

Comparative analysis of utilization of birthing position among parturient women in western Kenya

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ABSTRACT

Maternal and neonatal outcomes during the second stage of labor depend heavily on the positions women choose to adopt. Despite global and regional evidence supporting the benefits of alternative birthing positions: In Kenyan healthcare facilities the lithotomy position continues to be the main birthing position despite research supporting alternative positions like squatting, kneeling, and side-lying. The persistence of certain birthing positions is primarily caused by a lack of awareness among mothers about alternatives and healthcare systems that fail to endorse non-standard positions. The status of birthing position utilization plays a key role in advancing evidence-based maternal care practices. The research seeks to evaluate differences in birthing position utilization during the second stage of labor across two Kenyan regions, Kakamega and Bungoma. Methodology: A cross-sectional study design was employed. The research study enrolled 481 pregnant women from antenatal clinics located in the two referral hospitals of Kakamega and Bungoma. Researchers used systematic sampling to choose participants and gathered data through structured questionnaires and observational checklists. Data analysis was conducted through descriptive statistics and chi-square tests while maintaining a significance threshold at $p < 0.05$. Bandura's Social Cognitive Theory provided the framework for this study because it emphasizes how observational learning and self-efficacy combined with environmental factors shape health behavior. Results: The majority of women who gave birth in the Bungoma district did so in the lithotomy position at a rate of 94.6%, compared to 93.3% in Kakamega district. Fifth point three percent of Bungoma participants and six-point seven percent of Kakamega participants had used alternative birthing positions. The chi-square test results indicated no statistically significant difference between the two study areas ($\chi^2 = 0.19$, $p = 0.663$), confirming that they were comparable before the intervention. Conclusion: Research results indicate that the lithotomy position remains the predominant choice for women during the second stage of labor in Western Kenya. The research reveals significant gaps in maternal understanding and shows how healthcare system limitations prevent the usage of alternative birthing methods. Recommendation: Healthcare authorities need to update national maternal health resources and personal birth plans to provide information about birthing posture options. Healthcare providers require training while health facilities need proper equipment to accommodate multiple birthing positions.

Key words: Birth Position, Parturient Women, Utilization, Western Kenya

I. INTRODUCTION

The world focuses on maternal and neonatal health as essential elements for sustainable development work in efforts to decrease childbirth-related preventable deaths and complications. Obstetric care advancements and facility delivery rate improvements have not fully eliminated labor complications which remain significant obstacles particularly in areas with limited resources. The choice of birthing position during the second stage of labor has become an important research focus because it significantly impacts labor outcomes (Kibuka *et al.*, 2021; Mirzakhani *et al.*, 2020).

The interval from complete cervical dilation until the newborn is delivered during the second stage of labor serves as a critical time period which determines maternal as well as neonatal results. The physical processes of uterine

contractions and fetal movement form the core of second stage labor but maternal behavior and chosen birthing positions play a key role in shaping labor time, maternal well-being, perineal injury risk and neonatal health outcomes (Healy *et al.*, 2020; Satone & Tayade, 2023). Hospital births have evolved to become more medicalized through time which has led to health facilities consistently choosing lithotomy or supine positions due to provider convenience instead of maternal health evidence (Musie *et al.*, 2019; Mutinda *et al.*, 2021).

Historically, several cultures, including those in sub-Saharan Africa, embraced alternative birthing positions such as squatting or kneeling as the natural norm. These positions facilitated gravitational descent of the fetus and allowed women more control during labor. However, as institutional delivery became standardized, these traditional practices were largely replaced by the supine model of care. Despite mounting evidence linking lithotomy positions to negative outcomes such as prolonged second stage, increased risk of perineal trauma, and suboptimal neonatal Apgar scores, the practice persists globally (Gupta *et al.*, 2017; Yadav *et al.*, 2021)

Interestingly, the role of education in promoting informed choice and improving health behaviors is well documented in maternal health literature, including the World Health Organization (WHO, 2021) recommendation on the intrapartum care. While several studies have focused on training healthcare providers to support upright positions, relatively few have investigated the baseline knowledge and behavior of women themselves before exposure to such interventions (Odoemene *et al.*, 2020; Nguyen, 2023). Understanding the status of birthing position utilization is crucial, particularly when seeking to evaluate the effectiveness of behavior-change strategies.

In Kenya, utilization of alternative birthing positions is notably limited. Institutional delivery guidelines typically default to the lithotomy position, and most public facilities are not having equipment or proper orientation to support alternative birthing positioning (Agunda, 2022). Limited has been done on knowing the current status of alternative birthing position and what hinders its utilization.

Western Kenya exhibits very limited use of alternative birthing positions compared to other regions of Kenya. The majority of public healthcare facilities do not provide necessary accommodations for physiologically beneficial birthing postures including squatting, kneeling, or side-lying positions (Kituku *et al.*, 2019). Healthcare providers continue to use the lithotomy position as the standard practice even though it leads to negative results. It is essential to understand existing birthing position usage patterns prior to implementing any interventions so that future educational and systemic strategies can be accurately assessed for improving maternal care. This gap in understanding the status of utilization of alternative birthing position contributes to uncertain birth outcomes and undermines women's autonomy during labor and delivery. This study assessed the birthing positions between Kakamega and Bungoma counties during the second stage of labor in Western Kenya

1.1 Statement of the Problem

The use of alternative birthing positions that enhance maternal and neonatal outcomes during the second stage of labor remains minimal in Western Kenya. The lithotomy position remains the most common delivery position among women which leads to higher incidences of perineal tears, extended labor durations, and lower Apgar scores in newborns (Kituku *et al.*, 2019). The continuous adoption of this position results from pregnant women's limited knowledge about their birthing options alongside insufficient educational resources during prenatal care and healthcare systems that favor provider convenience instead of patient-focused care (Motanya, & Iheanacho, 2023). Maternal health instructional resources in Kenya fail to present birthing position choices to expectant mothers and do not promote personalized birth planning (Agunda, 2022). The Kenyan context suffers from a lack of research dedicated to understanding parturient women's knowledge and choices about birthing positions. Educational programs aimed at healthcare providers demonstrate potential benefits but efforts to directly empower women remain minimal. The absence of proper maternal education leads to negative birthing outcomes while stripping women of control during childbirth. Knowledge on use of alternative birthing position is fundamental before executing any valuable intervention on to the parturient women. The study bridged the gap by bringing the understanding on utilization of birthing position in Kakamega and Bungoma

1.2 Research Objective

This paper aims to compare the utilization of birthing positions during the second stage of labor in Western Kenya.

II. LITERATURE REVIEW

For centuries, traditional societies worldwide along with sub-Saharan African communities practiced upright birthing positions including squatting as well as kneeling or being on all-fours. These birthing positions matched labor

physiology and used gravity for fetal movement while empowering women throughout childbirth. With the institutionalization of childbirth practices medical professionals transitioned from traditional upright birthing positions to the supine or lithotomy position. The lithotomy position remains the standard worldwide even though research shows it leads to adverse outcomes like extended second-stage labor duration, greater perineal damage and reduced Apgar scores (Gupta *et al.*, 2017; Yadav *et al.*, 2021; Berta *et al.*, 2019). WHO recommend alternative birthing position because of its' benefits as one of the intrapartum care requirements(WHO,2021)

Recent scientific studies have highlighted clinical benefits associated with alternative birthing positions such as upright sitting, side-lying, kneeling, and all-fours. The clinical advantages of alternative birthing positions include enhanced uterine efficiency along with reduced mechanical resistance during labor which leads to a shorter labor duration less need for episiotomies and improved maternal satisfaction along with better neonatal outcomes (Das & Kaur, 2025; Kibuka *et al.*, 2021). Nevertheless, global uptake remains low. Worldwide research shows that women choose non-supine delivery positions in just 10–15% of cases with even smaller percentages in many low- and middle-income nations (Kituku *et al.*, 2019; Jiregna *et al.*, 2020).

Western Kenya exhibits the same trends as the overall situation in Kenya. Public hospitals follow lithotomy position protocols for institutional deliveries because they do not possess the necessary infrastructure and training for alternative birthing positions. Kituku *et al.*, (2019) found that more than 90% of childbirths in regional facilities take place in the lithotomy position. Despite international efforts promoting personalized and female-focused labor management methods, this practice continues.

Numerous elements combine to sustain the continued practice of supine birth positions. The continued use of supine birthing positions stems from women's lack of knowledge about alternatives, inadequate teaching on birthing positions during prenatal care and institutional practices prioritizing clinical convenience over patient choice (Agunda, 2022). Healthcare providers have received training about alternative birthing practices but studies that investigate women's initial knowledge levels or the benefits of directly educating pregnant women remain scarce (Odoemene *et al.*, 2020; Nguyen, 2023).

It is crucial to conduct empirical research that evaluates how birthing positions are currently utilized before developing educational interventions. Assessing women's knowledge and decision-making without formal education provides valuable insights for developing policies and programs that improve maternal health results.

III. METHODOLOGY

This study employed a cross-sectional study design. The main goal of this research was to analyse birthing positions in parturient women at the second labor stage in Kakamega and Bungoma. Researchers conducted this study in two Kenyan counties in the Western region named Kakamega and Bungoma. Researchers chose Kakamega and Bungoma counties because they have high delivery counts which lead to common use of lithotomy positions. Government-owned hospitals in both locations provide complete maternal and neonatal care services. The facilities deliver between 400 and 600 births per month and serve diverse populations which qualifies them as suitable study sites.

The selected study population included pregnant women who were delivering their babies at the chosen referral hospitals. Target participants for the study included expectant mothers who planned vaginal deliveries and those who consented to participate during the entire study duration.

The study included women who had low-risk singleton pregnancies at or beyond 37 weeks of gestation and agreed to participate through informed consent along with parturient women who were projected to deliver vaginally without any anticipated delivery complications. The study excluded women who had multiple pregnancies or who exhibited any known complications that required caesarean delivery.

The study applied Yamane's Formula as cited by Reid and Boore (1991) which functions when the population size (N) is established. The analysis incorporated an expected nonresponse rate of 10% to account for non-respondents. The research team conducted interviews with 481 mothers across two County Hospitals following proportional sample allocation. 243 for Kakamega and 238 for Bungoma

Researchers used systematic random sampling to select study participants at each research site. The required sample size per site divided the total number of eligible parturient women in labor during the study period to determine the sampling interval. We randomly chose the initial participant to begin sampling from the population and then selected every *n*th woman afterwards.

Research participants responded to a structured questionnaire and observational checklist during data collection. Researchers created these tools by referencing existing literature and using validated instruments from comparable studies. Researchers conducted reviews and pretests of these tools to verify cultural relevance and appropriateness within the local context.

A panel of maternal health experts along with midwives and obstetricians reviewed all data collection tools to maintain validity. The study confirmed content validity by matching its objectives with the relevant literature. A pretest

took place at another hospital which shared similar features before essential changes were implemented. The researchers evaluated reliability by conducting test-retest procedures alongside internal consistency analysis. The questionnaire sections demonstrated acceptable reliability because Cronbach's alpha values exceeded 0.75.

The study collected data at two separate hospitals.

The Masinde Muliro University of Science and Technology Institutional Review Ethics Committee (IREC) granted ethical approval for this study. The National Commission for Science, Technology and Innovation (NACOSTI) granted approval for the study along with the County Health Departments from Bungoma and Kakamega. All participants gave informed consent before researchers began collecting their data. The study ensured participants about the confidentiality of their data and explained that they could withdraw from the research anytime without impacting their medical treatment. The team anonymized data through identification codes before storing it in password-secured systems that only research team members could access.

Statistical Package for Social Sciences version 28 was utilized to perform data analysis. The analysis of socio-demographic and obstetric characteristics relied on descriptive statistics including frequencies, means, and standard deviations. Chi-square tests analysed categorical variables to compare birthing positions between Kakamega and Bungoma. Statistical significance occurred when the p-value fell below 0.05. The research findings were presented using tables and figures which helped ensure clear understanding and aided in interpretation.

IV. FINDINGS & DISCUSSION

4.1 Findings

The study included 481 parturient women divided between 243 participants from Kakamega County Referral Hospital and 238 participants from Bungoma County Referral Hospital. The research team examined the socio-demographic characteristics to determine baseline comparability between the two study groups. The examined variables consisted of age, marital status, educational level, occupation type, religious affiliation, and parity status. Table 1 demonstrates that no statistically significant differences existed between the two groups for any of the variables examined ($p > 0.05$) which proves their demographic comparability at baseline.

Table 1

Sociodemographic Characteristics of Participants by Study Group (N = 481)

Variable	Bungoma (n = 238)	Kakamega (n = 243)	p-value
Mean Age (years)	26.7 ± 5.1	26.9 ± 5.3	0.582
Married (%)	85.7%	83.1%	0.419
Primary Education (%)	28.6%	26.7%	0.634
Secondary (%)	41.2%	42.0%	0.864
Tertiary (%)	30.2%	31.3%	0.792
Unemployed (%)	54.2%	52.3%	0.699
Para 0-3 (%)	47.5%	48.1%	0.901

Researchers focused on the birthing position women chose during the second stage of labor which included lithotomy and various alternatives such as squatting or side-lying positions. Table 2 demonstrates the overwhelming dominance of the lithotomy position across both counties during childbirth. In Bungoma 94.6% of women delivered in the lithotomy position compared to 93.3% in Kakamega while only 5.3% and 6.7% of women respectively chose alternative birthing positions.

Table 2

Birthing Position Utilization by Study Group at Baseline

Birthing Position	Bungoma (n = 238)	Kakamega (n = 243)
Lithotomy	225 (94.6%)	227 (93.3%)
Alternative	13 (5.3%)	16 (6.7%)

The chi-square test of independence results in Table 3 show no statistically significant difference in birthing position utilization between the two groups at baseline ($\chi^2 = 0.19$, $df = 1$, $p = 0.663$).

Table 3*Chi-Square Test for Birthing Position Utilization at Baseline*

Group	Birth positions	Total	χ^2	df	P Value
Bungoma	Lithotomy	225	0.19	1	0.663
	Alternative	13			
Kakamega	Lithotomy	227			
	Alternative	16			

4.2 Discussion

The results confirm the established pattern that alternative birthing positions are rarely used in Kenya and similar low-resource regions. According to a 2019 study by Kituku *et al.*, over 92% of women in Western Kenya deliver babies in the lithotomy position because they lack sufficient awareness about other birthing positions and there is inadequate institutional support for these alternatives. Jiregna *et al.*, (2020) documented similar patterns in Ethiopia revealing that postnatal women are often uninformed about different birthing positions and default to healthcare provider recommendations which typically involve the lithotomy position. A 2020 study by Jiregna *et al.* showed that postnatal women usually have limited understanding of various birthing options and follow healthcare provider advice which typically favors the lithotomy position.

Systemic and cultural obstacles remain prevalent at both research locations which maintains the widespread use of the lithotomy position. The medicalization of childbirth along with institutional protocols have established the lithotomy position as the default standard practice. The design of labor ward infrastructure and birthing beds together with clinical workflows typically focuses on provider convenience through the lithotomy position instead of considering maternal preference or physiological needs (Mutinda *et al.*, 2021; Musie *et al.*, 2019).

Women's decisions for their later childbirth methods are largely shaped by their previous delivery experiences. Women who first experience childbirth through a lithotomy-only system do not tend to choose alternative birthing positions in later pregnancies according to Zileni *et al.*, 2021. Healthcare providers reinforce this cycle because they know upright or lateral positions offer benefits but resist recommending them due to perceived challenges in dealing with complications and monitoring progress (Lin *et al.*, 2018; Edqvist *et al.*, 2018).

Research from multiple studies indicates that less than 10% of women opt for non-supine delivery positions worldwide although these positions offer benefits including reduced labor time and lower episiotomy rates along with higher maternal satisfaction and improved neonatal results (Gupta *et al.*, 2017; Satone & Tayade, 2023; Kibuka *et al.*, 2021).

High-income nations demonstrate advanced adoption of non-traditional childbirth methods. For example, study by Edqvist *et al.* (2018) observed more frequent use of squatting and seated positions during childbirth in Sweden and France because of supportive midwifery approaches and access to birthing tools like stools and bars. Divergences in antenatal education quality, healthcare system effectiveness and cultural support for patient-oriented birthing techniques explain the observed disparity.

While the study found no important demographic differences among groups it also indicates that previous studies have demonstrated that education level and childbirth education exposure lead to increased use of non-standard birthing positions (Modi *et al.*, 2023; Zileni *et al.*, 2021). Limited access to complete antenatal information in Western Kenya leads to continued dependence on the lithotomy position for childbirth.

Research results reveal that Western Kenyan maternity practices favor the lithotomy position while the adoption of alternative birthing positions is uncommon among women in labor. Institutional, educational and cultural factors create limitations for women's independence which in turn affects the implementation of evidence-based labor practices.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The research indicated that Western Kenyan parturient women in Kakamega and Bungoma exhibited minimal use of alternative birthing positions. The majority of women experienced childbirth in the lithotomy position during their previous delivery while statistical analysis showed no meaningful differences between both groups. The healthcare system shows strong adherence to traditional institutional practices with minimal maternal understanding and inadequate support for various birthing positions.

Research outcomes show that enhancing maternal education about birthing positions and implementing institutional changes to endorse evidence-based and women-centered labor practices are essential. The research showed that educational interventions directed at mothers produced better results in selecting safer and more comfortable birthing positions which also provided physiological benefits beyond just baseline comparisons.

5.2 Recommendations

This research demonstrates that alternative birthing positions during the second stage of labor remain rarely used among parturient women in Western Kenya. These recommendations aim to close the current gap while working towards better maternal health results.

Routine antenatal care services must urgently adopt comprehensive birthing position education to improve maternal health outcomes. Healthcare professionals need training to deliver structured health talks which explain birthing positions like squatting, kneeling, side-lying, and all fours. When women receive education about birthing positions they can make knowledgeable choices about their preferred method which leads to greater autonomy and better labor results.

Healthcare providers must receive proper training to gain skills and competencies needed to assist with alternative birthing positions. Healthcare professionals including midwives, nurses, and obstetricians require consistent training that teaches them about the advantages and appropriate support methods for different birthing positions. Training programs need to cover typical misunderstandings and safety issues as well as methods for serving diverse maternal requests in clinical environments. Effective patient-centered practices require a workforce that combines both support and expertise.

Additional investigation is required to identify obstacles and supporting factors that affect the adoption of unconventional birthing positions. Research through qualitative methods that includes perspectives from healthcare providers and mothers will reveal more profound understanding about their attitudes, perceptions and institutional challenges. Longitudinal studies should examine the lasting effects of educational programs to improve maternal and neonatal outcomes while shaping future healthcare policies and practices.

REFERENCES

- Agunda, R. (2022). Utilization of birthing positions among women in public hospitals in Kenya. *Kenyatta National Hospital Research Journal*, 6(1), 25–34.
- Berta, M., Teshome, M., & Desta, H. (2019). Effect of maternal birthing positions on maternal and neonatal outcomes. *Ethiopian Journal of Health Development*, 33(2), 88–94.
- Das, P., & Kaur, H. (2025). Empowering labor: Alternative birth positions and maternal satisfaction. *Journal of Obstetrics and Women's Health*, 14(2), 57–64.
- Edqvist, M., Lindgren, H., Lundgren, I., & Christensson, K. (2018). Midwives' management during the second stage of labor in relation to second-degree tears: A qualitative study in Sweden. *Midwifery*, 61, 30–35. <https://doi.org/10.1016/j.midw.2018.02.013>
- Gupta, J. K., Sood, A., Hofmeyr, G. J., & Vogel, J. P. (2017). Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database of Systematic Reviews*, 2017(5), Art. No.: CD002006. <https://doi.org/10.1002/14651858.CD002006.pub4>
- Healy, S., Humphreys, E., & Kennedy, C. (2020). Midwives' and obstetricians' perceptions of birthing positions during labour. *Midwifery*, 83, 102630. <https://doi.org/10.1016/j.midw.2020.102630>
- Jiregna, S., Fekadu, T., & Mekonnen, H. (2020). Women's perception of birth position in Ethiopia. *African Journal of Midwifery and Women's Health*, 14(3), 135–142. <https://doi.org/10.12968/ajmw.2020.14.3.135>
- Kibuka, M., Onyango, R., & Mutiso, S. (2021). Alternative birthing positions and outcomes: A Cochrane review. *East African Medical Journal*, 98(1), 19–26.
- Kituku, V. M., Muli, M., & Mutinda, E. (2019). Factors influencing birth position among parturient women in Western Kenya. *Journal of Reproductive Health*, 11(4), 45–52.
- Lin, S. Y., Hu, W. Y., Chang, Y. H., & Lee, W. L. (2018). Effect of ergonomic ankle support aid for squatting position during second stage of labor. *Journal of Clinical Nursing*, 27(19–20), 3673–3680. <https://doi.org/10.1111/jocn.14533>
- Mirzakhani, K., Faghihzadeh, S., & Sadeghi, R. (2020). Effects of maternal positions during labor: A systematic review. *Iranian Journal of Nursing and Midwifery Research*, 25(3), 185–192. https://doi.org/10.4103/ijnmr.IJNMR_209_18
- Modi, M., Patel, P., & Desai, P. (2023). Exploring pregnant women's views on upright birthing positions: A cross-sectional study. *Asian Journal of Midwifery Research*, 6(1), 44–50.
- Motanya, M. O., & Iheanacho, T. I. (2023). Alternative birthing practices: Exploring patient autonomy in African settings. *Global Journal of Health Research*, 15(2), 27–35.
- Musie, M., Wanyama, A., & Nalubega, S. (2019). Barriers to use of alternative birthing positions by midwives in Uganda. *African Journal of Midwifery and Women's Health*, 13(2), 51–59. <https://doi.org/10.12968/ajmw.2019.13.2.51>



- Mutinda, E., Wambua, E., & Kituku, V. (2021). Maternal perspectives on birthing positions in Kenyan hospitals. *Kenya Journal of Nursing & Midwifery*, 5(2), 33–42.
- Nguyen, H. T. (2023). Integrating alternative birth positions into maternity care. *Global Health & Innovation Journal*, 7(1), 27–36.
- Odoemene, C. A., Nwachukwu, O., & Obasi, I. (2020). Awareness and utilization of birthing positions among women in labor. *African Journal of Health Sciences*, 16(4), 250–257.
- Reid, N. G., & Boore, J. R. P. (1991). *Research methods and statistics in health care*. Edwards Arnold.
- Satone, V., & Tayade, S. (2023). Comparative review of birthing positions: Implications for practice. *International Journal of Nursing Studies*, 144, 104371. <https://doi.org/10.1016/j.ijnurstu.2023.104371>
- WHO. (2021). *Recommendations: Intrapartum care for a positive childbirth experience*. World Health Organization <https://www.who.int/publications/i/item/9789241550215>
- Yadav, K., Singh, A., & Patel, P. (2021). Alternative maternal positions and labor outcomes. *Indian Journal of Obstetrics and Gynecology*, 9(1), 14–21.
- Zileni, B., Glover, P., & Jones, M. (2021). Women’s choice of birthing position in Malawi: Influences and implications. *BMC Pregnancy and Childbirth*, 21(1), 165. <https://doi.org/10.1186/s12884-021-03657-3>