for rapid descent during labor.

4.3.13 Music therapy helps to reduce the level of labor pain

In both hospitals MTRH 106(72.1%) and JOOTRH 85(71.4%) most of the participants agreed that music therapy were helped to reduce levels of pain during labor.

4.3.14 Soothing music increase catecholamine levels thus help to maintain heart rate and blood pressure

MTRH 72(49%) and JOOTRH 51(42.9%) of the respondents agreed that the soothing music helped to maintain heart rate and blood pressure during labor.

Objective 3: Practice of the health care providers on non-pharmacological management of pain during labor

Table 4.6: Practice of the health care providers on non-pharmacological management of pain during labor

Item	MTRH			JOOTRH			p-value
	Always	Sometimes	Never	Always	Sometimes	Never	
Use Aromatherapy during labor	5(3.4%)	17(11.6%)	125(85%)	20(16.8%)	28(23.5%)	71(59.7%)	<0.001*
Massage the laboring mother	85(57.8%)	55(37.4%)	7(4.8%)	64(53.8%)	47(39.5%)	8(6.7%)	0.700
Encourage mothers to do breathing exercise during labor	124(84.4%)	13(8.8%)	10(6.8%)	96(80.7%)	22(18.5%)	1(0.8%)	0.005*
Use intradermal water block during labor	11(7.5%)	27(18.4%)	109(74.1%)	21(17.6%)	19(16%)	79(66.4%)	0.040
Encourage and use hydrotherapy during labor	11(7.5%)	27(18.4%)	109(74.1%)	27(22.7%)	31(26.1%)	61(51.3%)	<0.001*

Will always ensure women's relatives are with laboring women during the entire labor process	86(58.5%)	49(33.3%)	12(8.2%)	39(32.8%)	73(61.3%)	7(5.9%)	<0.001*
Always use different positions according to the need of the laboring women	88(59.9%)	42(28.6%)	17(11.6%)	62(52.1%)	54(45.4%)	3(2.5%)	0.002*
If you support different positions kindly mention the position you use for the laboring women	112(76.2%)	19(12.9%)	16(10.9%)	93(78.2%)	19(16%)	7(5.9%)	0.307
Give acupressure during labor process	6(4.1%)	24(16.3%)	117(79.6%)	22(18.5%)	25(21%)	72(60.5%)	<0.001*
Do warm formentation for labor women to relieve her pain	10(6.8%)	35(23.8%)	102(69.4%)	20(16.8%)	32(26.9%)	67(56.3%)	0.020*
Use ice packs during labor for decreasing the labor pain	10(6.8%)	34(23.1%)	103(70.1%)	18(15.1%)	27(22.7%)	74(62.2%)	0.084
Encourage the laboring women to listen to soothing music during labor.	23(15.6%)	77(52.4%)	47(32%)	31(26.1%)	41(34.5%)	47(39.5%)	0.009*
***Significant**							

4.4.1 Use Aromatherapy during labor

Majority of MTRH 125(85%) and JOOTRH 71(59.7%) of the healthcare providers indicated that they never use aromatherapy during labor.

4.4.2 Massage the laboring mother

MTRH 85(57.8%) and JOOTRH 64(53.8%) of the participants responded that always massaged laboring mothers.

4.4.3 Encourage mothers to do breathing exercise during labor

Most of the participants MTRH 124(84.4%) and JOOTRH 99(80.7%) of the health care providers that they would always encourage mothers to do breathing exercise during labor.

4.4.4 Use intradermal water block during labor

In both hospitals MTRH 109(74.1%) and JOOTRH 79 (66.4%) of the respondents had never use intradermal water block during labor.

4.4.5 Encourage and use hydrotherapy during labor

MTRH 119(74.1%) and JOOTRH 61(51.3%) of the respondents indicated that they never encourage and use hydrotherapy during labor.

4.4.6 Would always ensure women's relatives are with laboring women during the entire labor process

MTRH 86 (58.5%) and JOOTRH 73(61.3%) of respondents that they would always ensure women's relatives accompany laboring women during the entire labor.

4.4.7 Always use different positions according to the need of the laboring women

MTRH 88(59.9%) and JOOTRH 62(52.1%) of the health care providers indicated that they would always apply different positions according to the needs of the laboring women.

4.4.8 Mention the position for using the laboring women

In both hospitals MTRH 112(76.2%) and JOOTRH 93(78.2%) of the respondents encouraged the different positions were used for laboring women like squatting, knee chest, side lying, standing and lithotomy positions.

4.4.9 Acupressure during labor process

MTRH 117 (79.6%) and JOOTRH 72(60.5%) of the respondents never applied acupressure during the labor process.

4.4.10 Warm formentation for labor women to relieve her pain

In both hospitals MTRH 102(69.4%) and JOOTRH 67(56.3%) of the health care providers responded that had never done warm fomentation for laboring women to relieve their pain.

4.4.11 Use ice packs during labor for decreasing the labor pain

Most of the health care providers in MTRH 103(70.1%) and JOOTRH 74(62.2%) never use ice packs during labor to reducing labor pain.

4.4.12 Encourage the laboring women to listen to soothing music during labor.

MTRH 77(52.4%) and JOOTRH 41(34.5%) of the participants sometimes encouraged laboring women to listen to music during labor.

Objective 4: Barriers to non-pharmacological management of pain during labor

Table 4.7: Barriers to non-pharmacological management of pain during labor

Indicator	MTRH					JOOTRH					*p-value*
Health-care system related barriers	***Not at all***	***Very seldom***	***Sometimes***	***Nearly always***	***Always***	***Not at all***	***Very seldom***	***Sometimes***	***Nearly always***	***Always***	
Lack of time	23(15.6%)	18(12.2%)	46(31.3%)	27(18.4%)	33(22.4%)	33(27.7%)	11(9.2%)	46(38.7%)	13(10.9%)	16(13.4%)	0.022*
Regulatory issues (policy)	28(19%)	13(8.8%)	58(39.5%)	37(25.2%)	11(7.5%)	30(25.2%)	22(18.5%)	37(31.1%)	10(8.4%)	20(16.8%)	<0.001*
Inadequate nursing staff numbers	9(6.1%)	17(11.6%)	39(26.5%)	35(23.8%)	47(32%)	25(21%)	7(5.9%)	30(25.2%)	22(18.5%)	35(29.4%)	0.005*
Lack of equipment	15(10.2%)	8(5.4%)	42(28.6%)	42(28.6%)	40(27.2%)	26(21.8%)	10(8.4%)	40(33.6%)	10(8.4%)	33(27.7%)	<0.001*
Health-care provider related barriers											
Lack of knowledge	23(15.6%)	28(19%)	51(34.7%)	24(16.3%)	21(14.3%)	45(37.8%)	20(16.8%)	24(20.2%)	11(9.2%)	19(16.0%)	0.001*
Difficult to apply	26(17.7%)	18(12.2%)	61(41.5%)	33(22.4%)	9(6.1%)	39(32.8%)	20(16.8%)	30(25.2%)	20(16.8%)	10(8.4%)	0.008*
Dr./RN unwillingness	28(19%)	22(15%)	57(38.8%)	25(17%)	15(10.2%)	46(38.7%)	17(14.3%)	36(30.3%)	12(10.1%)	8(6.7%)	0.008*
Critical thinking	22(15%)	26(17.7%)	49(33.3%)	36(24.5%)	14(9.5%)	42(35.3%)	21(17.6%)	31(26.1%)	18(15.1%)	7(5.9%)	0.003*
Hard to measure	23(15.6%)	31(21.1%)	48(32.7%)	30(20.4%)	15(10.2%)	34(28.6%)	29(24.4%)	34(28.6%)	14(11.8%)	8(6.7%)	0.046*
Efficacy	26(17.7%)	21(14.3%)	58(39.5%)	29(19.7%)	13(8.8%)	37(31.1%)	22(18.5%)	31(26.1%)	14(11.8%)	15(12.6%)	0.013*
Patient related barriers											
Patient unwillingness	14(9.5%)	22(15%)	47(32%)	45(30.6%)	19(12.9%)	30(25.2%)	11(9.2%)	38(31.9%)	22(18.5%)	18(15.1%)	0.004*
Sometimes not as concrete	12(8.2%)	21(14.3%)	55(37.4%)	42(28.6%)	17(11.6%)	35(29.4%)	17(14.3%)	36(30.3%)	24(20.2%)	7(5.9%)	<0.001*
Strong beliefs of analgesia	16(10.9%)	13(8.8%)	51(34.7%)	48(32.7%)	19(12.9%)	33(27.7%)	7(5.9%)	38(31.9%)	20(16.8%)	21(17.6%)	0.001*
Pain too severe	14(9.5%)	11(7.5%)	46(31.3%)	41(27.9%)	35(23.8%)	24(20.2%)	8(6.7%)	29(24.4%)	23(19.3%)	35(29.4%)	0.057
Build trust	9(6.1%)	27(18.4%)	51(34.7%)	40(27.2%)	20(13.6%)	25(21%)	10(8.4%)	39(32.8%)	26(21.8%)	19(16%)	0.002*
Age of client	21(14.3%)	17(11.6%)	42(28.6%)	44(29.9%)	23(15.6%)	39(32.8%)	18(15.1%)	31(26.1%)	16(13.4%)	15(12.6%)	0.001*
*** Significant**											

Health-care system related barriers:

4.6.1 Lack of time

In MTRH 46(31.3%) and JOOTRH 46(38.7%) of the participants responded that the main barrier was lack of time.

4.6.2 Regulatory issues (policy)

In both hospitals MTRH 58(39.5%) and JOOTRH 37(31.1%) of the participants responded that their barrier was regulatory issues (policy).

4.6.3 Inadequate nursing staff numbers and lack of equipment

MTRH 47(32%) and JOOTRH 35(29.4%) of the participants responded that their barrier was always an inadequate staff members, while MTRH 42(28.6%) and JOOTRH 40(33.6%) of the participants responded that their barrier was sometimes lack of equipment.

Health-care provider related barriers:

4.6.4 Lack of knowledge

In both hospitals MTRH 51(34.7%) and JOOTRH 24(20.2%) of the participants responded that sometimes they had lack of knowledge regarding non-pharmacological pain management during labor.

4.6.5 Difficult to apply

MTRH 61(41.5%) and JOOTRH 30(25.2%) of the respondents responded that sometimes difficult to apply.

4.6.6 Dr./RN unwillingness

MTRH 57(38.8%) and JOOTRH 36(30.3%) of the participants responded that sometimes the main barrier was Dr./RN unwillingness.

4.6.7 Critical thinking

In both hospitals 49(33.3%) and JOOTRH 31(26.1%) of the health care providers responded that sometimes they need critical thinking regarding non-pharmacological pain management during labor.

4.6.8 Hard to measure

MTRH 48(32.7%) and JOOTRH 34(28.6%) of the participants responded that sometimes it was hard to measure the non-pharmacological pain management during labor.

4.6.9 Efficacy

MTRH 58(39.5%) and JOOTRH 31(26.1%) of the participants responded that sometimes the barrier was efficacy non-pharmacological pain management during labor.

Patient related barriers:

In patient related barriers among 119 participants; while,

4.6.10 Patient unwillingness

MTRH 47(32%) and JOOTRH 38(31.9%) of the participants responded that the main barrier was patient unwillingness.

4.6.11 Sometimes not as concrete

In both hospitals MTRH 55(37.4%) and JOOTRH 36(30.3%) of the health care providers responded that sometimes not as concrete.

4.6.12 Strong beliefs of analgesia

MTRH 51(34.7%) and 38(31.9%) of the participants responded that sometimes strong beliefs of analgesia during labor.

4.6.13 Pain too severe

In MTRH 46(31.3%) of the respondents responded that labor pain was too severe during labor, while JOOTRH 35(29.4%) of the respondents responded that labor pain always severe during labor.

4.6.14 Age of client

In MTRH 44 (29.9%) of the health care providers responded that the barrier was nearly always for age of the client, while JOOTRH 31 (26.1%) had sometimes barrier was an age of the client.

Objective 5: Comparative analysis of the study constructs by study site

Normality test was performed using the Shapiro-Wilk.

Ho: Data (Attitude, practice, health system related barrier, health care related barrier and patient related) follow a normal distribution.

Table 4.8: Normality tests

Construct	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	p-value	Statistic	df	p-value
Health system related barrier	.131	266	.000	.916	266	.000
Health care provider related barrier	.100	266	.000	.955	266	.000
Patient related barrier	.154	266	.000	.893	266	.000
Practice	.177	266	.000	.790	266	.000
Attitude	.162	266	.000	.795	266	.000

Based on the results in table 4.8, all p-values were less than 0.05 i.e. ($p<0.05$). Hence we reject the Null hypothesis and conclude that Data (Attitude, practice, health system related barrier, health care related barrier and patient related) are skewed do not follow a normal distribution. Therefore a non-parametric alternative of independent samples t-test (Mann-Whitney U test is applied for comparative analysis)

Table 4.9: Comparative analysis of the study constructs (attitude, practice and barriers) by study site

Construct	**Study site (mean rank)**		**Statistic (Z)**	**p-value**
	MTRH	**JOOTRH**		
Attitude	137.77	128.23	1.007	0.314
Practice	142.22	122.72	2.063	0.039*
Barriers				
Health care system related	145.50	118.68	2.836	0.005*
Health care provider related	150.29	112.76	3.965	<0.001*
Patient related	147.05	116.76	3.201	0.001*
*Significant				

There was a significant difference in mean rank in terms of practice and barriers to non-pharmacological management of pain during labor ($p<0.05$). Health care providers from MTRH had higher mean rank compared to those from JOOTRH as indicated in table 4.9. The significant of these study was a comprised of the barriers were significant (Health care system related, Health care provider related and Patient related) 0.001, <0.001 and 0.005 respectively see table 4.9.

CHAPTER FIVE

DISCUSSION

5.0. Overview

This chapter provides discussion of the results of this study. The findings of the study have been interpreted and reference made with findings of other related studies.

5.1. Summary of the study

This study gives insight to medical implication of the knowledge, attitude and practices of health care providers on non-pharmacological pain management and its barriers during labor. Knowledge, Attitude and Practice (KAP) model is applied in this study to show how the barrier will affect the knowledge, attitude and practice of the health care providers.

The purpose of the study was to determine the medical education implication of knowledge, attitudes, practices and barriers to implementation of non-pharmacological pain management during labor at Moi Teaching and Referral Hospital (MTRH) and Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH).

The researcher adopted the questionnaire on non-pharmacological pain management and modified it based on review of recent literature. The researcher sought opinion from the supervisors with extensive experience in medical and nursing practice and training to ascertain whether the questionnaire was indeed relevant. Feedback from the supervisors and the recommendation from IREC was incorporated into the questionnaire and corrections made accordingly. The response rate was 93.01%. Data was approximately coded and entered in to a Statistical Package SPSS 20. Data were summarized using

frequencies, percentage, mean and standard deviation. Chi-square test was used to test the relationship between demographic characteristics and implementation of non-pharmacological management of pain during labor in teaching hospitals. Mann Whitney U-test was used to compare mean differences between the study sites in terms of attitude, practice and barriers. Chi-square test of independence was used to check for significant relationship between knowledge level and study site.

5.2. Main Findings

5.2.1 Demographic data

The distribution of respondents was MTRH (n=147) and JOOTRH (n=119) making a total of 266 respondents

5.2.2 Age

MTRH (n=147) majority of the respondents 75(51%) were in the 15 to the 24 year age group and JOOTRH (n=119) most respondents 58(48.7%) belonged to the 25 to 34 year age group.

5.2.3 Gender

For MTRH females comprised the highest percentage 109(74.1%), while in the case of for JOORTH 60(50.4%) of the respondents were males.

5.2.4 Highest qualification and Current position

For both MTRH 94(63.9%) and JOOTRH 86(72.3%) most of the respondents were students who were involved in pre-service education and the same applied to the question on current position followed by staff nurses and midwives. Among the

employed staff, one person from Eldoret 1(0.7%) had attained a PhD, while there no PhD holder in JOOTRH. Staff with medical degree were more in JOOTRH 9(7.6%) than MTRH 8(5.4%).

5.2.5 Additional training in non-pharmacological pain management

JOOTRH had a higher number of respondents 22(18.5%) with additional training in non-pharmacological pain management compared to MTRH 19(12.9%).

5.2.6 Years of experience (yrs.)

In both hospitals most of the respondents had worked for 0 to 5 years as shown for MTRH 111(75.5%) and JOOTRH 102(85.7%).

5.2.7 Need for non-pharmacological education

Most of the respondents In MTRH 140(95.2%) and JOOTRH 112(94.1%) felt that there was need for education on non-pharmacological pain management during labor.

The similar study was conducted in Nigeria (Ogboli et al, 2011) Most of respondents 46(50%) were in the 25 to the 34 year age group. Majority of the respondents were females comprised the highest percentage 64(67.4%). The highest qualification of the respondents 47(49.5%) were medical degree and 40(42.1%) of the respondents who were involved in current position followed by staff nurses and midwives.

5.3 Knowledge on Non-Pharmacological Pain Management during Labor

In general, majority of the healthcare providers 230(86.5%) had inadequate level of knowledge on non-pharmacological management of pain during labor. This was similar in the study sites the majority had inadequate knowledge on non-pharmacological management of pain during labor, 84.4% and 89.1% for MTRH and JOOTRH respectively.

According to the respondents had inadequate knowledge of non-pharmacological pain management during labor. The health care providers were not taught well about labor pain management during their training programme and their practical exposure to it was very limited.

Other studies showed that massage, aromatherapy, immersion bath, acupuncture and acupressure are effective methods for pain relief during labor because in addition to reducing pain perception, they lower levels of anxiety and stress. Among them the most effective one was the massage, especially when applied in the first stage of labor. Besides decreasing the perception of pain and the level of stress and anxiety, mothers who used this intervention did not report the need for pharmacological methods. Massage, aromatherapy and music therapy were the interventions when mothers' reported no need for analgesic to relieve pain, unlike the immersion bath and acupuncture. Furthermore, the study concluded that interventions do not interfere in the type and duration of labor, being safe for clinical practice ($p<0.001$). Finally the findings of this study point to the need of clinical research, particularly in nursing, focusing on the use of these and other nonpharmacological strategies for pain relief during labor, aiming to humanize care for women during labor (Samara *et al*, 2014).

This is similar to findings from a study in India among 100 obstetricians where 92% agreed that pain relief in labor was required, with 87% keen for the provision of epidural analgesia. In this study, 45% of obstetricians wanted to provide opioid analgesia for their patients and considered opioids safe, non-invasive, easy to administer and not requiring monitoring or the presence of an anesthetist (The authors conclude that despite a certain degree of awareness there is still a need to further educate, train and to increase

communication between obstetricians, anesthetists and women regarding the implementation of effective pain relief in labor in India (Taneja *et al.*, 2004).

5.4 Attitudes on Non-Pharmacological Pain Management during Labor

Health care providers' attendants tend to had positive attitudes towards non-pharmacological pain management during labor. Most of the respondents in MTRH 99(67.3%) compared to 60(50.4%) in JOOTRH agreed that aromatherapy helps to reduce the level of labor pain. With regard to massage and release of endorphins more JOOTRH 86(72.3%) of the respondents were agreeable compared to these in MTRH 62(42.2%). MTRH 92(62.2%) and JOOTRH 69(58%) agreed that back massage warms up women in labor. In both hospitals MTRH 104(70.7%) and JOOTRH 72(60.5%) agreed that breathing exercise helps the baby to provide more oxygen. MTRH 115(78.2%) and JOOTRH 97(81.5%) agreed to recommend breathing exercise during labor. JOOTRH 74(62.2%) of the respondents agreed that that hydrotherapy helps during labor to reduce pain, while MTRH 59(40.1%) of the respondents disagreed. MTRH 82(55.8%) and JOOTRH 50(42%) of the respondents agreed that water immersion were helped in the increased circulation. In both hospitals MTRH 85(57.8%) and JOOTRH 64(53.8%) of the participants agreed that heat and cold application were helped in reducing the labor pain. Most of the respondents in MTRH 71(48.3%) compared to 92(77.3%) in JOOTRH agreed that the recommended continuous support during labor. MTRH 77(52.4%) and JOOTRH 55(46.2%) of the respondents agreed that with regard to acupressure helped muscle fibres elongate and relax allowing blood to flow more freely. In MTRH 58(39.5%) and JOOTRH 49(41.2%) of the respondents agreed that the semi sitting position were comfortable during labor. Most of the respondents in MTRH 111(75.5%)

compared to 72(60.5%) in JOOTRH agreed that the squatting position for rapid descent during labor. In both hospitals MTRH 106(72.1%) and JOOTRH 85(71.4%) most of the participants agreed that music therapy were helped to reduce levels of pain during labor. MTRH 72(49%) and JOOTRH 51(42.9%) of the respondents agreed that the soothing music helped to maintain heart rate and blood pressure during labor. More than half of the participants had positive attitude towards non-pharmacological pain management during labor.

The similar study recommended that an overwhelming majority of the respondents in this study (94.8%) agreed that pain relief is needed during labor. The respondents' positive attitude to pain relief in labor was irrespective of gender, qualifications, position, and place of work, showing the universality of health workers' acceptance of the use of techniques to provide pain relief in labor. Such a positive attitude could be sustained by continuing education about the effect of labor pain on the parturient and the benefits of provision of pain relief in labor (Ogboli *et al*, 2011).

Another study recommended that the communication between a woman and her health care providers is the first step towards preventing distress during labor. The National Institute of Clinical Excellence (NICE) in the United Kingdom recommend that all healthcare professionals consider how their own values and beliefs inform their attitude to women coping with pain in labor and that they should ensure their care supports the woman's choice (National Institute for Health Clinical Excellence, 2014). Quality of care is considered a key component of the right to health and this requires appropriate skills and attitude of health care providers striving to provide a good experience of care for laboring women in a supportive environment (Tunçalp *et al*, 2015). This can be achieved

if all health care providers work together in a multidisciplinary approach to refine and implement guidelines for pain relief options for women in labor. Qualitative research is necessary to explore the under lying reasons for the attitudes of health care providers found in this survey. Health care providers working in the community and at primary health care facility level also need to be assessed. The timing, best method and benefits of providing cost effective pain relief in labor needs clarity in a low resource setting.

A similar study obtained in communication between a woman and her health care providers is the first step towards preventing distress during labor. The National Institute of Clinical Excellence (NICE) in the United Kingdom recommend that all healthcare professionals consider how their own values and beliefs inform their attitude to women coping with pain in labor and that they should ensure their care supports the woman's choice (National Institute for Health Clinical Excellence, 2014).

5.5 Practices on Non-Pharmacological Pain Management during Labor

The health care providers practice on non-pharmacological pain management during labor. Majority of MTRH 85(57.8%) and JOOTRH 64(53.8%) of the participants responded that always massaged laboring mothers. MTRH 124(84.4%) and JOOTRH 99(80.7%) of the health care providers that they would always encourage mothers to do breathing exercise during labor. In both hospitals MTRH 86 (58.5%) and JOOTRH 73(61.3%) of respondents that they would always ensure women's relatives accompany laboring women during the entire labor. MTRH 88(59.9%) and JOOTRH 62(52.1%) of the health care providers indicated that they would always apply different positions according to the needs of the laboring women.

Similar study findings shows in South Africa, 56% of 151 pregnant women reported severe pain during a previous labor and 65% of respondents believed that this was unacceptable (Mugambe *et al*, 2007). Nearly all of the women (99.3%) believed that health care providers had an important role to play in helping to relieve labor pain (Mugambe *et al,* 2007). In Uganda, 88% of 1293 pregnant women were keen for the pain to be relieved, 79% felt that health care providers should provide this pain relief but only 7% reported knowledge of different options available (Nabukenya *et al*, 2015). For the small number of women who did not want pain relief for their next delivery (10%), their reasons included; wanting a natural childbirth, pain relief was against the will of God, it would harm the baby, they would love their baby more and some women viewed the pain as a form of birth control (Nabukenya *et al*, 2015). There was a similar finding among 450 pregnant women in Niger of which 24% declined pain relief indicating that labor is a 'natural process', faith in divine intervention and concerns about side effects (Okeke *et al,* 2005).

The other study findings about the practice implications in intermittent auditing and evaluation of the content and process of prenatal classes and childbirth preparation given by nurses/midwives may help to elicit and rectify client and health care provider deficiencies in knowledge, attitude, and behavior. Nurses/midwives, as the prime users of the non-pharmacological methods, should give adequate health education and child birth preparation on labor pain reliefs to antenatal women. This should include explanation of the various methods, their advantages and disadvantages, as well as demonstrations and rehearsals of each technique. Thoroughness of teaching, along with the amount of time devoted to rehearsing these techniques and active participation of prenatal women will

affect each individual's mastery of methods, preferences, and confidence in performance (Agnes *et al*, 2015).

This finding is consistent with the finding of (Mary *et al.*, 2017) health care providers routinely recommended a combination of methods of pain relief: personal coping ability, breathing/relaxation exercises, back massage, support from family.

5.6 Barriers on Non-Pharmacological Pain Management during Labor

In health care system related barriers in MTRH 46(31.3%) and JOOTRH 46(38.7%) of the participants responded that the main barrier was lack of time. In both hospitals MTRH 58(39.5%) and JOOTRH 37(31.1%) of the participants responded that their barrier was regulatory issues (policy). MTRH 47(32%) and JOOTRH 35(29.4%) of the participants responded that their barrier was always an inadequate staff members, while MTRH 42(28.6%) and JOOTRH 40(33.6%) of the participants responded that their barrier was sometimes lack of equipment.

In health care provider related barriers in both hospitals MTRH 51(34.7%) and JOOTRH 24(20.2%) of the participants responded that sometimes they had lack of knowledge regarding non-pharmacological pain management during labor. MTRH 61(41.5%) and JOOTRH 30(25.2%) of the respondents responded that sometimes difficult to apply. MTRH 57(38.8%) and JOOTRH 36(30.3%) of the participants responded that sometimes the main barrier was Dr./RN unwillingness. In both hospitals 49(33.3%) and JOOTRH 31(26.1%) of the health care providers responded that sometimes they need critical thinking regarding non-pharmacological pain management during labor. MTRH 48(32.7%) and JOOTRH 34(28.6%) of the participants responded that sometimes it was hard to measure the non-pharmacological pain management during labor. MTRH

58(39.5%) and JOOTRH 31(26.1%) of the participants responded that sometimes the barrier was efficacy non-pharmacological pain management during labor.

In patient related barriers in MTRH 47(32%) and JOOTRH 38(31.9%) of the participants responded that the main barrier was patient unwillingness. In both hospitals MTRH 55(37.4%) and JOOTRH 36(30.3%) of the health care providers responded that sometimes not as concrete. MTRH 51(34.7%) and 38(31.9%) of the participants responded that sometimes strong beliefs of analgesia during labor. In MTRH 46(31.3%) of the respondents responded that labor pain was too severe during labor, while JOOTRH 35(29.4%) of the respondents responded that labor pain always severe during labor.

In MTRH 44 (29.9%) of the health care providers responded that the barrier was nearly always for age of the client, while JOOTRH 31 (26.1%) had sometimes barrier was an age of the client.

One large systematic review concluded that a woman's desire for and choice of pain relief during labor is influenced by many factors: personal expectations, the amount of support from HCPs, the quality of the relationship between the woman and the HCP and the woman's involvement in decision making (Williams *et al*, 2013). This majority of studies included in this review were conducted in High Income Country (HIC) and highlighted that the influences of the attitudes and behaviors of the HCPs can be as important that the influences of pain, pain relief and intra-partum interventions on women's satisfactions scores of the experience of labor (Williams *et al*, 2013).Inadequate labor pain management was attributed to heavy work load which prevented the staff from managing pain (Nyamtema *et al*, 2013). (Hildingsson *et al*, 2013) reported that shortage of health staff, inadequate sources and stressing work settings cause midwives' burn out.

Shortage of health staff such as midwives presents an array of problems that stakeholders and policymakers should strive to address. The government and the Ministry of Health of Ghana should ensure adequate staff on labor wards to provide an enabling environment for the midwives to work effectively (Oklah *et al*, 2014). Perhaps the heavy workload and lack of resources contribute to inadequate knowledge on labor pain management. The findings in this study confirm the need for vigorous efforts by all stakeholders to assist midwives to manage labor pain effectively at all levels of the health care delivery system.

5.7 Comparative analysis of the two study site on Non-Pharmacological Pain Management during Labor

There was a significant difference in mean rank in terms of practice and barriers to non-pharmacological management of pain during labor ($p<0.05$). Health care providers from MTRH had higher mean rank compared to those from JOOTRH.

There are no similar studies conducted in other settings.

This study describes the perceptions of labor and delivery clinicians regarding nonpharmacological methods for pain relief during labor. Changes can be made at the patient level, at the clinician level and at the institutional level in order to overcome these barriers. Although patients have a large say in the care they receive and hospitals have control over resources available and policies, the clinicians have the largest affect on the use of non-pharmacological methods. In general, increases in education related to alternative methods will result in increased awareness of its safety and effectiveness, the available of these methods and how frequently they are used. Overall, the clinicians need to focus care around what is important to the woman and make decisions regarding care together.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0. Overview

This chapter has a conclusion based on the findings and final the researcher made recommendations to the various stakeholders in the medical profession.

6.1. Conclusions

The objective of the study was:

1. To assess the knowledge of the health care providers towards the non-pharmacological pain management during labor.

   According to the findings from this study, majority of the healthcare providers 230(86.5%) had inadequate level of knowledge on non-pharmacological management of pain during labor.

2. To identify the attitude of the health care providers towards the non-pharmacological pain management during labor.

   Over all they have a positive attitude regarding non-pharmacological pain management during labor.

3. To determine the practice of the health care providers towards the non-pharmacological pain management during labor.

   Most of the health care providers practice massaging, breathing exercise, continuous labor support and encourage different laboring positions during labor.

4. To assess the barriers of non-pharmacological pain management during labor.

   When concluding about the barriers, they have barriers in three areas like health care system related barriers, health care provider barriers and patient related barriers. These barriers can be overcome when the knowledge of non-pharmacological pain management during labor of health care provider is to be improved.

5. Comparative analysis of the two study site on Non-Pharmacological Pain Management during Labor

   There was a significant difference in mean rank in terms of practice and barriers to non-pharmacological management of pain during labor ($p<0.05$). Health care providers from MTRH had higher mean rank compared to those from JOOTRH.

6.2. Recommendations

6.2.1 Implications for Health Care Providers Practice

The health care providers have a vital role in providing safe and effective care to enhance the reduction of labor pain perception. This can be done by motivating the health care providers to;

(a) have an in-depth knowledge of physiological changes during labor,

(b) understand the importance of reduction of pain perception during labor, and

(c) develop skills in providing efficient care for effective pain management during labor.

6.2.2 For Medical Education

(a) Make use of available literature and studies related to non-pharmacological measures for pain relief during labor,

(b) Educate the students about various complementary and alternative therapies for pain management during labor,

(c) Encourage the students to effectively utilization research based studies.

6.2.3 For Medical and Nursing Administration

(a) Collaborate with governing bodies to formulate standard policies and protocols to emphasize non-pharmacological pain management during labor.

(b) Arrange and conduct workshops, conferences, and seminars on non-pharmacological methods to reduce labor pain perception.

(c) Provide opportunities for the health care providers to attend training programs on complementary and alternative therapies for pain management during labor.

(d) To improve the curriculum for non-pharmacological pain management during labor.

6.2.4 For Medical and Nursing Research

(a) As a researcher, promote more research on effective pain management during labor.

(b) Promote effective utilization of research findings on labor pain management.

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APPENDICES

Appendix 1: Informed Consent

MOI UNIVERSITY

SCHOOL OF MEDICINE

DEPARTMENT OF MEDICAL EDUCATION

P.O.BOX 4606 – 30100

ELDORET

poorniramasamy@gmail.com
Phone No: +254 775093045

Dear Participant,

My name is **Poornima Ramasamy**, I am pursuing a PhD in Medical Education at Moi University, School of Medicine. I am conducting a study *entitled* **"Medical Education Implication on Knowledge, Attitude, Practices and Barriers to Implementation of Non-Pharmacological Pain Management during labor".**The purpose of this questionnaire is to assess your knowledge, attitude and practice in your day-to-day duties for non-pharmacological pain management during labor. Please note that your views will be kept confidential and will be used for academic purposes only. There are no direct benefits or risks anticipated in participating in this study; however, the findings may be used by medical education experts to improve the training of nurses in non-pharmacological pain management during labor. All information gathered in this study will be handled with utmost confidentiality. Your participation in this study is entirely voluntary and you are free to decline or withdraw your participation at any time.
If you agree to participate in this study, kindly sign this consent form on the space

provided.

Sincerely,

Poornima Ramasamy
SM/PhD/ME/06/2014
PARTICIPANT'S CONSENT: "I voluntarily agree to participate in this study"

Participant's Signature :…… DATE:……

Appendix 2 : Questionnaire

SECTION A - DEMOGRAPHIC DATA

Please respond to all items in this form by circling the correct answer

1. Age group (years)

a. 15–24

b. 25–34

c. 35–44

d. 45– and above

2. Gender

a. Male

b. Female

3. Highest qualification

a. Fellowship/PhD

b. Medical degree

c. Registered nurse/midwife

d. Other_____

4. Current position

a. Consultant

b. Resident Doctor

c. Medical Officer

d. House Officer

e. Nurse/Midwife

f. Student Nurse/Midwife

g. Other

5. Have you had any additional training in non-pharmacological pain management during labor?

a. Yes

b. No

6. If yes mention the year and types of training you have undergone_____

7. Year of experience in labor ward (Students are excluded from this question)

a. 0-5 years

b. 6-10 years

c. 11-15 years

d. Above 16 years

8. Do you think more non pharmacological education is needed?

a. Yes

b. No

SECTION B - Structured Questionnaire to assesses the knowledge of the health care providers regarding non-pharmacological pain management during labor

PART I: General information regarding labor

1. What is normal labor?

a. It is the expulsion of viable products of conception through vagina.

b. It is the expulsion of viable products of conception through womb.

c. It is the removal of viable products of conception through abdomen.

d. It is the expulsion of products of conception before 28 wks.

2. What is the other name for normal labor?

a. Dystocia

b. Eutocia

c. Delivery

d. Caesarean

3. Who is a parturient?

a. Postnatal mother

b. Person supporting woman in labor

c. Person conducting labor

d. Woman in labor

4. How many stages are there in normal labor?

a. One

b. Two

c. Three

d. Four

5. The first stage of labor starts with the onset of:

a. Cervical effacement

b. True uterine contractions

c. Rupture of membranes

d. Show

6. What is the duration of first stage of labor in primi mothers?

a. 8-12 hours

b. 4-8 hours

c. 14-16 hours

d. 6-8 hours

7. Where is the pain modulation gate situated?

a. Cerebrum

b. Cerebellum

c. Spinal cord

d. Medulla oblongata

8. What are the characteristics of true labor pain?

a. Pain is from abdomen, back and then thigh

b. Pain is from back, abdomen and then thigh

c. Pain is felt over lower abdomen and then thigh

d. Pain is felt from lower back to thigh

PART II: Non–pharmacological pain management during labor

9**.** What do you mean by non–pharmacological pain management during labor?

a. Modalities using medical interventions

b. Modalities used along with medical interventions

c. Modalities other than medical interventions

d. Modalities providing permanent relief

10. How do non-pharmacological pain management during labor help in minimizing labor pain?

a. By blocking pain receptors

b. By blocking pain modulation gate

c. By blocking nerve impulses

d. By using medical interventions

PART III: Aromatherapy

11. Have you heard of aromatherapy?

    a. Yes

    b. No

    c. Not Sure

12. How does aromatherapy works?

    a. Stimulates chemo-receptors in oro-pharynx

    b. Stimulates chemo-receptors in naso-pharynx

    c. Stimulates pain receptors in naso-pharynx

    d. Stimulates receptors in naso-pharynx.

13. Which oil can be used in latent phase of first stage of labor?

    a. Lavender, rosemary

    b. Rosemary, jasmine

    c. Jasmine, lavender

    d. Lavender, neroli

14. Which oils can be used in active phase?

    a. Lavender, jasmine, rosemary

    b. Lavender, neroli, rose

    c. Jasmine, lavender, sage

    d. Peppermint, lavender, neroli

PART IV: Massage

15. Have you heard about massage during labor?

a. Yes

b. No

c. Not Sure

16.Define massage

a. Rubbing muscles

b. Pressing the body muscles

c. Rubbing and kneading muscles

d. Stroking body parts

17. What is effleurage in labor?

a. Making small circles in palm

b. Simple stroking of hand, abdomen and back

c. Stroking feet and hands firmly

d. Light, circular stroking of abdomen, lower back

18. What are Meissner's corpuscles?

a. Nerve endings

b. Sensory receptors

c. Nerve fibers

d. Pain receptors

PART V: Breathing Exercises

19. Do you encourage breathing exercise during labor?

    a. Yes

    b. No

    c. Not Sure

20. How does breathing exercises help in minimizing labor pain?

    a. Relieves anxiety and pain

    b. Relaxes the mother

    c. Redirects from the painful response

    d. Reduces pain

21. What is slow-paced breathing?

    a. Four, short, light puffing breaths

    b. Deep breaths and exhale slowly

    c. Deep abdominal breaths

    d. Inhale and exhale with relaxed lips

22. When is light accelerated breathing done?

    a. Latent phase

    b. Transitional phase

    c. Active phase

    d. Expulsive phase

PART VI: Intra-dermal water blocks

23. Have you heard about intra-dermal water blocks?

a. Yes

b. No

c. Not Sure

24. What are intra-dermal water blocks?

a. Injecting sterile water

b. Sterile water injections intra-dermally

c. Sterile injections

d. Water injections

25. How many points are used for intra-dermal water blocks?

a. Two

b. Three

c. One

d. Four

26. What is the precaution to be taken after water blocks?

a. Avoid wiping

b. Avoid massaging

c. Avoid repeat injections

d. None of the above

PART VII: Hydrotherapy

27. Have you heard about hydrotherapy during labor?

a. Yes

b. No

c. Not Sure

28. What is hydrotherapy?

a. Therapy that uses medicines

b. Therapy that uses drugs

c. Therapy that uses water

d. Therapy using massages

29. What is the ideal time to start water immersions?

a. Cervical dilatation greater than 5 cm

b. Cervical dilatation greater than 3 cm

c. Cervical dilatation less than 5 cm

d. Cervical dilatation less than 3cm

30. How long should mother stay in water tub during immersion?

a. 2 hours

b. 3hours

c. 20 min

d. 4hours

PART VIII: Continuous Labor Support

31. Do you encourage continuous labor support?

a. Yes

b. No

c. Not Sure

32. Labor support given by the

a. Partner

b. Family members or friends

c. Doulas or hospital staff

d. All of the above

33. Continuous labor support is an approach in

a. reducing maternal and neonatal mortality rate

b. increasing maternal satisfaction

c. increasing the fetal movement

d. none of the above

34. Continuous labor support means

a. having a supportive person throughout the labor process

b. having her husband during delivery

c. having nurses during delivery

d. getting support by taking pain relief during labor

PART IX: Movement and Positioning

35. Do you encourage movement and positioning during labor?

a. Yes

b. No

c. Not Sure

36. Squatting position during labor helps in

a. rapid decent of fetus

b. good fetal circulation

c. increase pelvis diameter by 2cm

d. all of the above

37. Side-lying position during labor helps to get

a. to get contraction more effective

b. for good gravity

c. to assess the fetal heart tone easily

d. to shorten second stage

38. Best position that can be used for laboring in case of hemorrhoids and for large baby

a. semi sitting position

b. supine position

c. knee-chest position

d. upright position.

PART X: Acupressure

39. Do you know acupressure during labor?

a. Yes

b. No

c. Not Sure

40. Acupressure may reduce muscle pain and tension, improve blood circulation by releasing

a. oestrogen

b. endorphine

c. progesterone

d. oxytocin

41. Acupressure applies pressure on specific point of the body by using

a. finger pads and hands

b. finger tips and thumbs

c. finger tips and needles

d. all of the above

42. Acupressure points for inducing labor helps

a. the cervix to dilate

b. the labor to speed up

c. the baby to descent

d. all of the above

PART XI: Heat and Cold

43. Do you know heat and cold application to be used during labor?

a. Yes

b. No

c. Not Sure

44. Heat and cold application during labor can act as a nerve distracts because

a. It provides new sensation

b. It increase the perception of pain

c. It stimulate the uterine contractions

d. It improve the fetal well being

45. Options for applying heat include

a. A cloth warmed with warm water

b. stored heating pads

c. get packs that can be warmed in warm tap water

d. All of the above

46. Options for cold therapy include

a. stored cold packs

b. ice in a plastic bag wrapped with a towel

c. A washcloth cooled with cold water

d. All of the above

PART XII: Music and Audio Analgesia

47. Have you heard of music and audio analgesia during labor?

a. Yes

b. No

c. Not Sure

48. Music therapy helps to

a. experiences less pain perception

b. shorten the duration of the labor

c. sleep during labor

d. increase oxygen supply for the baby

49. Music perceived by the right brain will stimulate the pituitary gland to release endorphine

a. increasing contraction

b. decreasing pain

c. increasing dilatation

d. increasing a effacement

50. Positive outcome of music therapy includes

a. decreases depression

b. increases motivation

c. improve coping skills

d. all of the above

SECTION C - To identify the attitude of the health care providers towards the non-pharmacological pain management during labor.

INSTRUCTIONS: Please state whether you **Agree, Disagree or Not Sure** to the statements provided below. Kindly ensure that you mark all questions in this section by placing a Tick (√) in your correct response.

S.No.		**Agree**	**Disagree**	**Not Sure**
		3	**2**	**1**
1.	Does aromatherapy help to reduce the level of labor pain			
2.	Do you think massage helps in release of endorphine			
3.	Will back massage warm up women in labor			
4.	Do you think breathing exercise helps the baby to provides more oxygen			
5.	Will you recommend breathing exercise during labor			
6.	Do you think hydrotherapy helps during labor to reduce pain			
7.	Does water immersion help in increased circulation			
8.	Do you think heat and cold application helps in reducing the labor pain			
9.	Will you recommend continuous labor support			
10.	Does acupressure help muscle fibers elongate and relax allowing blood to flow more freely			
11.	Do you think semi sitting position during labor is comfortable			
12.	Will you recommend squatting position for rapid descent during labor			
13.	Does music therapy help to reduce the level of labor pain			
14.	Will soothing music increase catecholamine levels thus help to maintain heart rate and blood pressure			

SECTION D - To determine the practice of the health care providers towards the non-pharmacological pain management during labor.

INSTRUCTIONS: Please select the best response to the following question by putting a Tick (√) to your response as **Always, Sometimes, and Never**. Kindly to answer all questions on this section.

S. No.		**Always**	**Sometimes**	**Never**
1.	I use Aromatherapy during labor			
2.	I massage the laboring mother			
3.	I encourage mothers to do breathing exercise during labor			
4.	I use intradermal water block during labor			
5.	I encourage and use hydrotherapy during labor			
6.	I will always ensure women's relatives are with laboring women during the entire labor process			
7.	I always use different positions according to the need of the laboring women			
8.	If you support different positions kindly mention the position you use for the laboring women _____			
9.	I give acupressure during labor process			
10.	I do warm formentation for labor women to relieve her pain			
11.	I use ice packs during labor for decreasing the labor pain			
12.	I encourage the laboring women to listen to soothing music during labor.			

SECTION E - Barriers for using non-pharmacological pain management during labor

Please circle the appropriate five grades ranging from 1 to 5 grade, where:

1. Not at all 2.Very seldom 3.Sometimes 4.Nearly always 5. Always

Health-care system related barriers					
1. Lack of time	1	2	3	4	5
2. Regulatory issues (policy)	1	2	3	4	5
3. Inadequate nursing staff numbers	1	2	3	4	5
4. Lack of equipment	1	2	3	4	5
Health-care provider related barriers					
5. Lack of knowledge	1	2	3	4	5
6. Difficult to apply	1	2	3	4	5
7. Dr./RN unwillingness	1	2	3	4	5
8. Critical thinking	1	2	3	4	5
9. Hard to measure	1	2	3	4	5
10. Efficacy	1	2	3	4	5
Patient related barriers					
11. Patient unwillingness	1	2	3	4	5
12. Sometimes not as concrete	1	2	3	4	5
13. Strong beliefs of analgesia	1	2	3	4	5
14. Pain too severe	1	2	3	4	5
15. Build trust	1	2	3	4	5
16. Age of client	1	2	3	4	5

Thank you for your time in responding to the questions.

Appendix 3: IREC Research Approval

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2015/54
Approval Number: 0001515

23rd September, 2015

Ms. Poornima Ramasamy,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
29 SEP 2015
APPROVED
P.O. Box 4606-30100 ELDORET

Dear Ms. Ramasamy,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Knowledge, Attitude and Practice of Health Care Providers on Non-Pharmacological Pain Management and its Barriers during Labor in Selected Two Hospitals."

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1515*** on 23rd September, 2015. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 22nd September, 2016. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc Director - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

Appendix 4: Approval to conduct Research at MTRH

MOI TEACHING AND REFERRAL HOSPITAL

Telephone: 2033471/2/3/4
Fax: 61749
Email: director@mtrh.or.ke
P. O. Box 3
ELDORET

Ref: ELD/MTRH/R.6/VOL.II/2008

23rd September, 2015

Ms. Poornima Ramasamy,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

RE: APPROVAL TO CONDUCT RESEARCH AT MTRH

Upon obtaining approval from the Institutional Research and Ethics Committee (IREC) to conduct your research proposal titled:-

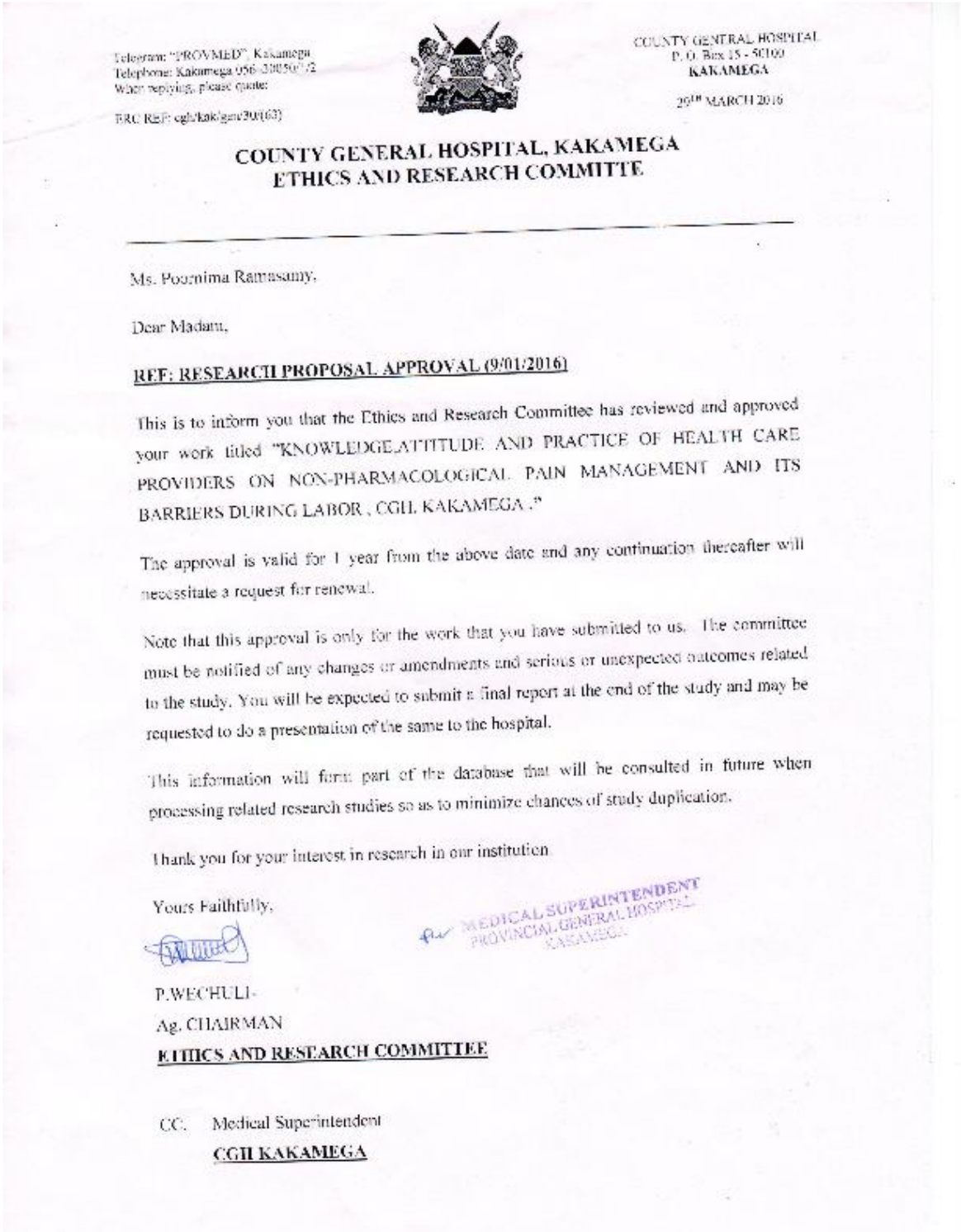
"Knowledge, Attitude and Practice of Health Care Providers on Non-Pharmacological Pain Management and its Barriers during Labor in Selected Two Hospitals".

You are hereby permitted to commence your investigation at Moi Teaching and Referral Hospital.

DR. JOHN KIBOSIA
DIRECTOR
MOI TEACHING AND REFERRAL HOSPITAL

CC - Deputy Director (CS)
- Chief Nurse
- HOD, HRISM

Appendix 5: ERC Research Proposal Approval from County General Hospital Kakamega



Telegram: "PROVMED", Kakamega
Telephone: Kakamega 056-30050/1/2
When replying, please quote:

ERC REF: cgh/kakigen/30/163

COUNTY GENERAL HOSPITAL
P. O. Box 15 - 50100
KAKAMEGA

29TH MARCH 2016

COUNTY GENERAL HOSPITAL, KAKAMEGA
ETHICS AND RESEARCH COMMITTE

Ms. Poornima Ramasamy,

Dear Madam,

REF: RESEARCH PROPOSAL APPROVAL (9/01/2016)

This is to inform you that the Ethics and Research Committee has reviewed and approved your work titled "KNOWLEDGE,ATTITUDE AND PRACTICE OF HEALTH CARE PROVIDERS ON NON-PHARMACOLOGICAL PAIN MANAGEMENT AND ITS BARRIERS DURING LABOR , CGH, KAKAMEGA ."

The approval is valid for 1 year from the above date and any continuation thereafter will necessitate a request for renewal.

Note that this approval is only for the work that you have submitted to us. The committee must be notified of any changes or amendments and serious or unexpected outcomes related to the study. You will be expected to submit a final report at the end of the study and may be requested to do a presentation of the same to the hospital.

This information will form part of the database that will be consulted in future when processing related research studies so as to minimize chances of study duplication.

Thank you for your interest in research in our institution

Yours Faithfully,

for MEDICAL SUPERINTENDENT
PROVINCIAL GENERAL HOSPITAL
KAKAMEGA

P.WECHULI-
Ag. CHAIRMAN
ETHICS AND RESEARCH COMMITTEE

CC. Medical Superintendent
CGH KAKAMEGA

Appendix 6: ERC Approval from JOOTRH

MINISTRY OF HEALTH

Telegrams: "MEDICAL", Kisumu
Telephone: 057-2020801/2020803/2020321
Fax: 057-2024337
E-mail: ercjootrh@gmail.com
When replying please quote

JARAMOGI OGINGA ODINGA TEACHING & REFERRAL HOSPITAL
P.O. BOX 849
KISUMU

Ref: ERC.1B/VOL.1/280

Date 27th July, 2016

Poornima Ramasamy,
Reg. No. SM/PhD/ME/062014,
MOI UNIVERSITY.

Dear Poornima,

RE: FORMAL APPROVAL TO CONDUCT RESEARCH ENTITLED: *"KNOWLEDGE, ATTITUDE AND PRACTICE OFTHE HEALTH CARE PROVIDERS ON NON-PHARMACOLOGICAL PAIN MANAGEMENT AND ITS BARRIERS DURING LABOR IN SELECTED TWO HOSPITALS"*

The JOOTRH ERC (ACCREDITATION NO. 01713) reviewed your protocol in a meeting held on 30th June, 2016. Comments for correction were raised which you have ethically and satisfactorily addressed. You are therefore, permitted to commence your study immediately. Note that this approval is granted for a period of one year (27th July, 2016 to 26th July, 2017). If it is necessary to proceed with this research beyond the approved period, you will be required to apply for further extension to the committee.

Also note that you will be required to notify the committee of any protocol amendment(s), serious or unexpected outcomes related to the conduct of the study or termination for any reason.

Finally, note that you will also be required to share the findings of the study in both hard and soft copies upon completion.

The JOOTRH ERC takes this opportunity to thank you for choosing the institution and wishes you the best in your endeavours.

Yours sincerely,

DR. PETER OKOTH,
DIRECTOR, RESEARCH AND TRAINING,
For: **SECRETARY – ERC,**
JOOTRH.

JOOTRH ETHICS & REVIEW COMMITTEE
P. O. Box 849 - 40100
KISUMU