EFFECTIVENESS OF EDUCATIONAL PROGRAM ON UTILIZATION OF ALTERNATIVE BIRTHING POSITIONS DURING SECOND STAGE OF LABOUR AMONG PARTURIENT WOMEN IN FORMER WESTERN KENYA

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DECLARATION

This research proposal is my original work prepared with no other than the indicated sources support and has not been presented elsewhere for a degree or any other award.

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DEDICATION

ABSTRACT

Alternative birth positions are one of the interventions in reducing maternal and neonatal mortality and morbidity (WHO, 2020).The use of supine positions during second stage has been associated with maternal neonatal complications. supine or lithotomy positions is the most used position in both develop and developing countries, despite of evidenced based literature which discourages its utilization, this has been associated to lack of knowledge among parturient women. The study, therefore aimed at investigating effectiveness of educational program on utilization of alternative birth positions during second stage of labor among parturient mothers in western Kenya. The study was a non-equivalent pre and post test quasi-experimental research design. Antenatal register was used as sampling frame and systematic sampling was used to identify and allocate participants to both groups of study.Sample size was computed using fleis formular with a total 500 as the sample size. The intervention group received two sessions of 2 hours each of the training between the 32th to 37th weeks of gestation. Data was collected using standard questionnaire, checklist,and focus group discussions. Data was analyzed using Statistical SPSS version 28. Chi-Square, paired t-test, logistic regression were the main statistical tests with $p<0.05$.Lithotomy position was the most used birth position during the last delivery, with 94.6% control,93.3% intervention. Both groups had limited Knowledge about alternative birth positions at baseline, with only 1.68%(intervention) and 1.23% (control group).The intervention group had increase in knowledge of alternative birth positions, from 0% at baseline to 68.5% at end line ($\chi2= 41.6$, $p < 0.001$),control group remained static, with no knowledge reported at baseline and only 9.4% at end line(after education).The intervention group uptake alternative positions from 6.7% to 68.5% at end line, control group (5.3% to 10.7% in end line), $\chi2= 16.8$, $p= < 0.001$.Being married ($p = 0.028$) or being unemployed (housewives or farmers) ($p = 0.044$) decreased uptake of alternative birth position. Necessary resources, facilitated utilization of alternative birth position (AOR = 28.64; $p < 0.0001$). Previous birthing experiences negatively influenced decision regarding birth positions (AOR = 0.40; $p = 0.037$). Spontaneous labor was also more in the intervention group (51.0%),control group (49.0%), $\chi2=4.6$, $p=0.032$).Intact perineums (62.1%) and a lower rate of episiotomies (4.7%) compared to the control group, with ($\chi2=96.4$, $\chi2=306.7$, respectively, $p= 0.0001$. Intervention group had higher rate of blood loss less than 500ml (53.6%), control group (46.4%), $\chi2 =27.1$, $p=< 0.0001$ and a lower rate of augmentation during the second stage of labor (28.6%) ,control group (71.4%), $\chi2 =6.6$, $p= 0.010$ was also observed. Likewise intervention group had shorter mean duration of the second stage of labor (18.9 minutes) compared to the control group (62.1 minutes), with a t-test = -18.8, $p=< 0.0001$ and had a higher rate of 1st Minute APGAR scores ≥7 (57.4%),control group (42.6%), with a $p= < 0.0001$.In conclusion the study showed that educating Parturient women during prenatal visits increases the knowledge on alternative birth positions and improves uptake of alternative birth positions during second stage of labour. Marital status, occupation, previous birthing experiences, access to equipment are critical factors influencing the uptake of alternative birth positions educating parturient women on alternative birth positions during second stage will enable them to make inform choice and enhance the overall positive birth outcomes. the study recommend incorporating educational program into routine prenatal care to ensure that all parturient women have access to information on alternative birthing positions.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABP	-	Alternative birth position
ANC	-	Antenatal Clinic
APGAR score	-	Appearance, Pulse, Grimace, Activity, Respiration score
NICU	-	Newborn intensive care unit
MOH	-	Ministry of health
IERC	-	Institutional Ethics Research Committee
NACOSTI	-	National Commission of Science Technology and Innovation
FGD	-	Focus group discussions
KII	-	Key informant interviews
SPSS	-	Statistical Package for Social Sciences
WHO	-	World health organization

OPERATIONAL DEFINITIONS OF TERMS

Labor: Process by which fetus, placenta, membranes are expelled through birth canal, covers not only physical event but also psychological.

Alternative birth position: Upright and lateral positions such as, squatting, kneeling, all fours, and side lying or lateral, except lithotomy or supine position

Parturient woman : pregnant woman at second and third trimester

Mother : woman after delivery

Health care provider: Nurses, midwives, doctors and clinical officers. Immediate care givers to the pregnant mother during pregnancy, labour and delivery

Second Stage: when the woman's cervix is assessed as being fully dilated (10cm) by the midwife until delivery of baby

Supine position: Lithotomy or lying on the back during delivering, supported supine position (mothers who will be on control group will deliver in supine positions)

Term pregnancy: When the woman has a gestation age of 37- 42 weeks.

Utilization: uptake of alternative birth position in second stage of labour

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter will provide a background of the study. It will dwell on birth positions as the major concept, the problem statement, the objectives, the research questions and hypothesis of the study. It also provide the justification of the study, limitations and a framework based on theory and conceptual model.

1.2 Background to the Study

Globally, approximately 200 million births occur every year and 70% are vaginal deliveries (WHO, 2021). These mothers are prone to complications. Adjustable factors to improve quality of life for both maternal and neonatal outcomes are the alternative delivery positions (Kibuka *et al.,* 2021, Rodrigues *et al.,* 2019).These alternative birth positions are any other positions in the second stage of labor apart from lithotomy or supine position, including; sitting, squatting, all fours, and side-lying (Mutinda *et al*.,2021).

Before colonization ,in Africa, it is clear that women have historically given birth in a variety of alternative positions, including sitting, upright, squatting, kneeling, on hands and knees, and in left lateral positions. These practices were typically common in home births, but nowadays, hospitals predominantly use the lithotomy position (Musie *et al*., 2019).

Birthing in the Lithotomy position has inherent demerits and risks to the mother and neonate. These demerits include; postpartum hemorrhage, perineal trauma, prolonged second stage which leads to delivery of neonates with asphyxia or Apgar score less than 7/10 in one minute, five and ten which may necessitate the neonate to

be admitted in the newborn intensive care unit. Evidence supports the use of alternative birth positions, but lithotomy position remains the most used (Mirzakhani *et al*., 2020, Musie *et al*., 2019,). Only 10% of pregnant women are allowed to deliver in alternative birth positions only because of difficult delivery (Jiregna *et al.,* 2020). Evidence supports the merits associated with alternative labor positions throughout the progression of labor (Satone & Tayade, 2023), but there is still procrastination in shifting to utilization of evidenced based birth position.

Throughout the process of labor and delivery, various physiological mechanisms contribute to the expulsion of the fetus, placenta, and membranes. These mechanisms include the widening of the cervix, a heightened frequency and duration of uterine contractions, and the lowering of the fetus's presenting part(Berta,*et al*.,2019). Alternative maternal positions during labor and delivery promote the effective advancement of uterine contractions, cervical dilation, and fetal descent by enhancing their frequency and duration. (Kibuka *et al 2021;* Healy *et al*.; 2020). Alternative birth positions during second stage prevent prolonged labour and decrease complications, such as bleeding after delivery (Fu *et al*., 2023,Gupta *et al*, 2019).

Since the late 20th century, numerous researchers have investigated how different positions affect labor and childbirth. They have discovered that adopting an upright position results in improved childbirth outcomes, including lower instances of perineal trauma, fewer assisted births, reduced labor pain, and a shorter duration for both the first and second stages of labor, in comparison to a supine position. (Uka, 2023,Kibuka *et al* 2021,Fu *et al,*Mtatina *et al.,* 2022).Furthermore, the World Health Organization (WHO, 2021) advocates for women to adopt upright positions during labor and advises against the use of supine positions. Nevertheless, research

indicates that a majority of women in both developed and developing nations give birth while lying in the supine position.(Healy *et al*.; 2020; Kibuka *et al*., 2021, Zileni *et al*, 2021).

A study conducted by Zileni et al. indicates that a woman's birthing experience has both immediate and long-lasting effects on her health and overall well-being. It also shows that women who have the opportunity to choose their preferred birthing position develop a greater sense of self-worth and competence. This suggests that expectant mothers should receive education on various birthing positions and should be empowered to make decisions, particularly regarding their choice of position during labor. Additionally, negative birthing experiences may adversely impact women's emotional health. Some women may experience depression, which can negatively influence the bonding process between the mother and her baby (Zileni *et al.*, 2021)

Midwives must consistently take on a crucial role in order to mitigate the negative experiences and birth outcomes linked to the lithotomy position. With this in mind, one responsibility of midwives is to offer care that centers on women, allowing them to choose birthing positions that they find comfortable and that are likely to enhance their self-esteem and well-being(Zileni *et al.*, 2021)

Musie *et al*., (2019), however, draw attention to the fact that midwives may encounter difficulties employing alternative delivery positions for a variety of reasons, highlighting the significance of removing obstacles through educational interventions. Lin *et al.*, (2023) emphasizes the duty of maternity care providers in supporting parturient women to choose different birthing positions depending on individual requirements and clinical situations in the context of encouraging shared

decision-making around birthing positions (Lin *et al*, 2023).This emphasizes shows how important it is to have educational programs for parturient mothers and healthcare professionals in order to help them make well-informed decisions about different alternative delivery positions. Improved delivery outcomes may result from the adoption of different birthing positions through the integration of educational activities including parturient women and healthcare workers

A study done by Jiregna *et al* on perception of women toward birthing positions among women in the postnatal unit at Jimma Medical Center, South West Ethiopia reveals that mothers lack knowledge and understanding of birth positions. They choose birth position according to previously used position or what health care workers recommend to them (Jiregna *et al.,* 2020*)*.Recommendation was made that these women needs to be equipped with knowledge on birth positions.

Despite the extensive evidence on the merits of alternate birthing position practices, 80% of Kenyan women still give birth in the litothomy position (Mutinda *et al*., 2021).According to a KNH study by Agunda (2022), the use of lithotomy positions is associated with women's lack of knowledge on alternate birth positions, women's inability to decide which position is most comfortable for them, and the preferences of medical professionals for lithotomy positions (Agunda.,2022).Educating parturient motherson how to utilize alternative birthing positions during the second stage of labor will promote their use, which will benefit both the mother and the newborn (Mutinda *et a*l., 2021).

Educating mothers in third trimesters on birthing practices will prepare mothers for labor because they are nearing delivery (Heidimokoff, 2021;ICEA, 2021).In Western Kenya, (92.6%) of mothers deliver in a lithotomy position, which has been also associated with education deficit on alternative birth positions (Kituku, *et al*.,2019).

From the literature, women need to be educated on alternative birth positions, and supported by healthcare providers to make an informed choice in choosing alternative birthing positions.

This study therefore aims to investigate effectiveness of educational program on utilization of alternative birth positions during second stage of labour among parturient mothers in western Kenya.

1.3 Problem Statement

Globally 70% of women deliver vaginally in different birth positions. Alternative birth positions are one of the interventions in preventing complications and reducing maternal and neonatal mortality and morbidity (WHO, 2020). The use of Lithotomy positions during second stage has been associated with numerous complications including; perineal tears, prolonged second stage, use of episiotomies, increased blood loss, an Apgar score of less than 7/10, need for neonatal resuscitation and admission to neonatal intensive unit (Musie *et al*., 2019)

Despite the potential benefits of alternative birth positions during the second stage of labor, such as improved maternal comfort, reduced pain, and better fetal outcomes, many parturient mothers are not aware of or do not have access to information about these positions. The majority of women in labor are still placed in the supine (lying on the back) position, which is often the default position in many healthcare settings. This lack of knowledge and limited use of alternative birth positions results to sub optimal outcomes for both the mother and the neonate.

Studies have shown that when women are educated about and encouraged to use alternative birth positions, such as upright, side-lying, or hands-and-knees positions, they are more likely to adopt these positions during labor. However, there is limited

research on the effectiveness of specific educational interventions in promoting the use of alternative birth positions and their impact on maternal and neonatal outcomes.(Nguyen, 2023; Oedemene *et al*., 2021, Zileni *et al*, 2021).

According to research, the majority of women give birth while in supine position in both developed and underdeveloped nations.Kenya as one of the developing countries women still practice supine position in their hospitals, despite the comprehensive literature on the benefits of alternative birthing position (Mutinda *et al*., 2021, Agunda, 2022). In western Kenya (92.6%) of mothers deliver in lithotomy position, which has been also associated with lack of knowledge of alternative birth positions by pregnant mothers (Kituku, *et al., 2019)*

Most of the studies done are geared towards educating midwives and other healthcare professionals about alternative birth positions (Agunda, 2022, Nguyen, 2023, Odoemene *et al*., 2020). Despite midwives and healthcare professionals having knowledge on alternative birth positions, mothers still give birth in supine positions

Little has been done on educating mothers on alternative birth positions in second stage of labor. Also, alternative birth positions are not captured in maternal booklet as health education to the mother nor individual birth plan (MOH 216, MOH 405, and Kenya)

Therefore this study aims to investigate effectiveness of educational programs on utilization of alternative birth positions in second stage of labour among pregnant mothers in western Kenya, propose an educational program on alternative birth positions that will be incorporated into the birth plan, and advise policymakers on the evidenced-based alternative birth position during second stage of labor

1.4 Objectives

1.4.1 Broad Objective

To evaluate effectiveness of educational program on utilization of alternative birth positions during second stage of labour among parturient women in western Kenya

1.4.2 Specific Objectives

i. To compaire the baseline status of birthing position between intervention and control group during second stage of labor in Western Kenya
ii. To analyze the effect of educational program on utilization of alternative birth positions among parturient women in western Kenya
iii. To assess the factors influencing the utilization of alternative birthing positions in second stage of labor among parturient women in western Kenyan
iv. To determine the effect of educational program on alternative birthing positions on birth outcomes among parturient women in western Kenya
v. To propose educational program frame work on alternative birthing positions

1.5 Research questions

This study seeks to answer the following questions

i. What is the comparison of the baseline status of birthing position between intervention and control group during second stage of labor in Western Kenya?
ii. What is the effect of educational program on utilization of alternative birth positions among parturient women in western Kenya?
iii. What are the factors influencing the uptake of alternative birthing positions in second stage of labor among parturient women in western Kenyan?
iv. What is the effect of educational program on birth outcome among parturient women in western Kenya?

1.6 Hypothesis

H_0: Educational program no has no effect on the utilization of the Aternative Birth Position among parturient women in former Western Kenya

HA-Educational program on ABP increases utilization of the Alternative Birthing Position among parturient women in former Western Kenya

1.7 Justification

Maternal and neonatal mortality and morbidity is a major public health concern. Most of birth complications are linked to birth position. However; an alternative position has been proven as one of the interventions in reducing maternal and neonatal mortality and morbidity (Agunda, 2022, Jiregna *et al*., 2020).Underutilization of alternative birth positions has been associated with parturient women's lack of knowledge of alternative positions and healthcare practitioners' preferences (Septiasari and Sulistianingsih, 2022,).Therefore, the study will bring insight to caregivers to utililize and educate mothers on alternative birth positions and incorporate alternative birth positions into the birth plan during antenatal clinics, also the implementation of the recommendations from the study will lead to the quality of maternal and neonatal health.

Little has been done on education on adoption of alternative birth positions in the second stage of labor in western Kenya, so this justifies the need for this study to bridge the knowledge gap.

The information generated would be used as a baseline for other studies. It will help policymakers and health administrators to improve health care for mothers during labor and delivery.

1.8 Limitations of the Study

The study design ,there was risk of contamination in the two arms of the study due to social networks among the participants. This was reduced by having two hospitals one as experimental and the other as control, which are opposite geographical locations,cultural differences and language differences

The same population recruited antenatally and followed up until delivery, risk to client loss.This was minimise by participants given information on the study and follow up period

The study was conducted in a natural environment, which may introduce variability, the participants was systematically selected to ensure diversity across age, socio-economic status, and educational level. This enhanced the representativeness of the sample

1.9 Conceptualization of the Theoretical Framework

Theoretical Framework

This study employed Albert Bandura's Social Cognitive Theory. Theory provides a robust framework for understanding how individuals learn and adapt behaviors through observation, self-efficacy, and social interactions. The theory illuminated the dynamics surrounding the uptake of alternative birth positions among pregnant mothers and their subsequent impact. It focuses on the role of cognitive processes in observational learning, social interactions, and self-efficacy in shaping behavior

Observational Learning

Bandura's theory underscores the importance of observational learning. The educational program facilitate this learning by providing demonstrations, videos, or real-life testimonials from women who have effectively employed these positions.

Self-Efficacy

Self-efficacy is a key element in Bandura's theory, highlighting the belief individuals have in their capacity to execute a particular behavior, as a crucial factor in behavior change which can be influenced by verbal persuasion. The educational program is designed to increase self-efficacy by imparting knowledge, teaching skills, and offering opportunities for practice. This boost in self-efficacy can enhance participants' confidence in utilization of alternative birth positions.

Reciprocal Determinism

Bandura's theory emphasizes the dynamic interplay between behavior, personal factors, and the environment. Utilizing alternative birth positions, as influenced by the educational program, can modify not only the behavior itself but also personal factors (e.g., knowledge, self-efficacy, attitudes) and the environment (e.g., healthcare provider support, cultural norms). The change in behavior, such as adopting alternative positions, can further affect personal factors and the environment, creating a feedback loop.

Factors Influencing Behavior Change

Bandura's theory recognizes that behavior change is influenced by numerous factors. These can include knowledge, attitudes, social support, and cultural norms. The educational program addresses these factors directly through the provision of

information, guidance, and encouragement. It also leverages observational learning to highlight pregnant mothers who have successfully adopted alternative birth positions and emphasizes the role of self-efficacy as a significant influencer

Theory offers a thorough and integrated framework for understanding how an educational program can influence behavior change in pregnant mothers regarding the utilization of alternative birth positions during the second stage of labor. By incorporating elements of observational learning, self-efficacy, and reciprocal determinism, the framework provides a holistic perspective on the potential effectiveness of the educational program in promoting safer and more patient-centered birthing practices. It addresses not only the behavior change but also the factors that influence this change and the dynamic interplay between personal factors and the environment. This comprehensive framework facilitates a deeper understanding of the study's objectives and its potential implications for maternal and neonatal care.

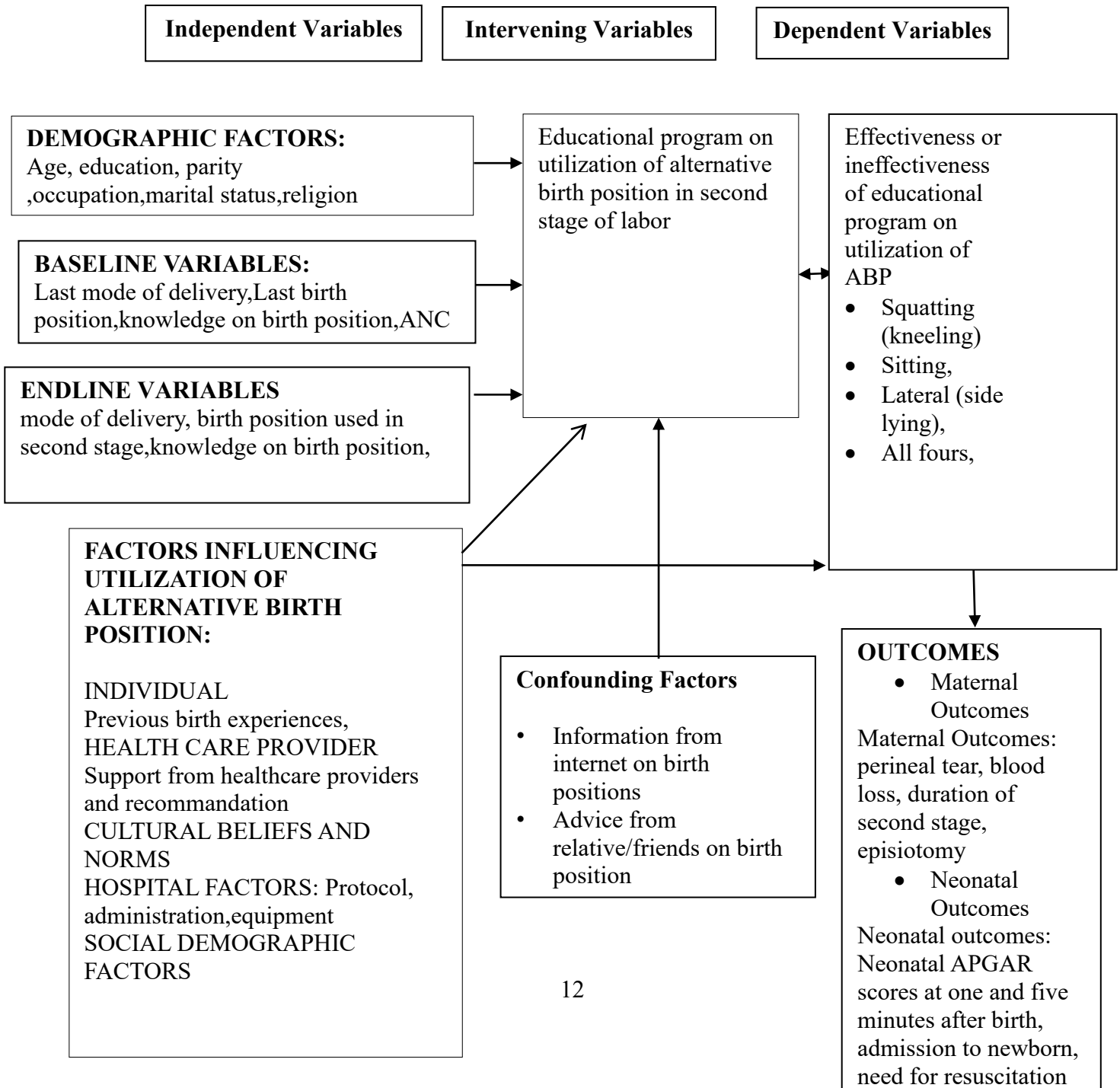
Independent Variables
Intervening Variables
Dependent Variables
DEMOGRAPHIC FACTORS:
Age, education, parity ,occupation,marital status,religion
BASELINE VARIABLES:
Last mode of delivery,Last birth position,knowledge on birth position,ANC
ENDLINE VARIABLES
mode of delivery, birth position used in second stage,knowledge on birth position,
Educational program on utilization of alternative birth position in second stage of labor
Effectiveness or ineffectiveness of educational program on utilization of ABP
Squatting (kneeling)
Sitting,
Lateral (side lying),
All fours,
FACTORS INFLUENCING UTILIZATION OF ALTERNATIVE BIRTH POSITION:
INDIVIDUAL
Previous birth experiences,
HEALTH CARE PROVIDER
Support from healthcare providers and recommandation
CULTURAL BELIEFS AND NORMS
HOSPITAL FACTORS: Protocol, administration,equipment
SOCIAL DEMOGRAPHIC FACTORS
Confounding Factors
Information from internet on birth positions
Advice from relative/friends on birth position
OUTCOMES
Maternal Outcomes
Maternal Outcomes: perineal tear, blood loss, duration of second stage, episiotomy
Neonatal Outcomes
Neonatal outcomes: Neonatal APGAR scores at one and five minutes after birth, admission to newborn, need for resuscitation

Figure 1.1 Conceptual Framework

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This literature review aims to explore existing research on the effectiveness of educational program on alternative birth positions in second stage of labor. The study focuses on four specific objectives: 1)To compare the baseline status of birthing position between intervention and control group during second stage of labor in Western Kenya 2) to analyze the effects of educational program on uptake of alternative birth positions among parturient women,3) To assess the factors influencing the uptake of alternative birthing positions in second stage of labor among parturient women,4) to determine the effect of educational program on alternative birthing positions on birth outcome among parturient women

2.2 Antenatal and Labour

Antenatally mothers are prepared for labour, delivery and postnatal care.The requirements of the expectant mother and the unborn child are the main focus of antenatal care. Examining the expectant mother, treating each client as an individual,

educating her about what to expect, and preparing the layout required for delivery, including birth positions (birth readiness) are all part of her need.

Educating mothers on alternative birth positions antenatally in will help them to choose for appropriate birth positions and increase acceptance and uptake (Yadav *et al*., 2021). Understanding labour and its' process will help to diagnose every stage promptly hence mothers are advice to assume preferred position in second stage of labour. The physiological process of labor involves the delivery or expulsion of the fetus, membranes, placenta, and umbilical cord from the uterus. Alteration in the biochemical connective tissue, progressive cervical effacement, and dilatation, or rhythmic, sufficiently frequent, intense, and prolonged uterine contractions, are what cause labor.(Akyıldız *et al*.,2021).

Regular, painful uterine contractions that cause ongoing cervical effacement and dilatation are the first signs of labor. Uterine contraction without cervical change does not qualify as a normal labor, while cervical dilatation without contraction implies cervical insufficiency (Negash, Sewunet,& Ayele, 2021).The first assessment of labour should involve a review of the parturient women's antenatal care, to include checking of the estimated date of delivery.The timing and frequency of contractions, the condition of the amniotic membranes, the movement of the fetus, and the existence or lack of vaginal bleeding Status of the amniotic membranes, Fetal movements, Presence or absence of hemmorrhage, regular rhythmic contraction can start as irregular as every ten to fifteen minutes but usually increase over time, accelerating to contractions that occur every two to three minutes leading to cervical dilatation (Choo & Agnes, 2020).

The first stage of labor begins with consistent uterine contractions and concludes with complete cervical dilation at 10 cm. This stage is divided into both the active phase and the latent phase. The latent period starts with mild, irregular uterine contractions that help to shorten and soften the cervix. The process of thinning and stretching of the cervix is referred to as cervical effacement. During a vaginal examination, the level of cervical effacement can be detected. If the cervix is described as 'long', it indicates that effacement has not yet occurred. The latent phase ends with the beginning of the active first stage, and this change is identified retroactively. The active phase typically starts at around three to four centimeters of cervical dilation and is marked by continuous cervical dilation and the descent of the presenting fetal part. Contractions become increasingly rhythmic and stronger during this time. As effacement occurs, the cervix becomes integrated into the lower section of the uterus. During a contraction, the uterine muscles contract, resulting in the descent of the fetus(WHO,2019)

In a gradual, forceful manner, the upper part of the uterus compresses while the lower part elevates. Subsequently, the leading fetal part is permitted to move downwards. When the cervix has dilated sufficiently for the fetal head to pass through, full dilation is reached; for a full-term baby, this is roughly 10 cm (WHO, 2019). The duration of labor can differ significantly, but for women having their first child ("primiparae"), the active phase tends to last about 8 hours, whereas for those who have previously given birth ("multiparae"), it is typically shorter. When the cervix fails to dilate at a rate of 1.2 cm per hour for a minimum of two hours, it is referred to as a prolonged active phase in first-time mothers. This definition is

derived from Friedman's Curve, which charts the usual pace of cervical dilation and fetal descent during active labor. Some healthcare providers may classify this as "lack of Progress," and as a result, recommend interventions to enhance the likelihood of a favorable outcome. (Zha *et al*., 2021).

The Second Stage of labor begins when the cervix is completely dilated and concludes after the fetus is delivered. This stage starts when it is confirmed that the cervix is fully dilated, the fetal presenting part is visible, and there are active expulsive contractions, ending with the delivery of the fetus. The midwife assesses the mother's cervix to determine if it is fully dilated. A prolonged second stage of labor is recognized when it surpasses three hours with regional anesthesia or two hours without it for first-time mothers. For women who have given birth before, a diagnosis of prolonged second stage is made if it exceeds two hours with regional anesthesia or one hour without it. Vaginal examinations are performed every four hours to monitor the progress of labor. Additionally, different maternal positions are considered to minimize the risk of perineal trauma, hemorrhage, and fistulas. (Zha *et al*., 2021; WHO, 2019).

The mechanism of labor refers to the fetus's capacity to navigate the pelvis effectively during childbirth, involving shifts in the head's position throughout its passage. The processes of labor, commonly known as the cardinal movements, are typically observed in vertex presentation, which takes place in 95% of all pregnancies. Labor and delivery movements encompass engagement, descent, flexion, internal rotation, extension, restitution, external rotation, and lateral flexion, despite the fact that these actions occur continuously. (Yadav *et al*., 2021).The mode of delivery differed among mothers in labour. If labour progress normally with no

complications, spontaneous vaginal delivery take place. In case of complications to the mother or fetus, cesarean sections or assisted vaginal delivery is done (WHO, 2018).

The third stage of labor refers to as the interval between the birth of the baby and the removal of the placenta and fetal membranes. During this phase, uterine contractions diminish baseline blood flow, which results in the thickening and decrease of the myometrium surface area beneath the placenta as it detaches. Although the placenta is typically expelled in under ten minutes, the duration of the third stage of labor can extend up to 30 minutes (Satone et al., 2023). Effective management of this stage is crucial to minimize the risk of postpartum hemorrhage, which can be caused by perineal trauma and other factors, and is among the top five causes of maternal morbidity and mortality globally. When there are perineal tears, a repair is performed. (Satone *et al*., 2023).

The fourth Stage is also term as postpartum care immeadiately after delivery of the baby and expulsion of placenta,it is the time when a close observation is needed to avoid or detect postpartum vaginal bleeding, signs of sepsis, and other complications. This period extends up to six weeks post-delivery (Peppe *et al.,* 2018).

2.3 Status of utilization of birth positions

Most women in labor give birth while lying on their backs (supine) or in the lithotomy position, which accounts for 68% of deliveries, while 23% are in a semi-sitting position. Upright positions (standing, sitting, or squatting) make up 4%, side-lying/lateral positions account for 3%, and hands-and-knees/all fours positions are used in 1% of births during the second stage of labor (Yadav et al., 2021).

Alternative birthing positions such as squatting, using a birth stool, sitting, or side-lying, present distinct psychological and physiological disadvantages compared to the lithotomy or supine positions. Research has shown that, in comparison to a supine position, the duration of the second stage of labor tends to be shorter in upright positions like squatting, sitting, on a birth stool, side-lying, or standing. For first-time mothers, the average length of the second stage of labor is about fifty minutes, while for mothers who have given birth before, it averages around twenty minutes, although it can vary widely. The World Health Organization recommends that parturient women be given the opportunity to select their preferred birthing position during the second stage of labor (Yadav et al., 2021, WHO, 2018). Gravity assists in the descent of the fetus, and being in an upright position also expands the pelvic outlet, which lowers the risk of labor dystocia (Agunda, 2022). The inclination towards needing episiotomies and assisted deliveries has also been noted to decrease when adopting an upright position (Maite et al., 2022). A spontaneous vaginal delivery is enhanced by hip flexion, as seen in squatting, which improves the angle of advancement for the fetal head through the pelvic axis, cervix, and pelvic floor. When delivery occurs in a supine position, there is a noted increase in the likelihood of cesarean sections. Although alternative birthing positions can alleviate fatigue, enhance comfort, and improve maternal circulation, their use remains limited (Satone *et al*.,2023).

Lithotomy position are still preffered by parturient women despite profound demerits.it has been associated with lack of sufficient knowledge of pregnant women on alternative birthing position(Kituku *et al*.,2019)

2.3.1 Different Maternal Positions in the Second Stage of Labor

Table 2.1: Different birthing positions

Supine position/Lithotomy	Lying flat on the back with head and shoulders slightly elevated or Lying on the back with knees bent and positioned above the hips and spread apart with the stirrups
Sims position	Lying on the left side with the right hip and knee bent and the left hip and lower extremities straight
Side-lying/lateral position	Lying on the side either with legs lifted or supported
Squatting position	Knees and hips bent with the weight of the body on the foot
Kneeling position	The woman kneels, leans forward, and balances herself on her fist or the palms of her hands
Birthing stool position	Sitting up straight on a chair or stool or at an angle of 45 degree
Birthing bar position	Squatting bars that arch over the bed near the foot for support
All fours	A physical posture where the participant has both her hands and knees on the bed with the trunk off the bed

Lithotomy /Supine Position

In several hospitals, physicians and midwives are observed using the lithotomy position for both aided and spontaneous vaginal births. The lithotomy posture consists of either supine without stirrups or lying on the back with the knees bent, above the hips, and wide apart. During childbirth, the lithotomy posture gives the obstetrician good access to both the mother and the fetus. The patient might not find this to be the most comfortable position, though. It was the most popular delivering position, but more people are now using different positions like squatting, birthing stools, and birthing beds. According to researches done on birthing positons, a woman who gives birth in a lithotomy position feels more discomfort during the second stage of labor compared to alternative birthing positions (Mutinda *et al*.,2021).Complications which are linked to lithotomy position include the increased

need for episiotomies and increased chance of forceps delivery or cesarean section (Yadav *et al*.,2021). The lithotomy position lowers blood pressure and can increase pain during contractions. It is also associated with an increased risk of perineal tears and more irregular fetal heart rate patterns (Kibuka *et al*., 2021). Lithotomy position is convenient for midwives and obstetricians to monitor the progress of labor and perform some of the interventions as during while in the lithotomy position, but questions continue regarding the hazards brought by such position which warrant health care providers to change the position used during monitoring mothers in labor to prevent complication brought by supine positions.(Healy *et al*.; 2020).



Figure 2.1 Lithotomy /Supine Position

Lateral Position

Pure side-lying and the exaggerated Sims posture (semi-prone) are examples of side-lying positions, also referred to as lateral positions. In the pure side-lying position, the parturient woman lie on her side with her legs raised and supported or with her hips and knees flexed with a pillow between them (Lopez et al., 2018). The parturient woman lies on her side with her lower arm behind (or in front of) her torso, lower leg outstretched, and her upper hip and knee flexed 90 degrees or more, while assuming the exaggerated Sims posture next, she partially rolls in the direction of her front (Mutinda et al., 2021). Additionally, a variation of the lateral position is the Sims position which is also referred to as the left lateral position. When a woman is

in the second stage of labor, Most midwives prefer lateral positions for both epidural analgesia-treated and non-epidural-treated mothers (Barasinski *et al* 2018)



Figure 2.2 Lateral Position

Squatting Position

A common alternative birthing position that is also useful for inducing labor is the squat, in which a woman's feet bear most of her weight, but her knees are visibly bent, and she may lean or pull on support. Often considered the most natural position, the squat position allows gravity to play a role in both labor and delivery, but pregnant women find it difficult to maintain the position for extended periods of time, necessitating support from a partner or a metal bar fixed to the bed. (Lin *et al*., 2018,Satone *et al*., 2023).According to the results of a study conducted in Taiwan on the effectiveness of ergonomic ankle support aid for squatting position during the second stage of labor, pushing during the second stage of labor puts less stress on the laboring woman's calf muscles when she squats with the help of an ankle supporter. This position can put a lot of pressure on the mother's knees and back and is difficult to maintain, so the development of supporting tools may be able to address this condition.(Lin *et al*.,2018).Squatting minimizes the time duration of the second stage of labor, decreases discomfort, and improves perceived pushing efficiency (Lin *et al*., 2018). By widening the pelvis, the fetus will have bigger space and can move

more freely in this position, which facilitates pushing by pressing the body weight against the uterus.





Figure 2.3 Squatting Position

Birthing Stool/sitting

Semi-sitting and sitting upright are the two different forms of sitting positions. In contrast to the former, when she sits with her trunk at an inclination greater than 45 degrees from the bed, the parturient woman in the later sits upright on a bed, chair, or tool. (Satone *et al*., 2023).

According to certain published studies, certain Western industrialized countries seem to prefer specific sitting positions over Asian ones. A French study found that the most common position for mothers during the second stage of labor was sitting on a birth seat. (Edqvist *et al*., 2018).

However, even if they want to, women from various African countries have few options for choosing to give birth while sitting down. This is because these cultures frequently practice the position of lying on one's back during birthing especiallly currenty in the our hospitals. The upright position using the birthing stool have greater advantages which usually helps utilize gravity to stimulate the fetus downward progress, and the low height of the stool flexes the legs and expand the size of the pelvis. Using a birthing stool increased the chance of losing less than 500 milliliters of blood prevent perineal tears.(satone *et al*., 2023)



Figure 2.4 Birthing Stool/sitting

Birthing Bar

During second stage of labor, squatting bars that arch over the bed near the foot and are secured on each side are very important for this type of birthing position. Most of the delivery beds can have a birthing bar attached to them to make it simpler to assume a squatting position with the aid of the bars for support. The squatting

position uses gravity to encourage the fetus downward progress while also expanding the size of the maternal pelvis. When a parturient woman feels a contraction coming, she can lean forward, hold the bar, and pull herself into a squatting position (satone *et al*., 2023).



Figure 2.5 Birthing Bar

Kneeling position

The advantages of delivering while in an upright position are well-established. The risk of aorto-caval compression is lowered, the fetus is better positioned, contractions work more efficiently, and the pelvic outlet is widened when a woman adopts a squatting or kneeling posture (Edqvist et al., 2018). Being upright has also been associated with psychological benefits such as reduced pain perception, an enhanced feeling of control, improved communication with the healthcare provider, and greater involvement from partners (Mutinda et al., 2021). In the meta-analysis conducted by Satone et al. in 2023, the authors found that any upright or lateral position was linked to a shorter second stage of labor, less intense reported pain, fewer instrumental deliveries, fewer abnormal fetal heart rate patterns, and a lesser incidence of episiotomies than supine or lithotomy positions. According to an

Australian retrospective study that explored the effects of six different delivery positions on perineal outcomes, the lateral birthing position yielded the highest rate of an intact perineum (66.6% intact, 28.3% requiring sutures), whereas squatting was associated with the highest rate of lacerations (53.2% requiring sutures, 41.9% intact perineum) as noted by Walker et al. in 2018. The lateral recumbent position, which avoids the compression of the aorta or inferior vena cava, has also been utilized during delivery. When the second stage of labor is prolonged, risks for both the mother and fetus increase. The childbirth experience is often challenging, significantly impacting women's satisfaction with their experience and the care received. During labor, healthcare professionals such as doctors, nurses, and midwives play a crucial role in influencing both the physiological and psychological aspects of the event. It is important for mothers to be assisted in discovering which birthing position suits them best (Satone et al., 2023). A study conducted in India revealed that approximately 92% of nurses in labor and delivery departments were knowledgeable about upright birthing positions, and the majority, around 83%, believed women should have the option to choose between an upright or supine position. Nonetheless, all of the nurses (100%) indicated that the lithotomy position was the most frequently utilized birthing position due to the convenience it offered

to doctors and other healthcare providers (Yadav et al., 2021).



Figure 2.6 Kneeling position

All Fours

The all-fours birthing position has been demonstrated to provide a wider inter-spinous diameter than the lithotomy position. In this position, the anterior-posterior diameter of the pelvic outlet is greater compared to lithotomy, which helps decrease the likelihood of shoulder dystocia. Consequently, this position has been utilized in the management of shoulder dystocia. Additionally, the all-fours position alleviates aorto-caval compression, enhancing utero-placental circulation and thereby improving fetal oxygenation. Uterine contractions tend to be more vigorous and effective in this posture. Furthermore, fetal alignment and passage through the maternal pelvis are better achieved in this position compared to lithotomy. This birth position also benefits from the force of gravity, which aids in the delivery of the fetus. However, despite the proposed advantages, this position has some drawbacks, such as pelvic instability, and has been linked to increased blood loss, possibly due to trauma (Agunda, 2022).)



Figure 2.7 All Fours

2.4 Uptake of alternative birth position after teaching program

Teaching mothers on alternative birth position increase the uptake and utilization leading to decrease maternal and fetal mortality and morbidity (Kituku *et al*., 2019). Most of the studies done are geared towards teaching midwives and other healthcare professionals about alternative birth positions (Agunda, 2022, Nguyen, 2023,

Odoemene *et al*., 2020). Despite midwives and healthcare professionals having knowledge on alternative birth positions, mothers still give birth in supine positions.

Agunda (2022) conducted a randomized controlled trial (RCT) involving pregnant women who received childbirth education focused on alternative positions. The results indicated a significant increase in the utilization of these positions among the educated group compared to the control group. Similarly, Mutinda *et al*. (2021) observed that a structured educational program increased the adoption of alternative positions during labor

Studies, such as that by Odoemene *et al* (2020), have emphasized the significance of healthcare providers in encouraging the use of alternative birth positions. Healthcare provider recommendations and support have been associated with increased utilization, highlighting the importance of the healthcare environment in promoting these positions.

A study conducted in India revealed that 92% of nurses operating in labor and delivery rooms were knowledgeable about upright birthing positions, with approximately 83% expressing that women should have the option to choose between delivering in an upright position or a supine one. However, every nurse (100%) reported that the lithotomy position was the most frequently employed birthing position due to its convenience for doctors and healthcare providers. There was a notable lack of understanding regarding various positions, including standing, squatting, lateral, sitting, and hands-and-knees. About 50% of mothers knew about the squatting position, while 37% were aware of the sitting position, and both the lateral and hands-and-knees positions were known by 23%. Only 13% of mothers were familiar with the standing position among the various alternative birthing

positions (Yadav et al., 2021). Some evidence-based guidelines recommend and support allowing women to move freely and adopt any position that they find most comfortable during labor and delivery, rather than defaulting to supine or lithotomy positions (Yadav et al., 2021).

2.5 Birth outcomes

2.5.1 Maternal outcomes on use alternative birth Positions

King *et al*., 2019 defined birth positions as the mother's position at the time of birth, regardless of the position during the first stage of labour(King *et al*., 2019). The literature reviewed showed a relationship between birthing positions and maternal outcomes (walker *et al*, 2018)

Research examining the impact of alternative birth positions on maternal outcomes has been extensive. A systematic review by Gupta *et al*. (2017) pooled data from multiple studies found out that alternative positions were associated with a lower incidence of perineal trauma and a shorter duration of the second stage of labor.

Maternal outcomes included increased blood loss was also associated with supine position (Berta, *et al*.,2019). Other outcomes of lithotomy according to Walker *et al*.,2018 include; Perineal trauma, maternal pain, increase duration of the second stage of labour, and lack of maternal satisfaction (Walker *et al*.,2018).

A study conducted by Septiasari and Sulistianingsih analyzed the impact of adopting an upright position on the length of the second stage of labor. It was found that the average duration for the control group was 50.38±6.24 minutes, in contrast to the intervention group, which experienced a shorter duration of 32.53±5.30 minutes. The

statistical analysis revealed a significant difference, indicated by a p-value of 0.000 (Septiasari and Sulistianingsih, 2022).

In a qualitative study by Garcia and Rodriguez (2021), pregnant mothers who utilized alternative birth positions reported enhanced comfort and a sense of empowerment during labor. The use of alternative positions was linked to lower pain perception and overall satisfaction with the birthing experience (Garcia and Rodriguez, 2021).

The knowledge of pelvic anatomy among midwives is crucial. The physiological changes that take place during pregnancy lead to slight alterations in the composition, shape, angle of inclination, and internal measurements of the true pelvis (Burns et al., 2022). These modifications allow the female skeletal structure to accommodate and stabilize the pregnant uterus, which is essential for the labor process. The same knowledge is beneficial to the mothers to ease labor and reduce anxiety when mothers are delivering on alternative birth positions (Stone *et al*., 2023)

Labor dystocia is thought to contribute to approximately 55% of first-time cesarean deliveries and is diagnosed when there is prolonged labor due to ineffective contractions, inadequate dilation, lack of descent, improper fetal positioning, excessive fetal size, or a narrow birth canal or pelvis (Lefevre *et al*., 2021). While certain factors leading to labor dystocia necessitate surgical procedures for delivery, others, like failure to descend and prolonged labor, may be influenced by adopting upright or alternative birth positions (Kibuka *et al*., 2021)

In a review by Huang *et al*. (2019),The impact of different maternal positions during labor on outcomes for mothers, including duration of labor , discomfort, and perineal injury, was outlined. Upright positions like assisted squatting and all fours were found to shorten the duration of the second stage of labor compared to lying down, although there is a possibility that they many parturient women are not utilising alternative positions in second stage of labor(Huang *et al*., 2019).Physiological processes that are believed to shorten labor duration when in upright positions consist of a widened pelvic outlet, more powerful and efficient contractions, and the influence of gravity. It was observed that specific positions, including lateral and hands-and-knees, can help in turning the fetus to the occiput anterior position, which is more advantageous for delivery(Huang *et al*., 2019).

A study done by Gupta *et al.,* (2017) on the position in the second stage of labour for women without epidural anesthesia found out that when pregnant women deliver in alternative birthing position (kneeling, All fours, squatting and sitting) as compared with lying on their backs, the duration of in the second stage of labor was reduced by six minutes p = 0.0007. Upright positions was having no difference in the rates of cesarean section (RR 1.22, 95% CI) with the lying positions. Also, there was a decreased in assisted deliveries (RR 0.75, 95% CI), a reduction in episiotomies (average RR 0.75, 95% CI), and no difference in the number of third or fourth-degree perineal trauma (RR 0.72, 95% CI), though some of the mothers had perineal trauma. There was increased estimated blood loss greater than 500 mL (RR 1.48, 95%) (Gupta *et al.,* 2017)

A review of Cochrane systematic reviews was performed by Kibuka *et al*., (2021) to assess the impact of maternal positioning in an upright posture on the length of labor

and rates of cesarean sections. The Cochrane systematic reviews included 65 trials, encompassing a total of 18697 laboring patients involved in the research. Kibuka *et al*.,(2021) .It was discovered that maintaining an upright position during the first and second stages of labor for patients without epidural anesthesia was linked to a significant reduction in labor duration. Additionally, adopting an upright position during the second stage of labor was correlated with a decrease in assisted vaginal deliveries. (Kibuka *et al.,* 2021)

Evidence shows that alternative birth position widens the outlet measurement of the pelvis and that primitive positions often enhanced the mechanical forces acting on the pelvis. The general rationale of alternative birth positions is that the forces acting on the pelvis are the weight of the trunk acting through the spine and the upward thrust of the femora.

A study was done by Zhang *et al*.,(2017) on maternal and neonatal outcomes of labour between kneeling and supine lying positions during the second stage of labour among the low-risk women showed that all four positions had a shorter second stage ($P<0.001$). There was no significant difference which was reported between the groups in terms of postpartum hemorrhage ($P=0.525$) (Zhang *et al.,* 2017).

A study conducted in Turkey indicated that women who utilized the squatting position with the help of bars had a notable decrease in the length of the second stage of labor and induction compared to those in a modified supine position at a 45-degree semi-Fowler angle during the second stage of labor ($p < 0.05$). No significant differences were observed regarding postpartum blood loss. (Ozlem *et al.,* 2017)

Study done by Peppe *et al (2018)* found out that perineal trauma was not linked with the maternal birthing position (p 0.285). Mothers in lithotomy positions who sustained 1st and 2nd tears were 47%, 3rd and 4th were 0.88% while in upright positions 57%,3rd, and 4th were 0.66% (p 0.135) (Peppe *et al.,* 2018).The lithotomy position is the most used form of position during delivery (Kituku *et al.,* 2019). Although the lithotomy position has been have found to cause a more serious form of perineal trauma, increase blood loss and prolonged second stage (Kituku *et al.,* 2019) others have reported to be convenient and helpful for the midwife or other healthcare provider when conducting a delivery (Stone *et al*., 2023).

2.5.2 Fetal outcomes on use alternative birth Positions

The impact of alternative birth positions on neonatal outcomes has also been explored. A study by De Jonge *et al*. (2017) conducted in the Netherlands found that neonates born to mothers using alternative positions had higher Apgar scores and reduced rates of neonatal resuscitation.

A study by Satone *et al*. (2023) examined neonatal outcomes and found that neonates born to mothers who used alternative birth positions had comparable Apgar scores and required fewer neonatal interventions. This suggests that the use of alternative positions does not compromise neonatal well-being.

World health organization have indicated that alternative birth position are associated with reduced neonatal complications such as Apgar score less than 7/10,admission to NICU and need for resuscitation(WHO,2018)

A study conducted by Agunda (2022) revealed that the neonatal outcomes were similar between the two positions, with p = 0.12. The incidence of oxygen

administration as a resuscitative measure was higher in the lithotomy position, at 9.3%, compared to 5.8% in the all fours position (RR 95% CI 1.0[0.9, 1.2]), p = 0.14. The rate of admission to the Neonatal Unit (NBU) was also greater in the lithotomy position, at 6.5%, versus 4.5% in the all fours position (RR 95% CI 1.0[0.9, 1.1]), p = 1. The primary reason for admission to the NBU was Respiratory Distress Syndrome (Agunda,2022)

2.6 Factors influencing the utilization of alternative birth position

Factors influencing birth position utilization among pregnant women are attributed to diverse factor including, demographic characteristics such as age, education, and parity have been identified as influential factors (Hastings-Tolsma *et al*., 2018, Cheng *et al*., 2021, Cohen *et al*., 2019). Younger, more educated, and multiparous women were more likely to consider alternative birth positions, such as upright or kneeling positions (Zileni *et al.,* 2021)

A research study conducted by Zileni *et al.,(2021)*on the factors affecting labor and birthing positions in Malawi revealed that the choice of an upright position is significantly influenced by the mother's age (P=0.018) and the family's monthly income (P=0.012). Among women during childbirth, those who had attained some level of education were more inclined to adopt the supine position compared to those who had not (93% vs 78%; P=0.011). Nevertheless, women with a higher income were less likely to choose the supine position than their low-income counterparts (82% vs 93%; P=0.005) (Zileni *et al*., 2021).)

Previous birth experiences, including the mode of delivery and any previous birth complications, have also been found to impact birth position preferences (Chuang *et al*., 2020, Clement *et al*., 2019, Kamel *et al*., 2020).,).

Information sources, such as healthcare providers, family/friends, and online resources, play a critical role in shaping women's knowledge and attitudes towards different birth positions (Gutvirtz *et al*., 2019,). Cohen *et al*., 2018 also found out that the information pregnant women receive from healthcare providers, family, friends, and online resources significantly impacts their decision-making process (Cohen *et al*., 2018).

Cultural beliefs and norms related to childbirth practices have been shown to influence birth position choices, with cultural factors often shaping maternal preferences (Adegbola *et al*., 2019, Beck *et al*., 2017, Barillas *et al.,*2023). Cantor *et al*., 2020 also found out that cultural beliefs and norms surrounding labor and delivery can influence the acceptability of certain birth positions (Cantor *et al*., 2020).

Woman's comfort during labor and fear of pain or injury are essential considerations that influence birth position preferences (Patel *et al*., 2021). Zang *et al*., 2020 also found out that fear of pain or injury during childbirth has been identified as a barrier to adopting certain birth positions(Zang *et al*., 2020).

A study done by Mirzakhani *et al*., (2020) found out that primiparous women were more likely to adopt the lithotomy position due to lack of experience with alternative positions. Fear of pain and injury and the perception of comfort during labor are additional factors that influence the choice of birth position (Barillas *et al.,*2023).

Healthcare provider advice was identified as a significant factor affecting birth position choices. Pregnant women who received guidance from supportive healthcare providers were more likely to opt for alternative birth positions other than the lithotomy position (Barillas *et al.,*2023, (Alsehimi and Shaban, 2021). also found out that healthcare provider advice and recommendations have a substantial influence on a woman's decision-making process, as their expertise and guidance may sway the choice of position (Alsehimi and Shaban, 2021)

A qualitative study done by Musie *et al*., 2019 on Factors hindering midwives' utilization of alternative birth positions during labour found out that lack of facilities and equipment, work place culture to facilitate the use of alternative birth position was the major barrier (Musie *et al*., 2019).

Research on pregnant mothers' views on birth positions reveals a wide range of preferences and concerns. Some women express a preference for upright positions, such as standing, squatting, or kneeling, due to perceived benefits such as gravity assistance and increased pelvic opening (Alsehimi and Shaban, 2021). Conversely, other women may have concerns or fears about upright positions, citing discomfort, instability, or unfamiliarity as reasons for avoiding them (Martin *et al*., 2021, Hauck *et al*., 2019). The reasons behind these preferences and concerns are multifaceted and may vary based on cultural, social, and individual factors. (Patel *et al*., 2021, Barillas *et al.,*2023, Choo & Agnes, 2020). A study done by Chu *et al*., 2018 found out that, cultural beliefs and traditions may influence pregnant uptake of alternative birth positions (Chu *et al*., 2018).

A survey conducted by Smith *et al*. (2017) showed that many women expressed a preference for upright positions (e.g., squatting, kneeling) due to perceived advantages in facilitating labor progression. However, some pregnant women also expressed concerns about these positions, particularly regarding fatigue and perceived difficulty in adopting them during labor (Barillas *et al.,*2023). Studies exploring pregnant mothers' alternative birth positions have revealed mixed preferences and concerns. While some women preferred upright positions due to perceived advantages in reducing pain and facilitating fetal descent, others expressed concerns about the potential risks of non-supine positions (Gupta *et al*., 2018; Jangsten *et al*., 2018)

Fear of pain, perceived discomfort, and the desire for medical assistance during labor were common reasons for choosing supine positions. However, pregnant women's views on birth positions can be influenced positively through educational interventions (Phan and Chau, 2022).

Research have indicated that pregnant women have diverse views on birth positions during the second stage of labor due to perceived benefits and fears. Preferences for upright positions, such as standing, squatting, or kneeling, are often reported due to perceived benefits like increased pelvic opening and more effective contractions (Agunda, 2022, Jiregna *et al*., 2020). Others express fear of potential perineal tearing or other complications can also influence women's views on birth positions (Sawyer *et al*., 2018). It is essential to understand these views to tailor educational interventions effectively

2.8 Summary of Literature Review and Knowledge Gap

From the above literature review, it is evident vaginal delivery is leading globally and various positions are applied during delivery. Lithotomy or supine positions has been associated with complications such as; perineal tears, prolonged second stage, use of episiotomies, increased blood loss, an Apgar score of less than 7/10, requirement for newborn resuscitation and admission to new born intensive care unit. Several factors have been identified either to influence utilization of alternative birth position positively or negatively to include, previous experiences, expectations, age, level of education among others.

There is evidence from literature that education on alternative birth positions has been done to health care providers, but still there is underutilization of alternative birth positions. Most studies suggest that women lack knowledge on alternative birth position, this can be achieved by educating mothers on alternative birth positions antenatally using well organized educational program to prepare them adequately for labor. However, from the above literature, antenatal mothers are not taught on alternative birth positions. Alternative birth positions are not included in specific health messages that are given to mothers during antenatal visits. They are also not featured in individual birth plan and mother booklet (MOH 415, MOH 216, Kenya). This implies that there is ineffective delivery of information in the present antenatal care to prepare mothers for labour. In view of the above, this study aimed at evaluating the effectiveness of an educational program on utilization of alternative birth positions and their outcomes. In this study, women will be educated on alternative birth position to improve their self-efficacy in the utilization of those

positions factors influencing the utilization of alternative birth position will be determine and recommendation will be made to be addressed accordingly.

CHAPTER THREE

METHODOLOGY

3.1 Overview

The chapter describes the research design, study area, study population, sample and sampling techniques, description of research instruments, ethical considerations, data collection procedures, and the plan for data analysis. The methodology adopted was designed to enable the researcher to answer the research objectives.

3.2 Research Design

The study adopted nonequivalent pre and post quasi-experimental design with an intervention group (receiving the educational program on alternative birth positions) and a control group (not receiving the intervention). It employed both quantitative and qualitative approaches. The design gave an opportunity to identify and relate events to particular exposures and defined it. Educational program was administered to parturient women at antenatal clinic and mothers followed to delivery to evaluate the effectiveness of the educational program.The parturient women were recruited at 32 weeks gestation and educational program was done in two session in line with schedule routine antenatal visits because the aim was that the programme is to be Incorporated to routine antenatal care or individual birth plan health talks.The intervention was done until 37 weeks gestation. On the other hand control group was also recruited,undergoes routine antenatal care they were assessed too. The design enabled the researcher to observe the effects of the intervention on the target population (WennMacker, Z. *et al.,* 2018). The exercise enabled the researcher to identify the extraneous variables likely to affect the outcome and therefore a

different health facility was used for control and prevent influence from the experimental group.

The intervention was,provision of antenatal information on PPFP using a standardized

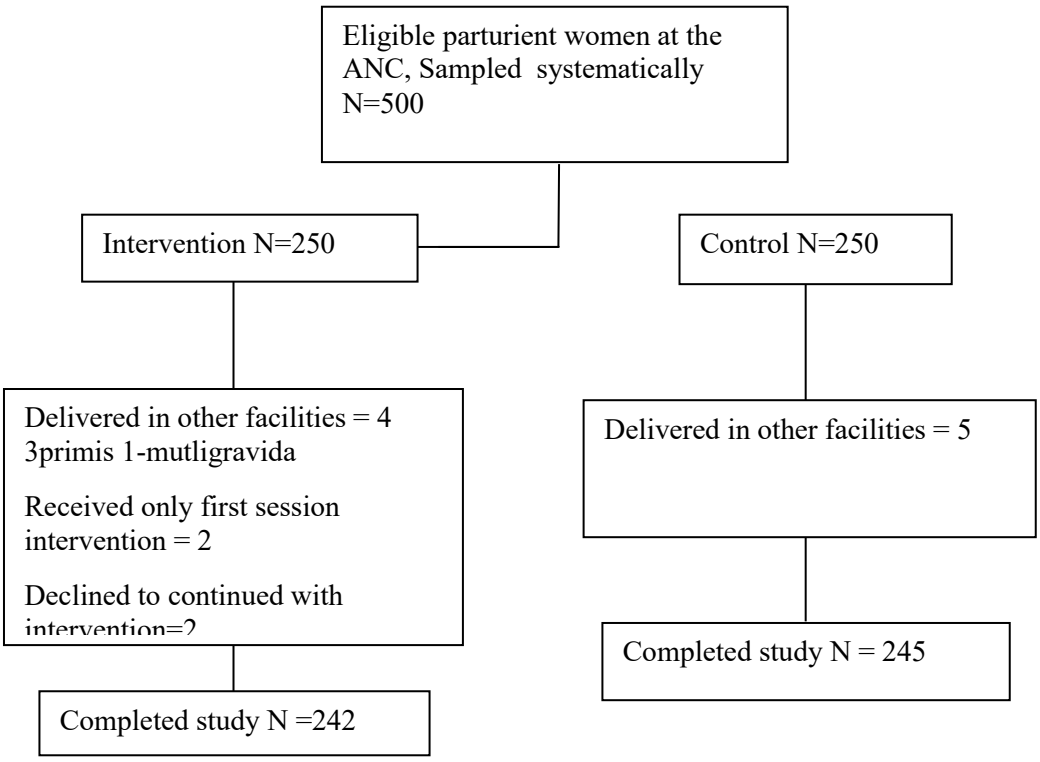

Figure 3.1: Flowchart showing recruitment of parturient women to intervention and control group

3.3 Study Area

The study was carried out in Western region, based on its prevalence of lithotomy position (Kituku *et al*., 2019). Kakamega and Bungoma County Referral Hospital was selected because of the highest number of deliveries in the western region

(KDHIS; 2019, KDHIS; 2022), this contributes to the prevalence of lithotomy position.

The two referral Hospitals receive clients from neighboring counties within and outside the Western region. Kakamega and Bungoma counties are among the devolved forty-seven (47) counties in Kenya's administrative and political structure. The counties are located in the western part of Kenya, Kakamega county covering an area of 3020.0 square kilometers and is the most populous rural County with a population of 1,867,579 (KNBS, 2019). The population density is estimated to be at 618/KM^2 (KNBS, 2019).

Kakamega county Teaching and Referral Hospital is in Lurambi sub-county, within the county Headquarters. Being the only County Referral Health facility, it receives referrals from the 12 sub-counties and beyond. The Hospital has maternity with a bed capacity of 100 and the estimated number of deliveries per month ranges between 400 to 600 with an average of 500 clients. Operative/ Caesarean Section cases are estimated to be 150 cases per month. Mother child health clinic is part of Maternity unit but based in outpatient department, pregnant mothers attending ANC per month range from 600 to 800 in total and 400 clients are pregnant mothers in third trimester (MOH, 2022)

Bungoma County Referral Hospital is located in Bungoma County and within the County headquarters. The Hospital is a Referral hospital within Bungoma County and its environs. Bungoma County has a population of 1,570,540 covering a land area of 1923.2 square Kilometer and a population density of 531/ KM^2 (KNBS, 2019). Bungoma County Teaching and Referral Hospital has deliveries ranging from

300 to 500 with an average of 400 per month of which Operative deliveries range from 80 to 100 .Pregnant mothers attended in MCH are 500 (DHIS2, 2019).

3.4 Study Population

Population is defined as a group of individuals, objects, or items from which samples are drawn for measurements (Kombo and Delmo, 2006). It is also refers to an entire group of individuals, events, or objects having a common observable characteristic (Mugenda and Mugenda, 2003). The study population included all parturient women attending antenatal clinic with low-risk pregnancy and anticipated for vaginal delivery at Kakamega and Bungoma Teaching and Referral Hospitals.

3.4.1 Eligibility Criteria

The inclusion criterion method was used to select study participants. The criterion was also used to exclude women from the study.

3.4.2 Inclusion Criteria

i. Pregnant mothers in third trimester
ii. Singleton pregnancy
iii. Cephalic presentation

3.4.3 Exclusion Criteria

i. Normal pregnancy with Previous caesarian delivery
ii. Pregnant mothers who are not consistent in attending Antenatal clinic

3.5 Sample Size Calculation

The effect size of the birth positions in the trial is expressed as $\delta = (pc - pt) =$ 0.0886.

Therefore the number of the required participant in each group of the trial is given in the equation below.

$$n = \frac{pt\ qt + pc\ qc}{\delta} * f(\alpha, \beta) \quad \text{.....(a)}$$

Where: $f(\alpha, \beta) = (z\alpha/2 + z\beta)2$

α = Type 1 error associated critical value of 1.96, (95% confidence level (1-α)

β = Type 2 error (gives power of $(1 - \beta)$ with associated critical value of 0.84

pt = Expected event rate of proportion in the treatment birth position = 0.0704

pc = Expected event rate of proportion in the standard of care birthing (control arm) position = 0.159

$\delta = (pc - pt) = 0.0886$ (Birthing position effect size)

$qt = (1 - pt) = 0.9296$

$qc = (1 - pc) = 0.841$

Hence:

$$n = \frac{ptqt + pc\,qc}{\delta} * f(\alpha, \beta) = \frac{pt\,qt + pc\,qc}{\delta} * (z\alpha/2 + z\beta)2)$$

$$n = \frac{(0.0704 * 0.9296) + (0.159 * 0.841)}{0.08862^2} * (1.96 + 0.84)2$$

$$n = \frac{0.06544 + 0.13372}{0.08862^2} * (2.8)2$$

$$n = \frac{0.1992}{0.08862} * 7.84$$

$$n = 198.9473$$

Taking the Fleiss continuity correction to obtain a sample for each group is computed in the equation bellow.

$$= \frac{n}{4\,n\,|pt - pc|}\,[[1 + \sqrt{1 + 4}\,]] \quad \text{..... (b)}$$

From the equation (b), the resulting sample size with continuity correction is give as for each group of study.

$$n' = 224.9441$$

According to (Singh & Masuku, 2014) and (Kish, 1965), To account for the attrition or non-despondences, adjustment will be done at the rate of 10% (r = 0.1). The adjusted sample size is given as

$$n'$$

$n'' = 1 - r = 224.9441 = 249.93444$

$1 - 0.1$

$n'' = 250$

$n'' + n'' = 500$

The sample size for each group, n intervention birthing position = 250 and standard of birth position (control) = 245. Hence the total sample size is 500 parturient.

3.6 Sample Population and Sampling Procedure

The sample is selected from a part of the target population that is accessible to the researcher, which is called the study population (Easton and McColl, 2007). This total population is called the target population, to which the results of the study can be generalized. A sample is a subset of the total population that is of interest to the study topic.

A simple random sampling technique was used to select one hospital as experimental and the other as control. Kakamega County Teaching and Referral Hospital was allocated as the intervention site while Bungoma County Teaching and Referral Hospital was a non-intervention group. The study used systematic random sampling to recruit research participants. The first mother was selected randomly. If a mother declined, the immediate next mother was selected, as long as she met criteria. This was done until the desired sample size was achieved within the study period.

Antenatal register was used as sampling frame. The number of parturient women attending ANC was obtained from antenatal clinic register, where the nth number was determined. The number of semi structured questionnaire to be used per day was

approximated to be 10. The nth number was obtained by dividing daily number by 10 .Daily number of parturient women attended in antenatal clinic was 30.Every 3rd client was recruited to the study.

3.7 Data Collection Instruments

This is referred to the instruments used for collecting data, which included adoption and development. To answer research questions, data was collected by the use of interviewer administered structured questionnaires and interview schedules adopted and modified by the researcher. Several methods (triangulation) that involve direct personal interviews and a structured questionnaire was used. The use of a combination of methods used to provide a more powerful strategy than reliance on a single method. Data was collected mainly by the researcher with the assistance of the trained research assistants. The inclusion criterion method was used to select the participants who met the criterion.

3.7.1 Development of Research Instrument

Quantitative and Qualitative data was collected using structured questionnaires, checklist and key informant, FGD schedules respectively; researchers and research assistants administered these questionnaires constituting information on socio-demographic, obstetric history, uptake of alternative birth position, outcomes of birth, and factors influencing utilizations of alternative birth position. The questionnaire is adapted from Agunda, 2022, Effect of upright (‘all fours’) versus lithotomy birth position on obstetric outcomes among low-risk parturient. The instrument was appropriate because it covers most of the areas to be studied. Few adjustments was done on the questions. The questionnaire was prepared in English. The main data collection tools that was used in this study included:

3.7.2 Questionnaires

The study employed the use of interviewer- administered structured questionnaires to collect information from mothers after delivery. The researcher developed a questionnaire that captured key information related information on socio-demographic, ANC profile, obstetric history, mode of delivery, uptake of alternative birth position, birth outcomes, and factors influencing utilizations of alternative birth position.. The first participant was identified by the use of random selection. The other clients was then selected systematically until the target population is attained. The process was followed for both intervention and control group. The researcher and research assistants therefore facilitated the questionnaires to the respondents and requested them to answer the questions sincerely. The researchers interviewed respondents and fill the questionnaires.

3.7.3. Focus Group Discussions

Focus group discussions was facilitated by the researcher and trained research assistants well versed with the native language. The pre-set questions and guide was on what exactly was to be discussed by the participants in regard to alternative birth positions. Focus group discussions was conducted after delivery to determine factors influencing the utilization of alternative birth position in second stage of labor. The researcher asked the questions as she/he probes for more or clear information. Notes was taken and discussions was taped .

3.8 Validity and Reliability of instruments

3.8.1 Validity of the Instrument

Validity is the quality attributed to measures of the degree to which they conform to the established knowledge (Dalton, 2000). It refers to the extent to which an

instrument asks the right questions regarding accuracy (Polit, 2017). Content validity was established by a thorough review of the literature, consulting expert opinion, and conducting a pretests. Regarding consulting expert opinion, both my research supervisors examined and help in refining the tool.

3.8.2 Reliability of the Instrument

According to Polit and Beck (2004), reliability refers to accuracy and the consistency of information that is collected in the study after repeated trails on the data, it is expected to consistently yield similar or near similar results thus implying its replicability (Mugenda and Mugenda 2003). For this purpose tools was checked for its content and structure to ensure that it is relevant in collecting the required information. The research tools was subjected to specific tests depending on the nature of the tool. Questionnaires was subjected to Chronbach alpha to measure internal consistency thus ensuring reliability of the tool. If a questionnaire's Cronbach's Alpha coefficient is higher than 0.70, it was regarded acceptable (Bujang M.A *et al.,* 2018). A pretest was conducted on a similar population and the tool was further refined.

3.8.3 Pre-Test

The pretesting of the research instruments was done at the Vihiga County hospital using fifteen mothers during delivery and after delivery. The goal was to identify any anomalies in the tools and also to estimate the time required for each respondent.

3.9 Data Collection Procedures

Data collection is a very important phase of the study, because it enables the researcher to answer research questions hence, gaining insight on the research topic

3.9.1 Pre intervention activities

3.9.1.1 Recruitment and Enrolment of Research Assistants and Participants

Research assistants were identified in the two hospitals for the purpose of data collection, they were evaluated on the knowledge of alternative birth position. The principal investigator trained research assistants who was midwives for one week on the main objective, educational program on alternative birth positions data collection tool, and interviewing skills. Information on ethical issues such as the need to observe confidentiality and obtaining informed consent from participants before recruiting the mothers to study was given.

The recruitment of participants was commenced at the initiation of the study. This was done in collaboration between researcher and midwife. Those who was willing to participate was enrolled for the study after understanding and signing the informed consent. For those who was unable to read, the researchers explained the objectives of the study, procedures to be used, and then obtain informed consent.

An abdominal examination was done by the midwife to determine; gestation, lie, and presenting part. This helped to confirm the trimester, which the parturient woman was, and to rule out any complication to met inclusionon criteria. This was done to both control group and intervention group.

Control group were parturient women seeking care at the Bungoma referral hospital, according to the inclusion criteria they were selected to the study using systematic random sampling. A total of 250 parturient women was recruited to control group. These group received routine care antenatally and were followed up to delivery to asses birth position used and both maternal and neonatal outcomes.

The intervention group comprised of parturient women seeking antenatal care services at the Kakamega county referral hospital . A total of 250 parturient women was recruited to the intervention group. This group receive routine antenatal care and additional educational programs on alternative birth positions. The intervention group received three sessions of about 2 hours each of the educational intervention program between the 32nd –36th weeks of gestation.

3.9.1.2 Educational program

Information on ABP was obtained from WHO and beefed up from Lamaze, Spinning Babies, Obstetrics Initiatives, and literature reviews, contributions from experts on obstetrics, midwifery and stakeholders, a comprehensive educational program on alternative birth position during the second stage of labor was developed. The educational program included interactive sessions, educational materials, videos, and demonstrations to effectively convey information to the participants.

3.9.2 Intervention

During Intervention the educational program on alternative birth positions in the second stage of labor was provided to the intervention group during their normal scheduled third trimester prenatal visits, between 32 and 36 weeks gestation.it was a 2-hour session spread through antenatal visits. Birthing classes are done in third trimester to prepare parturient mothers for labour (Heidimokoff, 2021;ICEA, 2021) The mothers are recruited during ANC visits, undergone educational program then followed up to delivery to assess the uptake of alternative birth positions birth outcomes and factors influencing uptake of alternative birth positions. The evidence-

based ABP to be taught includes; squatting (kneeling), sitting, lateral (side lying), all fours

3.9.3 Data Collection process

Before the data collection is done for the two groups, the research assistant introduced themselves and clarifies the purpose of the study including; benefits, procedure, risks involved, confidentiality, willingness to participate, and whom to contact as the principal investigator. The researcher then obtained individual consent, both verbal and written, and request them to tape the proceedings of the discussion. Each subject is given a unique number. Data collection was started upon acceptance and consent by the individual participants.

Quantitative data was collected using structured questionnaire. Focus group discussions was used to collected qualitative data. Key informant interview was used collect qualitative data from health care providers. The qualitative data was meant to enrich quantitative data and give more insights

Post-intervention data collection: An observational checklist was used during labor to record real-time birth outcomes and alternative birth positions assumed by parturient women from both control and experimental group. Review of medical records to gather additional data on maternal and neonatal outcomes was also done.

3.10 Data Storage

All data collected from the study participants was sorted and those well completed was coded and entered into computer software. The hard copies was kept under lock and key while the electronic data is stored both in the storage disk and computer secured with a password only known by the principal investigator awaiting Analysis.

3.11 Data Analysis

Data analysis is a very critical stage of research because it guide in drawing up conclusions and predictions made. This is a process of evaluating data using analytical and statistical tools with the sole aim of transforming raw data into understandable information. It includes the interpretation of data gathered using analytical and logical reasoning to determine patterns, relationships, or trends. The statistical analysis gives meaning to the numbers.

Descriptive statistics is used to provide a basic description of data collected quantitatively hence organizing and summarizing data to draw meaning full interpretation and conclusion. Quantitative data analysis was done using SPSS version 28.Descriptive analysis: Categorical data was summarized and presented as frequencies and proportions while continuous data was summarized and presented as means and standard deviations. The data was be presented as tables.

Inferential analysis: Chi-Square was used for comparing categorical data while t-test was used for comparing continuous data. P-values and Relative Risk at 95% confidence intervals (CIs) was calculated and reported. A p-value <0.05 was considered statistically significant.Logistic regression was employed to determine factors significantly influencing the utilization of ABP .Qualitative data was recorded, transcribed, and translated into English and analyzed using N-VIVO software

Bivariate analysis of dependent and independent variables was done with a p-value of less than or equal to 0.5, being considered significant and thus rejecting the null

Table 3.1 Summary of variables and specific tests

S/N	OBJECTIVE	VARIABLES	DESIGN	TOOLS TO COLLECT DATA	ANALYSIS
1	To determine a baseline survey on birthing positions during second stage of labor in Western Kenya.	Previous Birth position used,knowledge on birth position,	quasi experimental	interviewer administered questionnaire	Descriptive analysis
2	To analyze the effects of educational program on uptake of alternative birth positions among parturient women in western Kenya	Alternative birth positon: chosen by mothers Maternal past delivery,knowledge on birth position	quasi experimental	Observational checklist and interviewer administered questionnaire	Descriptive analysis Chi- square To compare the utilization between different groups for significant differences in the adoption of alternative birth positions
3	To evaluate the birth outcome with alternative birth positions in second stage of labor in selected hospitals in western Kenya	Maternal Outcomes: perineal tear, blood loss, duration of second stage, episiotomy Neonatal outcomes: Neonatal APGAR scores at one and five minutes after birth, admission to newborn unit, need for resuscitation, neonatal injuries	quasi-experimental	Checklist and records review	t-test to compare outcomes between experimental and control group Chi-square
4	To assess the factors that influence utilization of alternative birth position in second stage of labor among pregnant mothers in western Kenya	INDIVIDUAL Previous birth experiences, Comfort during labor, Fear of pain or injury, Knowledge about Alternative Birth Positions HEALTH CARE PROVIDER; Support from health providers and recommendation CULTURAL BELIEFS AND NORMS	quasi experimental	Interviewer-administered questionnaire FGDs	Logistic regression Thematic analysis

3.12 Ethical Consideration

According to the Helsinki declaration, any research conducted on human subjects should ensure the human rights of the participants are protected. This includes the privacy and dignity of participants that are considered to the highest level and that the data collected should be kept anonymous (Grove 2011). Therefore, Ethical approval to conduct the study was obtained from the Institutional Ethics and Research Committee (IERC) of Masinde Muliro University of Science and Technology, this is important to ensure that all the protocols concerning conducting the study are conformed to. Ethical issues of the study was focusing on ensuring excellent research practices per global research standards. This paved way to obtain a Research permit from the National Commission of Science Technology and Innovation (NACOSTI). Clearance was obtained from both Kakamega and Bungoma County Health offices and the County Teaching and Referral Hospitals. The study subjects was educated on their rights in the study. Informed verbal and written consent was obtained from the respondents and they were given assurances that their participation is voluntary and confidential. The participants was assured that results will only be used for academic and policy issues and not to deny them any service. Their names would not be used in any publications and would be kept anonymous.

Autonomy

Autonomy is a principle that puts a demand on the researcher to ensure that subjects are free to make their own decisions without being coerced when the study is ongoing. Participants have the right to make whichever decision as to their choice and the researcher needs to acknowledge and respect. It is therefore important as part

of the process where the researcher will provide adequate information to participants before enabling them to make informed consent. The participants should be legally authorized to make such consent and for those with reduced autonomy, the researcher endeavors to protect their rights. In this study, informed consent was sought from the participants after taking them through the consent form. A written consent form will be provided for the participants who are women after birth and will be required to sign or thump print on the consent form without writing their name after being informed of the purpose of the study. Any benefits or risks associated with the study was discussed in the process of consenting and the participants was allowed to withdraw from the study at any point without suffering any consequences (Owonikoko, 2013). The participants was informed that they are at liberty to withdraw from the study at any stage and it is completely voluntary to participate in the study. In the process of conducting the study, the participants were protected from discomfort and disadvantages as a result of being included in the study and willingly providing their information. In the analysis of data from the questionnaires, each questionnaire was coded and given a number to ensure anonymity.

Respect

Respect for participants is very key, therefore the researcher shall always demonstrate respect throughout their interactions with participants including not judging them, not discrediting them, and ensuring that their views are faithfully recorded and given due consideration in the assessment process. An important dimension of participant respect relates to ensuring the protection of persons with

diminished autonomy, and those who are marginalized or vulnerable (American Psychological Association, 2010).

Beneficence

The principle of beneficence ensures that the participants are free from any kind of harm, be it physical, psychological, economical of socially. This will be done by phrasing the questions in a sensitive and non-judgmental manner. Participants will be informed of their free will to withdraw from the study if she feels uncomfortable during the interview or implementation process. Participants was protected from exploitation hence the study procedures was clearly explained before data collection is started. They were informed that their participation in the study will not have direct benefits but would provide information that would help in the management of clients, provide guidance for midwives during maternity service delivery, and would also inform policy, therefore, guide in the development of standards of health care.

Justice

This principle applies to fair treatment and the right to privacy. The study was non-discriminatory following the set inclusion criteria and will allow the participants to seek for further clarification at any time during the study.

Confidentiality

Participants' information was kept confidential throughout the study. The data collected from individual participants was kept anonymous by using numbers to identify clients rather than names. Research assistance who came in contact with participant information signed pledges of confidentiality. Only the principal

investigator kept the data collected in storage during the whole process of the study under strict confidentiality.

CHAPTER FOUR

RESULTS

4.1 Overview

The chapter presents the study findings. Data analysis follows the following order social demographic data and baseline data are summarized in a frequency table showing the results of both arms of study and results are also given as per specific objectives; to compare baseline and end line on the uptake of alternative birth position among parturient women to analyze the effects of educational program on uptake of alternative birth positions among parturient women to assess the effect of educational program on factors influencing utilization of alternative birthing positions in second stage of labor among parturient women To determine the effect of educational program on alternative birthing positions on birth outcome among parturient women

Descriptive and inferential analysis was employed in presentation of the findings.

4.2 Response Rate

A total of 500 parturient women participated in the study at baseline of which, 250 were in intervention and 250 in control group. During delivery, 481 parturient women came to deliver in the facility; 238 (95.2%) from intervention and 243 (97.2%) from control group giving an overall retention rate of 96.2%. The clients which was lost during the study was because the researcher could not trace them. Most of them were primigravid as they might have feared to deliver in public hospital because of strike and were no longer willing to continue with the study.The high response rate was because of close monitoring of parturient women throughout the training sessions and their questions were adequately answered .

4.3 Analysis of the participants' characteristics

Participants' socio-demographic characteristics, past obstetric history, antenatal visit knowledge on birth position sources of information on birth positions last birth position used during delivery and birth complications have been summarized in frequency tables .Socio-demographic characteristics have been compared using paired Test for Continuous variables and categorical variables using Chi square.

4.3.1 Socio-demographic characteristics of the study participants

Table 4.1 shows the sociodemographic characteristics of parturient women in Control and Intervention groups. It includes age, marital status, level of education occupation, religion and parity.

The mean age was similar between the two groups (31.6 ± 4.4 years in the intervention group vs 31.4 ± 5.0 years in the control group, p=0.77). Marital status was also comparable, with 77.3% married in both the intervention and control groups (p=0.988).

However, there were statistical significant differences in level of education ($p<0.0001$). The intervention group had a higher proportion of participants with tertiary education (29.8% vs 1.6%), while the control group had more participants with none or primary education (9.9% vs 1.3%)

Occupation also differed significantly between the groups ($p<0.0001$). The intervention group had more housewives (27.3% vs 1.2%), farmers (14.7% vs 0%), and employed participants (20.6% vs 0.4%), while the control group had a higher percentage of participants engaged in business (98.3% vs 37.4%)

Religion and parity were similar between the intervention and control groups, with the majority being Protestant (94.1% vs 92.2%, p=0.40) and having 3-5 children (65.6% vs 65.4%, p=0.98)

Table 4.1Differences in sample Socio-demographic measures between intervention and control groups (n = 481)

Variables	Categories	Total (%)	Intervention n=238 (%)	Control n=243 (%)	$\chi 2$	P value
Mean age±SD (Range)			31.4±5.0 (19 – 44)	31.6±4.4 (18 – 45)	- 0.29*	0.77
Marital status	Single	109 (22.7)	54 (22.7)	55 (22.6)	0.0002	0.988
	Married	372 (77.3)	184 (77.3)	188 (77.4)		
Level of education	None or Primary	27 (5.6)	3 (1.3)	24 (9.9)	83.0	<0.0001
	Secondary	379 (78.8)	164 (68.9)	215 (88.5)		
	Tertiary	75 (15.6)	71 (29.8)	4 (1.6)		
Occupation	Housewife	68 (14.1)	65 (27.3)	3 (1.2)	206.2	<0.0001
	Farmer	35 (7.3)	35 (14.7)	0 (0.0)		
	Employed	50 (10.4)	49 (20.6)	1 (0.4)		
	Business	328 (68.2)	89 (37.4)	239 (98.3)		
Religion	Catholic	33 (6.9)	14 (5.9)	19 (7.8)	0.70	0.40
	Protestant	448 (93.1)	224 (94.1)	224 (92.2)		
Parity	1 - 2	166 (34.5)	82 (34.4)	84 (34.6)	0.0007	0.98
	3 - 5	315 (65.4)	156 (65.6)	159 (65.4)		

*t Test

4.3.2 Objective 1-Baseline survey on utilization of birthing position during second stage of labour

The baseline data was collected on the previous maternal obstetric characteristics, last birth outcome, knowledge on birth positions, source of information on birth position and last birth outcomes.

In both groups, the majority of participants (100% in the intervention group and 97.1% in the control group) had spontaneous vaginal deliveries (SVD) during their last delivery. Only 2.9% of women in the control group had assisted vaginal births

Lithotomy position was the most often used birth position during the last delivery, with 94.6% from control group and 93.3% from intervention group. Only a small percentage of individuals in both groups employed other positions such as squatting, kneeling, side-lying, and all fours.

Knowledge about alternative birth positions during the second stage was limited, with only 1.68% of the intervention group and 1.23% of the control group reporting awareness of other positions. Nearly all women (98.3% intervention, 100% control) reported receiving information on birth positions from healthcare providers.

The most common maternal complications were perineal tears (35.7% intervention, 32.9% control) and prolonged second stage (36.1% intervention, 24.3% control). The most frequent neonatal complication was not crying immediately after birth (32.3% treatment, 24.3% control).

All participants in the intervention group had term pregnancies (100%), while the control group had 90 9% with 9.1% postdate pregnancies. Most neonates in both groups had a birth weight between 2.5 to 4 kg (95% in the intervention group and 90.9% in the control group)

Table 4.2 Baseline survey on use of birthing during second stage of labour

Variables	Categories	Total (%)	Intervention n=238 (%)	Control n=243 (%)
Last mode of delivery	SVD	474 (98.5)	238 (100.0)	236 (97.1)
	Assisted vaginal delivery	7 (1.5)	0 (0.0)	7 (2.9)
Birth position used during last delivery	Squatting	4 (0.8)	2 (0.8)	2 (0.8)
	Kneeling	8 (1.7)	6 (2.5)	2 (0.8)
	Side lying/Lateral	7 (1.5)	4 (1.9)	3 (1.2)
	All fours	10 (2.1)	4 (1.7)	6 (2.5)
	Lithotomy	452 (94.0)	222 (93.3)	230 (94.6)
Knowledge on any other position that can be used in second stage	Yes	7 (1.5)	4 1.68	3 1.23
	No	474 (98.5)	234 (98.3)	240 (98.8)
If Yes, which one?	Squatting	3 (0.6)	0 (0.0)	3 (1.2)
	Side lying/Lateral	2 (0.4)	2 (0.8)	0 (0.0)
	All fours	2 (0.4)	2 (0.8)	0 (0.0)
	N/A	474 (98.5)	234 (98.3)	240 (98.8)
Source of information on birth positions	Health Care Provider	477 (99.2)	234 (98.3)	243 (100.0)
	Internet	3 (0.6)	3 (1.3)	0 (0.0)
	Relatives	1 (0.2)	1 (0.4)	0 (0.0)
Did you have any Maternal Complications during last delivery?	None	171 (35.6)	67 (28.1)	104 (42.8)
	Perineal Tears	165 (34.3)	85 (35.7)	80 (32.9)
	Prolong Second stage	145 (30.1)	86 (36.1)	59 (24.3)
What complications did your baby had during your last delivery?	Not Cried Immediately	136 (28.3)	77 (32.3)	59 (24.3)
	Difficulty in breathing	26 (5.4)	10 (4.2)	16 (6.6)
	Birth Injury	34 (7.1)	22 (9.2)	12 (4.9)
	None	285 (59.2)	129 (54.2)	156 (64.2)
Gestation during previous pregnancy	Term	459 (95.4)	238 (100.0)	221 (90.9)
	Postdates	22 (4.6)	0 (0.0)	22 (9.1)
Neonate Birth weight	≥2.5-4 Kgs	447 (92.9)	226 (95.0)	221 (90.9)
	>4 Kgs	34 (7.1)	12 (5.0)	22 (9.1)

Lack of education to parturient women prenatally on alternative birth position during second stage which lead to lack of knowledge was demonstrated well during FGD,

"I was not aware of any other birth position in second stage of labour a part from lying on the back, the nurse was the one who guides me during last delivery.She is also her who gives me information on how to deliver"(mother no.4 in intervention group and control group mother no.5).

About 98% of our mothers always assume lithotomy positions because its our routine in the hospital,we position only mothers to alternative birthing positions when there is prolong second stage.(KII)

4.4 Objective 2-Effect educational program on uptake of alternative birth positions

In the intervention group, there was a significant increase in the number of women attending three or more antenatal care (ANC) visits from baseline (5.9%) to endline (68.5%) among parturient women who utilized alternative birthing positions while the control group showed minimal change, with 1.4% at baseline and 10.9% at endline. Comparing intervention and control group at endline showed an increase of attendance of ANC from (10.9% to 68.5% for those who used alternative birthing positions,with a chi-square value of 152.8 and a p-value < 0.001.

Regarding spontaneous vaginal delivery (SVD), the intervention group showed an increase in spontaneous vaginal delivery among those who used alternative birthing positions from baseline to endline (6.7% to 68.5%), while the control group showed minimal change (4.7% to 10.9%).Intervention group showed marked increased in endline(68.5%) compared with control group(10.9%),with a chi-square value of 150.9and a p-value < 0.001.

The intervention group demonstrated also a marked increase in knowledge of alternative birth positions, from 4(100)% at baseline to 163(68.5%) at endline, In

contrast, the control group remained static, with no knowledge reported at baseline and only slight change(9.4%) at endline.At endline Intervention group had increase in knowledge (68.5%) ,while control group was 9.4%, with a (chi-square = 41.6, $p < 0.001$).

Similar trends were observed regarding the mention of alternative birth methods, where the intervention group improved from 4(100%) to 108(69.2%), while the control group 0% at baseline and 9.4%.Comparing intervention and control group at endline,intervention group were able to mention alternative birthing positions more (69.2%) compared to control group(9.4%) ,with a chi-square = 39.1, $p < 0.001$.

The intervention group utilized alternative positions significantly more,(from 6.7% to 68.5% at endline) compared to the control group (5.3% to 10.7% in endline).Comparing the intervientionn group and control group at endline ,the inrvention group utilized alternative birth position significantly more(at 68.5%) than control group (10.7%),with a chi-square value of 168.3 and a p-value < 0.001. Education on alternative birth position is significant as shown by ($\chi 2$=168.3, p=0.001 < 0.05). This shows that the education program designed has a significant influence on utilization of' alternative birthing positions among parturient women.

Table 4.3 Effect of educational program on uptake of alternative birthing positions during second stage of labour in the intervention and control sites at baseline and end-line

Variable	Group	n	Baseline survey					Endline survey			
			Alternative	Lithotomy	χ2	P value	n	Alternative	Lithotomy	χ2	P value
No. of ANC visits (3 or more)	Intervention	135	8 (5.9)	127 (94.1)	2.37	0.16	238	163 (68.5)	75 (31.5)	152.8	**<0.0001**
	Control	73	1 (1.4)	72 (98.6)			211	23 (10.9)	188 (89.1)		
SVD	Intervention	238	16 (6.7)	222 (93.3)	0.93	0.33	232	159 (68.5)	73 (31.5)	150.9	**<0.0001**
	Control	236	11 (4.7)	225 (95.3)			210	23 (10.9)	187 (89.1)		
Knows any other birth position	Intervention	4	4 (100.0)	0 (0.0)			238	163 (68.5)	75 (31.5)	41.6	**<0.0001**
	Control	3	10 (0.0)	3 (100.0)			32	3 (9.4)	29 (90.6)		
Mentions alternative birth methods	Intervention	4	4 (100.0)	0 (0.0)			156	108 (69.2)	48 (30.8)	39.1	**<0.0001**
	Control	3	10 (0.0)	3 (100.0)			32	3 (9.4)	29 (90.6)		
Position used during second stage of labour	Intervention	238	16 (6.7)	222 (93.3)	0.40	0.53	238	163 (68.5)	75 (31.5)	168.3	**<0.0001**
	Control	243	13 (5.3)	230 (94.7)			243	26 (10.7)	217 (89.3)		

4.5 Objective 3-Effect of educational program on factor influencing uptake of alternative birth positions

Table 4.4 shows analysis of several variables, including age group, marital status, level of education, occupation, religion, parity, cultural beliefs, previous birthing

experiences, and the support received from healthcare providers. It also examines whether the necessary equipment was available to facilitate an alternative birth position. The results presents adjusted odds ratios (AOR) and 95% confidence intervals (CI) for each variable, along with corresponding p-values. The AORs range from 0.24 to 3.35, with varying levels of statistical significance.

Compared with the control group, the intervention group showed a significant increase in uptake of alternative birth position after controlling for socio-demographic characteristics of study participants (AOR = 26.27; 95%CI = 14.65 – 47.16; $p < 0.001$). Women under 30 years old were less likely to uptake alternative birth positions compared to those 30 and older (AOR = 0.72, 95% CI: 0.43 - 1.20), but this difference was not statistically significant (p = 0.213). Similarly, Women with no education or primary education were more likely to uptake alternative birth positions compared to those with secondary or tertiary education (AOR = 1.54, 95% CI: 0.49 - 4.85), but this difference was also not statistically significant (p = 0.461).Being married (AOR = 0.53; 95%CI = 0.30 – 0.93; p = 0.028) or being unemployed (housewives or farmers) (AOR = 0.56; 95%CI = 0.32 – 0.98; p = 0.044) significantly decreased uptake of alternative birth position after controlling for other confounders.

A comparison between the control and intervention group revealed a significant increase in the uptake of alternative birth position among the intervention group after controlling for individual and hospital factors (AOR = 3.86; 95%CI = 1.54 – 9.67; $p = 0.004$). The Parity (1 or 2 vs ≥ 3) had an AOR of 0.56, with a p-value of 0.302, indicating no significant association with the uptake of alternative birth position. Getting necessary equipment to aid in delivery in alternative birth position, equally significantly facilitated utilization of alternative birth position (AOR = 28.64; 95%CI

= 15.52 – 53.21; $p < 0.0001$). However, previous birthing experiences negatively influenced decision regarding birth positions (AOR = 0.40; 95%CI = 0.17 – 0.95; $p = 0.037$) after controlling for other confounders.

Table 4.4 Effect of educational program on factor associated with the uptake of alternative birth position

Effect	Variables	Estimate	AOR	95% CI	P value
Age group	< 30 vs ≥ 30 years	-0.32	0.72	0.43 – 1.20	0.213
Marital status	Married vs Single	-0.63	0.53	0.30 – 0.93	**0.028**
Level of education	None or Primary vs Secondary or Tertiary	0.43	1.54	0.49 – 4.85	0.461
Occupation	Housewife or Farmer vs Employed	-0.57	0.56	0.32 – 0.98	**0.044**
Religion	Catholic vs Others	-0.24	0.79	0.30 – 2.05	0.627
Parity	1 or 2 vs ≥ 3	-0.26	0.77	0.47 – 1.26	0.302
Cultural beliefs influenced decision to take up alternative birth position	Yes vs No	-0.38	0.69	0.28 – 1.66	0.405
Previous birthing experiences influenced decision regarding birth positions	Yes vs No	-0.92	0.40	0.17 – 0.95	**0.037**
Was supported to use the position chosen by the midwife / health care provider	Yes vs No	-0.54	0.58	0.26 – 1.30	0.187
Got the necessary equipment to aid in delivery in alternative birth position	Yes vs No	3.35	28.64	15.42 – 53.21	**< 0.0001**
Treatment	Intervention vs Control	3.27	26.27	14.64 – 47.16	**< 0. 0001**

From FGD four of the mothers among intervention group responded that;

"I was supported by midwife to choose and use other position during second stage of labor other than lying on the back.Bed and support for delivery was available".(mother no.6 ,mother no.8,&mother 3 intervention grp)

"I chose alternative birth position because I didn't want to take longer time to deliver,to get perineal tear and loose a lot of blood. Idint also want my baby to get problems."(mother no.4,mother no5,& mother no8 intervention group)

Increased in knowledge on alternative birth position among parturient women after educational program was shown on FGD,

'Education on alternative birth position helped me to know other birthing position other lying on the back. I was also given chance to choose other positions apart from which i assume when I was delivering'.(Mother no.2, mother no3 & mother no 4 in intervention group)

4.5 Objective 4-Effect of educational program on birth outcomes

The components that were statistically significant were, term deliveries (≥37 weeks) were observed in the intervention group (53.7%) compared to the control group (46.3%), with a significant $\chi 2$ value (32.7) and a p-value < 0.0001, spontaneous vaginal deliveries without assistance (56.0%) than the control group (44.0%), with a significant $\chi 2$ value (47.4) and a p-value < 0.0001. Spontaneous labor was also more common in the intervention group (51.0%) than in the control group (49.0%), with a significant $\chi 2$ value (4.6) and a p-value of 0.032.

intact perineums (62.1%) and a lower rate of episiotomies (4.7%) compared to the control group, with significant $\chi 2$ values (96.4 and 306.7, respectively) and p-values < 0.0001. The intervention group had a higher rate of blood loss less than 500ml (53.6%) than the control group (46.4%), with a significant $\chi 2$ value (27.1) and a p-value < 0.0001. The intervention group had a lower rate of augmentation during the second stage of labor (28.6%) than the control group (71.4%), with a significant $\chi 2$ value (6.6) and a p-value of 0.010.

The intervention group had a significantly shorter mean duration of the second stage of labor (18.9 minutes) compared to the control group (62.1 minutes), with a significant t-test value (-18.8) and a p-value < 0.0001.

The intervention group had a higher rate of 1st Minute APGAR scores ≥7 (57.4%) than the control group (42.6%), with a significant $\chi 2$ value (20.8) and a p-value < 0.0001. However, the 5th and 10th Minute APGAR scores showed no significant difference between the groups. No significant differences were found between the groups in terms of NICU admissions or reasons for admission.

Table 4.5 Effect of educational program on alternative birthing positions on maternal and neonatal outcomes

Variables	Categories	Total (%)	Intervention n=238 (%)	Control n=243 (%)	χ^2	P value
Gestational age during delivery	≥37	436	234 (53.7)	202 (46.3)	32.7	< 0.0001
	< 37 or > 40	45	4 (8.9)	41 (91.1)		
Assisted Vaginal Delivery	None	411	230 (56.0)	181 (44.0)	47.4	< 0.0001
	Vacuum or Forceps delivery	70	8 (11.4)	62 (88.6)		
Onset of labour	Spontaneous	437	223 (51.0)	214 (49.0)	4.6	0.032
	Induced	44	15 (34.1)	29 (65.9)		
Perineal Outcomes	Intact	356	221 (62.1)	135 (37.9)	96.4	**< 0.0001**
	1st degree tear	105	8 (7.6)	97 (92.4)		
	2nd or more degree tear	20	9 (45.0)	11 (55.0)		
Episiotomy	Yes	213	10 (4.7)	203 (95.3)	306.7	< **0.000**1
	No	268	228 (85.1)	40 (14.9)		
Amount of blood loss	<500ml	429	230 (53.6)	199 (46.4)	27.1	< **0.000**1
	≥500mls	52	8 (15.4)	44 (84.6)		
Augmentation of labour during second stage	Yes	35	10 (28.6)	25 (71.4)	6.6	0.010
	No	446	228 (51.1)	218 (48.9)		
Duration of 2nd stage of labour in Min (Mean±SD (Range)			18.9±14.4 (17.1 – 20.8)#	62.1±32.5 (58.0 – 66.2)	-18.8*	< 0.0001
1st Minute APGAR Score	≥7	305	175 (57.4)	130 (42.6)	20.8	**< 0.0001**
	<7	176	63 (35.8)	113 (64.2)		
5th Minute APGAR Score	≥7	340	175 (51.5)	165 (48.5)	1.8	0.175
	<7	141	63 (44.7)	78 (55.3)		
10th Minute APGAR Score	≥7	447	222 (49.7)	225 (50.3)	0.08	0.78
	<7	34	16 (47.1)	18 (52.9)		
Administration of oxygen	Yes	32	14 (43.7)	18 (56.2)	0.45	0.50
	No	449	224 (49.9)	225 (50.1)		
Admission in NIBU	Yes	32	14 (43.7)	18 (56.2)	0.45	0.50
	No	449	224 (49.9)	225 (50.1)		
Reasons for admission in NIBU	Birth asphyxia	23	9 (39.1)	14 (60.9)	1.15	0.56
	Respiratory Distress Syndrome	9	5 (55.6)	4 (44.4)		
	Not admitted	449	224 (49.9)	225 (50.1)		

#Confidence Level
*t test

CHAPTER FIVE

DISCUSSION

5.1 Overview

In this chapter, the results are discussed starting with a general overview of the key findings paraphrased in the introduction, then participant characteristics are explored in the context of previous studies. Further, the findings on the uptake of alternative birth position, factors associated with the uptake of alternative birth position and birth outcomes among parturient women are discussed in relation to other studies conducted in various settings.

5.2 Introduction

This was quasi experimental involving 481 participants to evaluate the effectiveness of educational programme on uptake of alternative birth position among parturient women. The study had two arms: intervention and control .The intervention and control groups were similar in most socio-demographic characteristics, except for level of education and occupation, which showed significant differences between the two groups. The homogeneity of most sociodemographic factors might be because all parturient women was within reproductive age and residing from the same geographical area.

5.3 Baseline survey on use of birthing position during second stage of labour

The baseline results indicated that the intervention and control groups were well-matched of the findings, the similarity of the baseline results was because both group had not undergoes educational program.

The predominance of SVD in both groups suggests a favorable obstetric outcome, aligning with trends observed in low-risk populations where spontaneous deliveries

are encouraged. The study also found that lithotomy was the most frequently used position .This aligns with other studies indicating that lithotomy remains a standard position in many healthcare settings despite evidence supporting alternative positions like squatting or all four.(Agunda,2022,kituku *et al* .,2019 Berta et al.,2019).The study also found out that perineal tears, prolong labor and neonate not cry immediately after birth as the main maternal and neonatal complication in baseline which was supported by the study done by Berta *et al.,*2019 and Mutinda *et al*., 2021.These suggested that lithotomy position which was mostly used had similar outcomes.

Limited awareness of alternative birthing positions from the results was similar with the findings from the study done by Matsuzaki , *et al*.,(2024) which was echoed in other researches showing that pregnant women lack knowledge about non-lithotomy positions (Agunda,2022,kituku *et al* .,2019), these reflection of knowledge gap on alternative birthing positions among parturient women necessitated educational programme.

5.4 Utilization of the alternative birth positions

Utilization of alternative birthing position was low in both groups in baseline, most of the Parturient women was not aware of alternative birth position, the findings was similar with the results of Habeeb S, Chhugani M (2022) **o**n their study of Awareness of Alternative Birthing Positions among Parturient Mothers, they demonstrated that most of the mothers was not aware of other position other than lithotomy position ,they need education and support. The current study elucidated a strong relationship between educational program and utilization of alternative birth position where by being educated on alternative birth position prenatally increased the uptake of alternative birth position during second stage of labour. The findings

was supported by a study done in India by Modi *et al*., 2023 which found out that when women are informed and educated on alternative position they are in a better place to adopt options of alternative birth position during second stage of labour.This proposes that individuals who received education on alternative birth position during pregnancy were more likely to be aware of the benefits of alternative birth position thus, more motivated to take a steps and utilize them during delivery. Equally a study done by Mselle & Eustace, 2020 in south Africa found out that women who are educated about the options and supported with unbiased information on alternative birth positions, will improves significantly the adoption of alternative positions. In contrary,Yadav et al.,in their study of Exploring the perspective of nursing staffs or care givers on birthing position in central india found out that found out that there were no difference between educating women on alternative birthing position and uptake ,this could be due to small sample sized used.The knowledge of alternative birth position might be due to diversity in culture which allow women to delivered with different birthing positions which are allowed and supported by culture.

Increased Antenatal visit was also recorded in the current study among parturient women in intervention group.The finding were consistent with the result of McLellan *et al*.,(2021) who found out that pregnant women attend ANC more when they are provided with education during antenatal clinic on birth position for preparation of labor(McLellan, *et al*.2021) . This could be due to close monitoring of parturient women and they were eager to learn which make them to attend clinic more times than control group

Most Parturient women in intervention group had spontaneous vaginal delivery. Alternative birth position widen the pelvic outlet, and facilitating the fetal descent

hence promote spontaneous vaginal delivery. The findings are supported by studies done by Berta *et al*.,2019,Healy *et al*.,2020,Modi *et al*., 2023 in which they found out that alternative birth positions increases spontaneous vaginal delivery.

5.5 Effect of educational program on factors influencing the uptake of alternative birth positions

Factors influencing the decision to use alternative birth positions and the effect of an educational program on this decision was assessed, included: socio-demographic factors, Past delivery experiences, culture, support by health care providers and availability of resources. The findings from the study indicate a significant increase in the utiliztion of alternative birth positions among participants in the intervention group compared to the control group, which aligns with previous research that emphasizes the importance of targeted interventions in enhancing uptake of alternative birth position (Borer and Dubovi, 2023,Modi et al., 2023).

Sociodemographic factors, age, marital status, level of education, occupation, religion and parity were assessed on how they may influence individual uptake of alternative birth position. Marital status and employment status emerged as significant factors influencing the uptake of alternative birth positions. Single parturient women were more likely to adopt alternative birth position than their married counterpart, This finding resonates with existing literature that discusses how marital status can influence health behaviors and decisions during pregnancy, with married women often adhering to more traditional birthing practices due to societal expectations (Niu *et al*., 2021).This is also echoed in the qualitative study by Eide *et al*., 2019, which explored maternal motivations for choosing birthing position and highlighted the psychological factors influencing women's birth preferences,they found out that single women taking up birthing position more

compared with married women (Eide *et al*., 2019).This possibly due to single women may be more open to new approaches and they are sole decision makers while married parturient women could be due to cultural affiliations and may be they are not key decision makers on their own health choices.The finding contrast with the study by Zang *et al*., 2020 who found out that married women can take up birth position more than single women(Zang *et al*., 2020),This could be due to difference in culture and norms. Being unemployed (housewives or farmers) were associated with decreased likelihood of utilizing alternative positions. The lower uptake among housewives and farmers compared to employed women aligns studies done by Niu *et al*., 2021(Niu *et al*., 2021),This show that employment and economic empowerment are associated with greater use of maternal health services and more informed decision-making (Niu *et al*., 2021). Contrary to the study by Agunda,2022 who had no difference in sociodemographic between two groups.This could be due to that the study was conducted in a relatively homogeneous population where sociodemographic characteristics do not vary widely, making it difficult to detect differences.

The lack of significant findings related to age and education in the current study contrasts with studies that suggests younger, more educated women are more likely to adopt alternative practices. A studies by Hinton *et al*.,(2018),Sanders &Crozier (2018), indicated that younger mothers were more inclined to seek out information on alternative birthing methods(Hinton *et al*.,2018 ;Sanders & Crozier,2018). This discrepancy may be due to cultural differences or varying levels of access to educational resources in different populations.

Previous birthing experiences significantly influenced decisions, with women less likely to adopt alternative positions if their previous experiences influenced them

negatively . A qualitative study by Downe *et al*. (2018) found out that women's previous birth experiences significantly shape their preferences and choices in subsequent pregnancies.Similarly, meta-synthesis that identified various factors affecting women's choices, including cultural beliefs and previous negative experiences with healthcare systems influences future experiences with the uptake of care (Shorey et al., 2021).This finding also aligns with research that indicates how past experiences can shape women's perceptions and choices in subsequent pregnancies, often leading to a preference for familiar and perceived safer options (Mustefa & Belay, 2021).This showed that previous birthing position influence parturient women negatively or positively depending on previous experience with birthing position used.

Additionally, the study found that access to necessary resources to aid in delivery on alternative birthing position significantly facilitated the utilization of alternative birth positions , which underscores the importance of resource availability in shaping maternal health choices (Beydağ & Dal, 2023).However, there was no statistical differences in the support by the midwifes and health care providers

5.3 Effect of educational program on birth outcomes

The results indicate that the intervention group experienced a higher percentage of term deliveries , spontaneous vaginal deliveries without assistance , and a greater occurrence of spontaneous labor . These findings are consistent with the findings of Mtatina et al. (2022) and Fu et al (2023) who demonstrated that upright positions increases occurrence of spontaneous delivery and decreases assisted deliveries.This is attributed to the fact that upright position hasten labor and prevent complications. Uka, 2023 also points out that use of alternative birth positions lowers rates of operative interventions like cesarean sections (Uka, 2023). Moreover, the

intervention group demonstrated a significantly higher rate of intact perineum , a lower rate of episiotomies and a higher percentage of blood loss less than 500ml.This aligns with findings from studies done by Fu et al (2023), and Ganapathy et al 2023 that alternative birth position adoption reduces rates of episiotomies, increases chances of intact perineums and reduces Postpartum haemorrhage. Alternative birth positions during second stage of labor has been found to preserve perineal integrity and reduces increase blood loss. Conversely, Agunda 2022,found not statistical difference between the two groups, This could have been due to observer bias and quality of intrapartum care. Furthermore, the intervention group exhibited a lower rate of augmentation during the second stage of labor and a notably shorter mean duration of the second stage , which supports the hypothesis that alternative positions can facilitate a more efficient labor process. the findings corroborate with the studies which found out that adoption of alternative birth positions reduces the length of second stage and facilitate natural labor process without augmentation (Modi *et al*., 2023; Berta *et al*., 2019, Ganapathy et al 2023,Fu *et al .,*2023).This could be due to widening of pelvic outlet when parturient women assume alternative birthing position,it also aid in gravity,and reduces pressure on the perineum hence improves overrally maternal outcomes.

The higher rates of 1st Minute APGAR scores ≥7 in the intervention group further indicate improved neonatal outcomes, although the 5th and 10th Minute APGAR scores did not show significant differences. This finding resonates with the Modi *et al*., 2023 and Mtatina *et al*., 2022, who demonstrated upright positions lead to increased APGAR scores at the 1st minute. However, there was no significant difference between the two groups in the 5th and 10th Minute APGAR scores and NICU admissions agrees with the study by Agunda 2022.Similarly

Barrowclough,2022 found out no significant on the adoption of alternative and those who used supine birth position(Modi *et al*., 2023, Mtatina *et al*., 2022, Modi *et al*., 2023 and Mtatina *et al*., 2022,Barrowclough,2022)

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter presents the conclusion and recommendations of the study guided by the specific objectives.

6.2 Conclusion

6.2.1 Baseline on birth position

The study underscores significant gaps in knowledge regarding alternative birthing positions and their potential benefits. The findings resonate with broader trends observed in recent literature, emphasizing the importance of education and support for women during pregnancy and childbirth to optimize both maternal and neonatal outcomes.

6.2.1 utilization of alternative birthing position

The study showed that educating Parturient women during prenatal visits increases the knowledge on alternative birth positions and in turn improves the utilization of alternative birth positions during second stage of labour.

6.2.2 Effect of educational program on factors influencing the uptake of alternative birth position

The study concludes that marital status, occupation, previous birthing experiences, availability of resources, and educational interventions are critical factors influencing the uptake of alternative birth positions. These findings underscore the importance of providing resources and support to women, particularly through educational initiatives will encourage the adoption of alternative birthing positrions

6.2.2 Effect of educational on the birth outcomes

The study found out that an educational program on alternative birth positions during the second stage of labor leads to improved maternal and neonatal outcomes.By empowering parturient women on alternative birth positions during second stage will enable them to make inform choice and enhance the overall positive birth outcomes.

6.3 Recommendations

Based on conclusion of this study, the following recommendation are made

Ministry of health and county health departments to implement alternative birthing position educational program by incorporating into routine prenatal care to ensure that all parturient women have access to information on alternative birthing positions

Health care providers to provide comprehensive education to parturient women prenatally regarding alternative birthing positions and their benefits,to improve utilization during second of labor

Health systems and department of health services to provide resources to aid in utilization of alternative birth position

Health care providers to support parturient women to utilize alternative birthing position to improve maternal and neonatal outcomes

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APPENDIX I: COPY OF THE CONSENT FORM FOR PARTICIPANTS

My name is Wilfrida Bore,

I am undertaking a study on effect of maternal positions on perineal outcome in second stage of labour at Kakamega and Bungoma Counties, in Western Region, Kenya. The study is performed as partial fulfillment of the requirements for the Doctor of Philosophy degree of Masinde Muliro University of Science and Technology (MMUST) under the supervision of Dr. Mary Kipmerewo and Tecla Sum, School of Nursing, Midwifery and Paramedical Sciences.

General information

I am asking for permission from you to participate in this study. Please read (or have it read to you) this consent form carefully. Participation into this study is voluntary and you are free to or not accept to participate. There will be no form of rewards or payments to be given to the participants. Your services in the hospital will not be affected in any way by choosing to or not to participate. All the information you will give us will be treated with confidentiality and no names will be written on any form. You will also be asked to sign or thumb print in front of a witness to show that you have accepted by your own choice to take part in the study. This form may contain unfamiliar words; therefore, you may ask us to explain anything you cannot understand.

How to do the study: The participants into this study are mothers from Labour ward at KCTRH/BUNGOMA They are supposed to have delivered through spontaneous vagina Delivery (SVD) on supine or non-supine position and their perineum's

examined by the midwives. After consenting to be included into the study, Questions will be asked about yourself, your last pregnancy and your perineum integrity report recorded.

Risks and benefits: There are no expected risks in this study because there are no drugs to be given, no samples to be taken. There are no payments or any refund to be given as the interview will be conducted during normal delivery periods. The results of this study can be used by policy makers to improve on maternal health care.

I, participant number _____having been informed about the study/having read all the above and understand all what it entails, do willfully without coercion consent to participate in the study.

Participant signature/Thumb print. _____Date _____

Researcher /Research Assistant signature _____Date_____

In case of any question(s) or further information the following can be contacted:

Principal Investigator

1. Wilfrida Chemutai Bore Mobile No. 0723 309 716

Co Principlal Investigators

1. Dr. Mary Kipmerewo Mobile No. 0722 797 865
2. Dr. Tecla Sum Mobile No. 0723 308 025

CONSENT FORM - KISWAHILI VERSION

Mpelelezi

Wilfrida Bore, ni mwanafunzi wa kuhitimu katika Chuo MASINDE MULIRO UNIVERSITY . Ninafanya utafiti huu uliyotajwa hapo juu kama sehemu ya kutimiza tuzo ya digrii ya PHD in Nursing katika Chuo Kikuu cha MMUST.

Mawasiliano:

Nambari ya simu: 0723309716

Barua pepe: wilfrich@gmail.com

Anwani ya posta P.O.Box 190 - 50100, KAKAMEGA.

Msimamizi Mkuu,

LENGO LA UPELELEZI

Kulinganisha matokeo ya kujifungua kati ya wahusika wanaotumia mkao wa all fours' ampapo unapiga magoti na kujishikilia kwenye kitanda na mikono dhidi ya mkao wa lithotomy unalala kwa mgongo miguu ikiwa imewekelewa kwenye vitu vya kuwekelea miguu wakati wa kujigungua katika Hospitali ya Kitaifa ya Kenyatta

UTARATIBU WA UPELELEZI

Utaandikishwa kwenye upelelezi mara tu utakapotimiza vigezo vya ustahiki. Baada ya kutupa idhini, utasambazwa katika all fours' ama lithotomy. Takwimu zako za kijamii zitajazwa wakati huu.

Mpelelezi mkuu au wasaidizi wake watakufunza juu kuhusu kile unachohitaji wakati wa kujifungua.

Wasaidizi wa utafiti ambao ni wakunga waliosomea hii kazi, watakusaidia wakati wa kujifungua.

Watachukua habari kuhusu utunzaji wako wa ujauzito na uwasilishaji kupitia mahojiano, uchunguzi

na kuchunguza maandishi muhimu katika rekodi zako za matibabu (kijitabu cha ANC na faili).

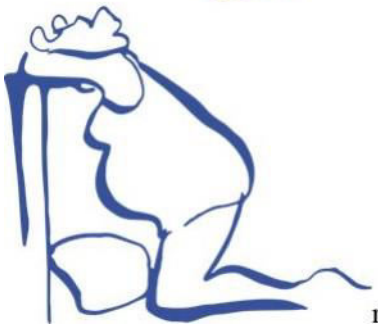
Watakuuliza kuhusu maoni yako katika njia uliotumia kujifungua.



mkao wa



lithotomy



mkao wa

mkao wa all fours'

FAIDA YA UPELELEZI

Utafiti huu hautakufaidi kifedha lakini matokeo yatatoa taarifa ambayo itatumika kutoa mwongozo juu ya njia za kujifungua kwa wajawazito katika siku zijazo.

UCHAGUZI NA DHIBITISHO

Wafanyikazi wa upelelezi, watakuelezea taratibu za utafiti kwa lugha ya Kiswahili au Kiingereza, watatoa habari iliyoandikwa wakati unaofaa na kuomba udhibitishe kwa njia ya uandishi kabla ya kuanza utafiti.

ATHARI KUTOKANA NA UPELELEZI

Hatari zinazoweza kutokea katika upelelezi huu ni kama yale ya kawaida katika hali ya kujifungua. Uzalishaji utafanyw na wasaidizi wa hii upelelezi ambao ni wakunga walioisomea hii kazi. Wakunga watakuwepo wakati wote wa mchakato wako wa kujifungua. Hakutakuwa na gharama ya ziada kwako kwa kushiriki katika utafiti. Hakutakuwa na faida za moja kwa moja za fedha kwa mhusika yeyote kwenye utafiti huu hata hivyo ikiwa inahitajika uingiliaji wa haraka na matibabu yatafanywa kama inafaa.

SIRI

Wakati wa ukusanyaji wa habari zako, jina lako halitarekodiwa kwenye zana zetu za

ukusanyaji wa data. Nambari za Siri zitatumika kama kitambulisho. Habari unayotupatia

haitatumika kwa madhumuni mengine yoyote mbali na utafiti huu.

WALIO CHINI YA UMRI

Wajawazito waliyo na miaka 14 kurudi nyuma hawataruhusiwa kushiriki kwenye utafiti. Huku Kenya, wajawazito kati ya miaka 14 hadi 18 hawanaruhusiwi kisheria kutoa idhini. Hawa watapewa idhini aidha na wazazi au walezi wake baada ya kuwaeleza kuhusu utafiti. Wajawazito hawa pia wanafaa kukubali kuwa katika upelelezi.

USHIRIKIANO WA KUJITOLEA NA KUTOKA KWA UPELELEZI

Ushirikiano ni kwa hiari na uko na huru ya kujiondoa kutoka kwa upelelezi wakati wowote.

Kukataa kutoa idhini au kujiondoa kwenye upelelezi hautakuzuia kupata matibabu unayohitaji.

UFUATILIAJI

Hakuna ufuatiliaji unaohitajika baada ya kushiriki katika utafiti. Walakini uchunguzi wa kawaida kwenye kliniki baada ya kuzaa utashauriwa.

ETHICAL APPROVAL

Utafiti huu umepitiwa na kupitishwa na Kamati ya Maadili na Utafiti ya MMUST/KCG/BGM.

Ikiwa unahitaji ufafanuzi zaidi kuhusu utafiti huu tafadhali jisikie huru kuwasiliana na mtafiti mkuu:

Wilfrida Bore mnamo 0723309716, Chuo Kikuu cha MMUST, barua pepe:

wilfrich@gmail.com, anuani ya posta: P.O.Box 190-50100, Kakamega.

Ninathibitisha kwamba nimeeleza kikamilifu utafiti huu na kuchukua idhini ya kushiriki katika

upelelezi huu kutoka kwa mshirika.

Msaidizi wa utafiti wa saini / mpelelezi

Waanzilishi . _____ Tarehe .

Nimeelezewa juu ya utafiti na ninakubali chemchem. Sijalazimishwa au kuvutiwa kwa njiayoyote.

Awali ya mshirika. . ...…….

Sahihi au kidole cha mshirika.....……...Tarehe.. . .. .

Awali ya shahidi.... Tarehe...…….

APPENDIX II: COPY OF THE CONSENT FOR THE MIDWIVES

My name is **Wilfrida Bore**

I am undertaking a study the effect of maternal birth positions on birth outcomes at the second stage of labor at Kakamega and Bungoma Counties, in Western Region, Kenya. The study is performed as partial fulfillment of the requirements for the Doctor of Philosophy degree of Masinde Muliro University of Science and Technology (MMUST) under the supervision of Dr. Mary Kipmerewo and Dr. Tecla Sum, School of Nursing, Midwifery and Paramedical Sciences.

Your participation in this study will provide useful information and enhanced understanding of this topic. You qualify for participation because you are a midwife working at the midwifery department. You have also shown interest and following the interview you were identified as Research assistant. You will be required to participate in the process, starting from taking part in answering questions before training of the research assistance. Thereafter participate in facilitation of the research process which includes taking the participants through the consent following ethical considerations and perform assessed maternal perineum after delivery on supine and non-supine positions. Participation in this study is strictly voluntary. You may withdraw from the study at any point without penalty. All data from this study are confidential and will be used for research purposes only. There is minimal to no risk to participants in this study. If you have questions at any time during your participation, please contact me or MMUST. If you have concerns, please feel free to decline from participation at any point in this project. By signing this consent form, you are agreeing that you have read, or it has been read to you,

and you fully understand the contents of this document and you are openly willing to consent to take part in this study.

Thank you for your assistance in this research study.

Wilfrida Bore **0723309716**

Name (Please Tick) ----------

Signature of Researcher---------- date----------

APPENDIX III: QUESTIONNAIRES

EFFECTIVENESS OF EDUCATIONAL PROGRAM ON UTILIZATION OF ALTERNATIVE BIRTH POSITIONS DURING SECOND STAGE OF LABOUR AMONG PARTURIENTWOMEN IN WESTERN KENYA

(To Be Filled By the Research Assistants and/or the Principal Investigator as Required)

Patient Initials…..……..…… County: ……. Code No: ……				
No	**Questions and Filters**	**Coding of Variables**	**Office Use**	**Remarks**
SECTION A: SOCIO-DEMOGRAPHIC DATA				
1	County	1 = Kakamega 2 = Bungoma		
2	Code No	1 = 1 2 = 2		
3	Age (Years)			
4	Marital status	1 = Single 2 = Married 3 = Separated 4 = Widow 5 = Divorced 4 = Others		
5	Level of Education	1 = Primary 2 = Secondary 3 = Tertiary 4 = None		
6	Occupation	1 = House wife 2 = Farmer 3 = Employed 4 = Business 5 = Student		
7	Religion	1 = Catholic 2 = Protestant 3 = Muslim 4 = Atheist 5 = Others		
8	Parity	1 = 1 2 = 2 3 = 3 4 = 4 5 = >4		
SECTION B: PAST DELIVERY HISTORY(BASELINE)				
9	Last mode of delivery	1 = SVD 2 = Caesarean Section 3 = Assisted vaginal delivery		

		4 = N/A		
11	Which birth position did you use during last delivery?	1 = Squatting 2 = Kneeling 3 = Side lying/Lateral 4 = All fours 5 = Lithotomy 6 = N/A 7 = Other (Specify)…		
12	Do you know any other position you can use in second stage?	1 = Yes 2 = No		
13	If yes, which ones?	1 = Squatting 2 = Kneeling 3 = Lateral/Sidelying 4 = All fours 5 = Lithotomy 6 = N/A 7 = Other (Specify)…		
14	Where did you get information on birth positions?	1 = Health Care Provider 2 = Friends 3 = Internet 4 = Relatives 5 = N/A		
15	Did you have any Maternal Complications during last delivery?	1 = None 2 = Perineal Tears 3 = Prolong Second stage 4 = N/A 5 = Other (Specify)…		
16	What complications did your baby had during your last delivery?	1 = Not Cried Immediately 2 = Difficulty in breathing 3 = Birth Injury 4 = N/A 5 = None 6 = Other (Specify)…		
17	Gestation during previous pregnancy	1 = Premature 2 = Term 3 = Postdates 4 = N/A		
18	Neonate Birth weight	1 = <2.5 Kgs 2 = ≥2.5-4 Kgs 3 = >4 Kgs 4 = N/A		
SECTION C: UPTAKE OF ALTERNATIVE BIRTH POSITION				
19	How many antenatal visits did you attended	1 = Once 2 = Twice 3 = Thrice 4 = More than four 5 = None		
20	Were you taught on delivery plan	1 = Yes 2 = No		

22	Did the education on alternative birth position influence your decision to use alternative birth positions	1 = Yes 2 = No 3 = N/A		
23	Which position did you used during the second stage of labor?	1 = Squatting 2 = Kneeling 3 = Side Lying/Lateral 4 = All fours 5 = Lithotomy 6 = Other (Specify)….		
SECTION D: FACTORS INFLUENCING USE OF ALTERNATIVE BIRTH POSITION				
INDIVIDUAL FACTORS				
24	Did your cultural beliefs influence you to take up of alternative birth position?	1 = Yes 2 = No		
25	Did previous birthing experiences influence your decision regarding birth positions?	1 = Yes 2 = No 3 = N/A		
HOSPITAL FACTORS				
26	Were you supported to use the position you choose by the midwife/ Health care provider?	1 = Yes 2 = No 3 = N/A		
27	Did you get the necessary equipment to aid in delivery in alternative birth position	1 = Yes 2 = No		

1. Maternal feedback on use of alternative birth position

Tick the box below the response choice that best corresponds to your opinion

#	**Questions/Statements**	**5 = Totally Agree**	**4 = Agree**	**3 = Neutral**	**2 = Disagree**	**1 = Totally Disagree**
1	Alternative birth position was helpful.					
2	Bearing down was easier					
3	Birth position more comfortable as compared to previous childbirth experience.					
4	Duration of labour was shortened.					
5	Will you use the same alternative birth position during second delivery?					

6	Will you recommend another person to use alternative birth position you used.					

APPENDIX IV: CHECKLIST

BIRTH OUTCOME CHECKLIST

CLIENT NO:			
NO.			**TICK (√)**
MATERNAL OUTCOME			
1	Gestation during delivery	1 = <37	
		2 = ≥37	
		3 = >40	
2	Assisted Vaginal Delivery	1 = Vacuum Delivery 2 = Forceps Delivery 3 = None	
3	Onset of labour	1 = Spontaneous 2 = Induced	
4	Perineal Outcomes:	1 = Intact	
		2 = 1st Degree	
		3 = 2nd Degree	
		4 = 3rd Degree	
		5 = 4th Degree	
		6 = N/A	
5	Episiotomy	1 = Yes 2 = No	
6	Amount of blood loss	1 = <500ml 2 = ≥500mls	
7	Augmentation of labour during second stage	1 = Yes 2 = No	
8	Duration of Second Stage of Labour (Minutes)		
FETAL OUTCOME			
9	APGAR Score		
	1st Minute	1 = ≥7 2 = <7	
	5th Minute	1 = ≥ 7 2 = <7	
	10th Minute	1 = ≥ 7 2 = <7	
10	Administration of oxygen	1 = Yes 2 = No	
11	Neonatal admission to new born unit	1 = Yes 2 = No	
12	If yes to Q: 5 Indicate reason for admission	1 = Birth Asphyxia	
		2 = Respiratory Distress Syndrome	
		3 = Birth Injury	
		4 = N/A	
		5 = Other…..	

APPENDIX V: FOCUS GROUP DISCUSSION INTERVIEW GUIDE

START TAPE RECORDER

My name is……and am facilitating the FGD on factor influencing the utilization of alternative birth position.

We would like to know and share the experiences you went through during delivery with chosen alternative birthing position in this facility

Component	Main questions	Probing questions	Notes
THEME:Delivery experience SUB THEME 1: Support	How were you supported in second stage of labor on birth position used?	Describe how you were supported in second stage of labor on birth position used? • Did it happened as you expected? • Were you happy or unhappy? • Do you have positive/negative memories on the support by healthcare provider?	
SUB THEME2:.Birthing position	How did you choose birthing position in second stage?	• Were you satisfied with the position you delivered in? • How do you feel about alternative birth positon used? • How was education concerning alternative birthing position?	
THEME:Cultural believe on birthing position	How does your culture influenced you in choosing alternative birthing position?	• Were you influenced by culture to take up alternative birthing position?	
THEME:Health system constraints Sub themes 1.lack of resuorce 2.skills of health care providers	How did you feel about resources in the facility? How was the quality of care provided to you during delivery?	• Were the resources adequate in the facility (gloves, drugs, beds, space, infrastructure) • How did the providers give care to you, did you feel they had the needed skills?	

Anything else you would like to say. Thank you

APPENDIX VI: Training Timetable

Activity	**Training Research assisstance**		
Venue:	**Hospital board room**		
Date:	**22.02.2024**		
Activity	**Sub-Activities**	**Time**	**Responsible Person**
Introduction	Prayer	2 Min	Volunteer
	Select a rapporteur	1 Min	Bore
	Learner expectation	5 Min	Bore
	Pretest	20 Min	Bore
	Study title	10 Min	Bore
	Statement of the problem		Bore
	Justification of the research		Bore
	Materials and methods		Bore
Study Tools	Study tools	30 Min	Bore
	Consenting		Bore
	Fill blank forms for each of the tools		Bore
Alternative birth positions	Types of alternative birth positions	30 Min	Bore
	Importance of ABP		Bore
	Delivery in various alternative birthing positions		Bore
Conclusion	Recap of lesson	5 Min	Bore
	Post test	15 Min	Bore
	Closure	5 Min	Bore

APPENDIX VII: LESSON PLAN

Broad objective: Teach research assisstance

Specific Objectives:

1. Learners can outline relevant expectations
2. The learner will be able to summarize the research methodology in their own words
3. The learner will be able to list the tools used in the study
4. The learner will be able to list the study routines
5. The learner will demonstrate understanding of eligibility criteria of alternative birth positions and improve in their pretest scores in the post test

Date: 22nd Feb 2024

Time	Topic	Subtopic	TEACHERS ACTION	LEARNERS ACTION	TEACHING AIDS
5 Min	Introduction	Learner expectation	Question & answer.	Questioning.	Zoom Whiteboard
20 Min		Pretest	Pretest	Submit their pretest answers	
10 Min		Study title Statement of the problem Justification of the research Materials and methods	Lecturing	Listening Questioning	Power point slides,
30 Min	Study Tools	-Study tools -Consenting -Fill blank forms for each of the tools	Demonstration	Reverse demonstration	Power point,paper demonstrations
30 Min		Types of alternative birth positions Importance of ABP Delivery in various alternative birthing positions Educational program	-Lecture -Brainstorming session. -Question & answer interlude.	-Listening -Questioning -Recap	-Power-point presentation. - Zoom platform
5 Min	Conclusion	-Recap of lesson	-Initiate a brain storming session. -Plenary session.	-Participating in teacher initiated sessions. -Questioning	-Power-point presentation.
15 Min		-Post test	Post the Post-test	Submit their post-test	
5 MINS		Closure	Role Clarification Adjournment	- Listening	-Prepared checklist

APPENDIX VII: LESSON PLAN FOR PARTURIENT WOMEN

Topic: Birthing Positions

Description/Overview: During labor, there are certain positions that can make the birthing process easier. Being upright, able to move around and free to change positions is better for the mother and her baby. As labor progresses, the baby is busy maneuvering through the birth canal and it helps if the body can respond to the changing sensations. Understanding these options and the benefits of different birth positions can help the mother feel more prepared.

Materials/Equipment: Visual aids (PowerPoint Presentation, Videos) Technical equipment (Laptop, Speakers, Projector) Assessment tool (Questionnaires) Leaflets.

General Objective: To introduce and discuss the different birthing positions that pregnant women could use to prepare for labor and delivery.

Objectives	Learning Content	Teaching Strategy	Time Allotment (In Minutes)	Evaluation and Assessment Tool
COGNITIVE: 1. To introduced briefly the relevance of birthing positions in the process of labor and delivery	Today, pregnant women can choose the position that makes the most comfortable, unless there is a medical reason not to. Many women find positions instinctively during labor and birth. You may also choose to practice some of the before you have your baby. It sis recommended that you walk, move and change positions frequently during the various stages of labor	Visual Presentation	10 Minute	Feedback Discussion
PSYCHOMOTOR: 1. To demonstrate the different birthing positions for the first stage of labor 2. To demonstrate the different birthing positions for the second stage of labor	• Standing • Sitting • Kneeling • Walking around • Four-point kneeling • Side-lying • Recumbent or semi-recumbent • Partial sitting/ Half lying • Sitting • Kneeling • Squatting • Lying on the side	Demonstration Demonstration	2 0Minutes 20 Minutes	Return Demonstration Return Demonstration

	• Four-point kneeling			
AFFECTIVE: 1. Clients will be able to appreciate the importance of knowing the different birthing positions 2. Mothers will be able to display and express preparedness on the labor and delivery process concerning birthing positions	Clients are encouraged to share their learnings and reflections Clients are encouraged to share their learnings and reflections. After the activity, they are to fill up a survey form for evaluation and assessment. Non – Upright positions • Four –point kneeling, in which the abdomen is hanging freely, and the hips are over the shoulders. Weight may be taken alternative between the hands and the forearms resting on a raised surface. This position has been found to be appropriate	Group Sharing Group Sharing	30Minutes 2 0Minutes	Feedback Discussion Feedback Discussion and Survey Forms

	for most women with epidural anesthesia. • Side-lying for rest, with pillows between the legs for comfort and • Recumbent or semi-recumbent, through the impact on blood supply to the baby needs to be taken into account			
3. To discuss the birthing positions for stage 2 labor	Positions for Stage 2 Labor The second stage is when your cervix is fully dilated and as your contractions happen. You'll push so your baby can move through and out of your vagina. Maintaining an upright position can open your pelvis and make it more comfortable for you to push. It can also help angle or tilt the pelvis to help the baby come down and lead to a faster birth. If you are in bed, you can still kneel or go on all fours. You can also sit, semi-	Visual Presentation and leaflets	20 Minute	Feedback Discussion

	recumbent, on the bed, or lie on your side with your top leg bent. If your baby is positioned facing your back (Posterior) or halfway between your back or front (lateral), being on your hands and knees can help, practically with back pain			
	Upright Positions • Partial siting/ half-lying; Trunk tilted backwards approximately thirty decrees to the vertical. Pillows may be behind the knees, arms and back. During contractions, the woman may brace by holding her knees and pulling up. The partner may sit behind the woman to assist with pulling her knees up. The benefits of the semi-sitting position is that the perineum can be easily visualized and			

	is accessible if necessary, though in one study this position was associated with an increased risk of perineal tears. • Sitting, such as on a toilet or birth stool, with the legs wide apart and leaning forwards with the arms supported on the thighs, or by a partner. • Kneeling, on the bed or floor, leaning against a large pile of pillows, or supported by a partner. Some women may feel more comfortable with one knee up, or • Squatting, supported by the partner behind or holding onto a bar. The woman should stand to rest between contractions. This may not be appropriate for women who have had			

	epidurals. Non-upright positions • Lying on the side, also known as the lateral. Or "Sims" position, with an attendant supporting the top leg. This is a good position when delivery is rapid, as it is gravity-neutral.			
	• Giving you less severe pain or backache • Reducing the likehood of a forceps or vacuum-assisted birth • Decreasing the chance of problems with the baby's heart rate • Helping to open your pelvis for the next stage **Upright position** • Standing: Leaning onto a benchtop or similar surface, or the back of a chair, or leaning on a partner with			

	hands around their neck or waist for contractions may be helpful some women find asymmetrical positions reduce discomfort, such as having one leg bent with the foot on a stool. • Sitting, usually with the legs wide apart, leaning forward with elbows on thighs, alternatively, straddling a chair, resting forward on pillows on the backrest, may be helpful, especially to relieve back pain. Again, asymmetrical positions may be helpful, with on leg up on the lounge and the other on the floor. Rocking chairs, or swaying with the bottom on a large ball, may provide comfort • Kneeling, possibly with a pillow			

	between the bottom and the feet and leaning forwards onto a bed (hospital's beds may have the head raised to lean against, beanbag or chair seat. • Walking around, although it is important that the woman conserves her energy, so taking rests regularly are encouraged.			

APPENDIX VII: EDUCATIONAL PROGRAM

Program Title:Educational Program on Alternative Birth Positions to parturient women

Empowering Birth: Teaching parturient women to utilized alternative birth position in second stage of labor

Program Overview:

This educational program is designed for parturient women, their partners, and healthcare providers involved in maternity care. It aims to provide comprehensive knowledge on alternative birth positions, their benefits, and how to integrate them into the birthing process. The program will cover the physiological aspects of labor, and the evidence supporting the use of alternative positions. It will also address common concerns and barriers to the adoption of these positions and offer practical strategies for implementation.

Learning Objectives:

By the end of this program, participants will be able to:

1. Understand the physiological principles of labor and how alternative positions can facilitate the birthing process.

2. Identify and describe various alternative birth positions and their potential benefits.

3. Discuss the evidence supporting the use of alternative birth positions for improving maternal and neonatal outcomes.

4. Recognize the barriers to adopting alternative birth positions and develop strategies to overcome them.

5. Create a supportive environment that encourages the use of alternative birth positions.

Program Content:

Session 1: Introduction to Labor and Birth Positions

- Overview of the birthing process

- Traditional versus alternative birth positions

Session 2: **Understanding Alternative Birth Positions**

- Detailed exploration of alternative positions (e.g., upright, squatting, hands-and-knees, side-lying)

- Demonstrations and practical exercises

- Benefits and considerations for each position

Session 3: **Evidence-Based Practice**

- Review of research on alternative birth positions

- Birth outcomes

- Comparison with traditional positions

Session 4: Overcoming Barriers and Facilitating Change

- Common concerns and misconceptions

- Strategies for healthcare providers to support alternative positions

- How to create a birth plan that includes preferred positions

Session 5: Creating a Supportive Environment

- The role of the birthing space and equipment

- Communication and collaboration between mothers, partners, and healthcare providers

- Cultural and personal considerations

Educational Methods:

- Lectures with visual aids (slides, videos)

- Interactive discussions

- Practical demonstrations and role-playing

- Group activities and sharing of experiences

- Handouts and resources for further reading

Evaluation:

Participants will be evaluated through:

- Pre- and post-program surveys to assess the utilization of alternative birth position

- Participation in discussions and practical sessions

- Feedback forms to evaluate the program's effectiveness and suggest improvements

Follow-Up:

- Access to additional resources and research updates

- Invitations to follow-up sessions or workshops

Conclusion:

By providing expectant mothers and their support systems with a comprehensive understanding of alternative birth positions, this educational program aims to empower women to take an active role in their labor experience, promoting a more comfortable and informed journey to motherhood

Empowering Birth: Exploring Alternative Positions for a Positive Birthing Experience" is designed to empower participants with the knowledge and skills to make informed choices about birth positions. By understanding the benefits and practicalities of alternative positions, expectant mothers and healthcare providers can work together to create a more positive and effective birthing experience.

APPENDIX VIII: APPROVAL LETTER FROM DPS

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

15th December 2023

Wilfrida Chemutai Bore,
HNR/H/01-53705/2019,
P.O. Box 190-50100,
KAKAMEGA.

Dear Ms. Bore,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Ph.D. Proposal entitled: ***"Effectiveness Of Educational Program On Utilization Of Alternative Birth Positions During Second Stage of Labour Among Pregnant Women In Western Kenya"*** and appointed the following as supervisors:

1. Prof. Mary Kipmerewo - SONMAPS, MMUST
2. Dr. Tecla Sum - SONMAPS, MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Nursing & Midwifery Graduate Studies Committee and Chairman, Department of Nursing Research, Education & Management and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of three years from the date of registration to complete your Ph.D. thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Prof Stephen Odebero, Ph.D, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

APPENDIX IX: APPROVAL LETTER FROM ISERC

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Scientific and Ethics Review Committee (ISERC)

REF: MMU/COR: 40312 Vol 6(01) Date: January 05th, 2024

To: Ms. Wilfrida Chemutai Bore

Dear Ms,

RE: EFFECTIVENESS OF EDUCATIONAL PROGRAM ON UTILIZATION OF ALTERNATIVE BIRTH POSITIONS DURING SECOND STAGE OF LABOUR AMONG PREGNANT WOMEN IN WESTERN KENYA

This is to inform you that the ***Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMUST-ISERC)*** has reviewed and approved your above research proposal.

Your application approval number is **MMUST/IERC/199/2023.** The approval covers for the period ***November 30th, 2023 to November 30th, 2024.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MMUST-ISERC.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MMUST-ISERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MMUST-ISERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MMUST-ISERC.***

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed

Yours Sincerely,

Prof. Gordon Nguka (PhD)
Chairperson, Institutional Scientific and Ethics Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

APPENDIX X: APPROVAL LETTER FROM NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **319542**

Date of Issue: **02/February/2024**

RESEARCH LICENSE



This is to Certify that Ms.. Wilfrida Chemutai Chemutai of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Bungoma, Kakamega on the topic: EFFECTIVENESS OF EDUCATIONAL PROGRAM ON UTILIZATION OF ALTERNATIVE BIRTH POSITIONS DURING SECOND STAGE OF LABOUR AMONG WOMEN MOTHERS IN WESTERN KENYA for the period ending : 02/February/2025.

License No: **NACOSTI/P/24/32712**

319542

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

APPENDIX XI: APPROVAL LETTER FROM BUNGOMA COUNTY

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH AND SANITATION
OFFICE OF THE COUNTY DIRECTOR

Telephone:
Cell: 0725393939
Email: health@bungoma.go.ke

When replying please quote:
Our Ref: **OUR REF:CG/BGM/CDH/RESEARCH/VOL.I**

County Executive Offices
Fifth Floor
P.O. BOX 437
BUNGOMA

Date: 7th ~~January~~ FEBRUARY, 2024

WINFRIDA CHEMUTAI BORE
P O Box 190-50100

RE: AUTHORITY TO CONDUCT RESEARCH.

Following your request for authority to undertake Research in Bungoma County, Bungoma County Referral on " ***Effectiveness of educational program on utilization of alternative birth positions during second stage of labour among pregnant women in Western Kenya***" I am pleased to inform you that you have been authorized to undertake the research.

Kindly note that you shall deposit **a copy** of the final research report to the County Director of Health. The soft copy of the same should be submitted through the online Research Information System.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. Box 18-50200,
BUNGOMA

Dr. Caleb Wanambisi Watta
COUNTY DIRECTOR – HEALTH AND SANITATION

Approved
BUNGOMA COUNTY REFERRAL HOSPITAL
MEDICAL SUPERINTENDENT
P. O. Box 11-50200, BUNGOMA
GLAD TO SERVE
7/2/24

APPENDIX XII: APPROVAL LETTER FR4OM KAKAMEGA COUNTY

REPUBLIC OF KENYA



COUNTY GENERAL HOSPITA
P.O. Box 15-G.P. O-50100
KAKAMEGA

DATE: 8TH TEBRUARY 2024

E-mail: wpgh15@yahoo.com
Telephone: Kakamega 0702930346
When replying, please quote:
REF: CGH/KAK/ERC/VOL.1/246

08 FEB 2024

COUNTY GOVERNMENT OF KAKAMEGA
MINISTRY OF HEALTH SERVICES

WILFRIDA CHEMUTAI BORE,
REF: NACOSTI/24/32712

RE: RESEARCH AUTHORIZATION FOR DATA COLLECTION – NO. ERC/234-02/2024

This is to inform you that Kakamega County General Hospital Ethics Review Committee (KCGH ERC) acting on behalf of the Kakamega County Department of Health has reviewed and authorized your data collection for the protocol titled : ***"Effectiveness of Educational Program on Utilization of Alternative Birth Positions during Second Stage of Labor among Pregnant Women in Western Kenya."*** The approval period shall expire on 02/ February/2025.

This authorization is subject to compliance with the following requirements:

i. Only approved documents including informed consent, study instruments, will be used.
ii. All changes including amendments, deviations and violations are submitted for review and approval by the **KCGH ERC.**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **KCGH ERC** within 24 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety of welfare of the study participants and others or affect the integrity of the research must be reported to **KCGH ERC** within 24 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to **KCGH ERC**.
viii. Submission of quarterly progress report to the **KCGH ERC** and dissemination of preliminary findings at the end of the study is expected from the researcher

This authorization should be attached to your research license from National Commission for Science, Technology and Innovation (NACOSTI) and also other necessary clearances. Preliminary dissemination of your study findings to **KCGH ERC** is mandatory prior to publications.

08 FEB 2024

DR. AJEVI AUSTINE
CHAIRMAN; ETHICS AND RESEARCH COMMITTEE
CGH – KAKAMEGA
Copy to: Director, Health Services

APPENDIX XIII: MAP OF BUNGOMA COUNTY



APPENDIX XIV: MAP OF KAKAMEGA COUNTY

