DETERMINANTS AND OUTCOMES OF BIRTHING POSITIONS AMONG WOMEN GIVING BIRTH IN NAKURU COUNTY REFERRAL HOSPITAL, NAKURU COUNTY, KENYA

BY:

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A THESIS SUBMITTED TO THE SCHOOL OF NURSING, COLLEGE OF HEALTH SCIENCES, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN MATERNAL AND NEONATAL HEALTH

MOI UNIVERSITY

FEBRUARY, 2021

DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been presented for a degree in any other University. No part of this thesis may be reproduced without the prior written permission of the author and or Moi University.

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DEDICATION

This Thesis is dedicated to family, my husband Titus, my lovely daughters Berlin and Belinda for their tolerance, perseverance and inspiration during this period of developing this dissertation.

ABSTRACT

Introduction: Birth position is a common determinant for the comfort of the mother and the neonate. Further, birthing positions influence maternal and neonatal outcomes. Birth position may reduce labor augmentation, operative delivery, hospital stay, and therefore the cost in general. Alternative Birth positions are associated with better perineal outcomes as compared to supine position which is commonly used in most Kenyan hospitals.

Objectives: To determine birth positions used in the hospital, identify factors influencing the choice, and determine outcomes of birth positions among women giving birth and finally to explore the perceptions, and practices of midwives in Nakuru County Referral Hospital.

Method: A hospital-based prospective cohort study design was employed. The study was carried out at the Nakuru County Referral Hospital (NCRH).A total of 240 low risk pregnant women in established labour were recruited using systematic sampling to answer the quantitative objectives. In addition 12 midwives working in the labor ward were purposively sampled for the qualitative aspect of this study. Questionnaires and observation checklist were used to collect quantitative data from the mothers while an interview guide was used to collect qualitative data from the midwives. Data were analyzed using both descriptive and inferential statistics.

Results: The study has showed that the common position used for birth is supine. Majority of the pregnant mothers gave birth in supine position (n=203) (84.6%).The main factors associated with birth positions adopted during labor are; knowledge $p<0.001$, antenatal training $p<0.001$, education $p=0.004$ and having delivered in the hospital $p<0.001$.Outcomes after birth mainly relate to perineal integrity and time taken to deliver. Majority of the mothers in supine position had perineal tears (n=103) (50.7%) and there was a difference in the meantime to delivery among the different positions. Regarding perceptions from midwives, most of the midwives had knowledge of other birthing positions but preferred supine position because it makes it easier for them to examine their patients.

Conclusion: The main position adopted by birthing mothers at NCRH was supine position. Knowledge on birth positions, mothers education, antenatal education and, place of previous birth were the main determinants in the choice and adoption of birthing position. Further, there was a significant difference in the meantime delivery among the birth positions. Although midwives are aware of birth positions, they preferred the supine position.

Recommendations: Women should be educated on different birth position and their outcomes during antenatal clinic. There is need for training, mentorship, and coaching of midwives in order for them to effectively support women with a range of birth positions so as to create a more client-centered maternity service.

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ABBREVIATIONS

A.N.C	Ante -Natal Clinic
C.I	Confidence Interval
C/S	Caesarean Section
I.R.E.C	Institutional Research and Ethics Committee
IUFD	Intrauterine Fetal Death.
N.C.K	Nursing Council of Kenya
NCRH	Nakuru County Referral Hospital.
R.C.M	Royal College of Midwives
RCT	Randomized Controlled Trial.
SPSS	Statistical Package for Social Science.
SVD	Spontaneous Vertex Delivery
VBAC	Vaginal Birth After Caesarian
W.H.O	World Health Organization

DEFINITION OF KEY TERMS

Alternative birthing position-Any other birthing position other than supine birth position.

Birth satisfaction- This was when a woman's expectations and experience of birth care were fulfilling.

Birthing positions -Physical postures the pregnant mother may assume during the process of childbirth

Lithotomy position -The mother is lying on her back with her legs up in stirrups and her buttocks close to the edge of the table.

Midwife- A person who has been regularly admitted to a midwifery educational program duly recognized in the country in which it is located, has completed the course of study and has acquired the requisite qualification to be registered or legally licensed to practice midwifery.

Non-supine positions-(side-lying position, squatting, on all fours positions, sitting)

Outcomes – The results of birth position used

Second-degree tear – A tear of the perineum involving both skin and muscles, but not the anus. Second-degree tears often require stitches

Second-stage labor – The time from the complete dilation of the cervix (10 cm) to the birth

Supine position- Lying on the back. (Lithotomy position, dorsal position, and semi-recumbent position)

ACKNOWLEDGEMENT

I wish to thank the almighty god for his grace and favor enabling me to complete this study.

I do acknowledge my supervisors, Dr. Judith Mang'eni and Dr. Priscah Mosol (Moi University) for their time and effort in guiding me during the process of writing the proposal for this study and helping me complete this final dissertation report.

I acknowledge my husband Titus Ngulungu for his financial support which enabled me to undertake this study.

I also extend my appreciation to Moi University for providing appropriate academic environment for the completion of this research project.

I am grateful to the medical superintendents of Nakuru County level 5 Referral Hospital and Naivasha Sub County Hospital for enabling me to undertake the study and pretest research data tools respectively.

CHAPTER ONE

1.0 Introduction

This section consists of a background of the study, statement of the problem, objectives of the study, research questions and further provides significance, and scope of the study.

1.1 Background Information

Giving birth is a significant life event that should aim for a healthy baby and mother. There are growing calls for women to give birth in their preferred birth positions. But this requires midwives to be trained in a way that enables them to respect the choices that women make. According to the International Mother Baby Childbirth Initiative, women have a right to be treated with respect and dignity during labor and childbirth, by partnering with her in decision making during labour and delivery. (Gupta et al., 2012) retort that historically, physiologically appropriate labor positions such as squatting, sitting upright, and even standing in the birthing process were used by mothers .A study by (DiFranco& Curl 2014) adds that, a woman delivered in more natural physical positions that allowed her for flexing of the hips, thus straightening the pelvis and facilitating the use of gravity, all of which facilitated the fetus moving through the birth canal.

According to a report by (USAID, 2016), providing woman-centered maternity care, empowering, supportive, evidence-based benefits the women and permitting free communication, trust, commitment and supporting informed choices brings out a partnership in care between the woman and the health professional. Respecting women rights and dignity, offering alternative birth positions that are culturally sensitive, valued by women and the community at large and be able to promote positive parenting

by improving the birth outcomes is a motivating factor promoting respectful maternal and newborn care.

(Moraloglu O., 2017) states that birth position adopted during second stage influence the maternal and neonatal outcome. Complications that arise from the second stage of labor such as; delayed second stage, the alternative birth position would greatly help both maternal and neonatal outcome. These positions are either upright or non-upright positions. Upright positions like squatting, sitting and kneeling while non-upright include lithotomy position and side-lying position. The process of childbirth is one that bears numerous risks to the pregnant woman and the baby well as maternal and neonatal morbidity or mortality.

(Gupta et al. 2012) state that in the earlier centuries, evidence showed that women gave birth in an upright position like sitting squatting, kneeling, standing and hands, and knees. Though they had no knowledge on which position was preferable, why and its outcome, the only thing they knew was that it was helpful in delivery at home. Benefits of one position over the other are still uncertain hence till a time when certainty is achieved, and more research is required to offer enough evidence.

The National Institute for Health and Clinical Excellence (NICE) guidance on intrapartum care (2007) recommends that women should be encouraged to move and adopt whatever positions they find most comfortable in labor. The NHS Institute for Innovation and Improvement's toolkit for reducing cesarean section rates (2007) also recommends that women should be discouraged from lying on the bed during labor and birth.

However, in a recent audit of current midwifery practice (RCM 2010b) midwives reported that most women still give birth in the semi-recumbent position. A study done in Tanzania by Lugina, (Mlay et al. 2004) asserts that women are mobile at home than in labor and confined in supine during birth. This study established that the barriers to change were more complicated, and the health care providers should be willing to change and the women to be informed on alternative birthing positions. A study was done in Malawi on women's knowledge, and use of labor and birthing positions concluded that childbirth education should include information on the various labor and birthing positions. Midwives should be equipped with appropriate skills to help women use different positions during childbirth (Zileni BD et al. 2017).

A study done in Kenyan referral hospital by (Mwanzia 2014) showed that supine positions as the most preferred birth position by midwives because it's convenient when examining the mother during and after birth.

1.2 Problem Statement

(Gupta 2017) highlights that; alternative birthing positions are associated with less instrumental deliveries, less perineal traumas thus improved maternal and neonatal outcomes. On the other hand, supine position is associated with increased instrumental deliveries, episiotomies, perineal trauma, the prolonged second stage of labor to the mother, and reduced fetal heart rate due to aorto-caval compression (Difranco &Curl, 2014). Despite these potential benefits of giving birth in other positions other than the supine position, most mothers giving birth still give birth lying on their backs (Thies-Lagergren, 2013).

Most mothers deliver in supine position in our Kenyan hospitals and, supporting mothers to deliver in alternative birthing position still remains a challenge (Mwanzia, 2014).

While that is the case no particular study has been done on determinants, and outcomes of alternative birth positions in Nakuru Kenya. Despite Nakuru County Hospital having convenient beds which are suitable for different birth positions. This study therefore sought to examine the determinants and outcomes of birth positions in Nakuru County referral hospital in order to inform policy.

1.3 Significance of the Study

This study will provide a new perspective by which to view childbirth as a natural process where every woman needs to experience and choose a position that suits her. It will also illustrate the importance of cooperation between midwives and mothers during childbirth hence improved patient satisfaction and positive birth experience.

This study will inform policy on determinants of various birth positions and their outcomes among pregnant women, especially in our setting. It will also empower the health care professionals with evidence to support alternative birthing positions and advocate for the mothers hence promoting good health of the mother and the infant. Every individual has the right to safe, satisfying, and health care with respect for human and cultural variations.

Midwives play a role in empowering women to adopt the positions that are most suitable for them at pivotal times during labor. Midwives also provide ongoing support and advice throughout pregnancy and labor. Midwifery practice requires knowledge of research and awareness for critical analysis. Midwives need to be aware of evidence-

based practice related to maternal positioning in labor to promote normal birth for childbearing women.

1.4 Justification

The process of pregnancy and birth can be enhanced through education, health, and supportive intervention (ACNM, 1997). The widespread use of the supine position during labor can be considered an intervention in the natural course of labor, which is overused in current care for laboring women (Jonge, 2004). Adopting an alternative birth position would greatly help both mothers during the second stage by reducing the duration and the neonatal Apgar score (Moraloglu, Kansu-Celik et al.2017).

Maintaining a level of autonomy by women during delivery by adopting a position of choice improves the patient satisfaction hence determining the patients' health-seeking behavior in the future (Hodnett et al.2007).

The WHO has issued policies on alternative birth positions which are favorable to women during childbirth. Education on birthing positions among midwives and other health professionals by Lamaze international has incorporated a more understanding of the physiology of labor and birth and the danger of interfering in the natural physiologic process of birth without a clear indication. (Lamaze international 2009).

Midwives and other health care professionals need to be able to gain experience in assisting women in delivering in non-supine positions and helping mothers to understand that they are free to use alternative birth positions during labor and birth (WHO 2018). There is no similar study which has been done in NCRH; therefore, this study will inform policy on determinants of various birth positions.

It will also empower the health care professionals with evidence to support alternative birthing positions and advocate for the mothers hence greater patient satisfaction.

1.5 Research questions

1. What are the birthing positions among women giving birth in Nakuru county referral hospital?
2. What are the factors influencing the choice of birth positions among women giving birth in Nakuru county referral hospital?
3. What are the outcomes of various birth positions among women giving birth in Nakuru county referral Hospital?
4. What are the perceptions and practices of midwives regarding birth positions during delivery in Nakuru county referral hospital?

1.6 Broad objective of the study

To determine birthing positions and their outcomes among women giving birth in Nakuru county referral hospital.

1.7 Specific Objectives of the study

1. To determine the birth positions among women giving birth in Nakuru county referral Hospital.
2. To identify factors influencing the choice of birth positions among women giving birth in Nakuru County referral hospital.
3. To determine the outcomes of birthing positions among women giving birth in Nakuru County referral hospital.
4. To explore the perceptions and practices of midwives regarding birth positions during delivery in Nakuru county referral hospital.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

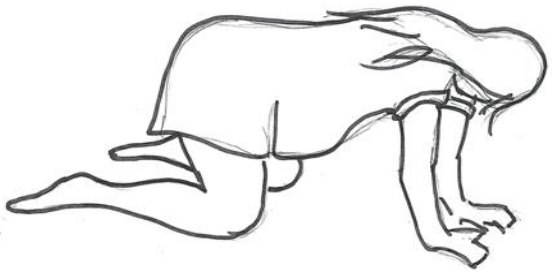
This chapter provides a detailed overview of the global, regional, and local view on different birth position which can be adopted by women while giving birth in our health facilities. Apart from supine birth position there are several alternative birth positions. These alternative birth positions have their advantages and disadvantages.

2.2 Birthing Positions

The National Institute for Health and Clinical Excellence (NICE) guidance on intrapartum care (2007) recommends that women should be encouraged to move and adopt whatever positions they find most comfortable in labor. The NHS Institute for Innovation and Improvement's toolkit for reducing cesarean section rates (2007) also recommends that women should be discouraged from lying on the bed during labor and birth. However, in a recent audit of current midwifery practice (RCM 2010b) midwives reported that most women still give birth in the semi-recumbent position.

(Jowitt 2014; Walsh 2012; & Coppen 2005), explains that women's birth positions have changed so much since the inception of obstetrics in the 17th century, which were predominantly practiced in high-income countries. (Walsh 2012) further remarked on the conceptual shift from women as agents of birth to recipients of care, singling out birth positions which evolved to suit birth attendants rather than women.

2.2.1 Knee and Hands position.



This is one of the alternative birthing positions a woman can adopt while giving birth in the health facility.

The pregnant woman needs to get down on her knees and hands, on either a floor mat or a bed to help the opening of the pelvis. One of the benefits of using this approach is relieving pressure from the spine, reducing the intensity of back pains, and boosting the baby's oxygen level (Simkin et al., 2017). One of the limitations of using this approach is the possibility of the woman's arms getting tired.

2.2.2 Sitting Position

Another position which can be adopted by the mother while giving birth in our health facility apart from supine position.

Position preferred when the pregnant woman feels that the weight of her unborn child is bearing down. It involves women sitting on a birthing chair or a toilet. The pregnant woman is required to spread her legs in a sitting position relying on gravity. One of the main benefits of the sitting position is in relieving the pregnant woman of the pressure on her pelvis. The position provides the pregnant woman with a chance to rest. It makes it easier for the physician to access the fetal heart tones. The sitting position aids the pregnant woman in relaxing the perineum, which can aid in decreasing tearing (Soong & Barnes, 2005).

2.2.3 Squatting Position

The squatting position is achieved by a woman rocking forward onto her feet with support on either side or by squatting on the floor while being supported under her shoulders. Squatting position yielded better perineal outcomes when giving birth (Dahlen et al., 2013).

2.2.4 Lateral /Side-Lying Position

Also known as the Sims positions with an attendant supporting the top leg, a good position when delivery is rapid (Gupta JK 2012 and Cochrane Database of Systematic Reviews 2012).

2.3 Factors influencing Choice of Birth Positions.

Several factors are showed to influence the women's choice of birth position.

2.3.1 Socio-Demographic Factors

A study done on socio-demographic and labor factors associated with the supine position during the second stage of labor showed that highly educated women and older were more likely to use non-supine positions (de JongeA et al., 2009).

Factors that significantly related to perineal trauma included first vaginal birth, use of regional anesthesia, deflexed head, and newborn weight more than 3,500gm hence women should be given a choice to give birth in whatever position they find comfortable(Soong and Barnes 2005).

(Da Silva, de Oliveira, et al. 2012) states that young women are the most vulnerable to getting episiotomies. In this age group, the use of oxytocin for labor augmentation as well as semi-upright positions at the time of birth were associated with second-degree lacerations and episiotomies. The use of upright alternative positions for birth and

avoidance of oxytocin could reduce the risk of perineal trauma from lacerations and need to perform an episiotomy.

For women use birthing chairs, they should be encouraged to move about between contractions to reduce vulvae congestion and use alternative aids such as a birthing chair (De Jonge et al. 2008). The woman's birth experience should focus on her individual needs, and facilitated by the midwife to ensure that she has choice and control over her position during labor and birth. Women are empowered to choose their place of birth but not on their choice of birthing positions among the Dutch. (DeJongeA et al. 2009).

According to (Coppen R. 2005), birthing positions were defined as: supine (< 45° from the horizontal), lateral, sitting (> 45°), birthing stool, standing, squatting, hands and knees, bath and other. Women who were only in the supine position during the second stage were compared to those who used other positions solely or in addition to the supine position. Women who gave birth in the supine position were compared with those who gave birth in any other position. Socio-demographic and labor factors were identified based on limited evidence in the literature that they may influence the use of birthing positions.

(Boyce P.M. 2003) states that equally, women with a prolonged second stage may be asked to adopt non-supine positions to aid and prevent referral for failure to progress. (Wald Enstrom U. 1999) states that some birthing positions, such as sitting on a birthing stool, involve intimate support of the birthing partner. This study, therefore, studied the influence of marital status whereby women who were single, divorced, widowed or separated were combined as ' living alone had no support to adopt the birthing positions while married women had the support to adopt these positions. This study also showed

higher rates of non-supine positions in home births and, therefore, low-risk women who choose to give birth in hospital spend the first part of their labor at home.

2.3.2 Knowledge

Knowledge of birthing positions lacks among pregnant mothers; hence, education on these positions need to be done (P Okonta, 2012).79.6% of Nigerian women had little knowledge of birthing positions. (Badejoko O, Ibrahim H M, Awowole I O, 2016).

Education on childbirth should include information on various birth positions, and midwives need to be equipped with skills to help women to use different birthing positions, 99.2% of Malawi women knew only about the supine position (Zilen BD, Glover P, 2016).

Women need to be made aware of alternate positions and their advantages and disadvantages for them to make an informed choice. Women are less likely to assume positions that are unfamiliar to them. Midwives and other obstetric health care personnel should be proactive in offering advice on alternative positions and resources to help women to be as comfortable as possible throughout labor.

2.3.3 Hospital Related Factors.

Hospital factors like skills, type of delivery beds have showed to influence choice by the women during delivery, as showed by different studies.

(Lugina, Mlay et al. 2004) asserts that women are mobile at home than in labor. He adds that midwives and obstetrician favor confining a mother in supine during delivery. This study established that the barriers to change were more complicated, and the health care providers had to be willing to change and inform women on alternative birthing positions. A study done in Malawi on women's knowledge and use of labor and birthing

positions concluded that childbirth education should include information on the various labor and birthing positions. Midwives should be equipped with appropriate skills to help women use different positions during childbirth (ZileniBD et al. 2017). A study by (Gizzo, Di Gangi et al. 2014) further, showed that in the absence of pre-labor or intra-labor complications, the alternative vertical positions might positively influence labor process reducing maternal pain and operative vaginal delivery, cesarean section, and episiotomy rate.

According to Gardosi, Sylvester et al. (2009), midwives play a role in supporting women in different birthing positions and help them find the positions they feel most comfortable in, thus, contributing to women's positive experience during birth. A randomized controlled clinical study was done on alternative positions in the second stage of labor, particularly kneeling, was achievable even without specific birth aids and antenatal preparation. Alternative birth positions appear safe, acceptable, and easily integrated into modern labor ward practice. However, (Copen's 2005) seminar paper on birthing positions concluded that midwives were likely to hinder adoption of upright birth positions.

Further study on evaluating the effects of an alternative mode of birth by (Walker, Rodriquez et al. 2012), revealed that a combination of postural changes during the passive expulsive phase of labor and lateral position during active pushing time is associated with reduced assisted vaginal delivery and perineal trauma. The women's narratives show a lot of disjuncture between their expectations of choosing, planning, and achieving natural birth as possible, and these experiences of births did not typically go as planned. (Malacrida & Boulton 2014) adds that these women revealed the disciplining qualities of both natural and medical discourses about birth and choice.

Furthermore, their narratives counter assumptions that women, as ideal patient consumers, are driving medicalization.

Midwives have an important role in helping women to find and choose comfortable positions (Cotton, 2010 Walsh, 2007). A study by (De Jonge et al.2009) found that there was considerable variation between midwifery practices in the use of different positions for labor and birth. The Royal College of Midwives (RCM) working with the Campaign for Normal Birth (CNB) steering group, undertook this survey of midwifery practice in the UK, to explore this area in more detail. As part of the strategy for the survey, the RCM consultant midwives group were approached, their opinion sought on the value of such a survey, and their interest in facilitating it within their units elicited. The Consultant Midwives' were enthusiastic and fully committed to this survey, and several of them agreed to be the local project lead. It involved recruiting midwives to participate, raising awareness, distributing forms, encouraging involvement, and collecting and returning the forms to the RCM.

In a survey entitled Listening to Mothers, fifty-seven percent reported that they gave birth lying flat on their backs (Declercq et al. 2006). Further research suggests that although upright positions may be difficult after pain relief administration, upright positions could still be achieved with the use of lower dose epidurals (Supplee & Genaro 2003). Women in labor typically enter an unfamiliar, busy institutional setting to receive care from an array of strangers where numerous technical care measures are routinely used, such as continuous electronic fetal monitoring and epidural anesthesia. Intravenous infusion during labor has become a routine procedure for a high percentage of women in labor throughout the United States; these procedures may affect a woman’s mobility and use of postural coping strategies in labor (Spiby et al., 2003).

Alternative birthing methods have become established because of the use of a high technical standard that combines safety for the mother and the child with the right side of obstetrics that evokes a nurturing and warm atmosphere (Geissbuhler & Eberhard 2002). Factors such as the ability to maintain some level of autonomy, ability to mobilize and change positions unprompted, in an environment conducive to welcoming partners and family members are contributors to patient satisfaction. Patient satisfaction plays a significant role in determining the pattern of one's health-seeking behavior in the future (Hodnett et al., 2007).

Another study showed that low prevalence of severe perineal trauma and episiotomy was found among women opting for home birth in four Nordic countries. Women used a variety of birth positions, and the majority gave birth in flexible sacrum positions. No associations were found between flexible sacrum position and severe perineal trauma (Edqvist, Blix et al.2016).

A study done among the Dutch women on factors influencing the fulfillment of women's preferences for birthing positions during the second stage of labor showed that midwives were contributors to women-centered care in the choice of birth positions (Nieuwenhuijze M et al. 2012).

(WHO 2016) revealed a lack of respect for women's preferred birth position. One survey in the USA in the year 2005 reported that 92% of the women gave birth in either semi-reclining or semi-sitting positions. In the recent past, the medical sector has undergone numerous transformations like the development and growth of technology, which has aided the health care in multiple ways. Currently, medical staff can deal with challenges that they found overwhelming some decades ago (DiFranco& Curl, 2014).

The women's narratives between their expectations of choosing, planning, and achieving a natural birth as possible, and their lived experiences showed that it did not typically go as plan. They also revealed that disciplining qualities of both natural and medical discourses about birth and choice. Furthermore, their narratives counter assumptions that women, as ideal patient consumers driving medicalization (Malacrida & Boulton, 2014).

2.4 Outcomes of Birthing Positions

Different birth positions have been showed to have different outcomes on the perineal integrity and time taken to deliver.

Care is not based on current evidence and embedded practices, especially birthing in the lithotomy position, and routine episiotomies were commonly used. However, a particular survey found the willingness to change, adapt practice, and consider different birthing positions, which may lead to fewer episiotomies being performed (Diorgu, Steen, et al. 2016).

2.4.1 Lithotomy Position

A review of the literature disclosed that the traditional supine position appeared to be associated with a prolonged second stage of labor and persistent occiput posterior presentations. However, the supine and left lateral positions are excellent for providing anesthesia and access, although there may be a little added benefit for the women’s comfort. The sitting, squatting, and hands-and-knees positions offer superior patient participation than the lithotomy position. (Gupta J.K 2012, Cochrane Database of Systematic Reviews 2012).

A study done on the use of episiotomy found that women delivering in lithotomy position were 55% more likely to receive episiotomy compared to those in lateral position (Da Silva et al. 2012). Comparison study between lithotomy and lateral position on perineal damage revealed that lithotomy was more associated with perineal damage (Meyvis, 2012).

Another study on pain during labor found that the lithotomy position was less painful compared to the lateral position (Nilsen et al, 2011). Further, the same author in the same study found that there was no significant difference between five minutes Apgar score compared to other alternative positions.

2.4.2 Lateral/Side-Lying Position

A study by (Da Silva, de Oliveira et al. 2012) showed that young women are most vulnerable to getting episiotomies. In this age group, the use of oxytocin, as well as semi-upright positions at the time of birth, was associated with second-degree lacerations and episiotomies. The use of upright alternative birth positions and avoiding the use of oxytocin could reduce the risk of perineal trauma from lacerations and need to perform an episiotomy.

(Soong & Barnes 2005) state that a study on the use of regional anesthesia in semi-recumbent position was associated with perineal traumas while lateral position had reduced perineal traumas. The factors significantly related to perineal trauma included first vaginal birth, use of regional anesthesia, deflexed head, and newborn weight more than 3,500 g. Therefore women should be given a choice to give birth in whatever position they find comfortable.

Maternity practitioners have a responsibility to inform women of the likelihood of perineal trauma in the preferred birth position. (Gizzo, Di Gangi et al. 2014) states that Alternative maternal positioning may positively influence the labor process to reduce maternal pain, operative vaginal delivery, cesarean section, and episiotomy rate. Women should therefore, be encouraged to move and deliver in the most comfortable position. Use of the lateral birth position appears to protect the perineum while squatting using a birthing chair has been reported as a predisposing factor for third and fourth-degree tears (Lawrence, 2009).

2.4.3 Knees and Hands /on Fours Position

Several studies analyzed the use of on fours or kneeling position by the woman during labor (Dahlen et al. 2013; Elvaner et al., 2015; Suto et al., 2015). There were increased risks of perineal lacerations among women in the kneeling position.

(Dahlen et al 2013) assessed perineal trauma and post-partum hemorrhage in women, and no significant results were found on these outcomes regarding the kneeling position. According to (Menakaya et al., 2013), there were low rates of episiotomies and perineal tears while using the hands and knees position in china. Neonatal asphyxia and postpartum bleeding did not increase (Hong-Yung Zhang, 2016).

(Evander et al., 2015) assessed maternal obstetric anal sphincters, and no significant results were found for the all-fours position compared to sitting, lithotomy, and lateral, standing, supine, squatting and using a birth seat. One study reported five-minute Apgar scores and no significant differences were found for the all fours and kneeling position compared to water births, semi-recumbent, lateral, standing, squatting, and use of a birth stool(Dahlen et al., 2013).

One of the labor position is the hand and knees position. The pregnant woman needs to get down on her knees and hands, on either a floor mat or a bed. The position is very effective as it contributes to the opening of the pelvis. One of the benefits of using this approach is relieving of pressure from the spine and reducing the intensity of the back pains (Simkin et al., 2017). Another benefit is boosting the baby's oxygen level in some instances. One of the limitations of using this approach is the possibility of the woman's arms getting tired.

2.4.4 Squatting Position Outcomes

The squatting position was achieved by a woman rocking forward onto her feet with support on either side or by squatting on the floor while being supported under her shoulders. There is an increased risk of anal sphincter injuries in parous women while in squatting position (Elvander et al. 2015).No significant results found in five minutes Apgar scores regarding squatting position and other birth positions (Dahlen et al.2013).

2.4.5 Sitting Position

According to (Soong & Barnes, 2005), the sitting position is preferred when the pregnant woman feels that the weight of her unborn child is bearing down. The position involves women sitting on a birthing chair or a toilet. The pregnant woman is required to spread her legs in the labor position, relying on gravity. One of the main benefits of the sitting position in relieving the pregnant woman of the pressure on her pelvis. The position provides the pregnant woman with a chance to rest. It makes it easier for the physician to access the fetal heart tone (Soong &Barnes, 2005).

The sitting position aids the pregnant woman in relaxing the perineum, which can aid in decreasing perineal trauma. Some of the limitations include the discomfort caused by the pressure from the toilet seat. (Kafka, Riss, et al. 1994) state that for pregnant

women who experience high blood pressure, this was not a viable option. Chair delivery comparison was made on alternative birthing to a control group in the supine position evaluating the safety of deliveries on the delivery chair, the duration of the stages of labor, rate, and degree of soft tissue injuries, maternal blood loss, fetal outcome and complications in the puerperium was done. The use of the delivery chair showed no increased risk to either the mother or the fetus and therefore represents an appropriate alternative to the traditional supine position for delivery. (Kafka, Riss, et al. 1994).

2.5 Practices by Midwives on birth positions.

Practices by midwives during delivery have showed to determine the choice of birth position by women during labour and delivery.

According to a study by (Wald Enstrom U. 2003), Midwives influenced the use of position depending on (lack of) progress in labor and parity. This was a reason to investigate the influence of the midwifery practice, parity, duration of pushing, and referral during the second stage of labor. Women who gave birth for the first time in 2001 were classified as prim parous and those who had given birth before 2001 as multiparous.

Further study on evaluating the effects of an alternative mode of birth by Walker, (Rodriquez, et al. 2012), revealed that a combination of postural changes during the passive expulsive phase of labor and lateral position during active pushing time is associated with reduced assisted vaginal delivery and perineal trauma. The women's narratives show a lot of disjuncture between their expectations of choosing, planning, and achieving natural birth as possible, and these experiences of births did not typically go as planned. (Malacrida & Bouton 2014) adds that these women revealed the disciplining qualities of both natural and medical discourses about birth and choice.

Furthermore, their narratives counter assumptions that women, as ideal patient consumers and driving medicalization.

According to (Cotton 2010), midwives have an important role in helping women to choose comfortable birth positions. A study by (De Jonge et al. 2009) found that there was considerable variation between midwifery practices in the use of different positions during labor and birth. The Royal College of Midwives (RCM) working with the Campaign for Normal Birth (CNB) steering group, undertook this survey of midwifery practice in the UK, to explore this area in more detail. As part of the strategy for the survey, the RCM consultant midwives group were approached, their opinion sought on the value of such a survey, and their interest in facilitating it within their units elicited. The Consultant Midwives' were enthusiastic and fully committed to this survey, and several of them agreed to be the local project lead. This involved recruiting midwives to participate, raising awareness, distributing forms, encouraging involvement, and collecting and returning the forms to the Royal College of Midwives.

2.6 Theoretical Framework

This study employed the Health Belief Model (HBM), which was developed in the 1950s (Janz, Champion, & Strecher, 2002). This model was developed to explain decisions around individuals.' participation in preventative health care. Later it is used to explain people's responses to symptoms and diagnosed illnesses.

The Health Belief Model assumes that individuals.' Perceptions about their openness to a condition and the perceived seriousness of the effects of the condition along with the perceived benefits and barriers associated with the action or treatment available will influence whether they will participate in preventative health care activities (Maiman & Becker, 2007). The combined levels of susceptibility and threat provide the energy

or force to act, and the perception of benefits (fewer barriers) provides a preferred path of action.

The stimulus necessary to trigger the decision making process or cue to action may be internal or external (e.g, mass media, interpersonal interactions, and communications with healthcare providers) (Rosen stock, 1974). Unfortunately, few HBM studies have attempted to assess the contribution of cues to predicting health actions, and no studies have studied this variable in the context of the model (Janz et al., 2002).

The HBM assumes that socio-demographic and structural variables might affect the individual's perception and indirectly influence health-related behavior (Janz & Becker 2002). Therefore this model provides a theoretical basis for understanding issues that influence the mother's childbirth decision and identify the relationship between health-related beliefs and maternal behaviors which can predict the possibility of a mother in choosing a particular birthing position.

The HBM was elucidated by the following descriptors;

i. **Perceived Susceptibility:** This means that every individual has his/her view of the probability of encountering a condition that would unfavorably influence one's health. The more a person believes he/she is at risk of, the more likely that the person will adopt a particular health-related behavior to minimize risks. The knowledge of the susceptibility of a woman to lose a life or go for caesarian section after been in the second stage for longer duration can propel a mother to seek appropriate information from the health care personnel to secure herself and the unborn child. Enabling the mother to make informed choices on birthing positions.

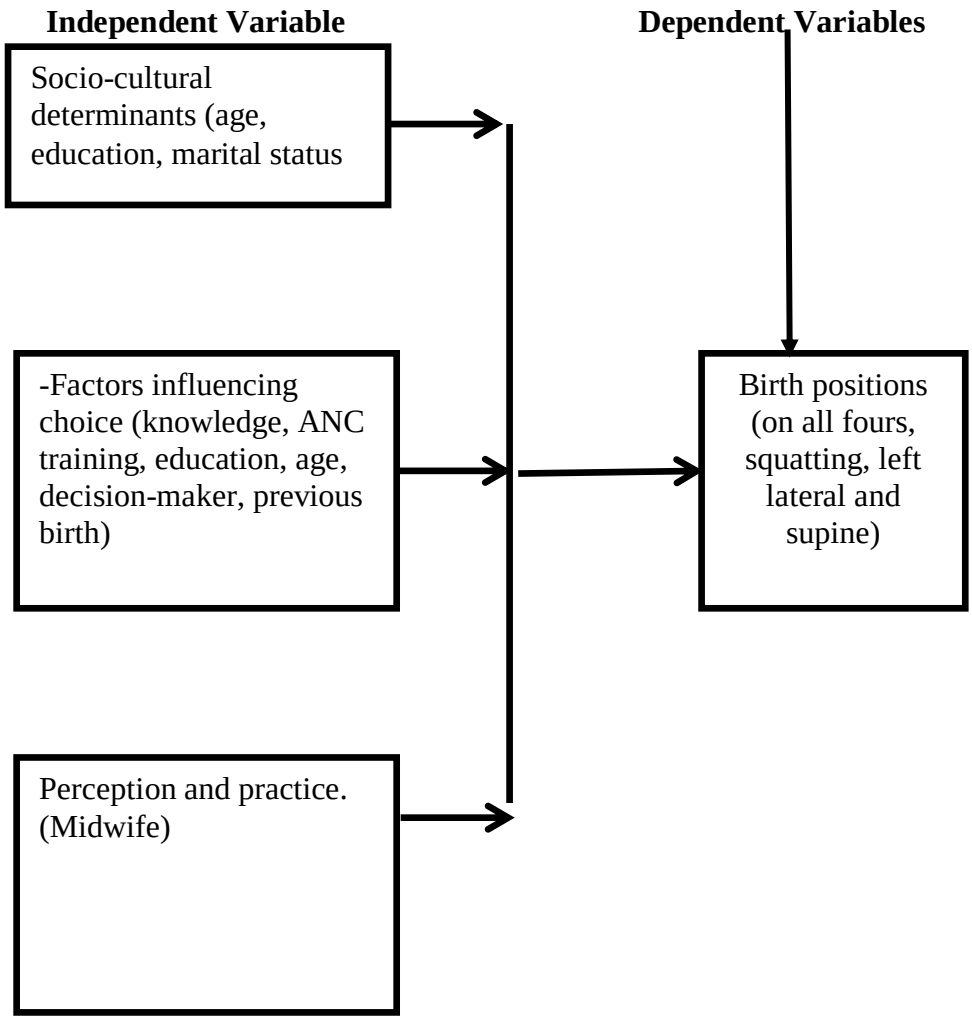
ii. **Perceived Severity:** This alludes to the beliefs that a person holds concerning the impacts of childbirth and eventual outcome. If it's believed that there are complications associated with certain birth positions, then the woman is likely to prefer alternative birthing positions to reduce risks.

iii. **Perceived Benefits:** This means that one's belief that outcomes can be positively affected by engaging in particular health behavior. The choice of birth position that an individual mother made was impacted by knowledge, attitude, and the care provided by the HCP.

iv. **Perceived Barriers:** This refers to the individual perception of the difficulties preventing them from following specific health-related behavior. The desire for a woman to choose a particular birth position may be hindered by obstetrical/medical conditions.

v. **Cues to Action:** These are factors that help an individual make health-related behavior. An individual's perception of the levels of susceptibility and seriousness will drive a mother to act. Mother's attitude and beliefs towards a particular birth position from different sources will determine the choice.

2.7 Conceptual Framework



(Adapted from Rosentock, 1974)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter includes a study area, design, and study population, sampling methods, techniques, and research instruments. It similarly described how data was collected, measured, analyzed, and ethical considerations.

3.1 Study Area

The study was carried out in Nakuru County referral hospital maternity unit. The hospital is a referral hospital situated in Nakuru County, which is a cosmopolitan town with a catchment area of 2.1million.(KHIS2018). The hospital receives about 600 normal deliveries and 240 cesarean section per month, giving an average of 28 deliveries per day as per Hospital maternity monthly report. NCRH is teaching hospital serving several institutions of higher learning with qualified personnel like obstetricians, pediatricians, midwives, and clinicians who offered necessary support in this research.

3.2 Study Design

A hospital-based prospective cohort study design employing both quantitative and qualitative approaches was used for this study. It enabled the integration of data, which was complete and synergistic. (Michael et al.,2015) defines a prospective cohort study design as one that enables the investigator to obtain accurate information about exposure before the outcomes, one or more samples (called cohorts) are followed prospectively and subsequent status evaluations with respect to a disease or outcome are conducted to determine which initial participants exposure characteristics (risk factors) are associated with it.

As the study was conducted, the outcome from participants in each cohort was measured and relationships with specific characteristics determined. Prospective cohort design was appropriate for this study because it enabled observation of the outcomes after exposure and collect the information on the determinants of birthing positions and its outcomes among pregnant women in Nakuru County Referral Hospital.

3.3 Study Population

The study population comprised of all women admitted to the maternity unit with low-risk pregnancy in labor and all midwives working in the maternity unit.

3.4 Eligibility Criteria

3.4.1 Inclusion criteria

- All Term Pregnant mothers in true labor.
- Those who consent.
- Midwives working in the labor ward

3.4.2 Exclusion criteria:

- Pregnant Mothers whose labor is augmented.
- Mentally challenged women.

3.5 Sample size calculation

The sample size is the number of items involved in the study as the respondents in the study.

The calculation was as follows using Yamane formula since there was no estimated proportion for the population.

$$n = \frac{N}{1 + N(e)^2}$$

Where: n is the sample size.

N is the target population (all women admitted to the maternity unit with low-risk pregnancy per month).

Z the normal standard deviation set at 1.96 with a confidence interval of 95 %.

$$N = \frac{600}{1+600(0.05)^2}$$

N=240

Therefore 240 women were recruited to meet the study objectives.

Sample for the qualitative data was 12 done through a census for all the midwives working in labor ward.

3.6 Sampling Technique

3.6.1 Quantitative Data

Systematic sampling was used to select the pregnant mothers at the maternity unit. The estimated calculated total sample size was 240 women who were recruited from the study population. The first participant was selected randomly. The interval was calculated by (total number of all women who deliver spontaneously at the NCRH that is 600 divided by the total sample size of 240 to give a sampling interval of 2.5). Every 3rd mother was selected until the desired sample size was attained for the study. Informed consent was obtained from the participants' then a questionnaire administered before discharge home.

3.6.2 Qualitative Data

Purposive sampling was used for all midwives working in the maternity unit and the antenatal clinic since they come into contact with the mothers before delivery. In depth-interview was carried out till saturation was reached.

3.7 Data Collection Tools

3.7.1 Questionnaire

Data was collected using a structured questionnaire. According to (Mugenda & Mugenda, 2003), questionnaires are commonly used to obtain important information about the population and each item in a questionnaire addresses a specific objective and research question of the study. Questionnaires are easy to use and administer and also saves on costs. The questionnaires had closed and open-ended questions. For those who could not read, the researcher read out the questionnaire for them and wrote down the answers they gave.

3.7.2 Observation Checklist

Observation was done for pregnant mothers from the time they go into labor, during labor and after delivery to check on the outcomes of different birthing positions.

3.7.3 Interview Guide

Interview guide was used to collect qualitative data from the midwives and the in-charge were able to direct the conversation in attaining the information needed for the study. The interviews lasted from 10 to 15 minutes.

3.8 Data Collection Procedure

3.8.1 Training of Research Assistants

The investigator hired two research assistants with bachelor's degree in nursing who were instrumental in the data collection process. They were not offering midwifery services at that particular time of collecting data. These research assistants were trained on the protocol, data collection process, and on ethical practice. The training lasted for two days, on the third day a pilot study was conducted.

3.8.2 Pilot study

According to (Mugenda, et al 2003), reliability is a measure of degree to which a research instrument yields consistent results or data after repeated trials.

The study questionnaire was pretested to enhance its validity and reliability. Pretesting was done at Naivasha County Hospital in Nakuru County which had almost similar infrastructure and population/demographic features. Proof reading of the tools was done to ensure that the tools measured what I wanted to measure. A total of 24 pregnant mothers, comprising of 10% of the study sample were selected and used to pretest the study questionnaire. Cronbach alpha method was used to test the tools reliability. There was consistency of the results. The research tools were able to yield results which were consistent after repeated administration of the pilot questionnaire. Adjustment of the research tool was done before the initial data collection of the study.

3.8.3 Data Collection Procedure

The research team introduced themselves to the staff and explained the aim of the study. A serialized list of women who deliver at the hospital was compiled every day using the admission register. The first pregnant mother from the register to be included in the sample was chosen randomly then every 3rd mother was included in the study until the desired sample size was attained. Approximately 7 participants were recruited daily. After the participants consented to participate they were followed up throughout labor observing all the outcome variables. The results were recorded in the observation checklist. The mothers were then interviewed for approximately 15-20 minutes each before discharge home using a questionnaire.

The researcher delivered the questionnaires personally. Mothers were assessed to ascertain that they met the eligibility criteria then systematic sampling done. When the sample population met the eligibility criteria, a written consent was obtained ensuring that instructions and purpose of the study were made clear to the mothers whose labour was not established on admission. Observation was done in the second stage of labor and recorded in the observation checklist. The questionnaire was administered in the postnatal ward before the patients were discharged home for each study case to collect the information needed. The interview guide was used to collect qualitative data from the midwives. Interviewing of the key informants was done by the researcher. Notes were taken and audio taping and probing was done by the key investigator. Collection of data was done for one month and five days.

3.9 Data Management

Hard copy Data/questionnaires were stored under lock and key and accessed only by the researcher to ensure confidentiality and avoid data loss. Data was entered into the computer using Microsoft excel spreadsheet by two different people (double entry) for accuracy purposes and saved under password protection. Data cleaning was done to identify missing values and any inconsistencies. The Data was then exported to SPSS software version 22.0 for analysis. Coding and verification of the data was done for easier manipulation, analysis and presentation.

3.10 Data Analysis

Data analysis was performed using SPSS program version 22.0 Analysis was done per objective. The first objective on the common positions of birthing was analyzed using descriptive statistics. The second objective on the factors that influence the birthing

positions was analyzed using chi-square. The third objective on birth outcomes was analyzed descriptively. Thematic analysis was used for the qualitative data.

3.11 Ethical Considerations

This study was carried out after obtaining formal approval from Institutional Research &Ethics Committee. The investigator further sort permission from the hospital administration then a letter for permission to carry out the research was issued to proceed to the maternity unit. Participants in this study were recruited after signing a written informed consent. Full explanation of the purpose, the procedure and their consequences were explained to the participants. Participants of the study were volunteers who were aware of their roles in the study. Research maintained the anonymity of the participants and their responses and results communicated to the patient and necessary consultations advised. Those who declined to give consent were not discriminated against in the provision of the appropriate services. To ensure confidentiality of the participants, information, anonymous typing was used whereby the name of the participants and any participants' identifier were not written on the questionnaire. A confidentiality agreement was drawn between the principal investigator and the research assistants before collecting data. The principal investigator collected all the questionnaires every day after data collection and kept them under lock and key. The study was carried out in a period of two months.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the finding of the study as follows; demographic characteristics and the results for each objective. During the study a total of 240 mothers and 12 midwives were interviewed. The results are presented in form of tables, bar graphs, and pie charts and verbatim from the midwives.

4.1 Socio-Demographic Characteristics of the participants

Majority of the participants were between the ages of 18-35 year (73.8%, 177/240). More than a third of the women were unemployed (39.2%, 94/240). Most of the participants were married (80%, 192/240). Majority of the mothers had at least some education with a third of them having secondary school education (39.2%, 71/240).

Table 1 below shows the demographic characteristics of the participants.

Table 1: Socio-Demographic Characteristics of the participants

Characteristics	Particular	frequency	percentage	Cumulative percent
Age	Under 18 years	5	2.1	2.1
	18-35 years	177	73.8	75.8
	36-49 years	58	24.2	100
Total		**240**		
Occupation	Employed	54	22.5	22.5
	Student	19	7.9	30.4
	Self employed	73	30.4	60.8
	Unemployed	94	39.2	100
Total		**240**		
Marital status	married	192	80	80
	Single	48	20	100
Total		**240**		
Level of education	Not educated	1	0.4	0.4
	primary	74	30.8	31.3
	secondary	94	39.2	70.4
	Tertiary	71	29.6	100
Total		**240**		

4.2 Objective 1. Birth Positions Adopted in Nakuru County Referral Hospital.

Regarding birth positions 84.6% (n= 203) of the pregnant mothers used supine position for delivery. The other positions such as; on all fours and others had the least percentage of use by the pregnant mothers. The proportion of the pregnant mothers that used side lying was 10.8% (n=26) while squatting was 2.5% (n=6) of the total population as shown in figure 1 below.

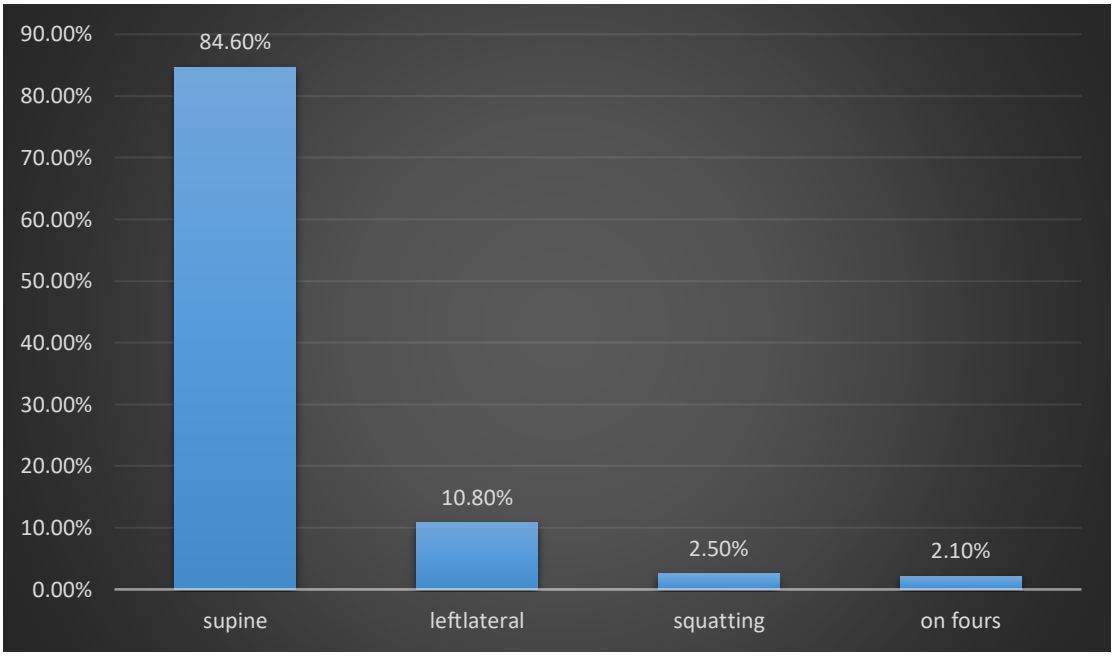


Figure 1: Birth Position Adopted by pregnant mothers during delivery

4.3 Objective 2: Factors associated with the Choice of Birth Positions among women giving Birth in Nakuru County Referral Hospital.

Factors associated with the choice of birth position include; knowledge on birth positions ($p<0.001$), training during ANC ($p<0.001$), mothers education level ($p=0.004$).mothers place of previous birth ($p<0.001$) and decision maker ($p< 0.001$). (See table 2 below)

Table 2: Factors associated with the choice of Birth Positions among women giving Birth in Nakuru County Referral Hospital.

Characteristics	**particulars**	**frequency**	**percentage**	**Chi-square**	**P-value**
Knowledge on birth positions	Yes	81	33.8	**239.000**	**<0.001**
	No	159	66.3		
Training during antenatal clinic	Yes	81	33.8	**239.000**	**<0.001**
	No	159	66.3		
Mother's education	Not educated	1	0.4	**38.06**	**0.004**
	Primary	74	30.8		
	Secondary	94	39.2		
	Tertiary	71	29.6		
Place of previous birth	hospital	150	62.5	**56.207**	**<0.001**
	Home	9	3.8		
	N/A	81	33.8		
Decision maker	Woman	71	29.6		**<0.001**
	midwife	160	66.6		
	Baby	5	2.1		
	Don't know	4	1.6		

4.4 Objective 3: Determine the Outcomes of Birthing Positions among Women giving Birth in Nakuru County Referral Hospital.

The main birthing outcomes relate to the integrity of the perineum and the meantime to deliver. Poor outcomes on perineum integrity were observed with supine position during delivery and this was also shown as the main birthing positions in the hospital.

All fours and squatting had the best outcomes in relation to the perineum. (See table 3 below and figure 2).

Table 3: Birth Position Outcome on Perineum

Position	**Outcome/** perineum	**frequency**	**Percentage**
Supine	Intact	103	50.7%
	Tear	80	39.4%
	episiotomy	20	9.9%
Left lateral	Intact	17	65.4%
	Tear	9	34.6%
On fours	Intact	5	100%
Squatting	Intact	6	100%

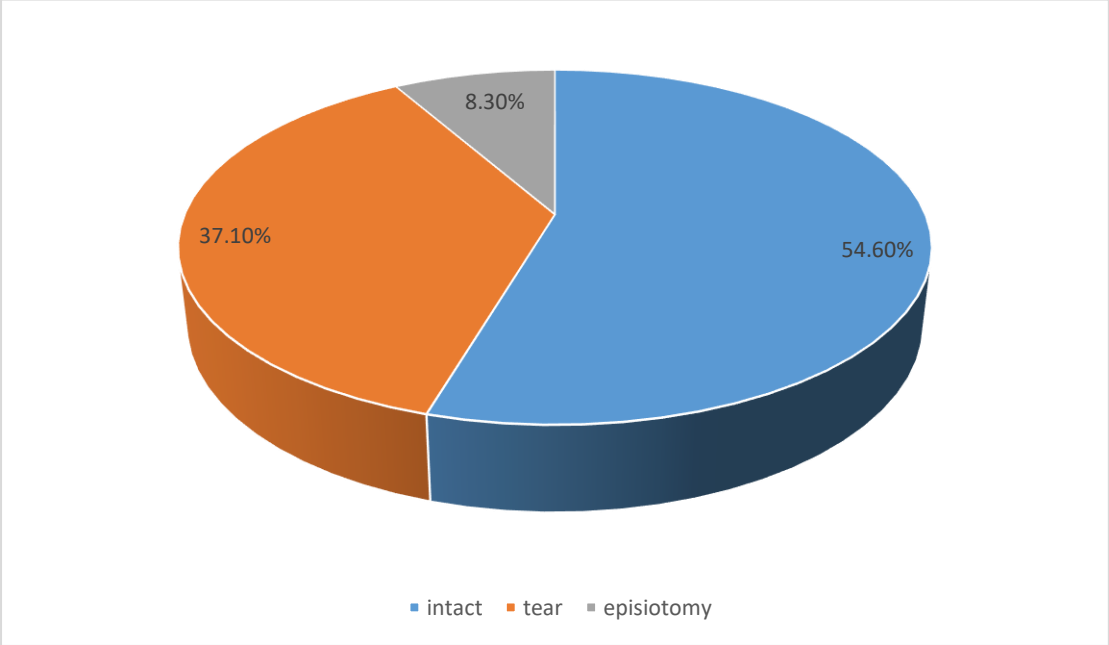


Figure 2: The status of Perineum after Birth for all positions

The meantime to delivery had a significant difference in seconds between and within different birth positions. (See table 4 below).

Table 4: Time taken to give birth as per the birth positions

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	874.477	4	218.619	5.249	.001
Within Groups	6206.380	149	41.654		
Total	7080.857	153			

4.5 Perceptions and Practices of Midwives regarding Birth Positions during delivery in Nakuru County Referral Hospital.

The perceptions of the nurse midwives are reviewed to augment the quantitative information from the mothers.

4.5.1 The knowledge of Birth Position

From the study, it was observed that most of the nurse-midwives had knowledge on various birthing positions; lithotomy, on all fours, squatting, side lying and water birth. Majority of the midwives had knowledge on five methods of giving birth.

> *"I know of lithotomy, on all fours, squatting, side lying and water birth", (key informant one*)

> *"I know there exist Lithotomy, on fours, squatting and side lying." (Key informant 5)*

4.5.2 The most Common Method of Giving Birth

Majority of the key informants indicated that most of the pregnant mothers give birth by lying on the back (supine position). This was the most common method of delivery by many pregnant mothers.

"Most mothers who deliver here lie on their backs when giving birth." (Key informant 3)

"*Mothers here they lie on their backs on the delivery couch." (Key informant 12*) precise

"During delivery most of the mothers use the lithotomy position though some will squat depending on their cooperation during delivery" (Key informant 1)

"Normally we let the mothers lie on my back" (Key informant 4)

4.5.3 The Preferred Method by the Midwives

Despite knowledge on methods to adopt when giving birth, the midwives preferred lithotomy position as the best method to assist the mother in giving birth. The main reason for the preference of this position while delivering mothers was that it was easy to deliver, examine the perineum and repair the perineum in case of tear.

"I prefer when the mother is on her back because it's easy to deliver, examine perineum and repair the perineum in case of a tear" (Informant 12)

"I prefer mothers on the back to be able to assist the mother during delivery and examine the perineum." (Informant 11)

4.5.4 The Care to Pregnant Mothers

From the study it was observed that majority of the key informants gave assistance to the pregnant mothers. Majority of the key informants helped the mothers to give birth, offer them family planning advice especially postpartum intrauterine device, and observe the health of the mother and baby, counseling on HIV and Immunization.

"I deliver the mother, offer family planning especially postpartum intrauterine device, observation of both the mother and the baby, counselling on HIV, immunization." (Informant 8)

"We deliver, offer family planning services especially postpartum intrauterine device if the mother had consented and observations for both the mother and the baby and immunization." (Informant 7)

4.5.6 Training on Birth Positions during Antenatal Clinic.

The study showed that majority of the key informants had never taught mothers on various birth positions.

> *"Training of the staff and health education of the mothers on these birth positions and availability of equipment can be done as measurements to enable easier adoption of these positions" (Informant 7)*

> *"Avail equipment's that can help us adopt these positions, training of the staff on different birth positions and health education to the mothers on these positions." (Informant 6)*

4.5.7 Equipment's in the Facility

The study analysis also indicates that majority of the key informant observed that availability of equipment in the hospitals is another factor that influences the choice of birth position to both the mother and the midwife.

> *"If the necessary equipment can be availed, staffs trained on different birth positions and mothers educated on these positions." (Informant 5)*

> "*Equipment to be available, training midwives and students and educating the mothers on different birth positions." (Informant 4)*

Some of the key informant also felt that the experience of the last birth is also a key factor that influences the choice of the birth position of the pregnant mothers. The analysis of the interview of the key informant indicate that previous birth position and place of delivery determine the choice of current birth position

> *"Previous place of delivery, attitude of the health care personnel and availability of the equipment." (Informant 4)*

> *"Place of previous deliveries like home deliveries and lack of equipment's" (Informant 6)*

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter presents discussion of the research findings against literature review as per objectives of the study. This chapter will be evaluated into three sections.

5.2 Birth Positions among women giving Birth in Nakuru County Referral Hospital

The study findings showed that 84.6% of the pregnant mothers used the supine position when giving birth. All fours position and others had the least percentage of use by the pregnant mothers. The proportion of the pregnant mothers that used side lying was 10.8% while squatting was 2.5% of the total population.

Similarly majority of the nurse-midwives indicated that they preferred the supine position when conducting a delivery. These findings was similar to findings from a study done by (Mwanzia, 2014) on perceptions and preferences of birth positions in a Kenyan referral hospital, which showed that 49.4% supine positions were preferred by midwives, reasons being easier to assist mothers when giving birth, minimum physical strain by the midwives, and good view when examining the mother.

These findings was also similar to findings from a study done by (Lugina et al 2004), which showed that most midwives preferred supine positions reason being easier to examine the mother during delivery.

The study showed that majority of the nurse midwives preferred physical comfort to mother's choice of birth position. These findings was similar to findings from a study

done by (Downe et al 2008), which showed that midwives comfort is preferred rather than that of the woman.

5.3 Factors Influencing Choice of Birth Positions among women giving Birth in Nakuru County Referral Hospital

Findings from this study showed that the women giving birth in Nakuru County Referral Hospital had low level of knowledge on different methods of giving birth. Only 33.75% of the pregnant mothers giving birth had knowledge of different birth positions. On the other hand 66.25% of the total pregnant mothers did not have an idea of the different birthing positions. This study further showed that the knowledge of the pregnant mothers determine the choice of birth position the pregnant mothers choose.

The study results were similar to findings from randomized research which found that the pregnant mothers had low level of knowledge on the birth positions during birth (Thies-lagergren, et al., 2013)

The study findings showed that the level of education of the pregnant mothers influenced the choice of birth position. From the findings in this study, majority of the pregnant mother had secondary level of education which was statistically significant. The findings were contrary to the study by (Li, Ingegerd, Kyllike, & Linda, 2013) who found that there were no differences in maternal age, civil status, educational level or tobacco use between the groups.

Regarding previous birth experience, our study findings indicated that the experience of the previous birth position had a positive influence on the choice of birth position from the pregnant mother. In addition, previous birth position and place of delivery determined the choice of current birth position. These findings were similar to results

from a study which indicated that Women in the adherence group reported a more positive experience of the birth position. The adherence group also experienced the length of the second stage of labour and the total length of labour as shorter than the non-adherence group. (Li, Ingegerd, Kyllike, & Linda, 2013).

Level of training during the antenatal clinic did have a positive influence on the selection of birth position by the pregnant mothers and was statistically significant with a p-value <0.001.This findings were similar to the results from a study which indicated that women who were educated during their antenatal visits had a positive experience when they choose their own birth position (Amelia .Maria &Jose, 2013).

Regarding age as a factor, our study findings indicated that the age of the pregnant mothers does not influence the choice of the birth position at birth. Pregnant mothers aged between 18- 35 years were 177 of 239 (73.7%) were unable to choose the birth position. Further pregnant mothers of ages 36-49 years did not know the birth position of the choice. The study findings differed with results from a study on the association of age of the pregnant mothers and the choice of birth position during birth where most of the respondents of ages between 20-29 years old were able to make a choice on birth position (Desseauve, et al., 2017).

The study findings showed that the decision maker influenced the choice of birth positions by the pregnant mothers with the midwife as the major decision maker. These findings were similar to the results from a study by (Wald Enstrom U.2013) which showed that midwives influenced adoption of various birth positions depending on the progress of labor.

5.4 Outcomes of Birth Positions

The study findings showed that lateral position had the highest rate of intact perineum at 65.4%, supine at 50.7%.This findings was similar to a study by (Suzanne, 2010) who studied the relationship between birth position and perineal outcome who found out that the lateral position was associated with the highest rate of intact perineum (intact rate 66.6%) and squatting for primiparas associated with the least favorable perineal outcome (intact rate 42%). Semi recumbent, standing, and "all-fours" positions led to outcomes of 36.3%, 42.7%, and 44.4%, respectively.

A similar study on Birth position and obstetric anal sphincter injury as reported by midwives showed that birth position in the medical record system within the next hours after birth. The recording system allowed the midwife to choose between seven different positions which (translated from Swedish) were; *sitting, lithotomy, lateral, standing on knees, supine squatting,* and *standing*. If another birth position was used it was documented using free text under the heading. All births on the *birth seat* and in *all fours* position were collected from this heading. (Charlotte, Mia, & Li, 2015).

Similar to a study done in Japan by (Shunji Suzuki 2017) which showed less perineal lacerations in lateral compared to supine position.

The study findings showed that there is a significant difference in the mean time delivery in seconds between and within different birth positions.

5.5 Perceptions and Practices

The study findings showed that majority of the midwives were aware of the different birth positions but preferred the supine position. This study findings was similar to a study by (Mwanzia, 2014) on perceptions and preferences of birth positions in a Kenyan

referral hospital which showed that majority of the midwives preferred supine position to other positions.

The study findings indicated that majority of the midwives were aware of the different birth positions but never allowed mothers to adopt the positions. This study findings was similar to a study done in Malawi on women's knowledge and use of labour and birthing positions, concluded that childbirth education should include information on the various labour and birthing positions. Midwives should be equipped with appropriate skills to help women use different positions during childbirth (Zileni B.D, et al; 2017).

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusions

- Majority of the pregnant mothers assume the supine position during delivery at the Nakuru County Referral Hospital.
- Maternal education level, mother's knowledge on birth positions, education during antenatal clinic and previous experience were all associated with the choice of birth position when giving birth.
- There is a significant difference in the meantime during delivery in seconds among different birth positions.
- The status/integrity of the perineum depends on the position adopted during delivery, with mothers giving birth in supine position having the worst outcomes in comparison to other positions such as squatting.
- From the qualitative analysis, midwives had knowledge on different birth positions but preferred supine position because of examination and assisting the mothers when giving birth.

6.2 Recommendations

Emerging from the findings, the study makes the following recommendation:

1. Health education to mothers on different birth position and their outcomes during their antenatal clinic visits.
2. Midwives need training, mentorship and coaching to support women with a range of birth positions in order to create a more client-centered maternity service.
3. Encouraging the women to adopt other birth positions which have better maternal and neonatal outcomes other than supine.

6.3 Recommendation for Further Research

More studies in other institutions in Kenya should be done on different measurable variables in different birth positions and in rural settings to enable one to generalize the findings.

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APPENDICES

Appendix I: Consent Form

Determinants and Outcomes of Birth Positions among Postnatal Mothers

Introduction

This is a study being carried out to establish whether birth positions would improve the maternal and neonatal outcome during delivery. The purpose of this study is to conduct an investigation in order to determine outcomes of various birth position during delivery. Approximately 240 patients will be enrolled in this study. Your participation is voluntary. The information obtained will be used to improve the participants care and complete a questionnaire to get data that will be analyzed. The information obtained may be used for future management of mothers during delivery.

Procedure: By you consenting to participate, you will be asked questions by the researcher with the only aim being to collect information to meet the purpose of this study.

Benefits: No direct benefit will be achieved following participation in this study but the findings from it will benefit NCRH and mothers.

Risk: There is no anticipated risk to the participants in this study.

Confidentiality: Information gathered in this study will be considered confidential and no names will be written on the questionnaire. Filled questionnaires and consent forms will be locked for access only by the researcher, to enhance confidentiality.

Right of participants:

Your participation in this study is on voluntary basis. You are free to either refuse not to take part or to withdraw at any stage in the course of study.

Signed Consent for Participation

I agree to participate in this study:

Sign..... Date ……...……

Researcher.....Date.....

For any further information, you may contact:

The investigator,

Karen Mutinda

Box 2678 00202

Tel 0722688429 or 0755555896

E-mail lekareti@gmail.com

Appendix II: Assent Form (Under the age of 18)

Serial number……..

Determinants and Outcomes of Birth Positions among Mothers in Nakuru County Referral Hospital.

I Karen Mutinda, student of master of Nursing at Moi University, Eldoret would like to invite you to participate in the above study.

The purpose of this study is to assess the determinants and outcomes of birth positions among mothers in Nakuru County referral hospital. Data collected will provide information to health care providers on the outcomes of birth position after delivery and education of mothers towards informed choice on birth position. In order to achieve the objectives of this study, information will be collected from selected women giving birth at Nakuru county referral hospital. Some of the information sought is highly personal. Your participation is voluntary, and whatever information you give shall be handled with high confidentiality. There are no direct benefits from the study and you are allowed to ask any question you may have freely.

Feedback on findings

The findings of this study will be communicated to IREC, County director of health and the Medical superintendent Nakuru county referral hospital.

Participant's consent

I have read the foregoing information/ the information has been read to me. I have had the opportunity to ask questions and received satisfactory responses. I hereby volunteer/assent to participate in the study.

Date ……..

Date ……Signature/ thumb print of respondent……..

Date ……..Signature/thumb print of parent/guardian/witness…….

Name of research staff……...……...

Signature of research staff…….

The investigator,

Karen Mutinda

Box 2678 00202

Tel 0722688429 or 0755555896

E-mail lekareti@gmail.com

Appendix III: Study Questionnaire

Questionnaire on "Determinants and outcomes of birthing positions among women delivering in Nakuru County Referral Hospital"

Serial number……. Date of interview……

Instructions: Thank you for your willingness to respond and participate in the study. The session will take 15-20minutes. You will be interviewed by the research assistant who will fill the questionnaire for you. Your responses will be recorded just the way you put them. You are encouraged to be as accurate in your response as possible. All information gathered will be kept confidential and will only be used for the purposes of this study. There is no right or wrong responses, feel free to ask for any clarification in the questions that I will ask you. Thank you.

Introduction

Section A: Socio-demographic information

Section B: common birth positions.

Section C: Hospital related factors influencing birth positions.

Section D: Outcomes of birth positions.

Section A: Socio-demographic Information

1. Age

Below 18 yrs [ ] 19 -30 yrs [ ] 31-40 yrs [ ] 41-50 yrs [ ] Above 50 yrs [ ]

2. Occupation

Employed [ ] student [ ] self semployed [ ] Unemployed [ ]

3. Marital status

Married [ ] Single [ ] Separated [ ] Widowed [ ] Divorced [ ]

4. Level of education

Not educated [ ] primary [ ] secondary [ ] college [ ]

Parity:.....LMP…….EDD……

GBA……..Previous pregnancies (a) hospital…… (b) Home……

ANC a) attended b) Never attended

Section B: Common Birthing Positions

5. During your antenatal clinic were you taught on birth positions? Yes….. No…..

   If yes which ones (specify)……

6. Are there any birthing positions you would never want to use and why

   not?(specify).....

Section C: Hospital Related Factors Influencing Choice of Birthing Positions

7. Was your labor as you had expected? Yes [ ] No [ ]

   If No why?.....

8. Would you prefer to be involved in decision making during childbirth? Yes….

   No….. If Yes why……

9. Whom do you think influences the positions that you adopt during childbirth?

   a. The woman [ ]

   b. The midwife [ ]

   c. I don't know [ ]

   d. The baby [ ]

10. What other factors influences adoption of birth positions in the maternity unit?

    a. Presence of equipment [ ]

    b. Availability of enough space [ ]

    c. Influence of the hospital environment on women's decision making [ ]

    d. I don't know [ ]

    e. Any other (specify)…….

11. Did you feel more in control during child birth? Yes…. no…..

    If yes how……..

12. Would you prefer your partner to support you during childbirth in certain positions? Yes….. No…….

    If yes why……

13. What was your experience during childbirth…….

14. Do you find it easy to communicate with your midwife in adopting a position of your choice? Yes……. No……..

    If No why? ……

15. Did the position at the time of birth influence your first contact with your baby?

    Yes…… No…….

16. Which position(s) would you want to use if you would give birth again? (list)

    ……..……

17. What would you recommend other women regarding birthing positions during labour?……

18. How do you feel in adopting birthing positions?

    a. Birth satisfaction [ ]

    b. Feeling of control during labour [ ]

    c. Pain [ ]

    d. I don't know [ ]

Thank you for your participation.

Investigator: Karen Mutinda

Tel 0722688429 or 0755555896

Appendix IV: Observation Checklist

Outcomes of Birthing Positions

Serial no…….. Date……

	Supine	Left lateral	Squatting	On all fours	Others(indicate)
Position adopted					
Duration of second stage					
State of the perineum					
Apgar score					

Thank you for your participation.

Investigator: Karen Mutinda

Tel 0722688429 or 0755555896

Appendix V: Interviewer Guide.

Dear participant,

You are hereby invited to participate in an interview for the study on determinants of birthing positions among women giving birth in Nakuru County Referral Hospital. You have been chosen purposively due to the expected level of information and knowledge you have on the study topic. The details of the research are as per the information sheet for the participants. Requirements for informed consent are specified in the informed consent form which you will be expected to fill for proof of consent to participate. Be honest free and active in your participation in responding to the questions. There will be an observer, moderator and note taker for your key informant interview information.

1) Which birthing positions do you know? .....
2) Which birthing positions are adopted by mothers during birth? .....
3) Which positions would you prefer during the delivery and why?
4) Which birthing positions do you feel is not appropriate and why? (Specify)……..
5) What care do you give to mothers during delivery?
6) What measurements can be done on different birth positions?
7) What are the factors that influence choice of birthing positions? .....
8) What messages do you share with mothers on birthing positions?

Thank you for your participation.

The investigator,
Karen Mutinda
Box 2678 00202
Tel 0722688429 or 0755555896
E-mail lekareti@gmail.com

Appendix VI Approval letter from Nakuru County Referral Hospital.

21/12/2018
· ~~Receive~~ /stamp as received.
· copies (1)
· Receipt for 3,000/-
· To start in January.
copy to result of the research deposited to HRA

RECEIVED
27 DEC 2018
P. O. Box 71-20100, NAKURU

KAREN N.MUTINDA

P.O BOX 71 NAKURU

21-DEC -2018

THE SUPERITENDENT

NAKURU COUNTY REFFERAL HOSPITAL

LEVEL 5

PO BOX 71

NAKURU

DEAR SIR/MADAM.

RE: REQUEST FOR PERMISSION TO CARRY OUT A STUDY IN NAKURU COUNTY REFFERAL HOSPITAL.

I'm humbly requesting to carry out a study in the facility on "Determinants and outcomes of birth positions among women giving birth in Nakuru County Referral Hospital"

I'm registered nurse based in Nakuru county hospital and currently undertaking a master's degree in nursing (Maternal and neonatal health) at Moi University, Eldoret.

Attached is a copy of my formal approval from the institutional research and ethics committee Moi University and a copy of my proposal.

I look forward to your positive response.

Yours faithfully

Karen Mutinda.

Appendix VII Approval letter from I.R.E.C

MU/MTRH-INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

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

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET

Reference: IREC/2018/169
Approval Number: 0003155

20th November, 2018

Dr. Karen N. Mutinda,
Moi University,
School of Medicine,
P. O Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
20 NOV 2018
APPROVED
P. O. Box 4606 - 30100 ELDORET

Dear Dr. Mutinda,

RE: FORMAL APPROVAL

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

"Determinants and Outcomes of Birthing Positions among Women Giving Birth in Nakuru County Referral Hospital".

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 3155*** on 20th November, 2018. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; hence will expire on 19th November, 2019. 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 will be required to submit progress report(s) on application for continuation, at the end of the study and any other times as may be recommended by the Committee.

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. You will also be required to seek further clearance from any other regulatory body/authority that may be appropriate and applicable to the conduct of this study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

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

Appendix VIII: Maps of the study area