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FACTORS ASSOCIATED WITH USE OF LESS EFFECTIVE CONTRACEPTIVE METHODS AMONG WOMEN USING FAMILY PLANNING METHODS IN NANDI COUNTY, KENYA: A CROSS-SECTIONAL STUDY

By

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BU/GS24X/MPH/11

This Dissertation is submitted to the Directorate of Graduate Studies, Research and Innovations in Partial Fulfillment of the Requirement for the award of the Degree of Master of Public Health of Busitema University

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ABSTRACT

Background: Unintended pregnancy remains a major public health challenge in Kenya. Despite increasing contraceptive uptake, some women continue to use less-effective contraceptive methods, which are associated with higher typical-use failure rates and increased risk of unintended pregnancy. Evidence on the prevalence and determinants of less-effective contraceptive use remains limited. This study determined the prevalence and factors associated with use of less-effective contraceptive methods among women using family planning in Nandi County, Kenya.

Methods: A community-based cross-sectional analytical study was conducted among 422 women aged 18–49 years using family planning methods in Nandi County, Kenya. Participants were selected through multistage sampling and all 422 sampled women completed the interview. Data were collected from May to July 2026 using an interviewer-administered questionnaire in KoboToolbox and analysed using descriptive statistics, bivariate analysis, and multivariable modified Poisson regression with robust variance estimation. Adjusted prevalence ratios (aPRs) with 95% confidence intervals (CIs) were reported.

Results: Overall, 25.4% (107/422) of participants used less-effective contraceptive methods, with the Standard Days Method being the most commonly used (17.8%). Fear of side effects was the leading reported reason for use (95.3%). Utilization was significantly associated with age 25–34 years (aPR=1.52, 95% CI: 1.01–2.30), age 35–49 years (aPR=2.24, 95% CI: 1.31–3.84), marital status (aPR=0.41, 95% CI: 0.26–0.65), employment status (aPR=0.66, 95% CI: 0.48–0.91), partner-influenced contraceptive choice (aPR=1.51, 95% CI: 1.03–2.20), never having visited a health facility for contraceptive services (aPR=3.21, 95% CI: 2.32–4.46), not discussing family planning with a partner (aPR=0.32, 95% CI: 0.16–0.63), and reporting that contraceptive stock-outs was associated with less effective contraceptive choice (aPR=0.61, 95% CI: 0.37–0.99).

Conclusion: Less-effective contraceptive use was common among family planning users in Nandi County. Strengthening contraceptive counselling and community-based interventions may support informed contraceptive choice and reduce reliance on less-effective methods.

DECLARATION

I, **CHEBET STELLA** declare that this dissertation titled **"FACTORS ASSOCIATED WITH USE OF LESS EFFECTIVE CONTRACEPTIVE METHODS AMONG WOMEN USING FAMILY PLANNING METHODS IN NANDI COUNTY, KENYA"** is my original work and has never been submitted to this university or any other institution of higher learning for any academic award.

Registration Number: BU/GS24X/MPH/11

Signature:..  .....

Date: ..15th September, 2026……...

APPROVAL

This is to certify that this dissertation has been submitted under my supervision.

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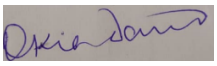
Signature…… 

Date ……15th September, 2026.

DEDICATION

I dedicate this dissertation to my beloved daughter, Ms. Terry Chepngetich, whose presence fills my life with joy and constant inspiration. Her unwavering love and laughter motivate me every day to persevere and pursue my goals with determination and purpose; my parents, Paul Tanui and Jane Tanui, and to my dear siblings for their love and encouragement.

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ABBREVIATIONS

WHO- World Health Organization

KDHS-Kenya Demographic Health Survey

CPR-Contraceptive Prevalence Rate

SDM-Standard Days Method

LAM- Lactation Amenorrhea Method

CPR-Contraceptive Prevalence Rate

SSA- Sub Sahara Africa

PMA-Performance Monitoring for Action

OPERATIONAL DEFINITION OF TERMS

Less effective contraceptives methods- For this study, less-effective contraceptive methods were defined as highly user-dependent behavioural and fertility-awareness methods with relatively higher typical-use failure rates, specifically withdrawal, rhythm/calendar methods, the Standard Days Method (SDM), and the Lactational Amenorrhea Method (LAM). The classification was based on the study's predefined operational criteria and typical-use effectiveness, with methods having relatively higher typical-use failure rates considered less effective than methods requiring less user-dependent adherence, for LAM, fulfilment of specified eligibility conditions. Typical-use failure rates above 10% were used as the basis for identifying the selected methods as relatively less effective, with reported failure rates within the range of approximately 13–23% for the applicable methods (World Health Organization (WHO) et al., 2022). A woman was classified as a user of a less effective contraceptive method if she reported currently using at least one of these methods to delay or prevent pregnancy.

Women of reproductive age- defined as women aged 18-49 years who met the study eligibility criteria. This study used 18 years as the lowest age limit.

Unintended pregnancy- defined as mistimed or unwanted pregnancy at the time of conception.

Utilization- Utilization was defined as the current use of a contraceptive method to delay or prevent pregnancy, based on the participant's self-reported contraceptive use.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Unintended pregnancy continues to present a significant global public health concern; each year approximately 121 million unintended pregnancies occur, with over 60% ending in abortion, and 45% are considered unsafe. Unsafe abortions contribute substantially to maternal mortality, accounting for an estimated 5-13% of all maternal deaths (United Nations Population Fund [UNFPA], 2022). Although family planning programmes have expanded considerably, a substantial gap in contraceptive access and use remains. Globally, about 270 million women of reproductive age still have the unmet need, while 874million use modern contraceptives and 92 million rely on traditional methods (United Nations Department of Economic and Social Affairs, Population Division (UNDESA), 2022).

The burden of unintended pregnancy is particularly important in sub-Saharan Africa. Evidence from a recent multi-country analysis reported that 27.6% of women described their last pregnancy as unintended (Ghose et al., 2025), significantly higher than in developed countries. These pregnancies are associated with unsafe abortions, maternal mortality, and adverse child health outcomes (Baschieri et al., 2017).

Access to contraception alone, however, does not necessarily translate into effective pregnancy prevention. Although modern contraceptive methods are increasingly available, a considerable number of women continue to rely on traditional or highly user-dependent methods. An estimated 55 million women in developing countries rely on traditional contraceptive methods (Bertrand et al., 2022). Contraceptives are generally categorized as modern and traditional (World Health Organization (WHO), 2025).), but these broad categories do not fully capture differences in effectiveness between individual methods. Examining contraceptive effectiveness is therefore important when considering the risk of unintended pregnancy.

Centers for Disease control and Prevention (CDC) further classifies them based on their effectiveness or failure rates IUDs Levonorgestrel intrauterine system (LNG IUD) typical failure rate is 0.1-0.4%, Copper T intrauterine device (IUD), typical failure rate is 0.8%, for hormonal methods; implants 0.1%, injection 4%, COCs 7%, POPs 7%, male condom is 13%, female condom 21%, rhythm 15%, SDM 13%, withdrawal 20% , male condoms 13%, female condoms 21%, LAM 2% with effectiveness rapidly dropping if any of the criteria are not consistently met; 6 month breastfeeding, amenorrheic and less than 6 months postpartum, it’s

also a temporary method (Centers of Disease Control and Prevention (CDC), 2024; World Health Organization (WHO) et al., 2022), consistent with other studies by (Peragallo Urrutia et al., 2018).

A study by (Polis et al., 2016) further reported typical failure rates of 13.9% for SDM and 13.4% for withdrawal, with cumulative failures exceeding 30% over 3 years. The relatively high failure associated with these methods may increase the likelihood of unintended pregnancy, particularly when women do not subsequently adopt a more effective contraceptive method (Khan & Islam, 2022).

Despite the well-documented risk of unintended pregnancies associated with these methods, less effective contraceptives remain widely used in many settings. Studies conducted in Asia, Africa, and the Middle East have reported use ranging from approximately 14%-30% with factors such as cultural acceptability, affordability, simplicity of use, and concerns about side effects of modern contraceptives influencing women's choices (Ajayi et al., 2018; Fouad, 2023; V. Namasivayam et al., 2023). The continued use of these methods results from multiple interacting factors rather than access barriers alone. Sociodemographic characteristics, cultural beliefs and preferences for natural methods, partner dynamics, misconceptions and provider attitudes may all influence contraceptive decision-making (Rossier & Corker, 2017a; Sedlander et al., 2018). In addition, negative or dismissive provider attitudes towards concerns about modern contraceptive methods may limit the quality of counselling and women's ability to make informed choices (Stevens, 2018).

Contraceptive uptake is always influenced by a range of contextual factors such as socio-demographic, cultural, economic factors, and partner dynamics (W. D. Negash et al., 2022). Rural women face unique barriers due to cultural norms, economic limitations, and limited access to health services (Debebe et al., 2017). Some women may also prefer fertility-awareness or other natural methods because they perceive them as having health benefits or fewer health-related concerns, despite limited evidence regarding their effectiveness under typical conditions of use (Moroole et al., 2020).

In Kenya, unintended pregnancy remains a major public health challenge, with a reported prevalence of approximately 39% (Ikamari, 2024). At the same time, the country has made considerable progress in family planning, with contraceptive prevalence increasing from 40% in 2003 to approximately 63% in 2022 (Kenya Demographic Health Survey (KDHS), 2022). Nevertheless, some women continue to rely on less-effective contraceptive methods, while

others do not use contraception despite having a need for pregnancy prevention (Ochako et al., 2016a; Sedlander et al., 2018). At the county level, Nandi county reflects similar patterns, modern contraceptive prevalence of 60% and traditional methods at 6.3% (Kenya Demographic Health Survey (KDHS), 2022).

Nandi County launched its first Family Planning Costed Implementation Plan (2018–2022) in 2018, with the aim of increasing modern contraceptive prevalence among women of reproductive age from 58% to 68% and reducing unmet need to 40%. Developed in partnership with Deutsche Stiftung Weltbevölkerung (DSW), the plan sought to improve access to modern contraceptive methods, guide resource allocation, and contribute to improved maternal and child health (County Government of Nandi, 2018). However, the continued use of less-effective methods suggests that contraceptive choice may still be shaped by factors beyond physical access to services, including knowledge, counselling experiences, sociocultural beliefs, and partner-related influences

Previous studies have not sufficiently distinguished the factors associated with use of these contraceptives method (Rossier & Corker, 2017). Although a substantial proportion of women continue to rely on less effective contraceptives, there is limited empirical evidence quantifying factors associated with their use.

Existing research has largely focused on barriers to modern contraceptive uptake, contraceptive discontinuation, traditional contraceptive methods, and unmet need for family planning. Although the Kenya Demographic and Health Survey (KDHS) provides national and county-level estimates of contraceptive use, it does not specifically examine factors associated with the use of selected less-effective contraceptive methods among women currently using family planning methods who are trying to delay or prevent pregnancy in Nandi County. Thus, there is limited empirical evidence on the factors associated with the use of these methods in the county, limiting the development of targeted interventions to reduce unintended pregnancies associated with their use.

This study seeks to bridge the knowledge gap by examining the factors associated with use of less effective contraceptive methods among women of reproductive age using family planning in Nandi County, Kenya. The findings will support targeted interventions, strengthen counseling quality, promote informed choice, and help reduce unintended pregnancies. The study also aligns with Kenya's family-planning priorities and commitments under FP2030, as well as global health priorities reflected in Sustainable Development Goals 3.1 and 3.7.

1.2 Statement of the problem

Less effective contraceptive methods have been associated with high failure rates > 10%, with risk of pregnancy exceeding 8 pregnancies per 100 women of all women of reproductive age, placing women who are intending to delay or prevent pregnancy at increased risk of unintended pregnancies on a typical use, these unintended pregnancies remain a significant public health concern directly contributing to maternal mortality and morbidity due to unsafe abortions, neonatal complications, adverse child health outcomes. In Kenya, 39% of women of reproductive age report unintended pregnancies, while in Nandi County, 55.8% of pregnancies among women aged 15–49 with one or more births were unintended, (Performance Monitoring and Accountability 2020 (PMA2020) Project, 2020). However, unintended pregnancies may occur for multiple reasons, and not all unintended pregnancies among women using contraceptive methods are necessarily attributable to method failure.

Despite the increasing proportion of women using modern contraceptive methods, nationally at 57% and Nandi County at 60%, utilization of less effective contraceptives prevails, posing ongoing reproductive health risks. Globally and regionally, previous studies indicates that persistent use of contraceptive methods are influenced by cultural norms, partner dynamics, accessibility, simplicity, and fear of side effects, yet most research focuses on the modern methods and traditional methods, discontinuation rates with paucity of knowledge on the determinants of less effective contraceptive methods use.

In Nandi County, traditional and other less effective methods among family planning users account for about 6.3% of contraceptive use, including rhythm (4.6%), withdrawal (1%), SDM (0.2%), and LAM (0.5%), while 34.4% using no method at all (Kenya Demographic Health Survey (KDHS), 2022). Although the County implemented a Family Planning Costed Implementation Plan (2018–2022) to increase modern contraceptive use and reduce unmet need, the continued use of less effective methods indicates persistent risk exposure, with evidence from literature stating contraceptive uptake being influenced by knowledge gaps, socio-cultural influences, and counselling limitations.

While evidence clearly links these methods to higher failure rates, limited research exists that has examined less effective contraceptives as a distinct category and explore why women continue to choose these methods despite widespread availability of more effective options.

This study seeks to determine the factors associated with less effective contraceptive use, providing evidence to strengthen contraceptive counselling, promote informed choice, reduce

unintended pregnancies and generally improve reproductive health outcomes in alignment with SDG 3.7.

1.3 Objectives of the study

1.3.1 General objective

To assess the factors associated with use of less effective contraceptive methods among women using family planning methods in Nandi, Kenya.

1.3.2 Specific objectives

1. To determine the prevalence of use of less effective contraceptive methods among women using family planning methods in Nandi, Kenya.
2. To identify the factors associated with the use of less effective contraceptive methods among women using family planning in Nandi County, Kenya.

1.4 Research questions

1. What is the prevalence of less-effective contraceptive method use among women using family planning methods in Nandi County, Kenya?
2. What factors are associated with use of less-effective contraceptive methods among women using family planning methods in Nandi County, Kenya?

1.5 Hypothesis for the study

Null hypothesis

There is no significant association between women's level of education and the use of less effective contraceptive methods among family planning users in Nandi County, Kenya.

Alternative hypothesis

There is a significant association between women's level of education and the use of less effective contraceptive methods among family planning users in Nandi County, Kenya.

1.6 Justification of the study

This study was justified by the persistent reliance of less effective contraceptive methods such as withdrawal, rhythm, SDM and lactational amenorrhea among women of reproductive age, despite the wide availability of modern alternatives, women continue to prefer these methods due to cultural acceptance, partner influence, ease of use, or concerns about the side effects of modern contraceptives. Limited research has specifically examined less effective methods as a distinct category, meaning that the factors sustaining their use remain poorly understood.

While both non-use and use of less effective contraception contribute to unintended pregnancy, they show a different public health problem. The study focused on women who were making an attempt to prevent or delay pregnancy but are using contraceptive methods that are less effective, women in this group are at heightened risk of unintended pregnancy which carries significant maternal and child health consequences and broader public health implications, unintended pregnancy in this group points to preventable gaps that can be addressed through public health interventions, such as improved counselling, method selection, and support for correct and consistent use. Women who are non users are influenced by different factors, including fertility intentions, access to services, cultural or religious beliefs, and partner dynamics, which are typically studied using different public health research approaches, therefore with this reason, non-users fall outside the scope of this study.

Determining the factors associated with use of less effective contraceptives in Nandi County, generated evidence that will help policymakers and health providers tailor counselling to ensure correct and consistent use, while still respecting women's preferences. The findings contribute to Kenya's family planning policy and programme environment by providing evidence that can inform practice and county-level programme planning, particularly counselling and support for women whose contraceptive choices are influenced by partners or who have limited contact with health facilities. The findings also identify areas for further research, particularly the reasons underlying partner influence, partner communication, and contraceptive availability. At a broader level, the study aligned with global and national priorities, particularly SDG 3 (good health and well-being) by supporting efforts to strengthen family planning programmes and ensure equitable access to reproductive health services.

1.7 Conceptual framework

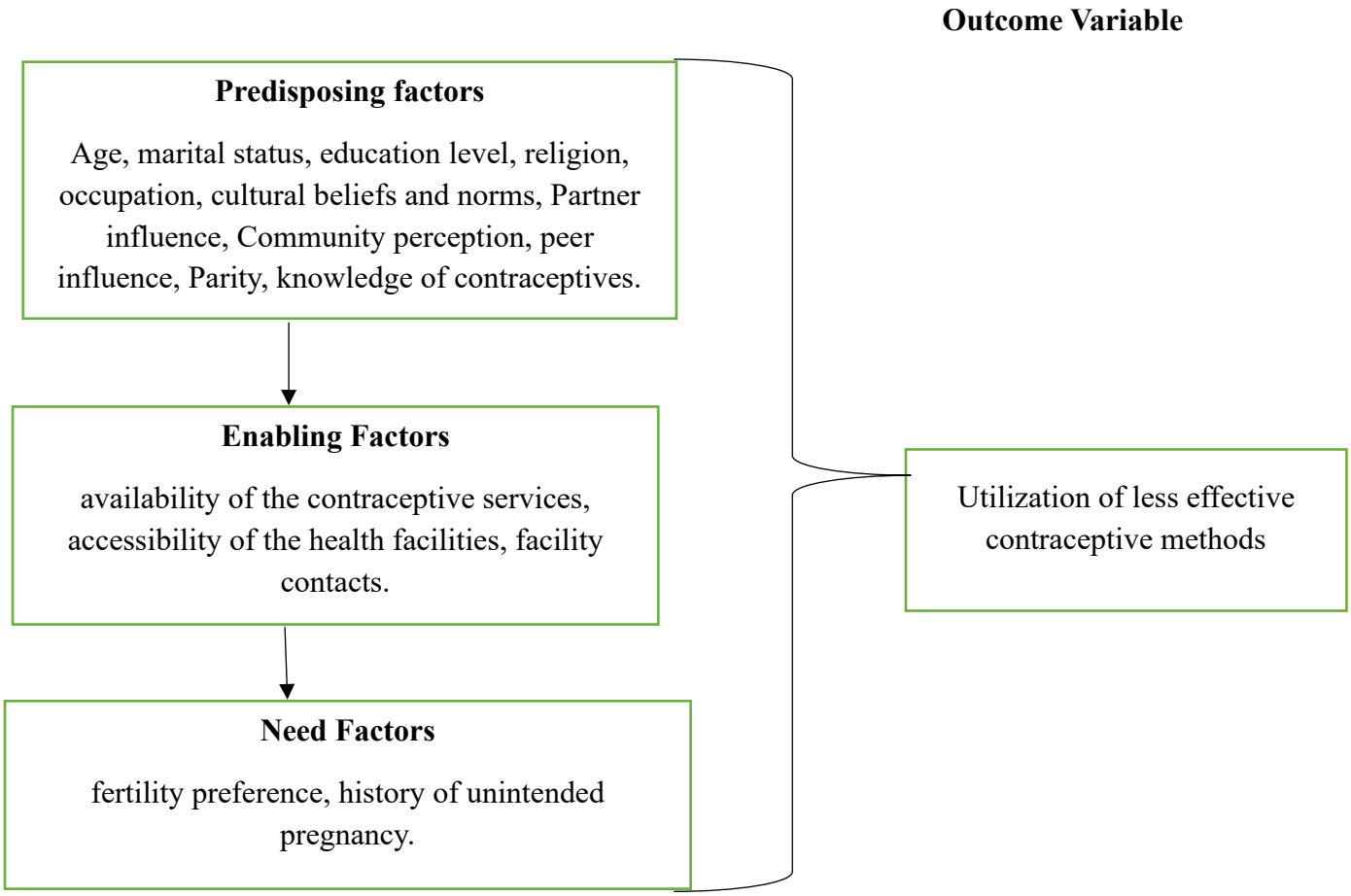

Figure 1.1 Conceptual framework

The conceptual framework was adapted from Andersen's Behavioral Model of Health Services Use (Andersen, 1995) and modified to fit the context of contraceptive-method utilization among women of reproductive age. The model's predisposing, enabling, and need characteristics were operationalized using variables relevant to the study, while the outcome was utilization of less effective contraceptive methods. Predisposing characteristics included socio-demographic and socio-cultural factors, enabling characteristics included socio-economic and health-system factors, while need characteristics were represented by the reproductive factors measured in the study. These domains were therefore used to guide the selection and organization of the explanatory variables, with use of less-effective contraceptive methods as the outcome.

The Andersen model guided the selection and categorization of variables in this study. Predisposing factors represented characteristics that existed before contraceptive method use, including age, education and marital status. Enabling factors represented resources and circumstances that facilitate or constrain access to and use of contraceptive services, including

employment, partner communication, decision-making autonomy, distance to health facilities, previous facility visits and perceived influence of contraceptive stock-outs. Need factors represented reproductive and perceived needs relevant to contraceptive use, including previous pregnancy history, fertility intentions.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter critically reviewed existing literature on contraceptive use, with particular emphasis on the use of less effective contraceptive methods and the factors influencing their continued use among women of reproductive age. The review examined the global, regional, and Kenyan burden of unintended pregnancies and highlighted patterns of contraceptive method use. It further explored socio-demographic, socio-cultural, reproductive, and health system factors associated with contraceptive choice and effectiveness and finally identifies the gaps and provides a summary of the literature.

2.2 Burden of unplanned pregnancies

Unintended pregnancy refers to a pregnancy that is either mistimed or unwanted at the time of conception. It may occur when contraception is not used, when a method fails, or when a contraceptive method is used incorrectly or inconsistently. Reliance on methods with higher typical-use failure rates may further increase the likelihood of unintended pregnancy (Tsegaye et al., 2018). Women using less effective contraceptives face an increased risk of unintended pregnancies, which remain a significant public health concern globally, with an estimated 121 million unintended pregnancies occurring annually, approximately 60% ending in abortion, with 45% being unsafe abortions, and contributing to 5-13% of maternal deaths worldwide (United Nations Population Fund [UNFPA], 2022)

The consequences of unintended pregnancy extend beyond the occurrence of an unplanned pregnancy itself. Evidence indicates that women experiencing unintended pregnancies may have increased risks of maternal morbidity, mortality and obstetric complications, as well as adverse birth outcomes such as preterm birth and low birth weight (Dehingia et al., 2020). Unintended pregnancy has also been associated with psychological consequences, including depression and anxiety among affected women (Nelson et al., 2022). Children born following unintended pregnancies may experience poorer developmental outcomes, particularly where pregnancy-related circumstances lead to inadequate preparation or limited access to appropriate care (Ranatunga & Jayaratne, 2020). The health risks may be further increased when women seek unsafe abortion because they are unwilling or unable to continue an unintended pregnancy (Hall et al., 2017).

Evidence consistently indicates that less effective contraceptive use is a key driver of unintended pregnancies, including incorrect or inconsistent use of modern methods, method

discontinuation, and dependence on user-dependent or traditional methods with high typical-use failure rates(Jain & Winfrey, 2017; Yohannes & Balis, 2022). However, the occurrence of unintended pregnancy is not determined by contraceptive effectiveness alone. Factors such as limited contraceptive knowledge, socioeconomic disadvantage, adolescent pregnancy, and exposure to physical or sexual gender-based violence may also increase women's vulnerability to unintended pregnancy (Anand et al., 2017).

Despite widespread awareness of the risks associated with unintended pregnancy and the availability of effective contraceptive options, many women continue to rely on less effective contraceptive methods. This persistence raises an important gap in understanding why women choose or continue to use less effective methods, particularly in settings such as Kenya where unintended pregnancy remains prevalent. Addressing this gap is critical for reducing preventable maternal and child health risks and improving reproductive health outcomes.

2.3 Overview of contraceptive methods use

Contraceptive methods can be classified according to their modern or traditional status. Modern contraceptive methods include long-acting reversible contraceptives, such as intrauterine devices (IUDs) and implants; short-acting methods, such as oral contraceptive pills and injectables; barrier methods, such as male and female condoms; and permanent methods, including male and female sterilization. Traditional methods include withdrawal and fertility-awareness-based methods, such as calendar/rhythm methods and the Standard Days Method (SDM). The lactational amenorrhea method (LAM) is considered effective when all the required criteria are fulfilled (World Health Organization (WHO), 2025).

The modern-traditional classification should be distinguished from contraceptive effectiveness. Effectiveness is commonly assessed using typical-use failure rates, which reflect the likelihood of pregnancy during actual use rather than under ideal conditions. Consequently, some modern methods may have higher typical-use failure rates than others because their effectiveness depends more heavily on consistent user behaviour. For example, condoms are classified as modern methods but require correct and consistent use, whereas implants and IUDs have very low typical-use failure rates and require substantially less user action once provided . Similarly, the effectiveness of LAM depends on fulfilment of its required criteria (Centers of Disease Control and Prevention (CDC), 2024). In this study, less-effective contraceptive methods were considered separately from the modern or traditional classification. The study focused on selected behavioural and fertility-awareness methods that were predefined as less-effective

based on their relatively higher typical-use failure rates and dependence on correct and consistent user practice. These methods were withdrawal, rhythm/calendar methods, SDM, and LAM. The classification was therefore based on the study's operational definition and was not intended to equate all traditional methods with less-effective contraception.

Contraceptive use provides important health and socioeconomic benefits. Effective contraception can prevent unintended pregnancy, support healthy birth spacing, and contribute to reductions in maternal and child morbidity and mortality (Chen et al., 2017, Abdi et al., 2020). Evidence also suggests that increased access to and use of effective contraceptive methods can reduce unintended pregnancy and its associated health consequences (Kelly et al., 2023),

Contraceptive effectiveness varies widely by method, particularly under typical-use conditions. User-dependent methods such as withdrawal, rhythm/calendar methods, Standard Days Method, and other fertility awareness–based methods exhibit higher failure rates, ranging from 11% to 23% annually, compared to modern methods (Polis et al., 2016). (Kavanaugh & Pliskin, 2020) report typical-use failure rates of approximately 20% for withdrawal, 19% for rhythm methods, and 13% for the Standard Days Method. In contrast, modern hormonal and long-acting methods generally have failure rates of less than 5%, with implants and IUDs demonstrating rates below 2%.

At the global level, contraceptive use has increased substantially over time. The number of women using contraception increased from approximately 0.7 billion in 1990 to 1.1 billion in 2021, an increase of 62%, largely driven by modern methods adoption; however, regional disparities persist (United Nations Department of Economic and Social Affairs, Population Division (UNDESA), 2022). In sub-Saharan Africa, modern contraceptive prevalence has gradually improved from 24.2% in 1990 to about 55.9% in 2021. Nonetheless, traditional and less effective methods still account for 7%, with a 37% unmet need for family planning (UNDESA, 2022).

Government agencies have made improvements in advocating for modern methods to replace traditional methods, which have been associated with a higher risk of pregnancy with typical use, with women still foregoing these due to the fear of side effects, mistrust of biomedical methods, and perceived convenience of traditional methods leading to discontinuation of these methods and non-use (Rabiu & Rufa'i, 2018). Studies indicate that women are often knowledgeable about modern contraceptives but deliberately choose traditional methods

because they are perceived to have no side effects, no cost, and greater autonomy (V. Namasivayam et al., 2023)

Evidence from diverse contexts demonstrates that reliance on less effective methods remains widespread. For example, in Turkey, 29.5% of women reported using traditional methods, predominantly withdrawal (Çalıkoğlu et al., 2018). Similar patterns have been observed in South Asia and other low- and middle-income countries, where cultural acceptability and fear of side effects contribute to sustained use of ineffective methods (Kundu et al., 2022, V. Namasivayam et al., 2023). These findings demonstrate that reliance on less effective methods persists globally, reflecting personal preference, cultural norms, and mistrust of modern contraceptives.

Contraceptive uptake is shaped by a range of contextual influences, including socio-demographic, cultural, economic factors, and partner dynamics (W. D. Negash et al., 2022), with contraceptive uptake in rural areas often affected by cultural norms, socio-demographic characteristics, and economic conditions (Debebe et al., 2017). Evidence indicating that certain hormonal methods may be linked to delays in the return of fertility (Gemmill et al., 2023). Traditional contraceptive methods, including periodic abstinence, withdrawal, breastfeeding (LAM), postpartum abstinence, herbal remedies, and waist bands, remain widely used due to cultural acceptance and perceived health benefits, despite limited evidence on their safety and effectiveness (Moroole et al., 2020).

Health providers also shape contraceptive choices; some dismiss women’s concerns about side effects and emphasize high-efficacy methods over patient preference, reinforcing mistrust and perpetuating reliance on less effective methods (Stevens, 2018). In coastal Tanzania, women continue to use traditional methods such as withdrawal, breastfeeding, herbs, and abstinence for child spacing, primarily due to accessibility, simplicity, and cultural preference, even with modern contraceptives available, with emphasis on HCW acceptability, providing enough counselling, and observing clients' preferences (Mbwete, 2025).

Kenya has made progress in CPR, with a rise from 33% in 1993 to 63% in 2022, with a great achievement in modern methods; however, from the KDHS, there are some women who still use traditional methods, accounting for 6%.

2.4 Factors influencing the use of contraceptive methods

2.4.1 Sociodemographic factors

Sociodemographic characteristics such as age, education, marital status, parity, religion, income level, and place of residence have been widely documented as key determinants of contraceptive use, shaping women's knowledge, attitudes, and access to family planning services (Solanke, 2017). Understanding how these factors interact is essential for explaining variations in both modern and traditional contraceptive use.

Age significantly impacts contraceptive choices; women of older age tended to have higher levels of education, and those residing in urban areas are more likely to understand the advantages of using contraceptives. Using Demographic and Health Survey (DHS) data (Adedini et al., 2019) investigated trends and determinants of long-acting reversible contraceptives (LARCs) among women in Sub-Saharan Africa, finding that contraceptive use generally increases with age until the late thirties and declines thereafter. Some studies have explored traditional contraceptive use and found no significant association with age, although most users had low educational attainment, suggesting indirect links between age, education, and method choice (V. Namasivayam et al., 2023). Contraceptive use increases with younger age and decreases with older age; women in their 40s and above are almost in stages of their menopausal stage, hence decreased fertility as compared to younger women (B. T. Negash et al., 2023). A study in Kenya reported the factors associated with use of contraceptives by age as a factor: younger women less likely to use TM and short term methods and older women had higher odds as they want to stop childbearing and use the long term methods, contraceptive use increases with parity as women who already have desired number of children wants to limit births (Ochako et al., 2016). These differences may partly reflect variations in the outcomes examined, since studies assessing overall or modern contraceptive use may produce different patterns from those specifically examining traditional or less-effective methods. This suggests that age should not be assumed to have a uniform relationship with less-effective contraceptive use. The present study therefore included age as a potential explanatory variable to determine whether the patterns observed elsewhere also applied among women using family-planning methods in Nandi County.

Marital status is a factor associated with contraceptive use and behavior among women and couples a study in Kenya, marital status serves as a strong positive determinant of modern contraceptive uptake, with married women 1.593 times more likely to use modern methods than women never in union, showing that married women generally have higher prevalence

rates due to increased sexual activity and fertility regulation needs (Mankelkl et al., 2024), Unmarried or cohabiting women may underreport contraceptive use due to stigma or cultural norms. This relationship may be explained by differences in sexual activity, fertility intentions, and the need for pregnancy prevention within marital relationships. However, evidence on marital status may differ when the outcome is traditional or less-effective method use because method choice may also be influenced by partner preferences, relationship dynamics, and the acceptability of particular methods within unions. This distinction is important because higher contraceptive use among married women does not necessarily imply greater use of highly effective methods. Marital status was therefore included in the present study as a potential determinant of less-effective contraceptive use.

Higher educational attainment is consistently identified as a powerful socio-demographic predictor of contraceptive adoption and intention across Sub-Saharan Africa. For instance, a study in South Nigeria among postpartum women reported that higher education was significantly associated with the use of modern methods, as it enables women to understand the importance of fertility regulation (Okoeguale et al., 2022). This highlights the need to distinguish between knowledge-driven preference and knowledge gaps when examining ineffective method use. A study in Guinea, West Africa, found that educated women had higher odds of intending to use contraceptives compared to their counterparts, primarily because they are empowered and have greater access to health information and services (Armah-Ansah et al., 2024). A study by (Rossier & Corker, 2017) suggests that educated women may deliberately choose traditional methods because they are knowledgeable about fertility cycles and perceive natural methods as safer or more controllable. This contradictory idea calls for a study on ineffective methods to identify predictor factors and guide policymakers, as most of these studies have been on modern methods. The contrasting findings indicate that education may influence not only contraceptive knowledge and uptake but also the type of method selected. Therefore, educational attainment and contraceptive knowledge were included as separate explanatory variables in the present study to distinguish the potential effect of formal education from knowledge about contraception.

2.4.2 Socio-cultural factors

Socio-cultural norms and beliefs strongly shape contraceptive behaviour and can encourage reliance on traditional or otherwise less effective methods. In many settings, fertility ideals, religious teachings that frame children as blessings, and the cultural value placed on large families lead women and couples to prefer natural or non-medical methods or to avoid

contraception altogether (Abdi et al., 2020). Misinformation and fears about side effects often spread via social networks or social media also push some women away from hormonal and long-acting methods toward withdrawal, rhythm methods, or fertility-tracking apps despite their higher typical-use failure rates (D'Souza et al., 2022). A qualitative study in Eastern Uganda among Busoga women reported that gender and partnership dynamics, male partner opposition, the need for covert use, or unequal decision-making frequently make women choose user-dependent methods that can be hidden or negotiated within relationships, together with restrictive sociocultural norms (A. Namasivayam et al., 2022).

As far as religion has been reported to be a factor deterring women from using modern contraceptives, a study in Uganda by (Namanda et al., 2023) as some religious faiths are against contraceptives reported that this happens in rural areas, while urban women already know the benefits of these methods. Another qualitative exploratory study found that local social networks, community narratives, and endorsement by trusted community figures (including satisfied users) substantially influence women's perceptions of method safety and acceptability; interventions using peer testimonials and community dialogue have increased positive attitudes and uptake in Uganda (Birabwa et al., 2025). Although these studies consistently demonstrate the importance of social and religious context, they were conducted in populations with different cultural and religious backgrounds. Their findings therefore cannot be assumed to apply uniformly to women in Nandi County. Moreover, much of this evidence examines contraceptive use generally rather than specifically the use of less-effective methods. The present study consequently considered socio-cultural influences as potential determinants of method choice rather than assuming that they would necessarily predict contraceptive use in general.

Similarly, in Kenya's Turkana County, socio-cultural factors such as religious beliefs, myths about contraceptive side effects, and gender preferences influence contraceptive choices. A study by (Okenyoru et al., 2023) revealed that misconceptions about side effects and male dominance in decision-making led to low uptake of modern methods, with many women resorting to traditional methods with a deep-rooted culture of having many children.

Fear of contraceptive side effects, including those of modern methods, has shifted the focus of women to traditional methods, with a study in Kenya reporting that women are associating the methods with infertility; the prevailing belief is that using contraception, particularly at a young age or before having children, can harm a woman's uterus or reproductive system, potentially

leading to difficulties in conceiving or carrying a pregnancy to term in the future (Sedlander et al., 2018). However, the influence of partners may operate differently depending on the relationship context and the method under consideration. A partner may oppose modern methods because of concerns about side effects or fertility while accepting methods perceived as natural or less intrusive. Thus, partner influence may affect not only whether contraception is used but also which method is selected. This distinction informed the inclusion of partner influence in the present study, particularly the assessment of who had the primary influence on contraceptive choice and whether contraceptive use was discussed with partners.

Although numerous studies have examined contraceptive use in sub-Saharan Africa, most have focused on modern methods, with limited attention given to less effective contraceptives. Socio-cultural, religious, and gender-related factors have been identified as influencing contraceptive choice broadly, but the specific determinants driving the continued use of less effective methods remain underexplored, particularly in Kenya. Understanding these factors is therefore critical to inform culturally sensitive interventions aimed at reducing unintended pregnancies and improving maternal and child health outcomes.

2.4.3 Reproductive health factors

Reproductive health characteristics play a critical role in shaping women's contraceptive behavior and choice of method. A study by (Çalıkoğlu et al., 2018) on the utilization of contraceptives found an association between the number of pregnancies and methods used, where the use of contraceptives increases with pregnancies, but in this study the modern methods decreased with the number of pregnancies, indicating that women with many children are not protected by effective methods.

Study by (Compton et al., 2023) reported that higher parity is a factor in contraceptive use to limit births. This was in agreement with a study in Nigeria, which identified some predictors of any family planning use as having many children, (Akamike et al., 2020).

However, some studies suggest that women with higher parity may not necessarily adopt the most effective methods, instead relying on short-term or traditional methods due to fear of side effects or previous negative experiences with modern contraceptives. These findings underscored the importance of examining parity not only as a determinant of contraceptive use, but also as a factor influencing choosing a less effective contraceptive method. Taken together, the evidence suggests that reproductive experiences influence contraceptive behaviour, but existing findings provide stronger evidence for determinants of contraceptive use generally

than for determinants of less-effective method use. Differences in reproductive profiles, settings, and outcome definitions also make direct comparison across studies difficult. This limitation informed the present study's assessment of pregnancy history, parity, fertility intentions, and previous contraceptive-method experience. These characteristics were examined to determine whether reproductive circumstances explained the continued use of less-effective methods among women already practicing family planning in Nandi County.

2.4.4 Health system factors

Health system factors play a pivotal role in shaping women's access to, choice of, and sustained use of contraceptive methods. Beyond individual and socio-cultural determinants, the accessibility, capacity, and functioning of health systems significantly influence whether women can obtain effective family planning services and make informed contraceptive choices.

Empirical studies highlight that stock-outs and limited method mix in health facilities limit opportunities for women to choose and use their preferred contraceptive method. For instance, a facility-based study in Kajiado County, Kenya found that short-term methods (e.g., injectables, pills) were more readily available (60–75%) compared to long-acting methods (20–60%), indicating uneven service availability within public facilities. Stock-outs were common and linked to national supply chain constraints, inadequate forecasting, and insufficient trained staff, collectively affecting the provision of comprehensive family planning services (Githinji et al., 2022)Similarly, patterns have been observed in other African settings where stock-outs and lack of women's choice or preference influence the uptake of contraceptives, as women are coerced to take the available methods with no choice, leading to discontinuation and switching to less effective and natural methods due to lack of preferred choices (Silumbwe et al., 2018). This echoed a study in Burundi, which documented lack of women's family planning preferences limited their uptake, and they resorted to natural methods, which are less effective, when they could not get their method of choice at the facility (Coomson & Manu, 2019). These findings suggest that women may not always select a method solely on the basis of preference; their choice may also reflect what is available at the time they seek services. However, the studies were conducted in different health-system and geographic contexts, and their findings cannot be directly generalized to Nandi County.

Accessibility refers to how easily women can physically and economically reach family planning services, including factors like distance, transportation, costs, and geographical

barriers. Accessibility forms a cornerstone of health system influence on contraceptive utilization, with evidence demonstrating that physical proximity to health facilities significantly affects contraceptive use. A study in Zambia identified distance as a factor in why some women can't access health facilities to get modern contraceptives, limiting use and leading to adoption of the available methods (Silumbwe et al., 2018). This finding is particularly relevant to the present study because it suggests a potential pathway from health-system constraints to less-effective method use. However, facility-level availability does not necessarily translate directly into individual method choice, since women may also have personal, cultural, or partner-related reasons for preferring less-effective methods. The present study therefore examined whether contraceptive unavailability or stock-outs influenced women's method choices while considering other individual and social factors.

Although health system factors influencing contraceptive use have been widely studied, limited attention has been given to how these factors specifically drive the continued use of less effective contraceptive methods, particularly in the Kenyan context. This represents an important gap that the current study sought to address.

2.5 Summary of the literature

The reviewed literature demonstrates that unintended pregnancy remains a major public health challenge globally and in sub-Saharan Africa, with a substantial proportion attributable to less effective or inconsistent contraceptive use. While modern contraceptive methods are widely recognized as effective in preventing unintended pregnancies, many women continue to rely on traditional or user-dependent methods such as withdrawal, fertility awareness-based methods, and improperly used lactational amenorrhea. These methods exhibit significantly higher failure rates under typical use and contribute disproportionately to unintended pregnancies and their associated adverse outcomes.

Evidence further indicates that women's contraceptive choices are shaped by a complex interplay of socio-demographic factors (age, education, parity, marital status), socio-cultural and religious beliefs, reproductive intentions, and health system factors such as availability of the services and accessibility of services. Fear of side effects, myths and misconceptions, and partner opposition emerge as key drivers of reliance on less effective methods, even in settings where modern contraceptives are available.

However, several critical gaps remain in the existing body of literature. First, most studies prioritize modern contraceptive uptake, with limited attention given to the prevalence,

classification, and determinants of less effective contraceptive methods (Beyene et al., 2023; W. D. Negash et al., 2022; Tesema et al., 2022). Second, large-scale surveys such as the Demographic and Health Surveys are likely to underreport or may not fully capture the use of some traditional and user-dependent methods, obscuring the true magnitude of ineffective contraceptive utilization (Bertrand et al., 2022; Rossier et al., 2014). Third, although some fertility awareness methods like LAM and lactational amenorrhea are often classified as modern methods, few studies assess them based on their effectiveness, as they are highly user-dependent (Peragallo Urrutia et al., 2018). Finally, there is a paucity of context-specific evidence from Kenya regarding why less effective contraceptive methods persist despite high awareness of modern alternatives.

Given that contraceptive choice and correct use are central to the quality of family planning services, there was a clear need for studies that specifically examine less effective contraceptive methods and the factors influencing their continued use (D'Souza et al., 2022). This study therefore addressed these gaps by assessing the utilization of less effective contraceptive methods and associated factors among women using family planning methods in Nandi County, Kenya, to generate evidence to inform policy, strengthen counselling practices, and improve reproductive health outcomes.

CHAPTER THREE: METHODOLOGY

3.1 Study setting

The study was conducted in Nandi County, located in the North Rift Valley region of Kenya. Nandi County is one of the 47 counties in Kenya. It is known for its agricultural farming activities, including maize and tea farming. It borders the following counties: Uasin Gishu County to the North East, Kakamega County to the West, Kericho County to the South East and, Kisumu County to the South and Vihiga County to the South West.

According to the 2019 Kenya Population and Housing Census, Nandi County covers an area of 2849 KM^2 with a total population of 885,689 (males 442,259 and females 444,430) and 199, 426 households. The population of women of reproductive age (15-40) years are 221, 419, The county is divided into 6 sub-counties: Tinderet, Nandi Hills, Aldai, Chesumei, Mosop and Emgwen (Kenya National Bureau of Statistics (KNBS), 2019).

Figure 2.1 Location of Nandi County in Kenya

Source: County Government of Nandi (2023) County Integrated Development Plan

Figure 3.1 Location of study sites in Nandi County

1. Emgwen 2. Mosop.

Source: County Government of Nandi (2023) County Integrated Development Plan

3.2 Study design

A community-based cross-sectional analytical study design with a quantitative approach was employed. This design allowed for the simultaneous measurement of outcome and exposure variables and identification of associations between factors and outcome at a single point in time.

3.3 Study population

The target population was women of reproductive age (18–49 years) in the community who were currently using family planning methods. The study specifically targeted women who were attempting to control, prevent, or delay pregnancy.

The target population comprised women aged 18–49 years in Nandi County who were currently using family planning methods to prevent or delay pregnancy. The accessible population comprised eligible women aged 18–49 years who were currently using family planning methods and were residing within the selected study areas of Mosop and Emgwen Sub-counties during the study period. The study population comprised eligible women from the accessible population who were selected to participate in the study, from whom 422 women were enrolled and interviewed.

3.3.1 Inclusion criteria

Women were eligible to participate if they were aged 18–49 years, were sexually active, had an intention to delay or avoid pregnancy, and were currently using a contraceptive method for family planning.

3.3.2 Exclusion criteria

Women were excluded if they were unable to provide informed consent or had a known gynaecological condition that could affect contraceptive use.

3.4 Study variables

3.4.1 Primary outcome

The primary outcome variable for this study was utilization of less effective contraceptive methods, defined as the current use of less effective contraceptives among women using family planning methods. These were contraceptive methods having a failure rate of >10%, as classified by (Centers of Disease Control and Prevention (CDC), 2024; World Health Organization (WHO) et al., 2022).

A woman was classified as using less effective methods if they were currently using any of the following methods: (Withdrawals, rhythm/ calendar methods, SDM, LAM). Women who reported using the following methods (Male and female sterilization, injectables, oral pills (COPs or POPs), emergency contraceptives, implant, Male and female condoms) were classified as non-users of less effective contraceptives. The coding for these methods was 1 for less effective contraceptives and 0 for non-use of less effective contraceptive methods.

3.4.2 Independent variables

Independent variables were selected based on the evidence from previous literature; the variables included age, religion, education, marital status, occupation, knowledge of contraceptive methods, parity, fertility preference, history of unintended pregnancy, pregnancy outcomes, previous contraceptive use, community and cultural norms, religious influence, partner influence, peer influence, accessibility of health facilities, and availability of contraceptives at the health facility.

Age was categorized into (18-24, 25-34, and 35-49), educational attainment was categorized into (primary, secondary and tertiary), marital status was categorized into (Never in union, married/cohabiting, previously married), religious affiliation (Christian, Muslim and other), employment status (employed/self- employed, unemployed), previous history of pregnancy (yes and no), number of living children or parity (1 child, 2-3 children, > or equal to 4), outcome of most recent pregnancy (live birth, miscarriage), history of unintended pregnancy (wanted then, wanted later and did not want at all), fertility intentions (have children in future, no more children, undecided), history of previous contraceptives used (yes and no), partner communication of family planning (yes and no), partner approval of contraceptive methods

(yes and no) religious influence on contraceptive use (yes and no), cultural influence on contraceptive use (yes and no), knowledge of more effective contraceptives (low knowledge, moderate knowledge and high knowledge), decision making autonomy regarding contraceptive use (husband, woman and both), primary influence on contraceptive use (partner influence and personal preference), distance to nearest health facility (< 5km and >5 km), influence of distance on contraceptive use (yes and no), access to health facility for contraceptive services (yes and no), and influence of stock outs on contraceptive choice (yes and no).

Knowledge of more effective contraceptive methods in the study population was categorized using Bloom's cut-off points. Respondents who scored 80–100% of the total knowledge score were classified as having high knowledge, those who scored 60–79% were classified as having moderate knowledge, and those who scored <60% were classified as having low knowledge.

3.5 Sampling technique

Participants for this study were selected from the population through a multi-stage sampling strategy. In the first stage, two sub-counties were selected using simple random sampling from all the sub-counties in Nandi County, namely Mosop and Emgwen Sub-Counties. In the second stage, two wards were selected using simple random sampling from each selected sub-county, resulting in a total of 4 wards: Kabiyet and Ndalat wards from Mosop Sub-County and Kapsabet and Kilibwoni wards from Emgwen Sub-County. In the third stage, two community units were selected using simple random sampling from each selected ward from the list of all community units, resulting in a total of eight community units. In the fourth stage, three villages were selected using simple random sampling from each selected community unit, resulting in a total of 24 selected villages. The total sample size was approximately equally allocated across the 24 selected villages because the villages had comparable numbers of households, with minimal variation in size (approximately 100–150 households per village). Therefore, approximately 18 participants were recruited from each village, calculated by dividing the total sample size (422) by the number of selected villages (24). In the fifth stage, eligible households in each selected village were selected using systematic random sampling. A household listing of women aged 18–49 years who met the initial eligibility criteria was compiled with the assistance of Community Health Promoters (CHPs) and served as the sampling frame. The sampling interval (k) was calculated by dividing the total number of eligible households by the required sample size for each village. A random starting household was selected, after which every kth household was visited until the required sample was attained. Final eligibility was confirmed at the time of interview, and only women who reported current use of a contraceptive

method were enrolled in the study. Where more than one eligible woman was identified in a selected household, one participant was selected using the lottery method. Recruitment continued until the allocated sample size for each village was achieved. If a selected household did not have an eligible woman, or if the eligible woman was unavailable or declined to participate, the research team proceeded to the next household until an eligible participant was identified. We then continued with the predetermined systematic sampling procedure until the required number of participants for that village was achievedAll 422 respondents completed the interview. Sampling weights were not calculated or applied in the analysis.

3.6 Sample size determination

It was determined using the Kish and Leslie formula

$$n = \frac{Z^2 P(1-P)}{d^2}$$

n= sample size

Z= normal standard deviate corresponding to your confidence level (usually 1.96 for 95% confidence).

p= proportion of the population expected to have the characteristics 50% for 0.5 because there is no study that has looked into less effective contraceptives in Kenya.

d= margin of error (0.05 for 5%)

1-p= proportion of the population not having the outcome = (1-0.50) = 0.50

1.96^2 .0.50(1-0.50)/0.050^2

=384 respondents.

Because a multistage sampling approach was used and no empirically established design effect was available for the study setting, a design effect of 1 was applied in the original sample-size calculation. A design effect depends on factors including cluster size and the degree of similarity among individuals within clusters; therefore, estimates from previous surveys may not be directly applicable when these components differ (Katz & Zeger, 1994) 384*1, giving a total of 384 participants.

Assuming a non-response rate of 10% to the sample size, it will bring a total of 422 respondents.

Because there were no prior studies that had looked into the exact prevalence of less effective contraceptive use in the literature, we used $P = 50\%$. This is the conservative standard, gives the largest required sample for a given precision, and protects the study from being underpowered if the true prevalence is unknown or lower than national estimates. A 10% non-response adjustment yielded a final sample of 422.

3.7 Data collection methods

Prior to conducting of the study, pre-testing of questionnaires was conducted in Uasin Gishu County in Kapseret Sub-County selected households with a sample of 40 participants (around 10% of the study sample), the selected sub county was being considered due to its proximity and similarities with Nandi County. The pre-test helped to assess the clarity, relevance, flow, and comprehension of the questionnaire and informed necessary revisions before the main data collection.

Data were collected from May 2026 to July 2026 using a structured, interviewer-administered questionnaire. The questionnaire was adapted from the PMA 2020 female respondent questionnaire and the KDHS questionnaire on reproductive health, with modifications to suit the local context, and additional information from the literature review was incorporated, which covered individual-level factors, reproductive history, health system factors, and socio-cultural factors. The questionnaire was administered via KoboToolbox.

A total of 422 eligible women who consented to participate were included in the study and analysed, giving a response rate of 100% among eligible participants approached for participation. Women who were found to be ineligible were not enrolled, while those who declined to participate were not captured in KoboToolbox and were therefore not included in the study dataset. Interviews were conducted in Kiswahili, with the questionnaire translated into Kiswahili and back-translated into English to ensure consistency of meaning. Interviews were conducted in a private location within the participant's compound to maintain privacy and confidentiality. Skip patterns were incorporated into the KoboToolbox questionnaire to ensure that participants were only asked questions relevant to their responses. At the time of the interview, each participant reported one current contraceptive method; therefore, classification of current contraceptive-method utilization was based on the single method currently being used. Multiple methods were only reported when assessing previous contraceptive-method use, where participants could indicate more than one method they had used previously.

3.8 Data quality control

Several measures were undertaken to ensure the quality, completeness, and reliability of the data. The questionnaire was adapted from the PMA 2020 female respondent modules and the Kenya Demographic and Health Survey (KDHS) questionnaires and tailored to the local context to ensure relevance and clarity. The questionnaire was translated into Kiswahili and back-translated into English to minimize language barriers and preserve the intended meaning of the questions. Two research assistants with backgrounds in nursing and public health underwent a two-week training covering the study objectives, questionnaire content, probing techniques, use of KoboToolbox, and ethical considerations in handling participants.

Data security was maintained by ensuring that laptops and electronic devices used for data storage were password-protected and encrypted. Flash drives containing study data were kept in secure, lockable cabinets, with access restricted to the principal researcher and data manager. All datasets were de-identified to maintain participant confidentiality. In addition, supervisors reviewed completed questionnaires daily to identify missing data and inconsistencies, allowing corrections to be made promptly and thereby maintaining the completeness, accuracy, and reliability of the data.

3.9 Data analysis

Completed questionnaires were downloaded from the KoboToolbox and imported into STATA Vs 17 for cleaning and analysis. Data cleaning involved checking for missing values, inconsistencies, outliers, and data entry errors to ensure data quality before analysis.

At the univariate level, descriptive statistics were used to summarize the study variables. Frequencies and percentages were used to summarize categorical variables, while continuous variables were summarized using means and standard deviations. The prevalence of less effective contraceptive use was calculated as the proportion of women using less effective contraceptive methods (withdrawal, rhythm, SDM, or LAM) among the total study participants. The findings were presented using tables and figures.

At the bivariate level, the association between each independent variable and the outcome variable (utilization of less effective contraceptive methods) was assessed. Cross-tabulations were used to examine the distribution of the outcome across categories of the independent variables, and Pearson's chi-square test was used to assess associations between categorical variables. Continuous variables were compared using independent-samples *t*-tests. Variables with a p-value <0.25 in the bivariate analysis, together with variables known from previous

literature to be associated with contraceptive use, were considered for inclusion in the multivariable model.

Given that the prevalence of the outcome (utilization of less effective contraceptive methods) exceeded 10%, a modified Poisson regression model with robust standard errors was used to directly estimate prevalence ratios, thereby avoiding the overestimation of effect sizes that may occur when odds ratios are used for common outcomes.

At the multivariable level, modified Poisson regression analysis with robust standard errors was performed to identify factors independently associated with the utilization of less effective contraceptive methods while adjusting for potential confounding variables. The results were reported as crude prevalence ratios (cPRs) and adjusted prevalence ratios (aPRs) with their corresponding 95% confidence intervals (95% CIs). Statistical significance was determined at $p < 0.05$.

Before fitting the final multivariable model, multicollinearity among the independent variables was assessed using the Variance Inflation Factor (VIF). No evidence of multicollinearity was observed, as VIF values ranged from 1.08 to 1.38, with a mean VIF of 1.22, indicating that multicollinearity was not a concern in the final model.

Because sampling weights were not calculated or applied, the analysis was based on the observed sample without weighting for differential selection probabilities across sampling stages. This was considered when interpreting the findings and is acknowledged as a limitation.

3.10 Ethical considerations

Ethical approval to conduct the study was obtained from the **Busitema University Research Ethics Committee (REC)** under approval number **BUFHS-2026-695**. Authorization to conduct the study in Kenya was obtained from the **National Commission for Science, Technology and Innovation (NACOSTI)** under license No. **NACOSTI/P/26/4189190**. Permission was also obtained from the County Department of Health in Nandi County and from the relevant administrative personnel in the selected sub-counties, wards, and community units to facilitate community entry and engagement.

Informed consent was obtained from all participants before data collection. Participants were informed about the voluntary nature of their participation and their right to decline participation or withdraw from the study at any stage without any consequences. Participants' privacy and

confidentiality were maintained throughout the study. Interviews were conducted in safe and private locations, and personal identifiers were not collected.

All study data were handled securely. Unique identifiers were used for participants, while electronic data were password-protected and anonymized. Access to the data was restricted to the research team. These measures were implemented to protect participants' confidentiality and ensure ethical handling and integrity of the study data.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Results

4.1.1 Background characteristics of the respondents

Table 1 presents the background characteristics of the respondents. The mean age of the respondents was 32.0 ± 6.5 years. Nearly half of the respondents were aged 25–34 years 48.8%; (n=206). Nearly half had attained primary education, 46.0% (n=194). More than two-thirds of the respondents were married or cohabiting 74.4% (n=314). The vast majority were Christians 97.2% (n=410) and were unemployed 75.8% (n=320).

Table 1. Background characteristics of the respondents (N=422)

Table 1. Background characteristics of the respondents (N=422)

Characteristics	**Frequency (N)**	**Percentage (%)**
Age group (years)		
18–24	60	14.2
25–34	206	48.8
35–49	156	37.0
Mean ± SD	**32.0±6.5**	
Educational attainment		
Primary	194	46.0
Secondary	152	36.0
Tertiary	76	18.0
Marital status		
Never in union	77	18.2
Married/cohabiting	314	74.4
Previously married	31	7.3
Religious affiliation		
Christian	410	97.2
Muslim	9	2.1
Other	3	0.7
Employment status		
Employed/self-employed	102	24.2

Characteristics	Frequency (N)	Percentage (%)
Unemployed	320	75.8

4.1.2 Reproductive health characteristics of respondents

Table 2 presents the reproductive health characteristics of the respondents. The majority of the respondents reported a previous history of pregnancy, 94.8% (n=400). Among those with a previous history of pregnancy, half had 2–3 living children 50.7% (n=203), and nearly all reported a live birth as the outcome of their most recent pregnancy 99.5% (n=398). About half reported that their most recent pregnancy was wanted, 51.0% (n=204). Regarding fertility intentions, nearly half of the respondents did not intend to have more children, 46.9% (n=198). Almost all respondents had ever used contraceptives, 98.8% (n=417).

Table 2. Reproductive health characteristics of respondents (N=422)

Table 2. Reproductive health characteristics of respondents (N=422)

Characteristics	Frequency (N)	Percentage (%)
Previous history of pregnancy		
Yes	400	94.8
No	22	5.2
Number of living children (n=400)		
1 child	70	17.5
2–3 children	203	50.7
≥4 children	127	31.8
Outcome of most recent pregnancy (n=400)		
Live birth	398	99.5
Miscarriage	2	0.5
History of unintended pregnancy (n=400)		
Wanted then	204	51.0
Wanted later	175	43.8
Did not want at all	21	5.2
Fertility intentions		
Have children in future	166	39.3

Characteristics	Frequency (N)	Percentage (%)
No more children	198	46.9
Undecided	58	13.7
Contraceptive method currently using is the first ever		
Yes	5	1.2
No	417	98.8
Previous contraceptive methods used among current users of less-effective contraceptive methods (n=107)		
Less effective contraceptives	39	36.5
Both less effective and more effective contraceptives	43	40.19
More effective contraceptives	25	23.36

4.1.3 Socio-cultural characteristics, contraceptive knowledge, and decision-making profile of respondents

Table 3 presents the socio-cultural characteristics, contraceptive knowledge, and decision-making profile of respondents. A majority of the respondents, 76.3% (n=322), reported discussing family planning methods with their partners. Among those who communicated with their partners, 88.5% (n=285) stated that their partner approved of their current contraceptive method. In terms of household decision-making autonomy, joint decision-making was the most common profile, with 56.4% (n=238) of respondents indicating that both partners jointly make decisions regarding contraceptive use and the number of children. This was followed by 37.9% (n=160) of women making the decision independently, while the husband was the sole decision-maker in 5.7% (n=24) of cases. Furthermore, personal preference was the Primary influence on contraceptive method choice for most respondents, 89.8% (n=379). Religious beliefs 8.8% (n=37) and cultural or traditional beliefs in the community 1.4% (n=6) were reported to have minimal influence on the respondents' contraceptive choices. Regarding knowledge of more effective contraceptive methods, only about one-quarter of respondents demonstrated high knowledge 24.6% (n=104).

Table 3. Socio-cultural characteristics, contraceptive knowledge, and decision-making profile of respondents (N = 422)

Table 3. Socio-cultural characteristics, contraceptive knowledge, and decision-making profile of respondents (N = 422)

Characteristics	Frequency (N)	Percentage (%)
Socio-cultural factors		
Partner communication on family planning		
Yes	322	76.3
No	100	23.7
Partner approval of current contraceptive method (n=322)		
Yes	285	88.5
No	37	11.5
Religious influence on contraceptive use		
Yes	37	8.8
No	385	91.2
Cultural influence on contraceptive choice		
Yes	6	1.4
No	416	98.6
Contraceptive knowledge		
Knowledge of more effective contraceptive methods		
Low knowledge	163	38.6
Moderate knowledge	155	36.7
High knowledge	104	24.6
Contraceptive decision-making profile		
Decision-making autonomy regarding contraceptive use		
Husband	24	5.7
Woman	160	37.9
Both	238	56.4
Primary influence on contraceptive method choice		
Partner influence	43	10.2
Personal preference	379	89.8

4.1.4 Health system Factors related to contraceptive access and choice

Table 4 presents the health system factors related to contraceptive access and choice among the respondents. More than two-thirds of the respondents lived within 5 km of the nearest health facility, 67.1% (n=283). The majority reported that distance did not influence their contraceptive choice, 85.8% (n=362). Most respondents had ever visited a health facility for contraceptive services, 89.6% (n=378). About one-third indicated that contraceptive stock-outs influenced their choice of contraceptive method 32.0% (n=135).

Table 4. Health Facility Factors Related to Contraceptive Access and Choice (N = 422)

Table 4. Health Facility Factors Related to Contraceptive Access and Choice (N = 422)

Characteristics	Frequency (N)	Percentage (%)
Distance to nearest health facility		
<5 km	283	67.1
≥5 km	139	32.9
Influence of distance on contraceptive choice		
Yes	60	14.2
No	362	85.8
Ever visited a health facility for contraceptive services		
Yes	378	89.6
No	44	10.4
Influence of contraceptive stock-outs on contraceptive choice		
Yes	135	32.0
No	287	68.0

4.1.5 Distribution of specific contraceptive methods currently utilized by the respondents

Figure 1 presents the distribution of specific contraceptive methods currently utilized by the respondents. Injectables were the most commonly utilized method, at 33.4% (n=141), followed by implants at 29.9% (n=126). Among the less effective contraceptive methods, the Standard Days Method (SDM) was the most frequently utilized, 17.8% (n=75), followed by

rhythm/calendar methods at 4.7% (n=20), withdrawal at 1.7% (n=7), and the lactational amenorrhea method (LAM) at 1.2% (n=5).

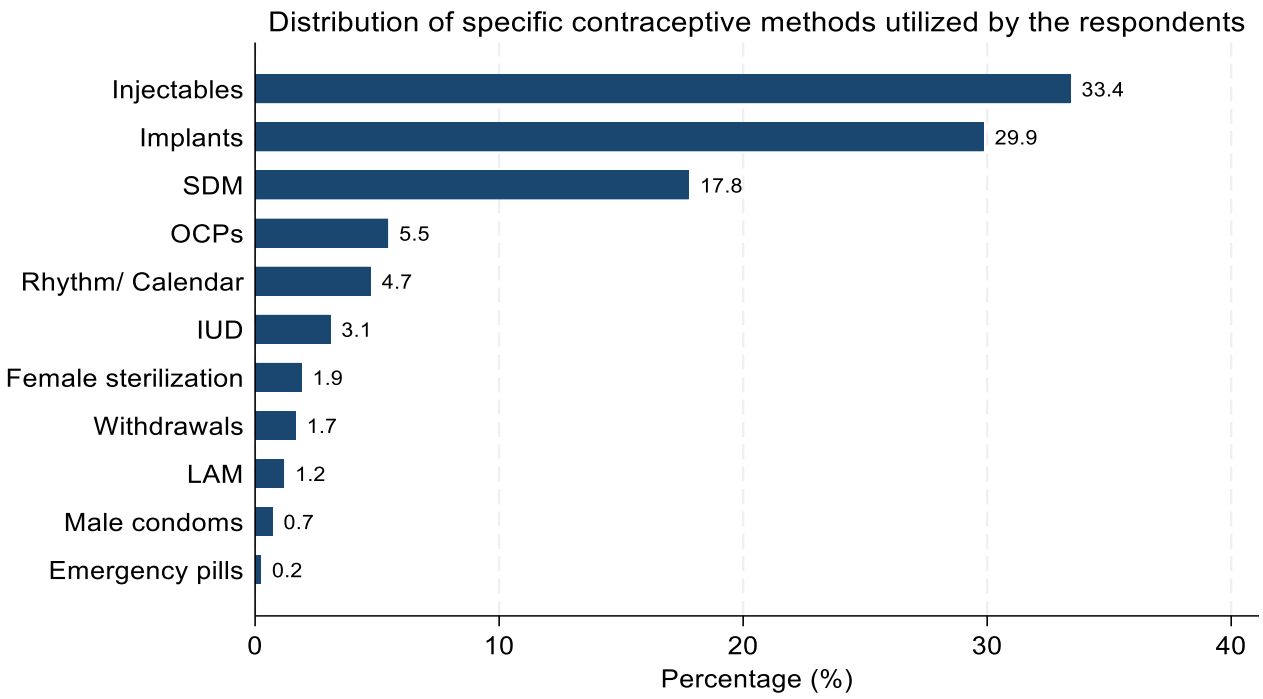

Figure 1. Distribution of specific contraceptive methods currently utilized by the respondents

4.1.6 Prevalence of less effective contraceptive methods use among respondents

Figure 2 presents the prevalence of less effective contraceptive methods use among the women who were using family planning methods. One-quarter of the respondents reported using less effective contraceptive methods 25.4% (95% CI: 21.42–29.74; n=107).

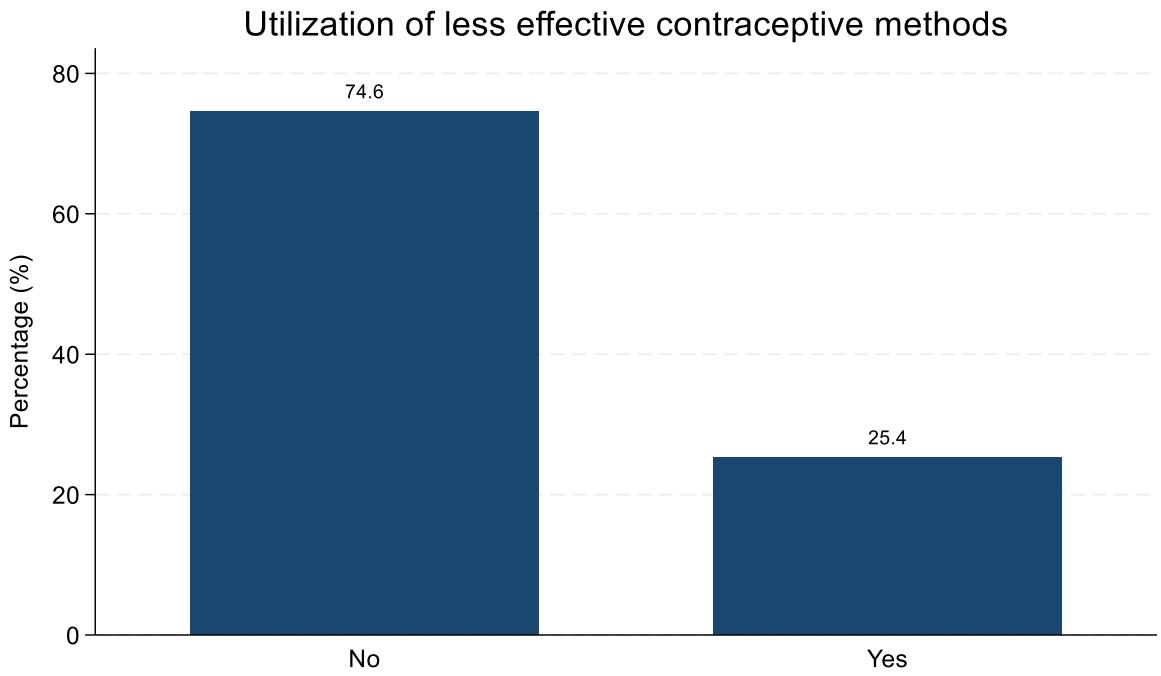

Figure 2. Prevalence of se of less effective contraceptive methods among respondents

4.1.7 Reported reasons for use of less effective contraceptive methods among respondents

Figure 3 presents the reported reasons for use of less effective contraceptive methods among respondents who used these methods. Among respondents using less effective contraceptive methods 25.4% (n=107), the most commonly reported reason for the utilization of the current method was fear of side effects from other contraceptive methods 95.3% (n=102). A small proportion reported convenience 2.8% (n=3) and absence of side effects 1.9% (n=2).

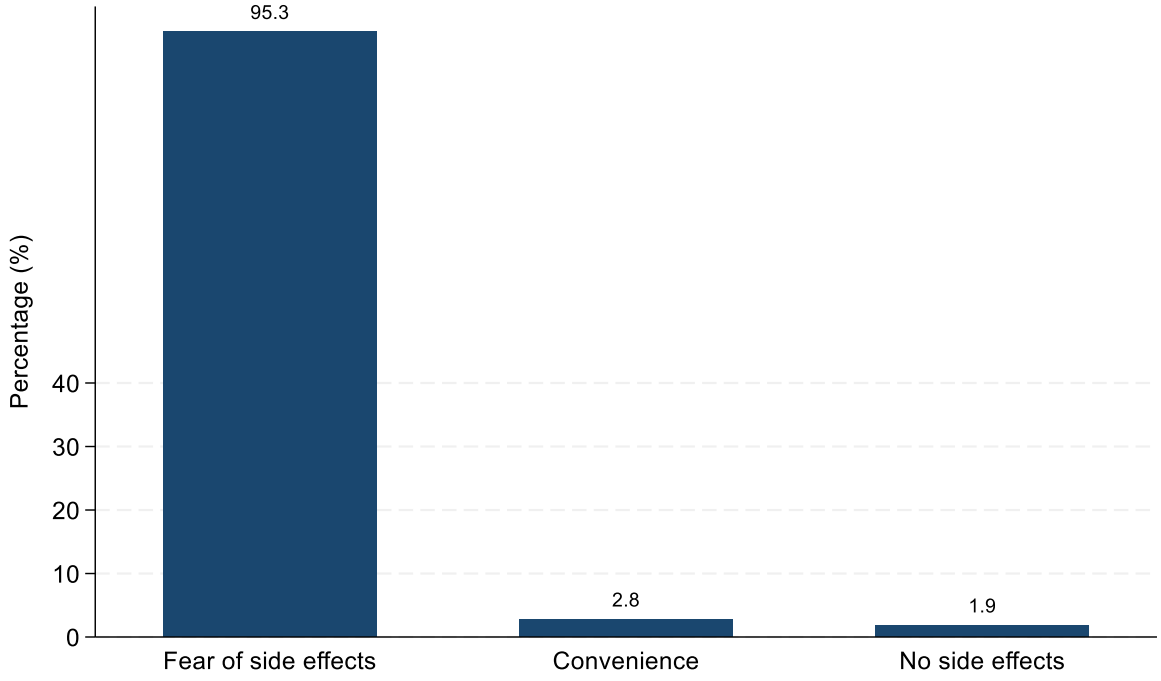

Figure 3. Reasons for use of the less effective contraceptive methods

4.1.8 Distribution of less effective contraceptive methods use across selected characteristics

Table 5 presents the distribution of the utilization of less effective contraceptive methods across selected characteristics. The utilization of less effective contraceptive methods was higher among women who had never visited a health facility for contraceptive services 95.5% (n=42), those with no previous history of pregnancy 63.6% (n=14), women whose contraceptive method choice was primarily influenced by their partners 48.8% (n=21), those who had never been in union 44.2% (n=34), women with tertiary education 38.2% (n=29), those who reported fear of side effects 77.9% (n=102) and those who reported no influence of contraceptive stock-outs on contraceptive choice 31.4% (n=90).

In contrast, lower utilization of less effective contraceptive methods was observed among women who had previously been married 9.7% (n=3), those who reported that distance influenced their contraceptive choice 11.7% (n=7), women who indicated that contraceptive stock-outs influenced their contraceptive choice 12.6% (n=17), those who had ever visited a health facility for contraceptive services 17.2% (n=65), respondents who were undecided about future fertility intentions 17.2% (n=10), and women with primary education 20.6% (n=40).

Table 5. Distribution of utilization of less effective contraceptive methods across selected characteristics

Table 5. Distribution of utilization of less effective contraceptive methods across selected characteristics

Characteristics	**Total (N=422)**	**Use of less effective contraceptive methods N (%)**	**Non-use of less effective contraceptive methods N (%)**	**X^2 (df)**	**P-value**
Age group (years)				1.07 (2)	0.587
18–24	60	14 (23.3)	46 (76.7)		
25–34	206	49 (23.8)	157 (76.2)		
35–49	156	44 (28.2)	112 (71.8)		
Educational attainment				8.89 (2)	0.012
Primary	194	40 (20.6)	154 (79.4)		
Secondary	152	38 (25.0)	114 (75.0)		
Tertiary	76	29 (38.2)	47 (61.8)		
Marital status				19.96 (2)	<0.001
Never in union	77	34 (44.2)	43 (55.8)		
Married/cohabiting	314	70 (22.3)	244 (77.7)		
Previously married	31	3 (9.7)	28 (90.3)		
Employment status				0.56 (1)	0.454
Employed/self-employed	102	23 (22.5)	79 (77.5)		
Unemployed	320	84 (26.2)	236 (73.8)		
Previous history of pregnancy				17.97 (1)	<0.001
Yes	400	93 (23.2)	307 (76.8)		
No	22	14 (63.6)	8 (36.4)		
Fertility intentions				2.52 (2)	0.283
Have children in future	166	46 (27.7)	120 (72.3)		
No more children	198	51 (25.8)	147 (74.2)		

Characteristics	Total (N=422)	Use of less effective contraceptive methods N (%)	Non-use of less effective contraceptive methods N (%)	X^2 (df)	P-value
Undecided	58	10 (17.2)	48 (82.8)		
Partner communication on family planning				14.27 (1)	<0.001
Yes	322	96 (29.8)	226 (70.2)		
No	100	11 (11.0)	89 (89.0)		
Decision-making autonomy regarding contraceptive use				2.13 (2)	0.345
Husband	24	8 (33.3)	16 (66.7)		
Woman	160	35 (21.9)	125 (78.1)		
Both	238	64 (26.9)	174 (73.1)		
Knowledge of more effective contraceptive methods				1.72 (2)	0.422
Low knowledge	163	41 (25.2)	122 (74.8)		
Moderate knowledge	155	35 (22.6)	120 (77.4)		
High knowledge	104	31 (29.8)	73 (70.2)		
Primary influence on contraceptive method choice				13.95 (1)	<0.001
Partner influence	43	21 (48.8)	22 (51.2)		
Personal preference	379	86 (22.7)	293 (77.3)		
Distance to nearest health facility				0.03 (1)	0.857

Characteristics	Total (N=422)	Use of less effective contraceptive methods N (%)	Non-use of less effective contraceptive methods N (%)	X^2 (df)	P-value
<5 km	283	71 (25.1)	212 (74.9)		
≥5 km	139	36 (25.9)	103 (74.1)		
Influence of distance on contraceptive choice				6.92 (1)	0.009
Yes	60	7 (11.7)	53 (88.3)		
No	362	100 (27.6)	262 (72.4)		
Ever visited a health facility for contraceptive services				127.53 (1)	<0.001
Yes	378	65 (17.2)	313 (82.8)		
No	44	42 (95.5)	2 (4.5)		
Influence of contraceptive stock-outs on contraceptive choice				17.08 (1)	<0.001
Yes	135	17 (12.6)	118 (87.4)		
No	287	90 (31.4)	197 (68.6)		

4.1.9 Factors associated with the utilization of less effective contraceptive methods

Table 6 presents the factors associated with the utilization of less effective contraceptive methods. In the bivariate analysis, variables with a p-value ≤0.25 were considered for inclusion in the multivariable model. These included educational attainment, marital status, previous history of pregnancy, fertility intentions, partner communication on family planning, knowledge of more-effective contraceptive methods, primary influence on contraceptive

method choice, influence of distance on contraceptive choice, ever visiting a health facility for contraceptive services, and influence of contraceptive stock-outs on contraceptive choice. In addition, variables with a known association with contraceptive use in previous literature were considered for inclusion irrespective of their bivariate p-value, particularly to account for potential confounding. These included age, employment status, and decision-making autonomy.

After adjusting for potential confounders, women aged 25-34 years were 52% more likely to utilize less effective contraceptive methods compared to those aged 18-24 years (aPR = 1.52, 95% CI: 1.01-2.30). Similarly, women aged 35-49 years were 2.24 times as likely to utilize less effective contraceptive methods compared to women aged 18-24 years (aPR = 2.24, 95% CI: 1.31-3.84). Women who were married or cohabiting had a 59% lower prevalence of utilizing less effective contraceptive methods compared to women who had never been in union (aPR = 0.41, 95% CI: 0.26-0.65). Employed or self-employed women had a 34% lower prevalence of utilizing less effective contraceptive methods compared to unemployed women (aPR = 0.66, 95% CI: 0.48-0.91). Women who had not discussed family planning with their partners had a 68% lower prevalence of utilizing less effective contraceptive methods compared to those who had discussed family planning with their partners (aPR = 0.32, 95% CI: 0.16-0.63). Women whose contraceptive method choice was primarily influenced by their partners were 51% more likely to utilize less effective contraceptive methods compared to those whose contraceptive method choice was based on personal preference (aPR = 1.51, 95% CI: 1.03–2.20).

Women who had never visited a health facility for contraceptive services were 3.21 times as likely to utilize less effective contraceptive methods compared to women who had ever visited a health facility for contraceptive services (aPR = 3.21, 95% CI: 2.32–4.46). Women who reported that contraceptive stock-outs influenced their contraceptive method choice had a lower prevalence of less-effective contraceptive method use compared with those who reported that stock-outs did not influence their contraceptive choice (aPR = 0.61, 95% CI: 0.37–0.99).

Table 6. Factors associated with the utilization of less effective contraceptive methods

Table 6. Factors associated with the utilization of less effective contraceptive methods

Characteristics	**Total (N=422)**	**Utilization of less effective contraceptive methods** **N (%)**	**Crude prevalence ratio (cPR) [95% CI]**	**P-value**	**Adjusted prevalence ratio (aPR) [95% CI]**	**P-value**
Age group (years)						
18–24	60	14 (23.3)	Ref		Ref	
25–34	206	49 (23.8)	1.02 [0.61-1.72]	0.942	**1.52 [1.01-2.30]**	**0.044**
35–49	156	44 (28.2)	1.21 [0.72-2.04]	0.477	**2.24 [1.31-3.84]**	**0.003**
Educational attainment						
Primary	194	40 (20.6)	Ref		Ref	
Secondary	152	38 (25.0)	1.21 [0.82-1.79]	0.333	1.18 [0.81-1.70]	0.385
Tertiary	76	29 (38.2)	**1.85 [1.24-2.76]**	**0.002**	0.94 [0.57-1.54]	0.794
Marital status						
Never in union	77	34 (44.2)	Ref		Ref	
Married/cohabiting	314	70 (22.3)	**0.50 [0.36-0.70]**	**<0.001**	**0.41 [0.26-0.65]**	**<0.001**
Previously married	31	3 (9.7)	**0.22 [0.07-0.66]**	**0.007**	0.32 [0.10-1.06]	0.063
Employment status						
Employed/self-employed	102	23 (22.5)	0.86 [0.57-1.29]	0.461	0.66 [0.48-0.91]	**0.011**
Unemployed	320	84 (26.2)	Ref		Ref	
Previous history of pregnancy						
Yes	400	93 (23.2)	Ref		Ref	
No	22	14 (63.6)	**2.74 [1.90-3.94]**	**<0.001**	0.87 [0.54-1.40]	0.568
Fertility intentions						
Have children in future	166	46 (27.7)	1.08 [0.76-1.51]	0.675	0.88 [0.58-1.34]	0.557
No more children	198	51 (25.8)	Ref		Ref	
Undecided	58	10 (17.2)	0.67 [0.36-1.23]	0.199	0.63 [0.39-1.01]	0.054

Characteristics	Total (N=422)	Utilization of less effective contraceptive methods N (%)	Crude prevalence ratio (cPR) [95% CI]	P-value	Adjusted prevalence ratio (aPR) [95% CI]	P-value
Partner communication on family planning						
Yes	322	96 (29.8)	Ref		Ref	
No	100	11 (11.0)	**0.37 [0.21-0.66]**	**0.001**	0.32 [0.16-0.63]	**0.001**
Decision-making autonomy regarding contraceptive use						
Husband	24	8 (33.3)	1.24 [0.68-2.27]	0.486	1.19 [0.71-2.01]	0.509
Woman	160	35 (21.9)	0.81 [0.57-1.17]	0.262	1.34 [0.90-1.99]	0.156
Both	238	64 (26.9)	Ref		Ref	
Knowledge of more effective contraceptive methods						
Low knowledge	163	41 (25.2)	0.84 [0.57-1.25]	0.402	0.80 [0.51-1.26]	0.330
Moderate knowledge	155	35 (22.6)	0.76 [0.50-1.15]	0.190	0.76 [0.51-1.13]	0.178
High knowledge	104	31 (29.8)	Ref		Ref	
Primary influence on contraceptive method choice						
Partner influence	43	21 (48.8)	**2.15 [1.50-3.08]**	**<0.001**	**1.51 [1.03-2.20]**	**0.033**
Personal preference	379	86 (22.7)	Ref		Ref	
Influence of distance on contraceptive choice						
Yes	60	7 (11.7)	**0.42 [0.21-0.86]**	**0.018**	0.50 [0.23-1.06]	0.071
No	362	100 (27.6)	Ref		Ref	

Characteristics	Total (N=422)	Utilization of less effective contraceptive methods N (%)	Crude prevalence ratio (cPR) [95% CI]	P-value	Adjusted prevalence ratio (aPR) [95% CI]	P-value
Ever visited a health facility for contraceptive services						
Yes	378	65 (17.2)	Ref		Ref	
No	44	42 (95.5)	**5.55 [4.41-6.99]**	**<0.001**	**3.21 [2.32-4.46]**	**<0.001**
Influence of contraceptive stock-outs on contraceptive choice						
Yes	135	17 (12.6)	**0.40 [0.25-0.65]**	**<0.001**	**0.61 [0.37-0.99]**	**0.045**
No	287	90 (31.4)	Ref		Ref	

4.2 Discussion

The main objective of this study was to determine the prevalence and factors associated with the utilization of less effective contraceptive methods among women using family planning methods in Nandi County, Kenya.

4.2.1 Prevalence of less effective contraceptive use among women using family planning methods

The study found that 107/422 (25.4%) of women using family planning relied on less effective contraceptive methods, with the Standard Days Method (17.8%) being the most commonly used, followed by the rhythm/calendar method (4.7%), withdrawal (1.7%), and the lactational amenorrhea method (1.2%). This finding indicates a considerable proportion of women remained at risk of unintended pregnancy despite practicing contraception due to reliance on methods with higher typical-use failure rates.

The prevalence observed was higher than the 6.7% traditional contraceptive users reported in Uganda (Nabukeera et al., 2026) and the 6% reported in the 2022 Kenya Demographic and

Health Survey (Kenya Demographic Health Survey (KDHS), 2022), but lower than the 44.3% reported in Nigeria (Ajayi et al., 2018). It was comparable to findings from Turkey, 29.5% (Çalıkoğlu et al., 2018), and India, 23.7% (V. Namasivayam et al., 2023), among women using traditional contraceptive methods. These differences may be explained by variations in study populations, cultural contexts, and definitions used to classify less effective contraceptive methods. Unlike some previous studies that assessed traditional contraceptive use among women of reproductive age, this study focused specifically on women already using family planning methods or trying to prevent, avoid, and delay pregnancy, which may explain differences in prevalence estimates. The substantial proportion of women relying on less-effective methods indicates continued vulnerability to unintended pregnancy despite contraceptive use; hence, family planning services should strengthen support for informed contraceptive choice and access to effective contraceptive methods.

The relatively high use of less effective methods may be related to concerns about side effects of modern contraceptives. In this study, 95.3% of women using less effective methods reported fear of side effects. This finding is consistent with evidence from Kenya showing that misconceptions and fears regarding hormonal and long-acting contraceptive methods influence contraceptive choices and may encourage reliance on traditional methods (Odwe et al., 2021). Additionally, the interviewer-administered approach used in this study may have improved identification of less effective contraceptives commonly used, reducing possible under-reporting.

4.2.2 Factors associated with utilization of less effective contraceptives among women using family planning methods

Interpreted within Andersen's Behavioural Model of Health Services Use, both predisposing and enabling factors were associated with utilization of less-effective contraceptive methods. Predisposing characteristics, particularly age, marital status, employment status, partner influence on method choice, and partner communication, were independently associated with utilization, while enabling factors, particularly health-facility contact and perceived influence of contraceptive stock-outs, were also significant. This suggests that contraceptive method choice was shaped by both individual and interpersonal characteristics and women's engagement with and access to family planning services. Overall, the observed associations may reflect differences in individual, interpersonal, socioeconomic, and health-service factors. However, these explanations are interpreted as associations and not causal inferences, as the

cross-sectional design does not establish temporality and alternative explanations, including unmeasured confounding, cannot be excluded.

Age was one of the factors independently associated with utilization of less effective contraceptive methods. Women aged 25-34 years were 1.52 times more likely to use less effective contraceptive methods than those aged 18-24 years (aPR =1.52, 95% CI: 1.01-2.30). Similarly, women aged 35-49 years were 2.24 times more likely to utilize less effective contraceptive methods compared with women aged 18-24 years (aPR = 2.24, 95% CI: 1.31-3.84). These findings are consistent with a study in Ghana, where older women aged 35-49 years increasingly transitioned to traditional or fertility-awareness methods as they perceived themselves to have lower fecundity or wished to avoid hormonal contraceptives near the end of their reproductive years (Takyi et al., 2023). Similarly, a study in Ethiopia reported lower utilization of modern contraceptive methods among women aged 35 years and above (Beyene et al., 2023), suggesting that increasing age may be associated with reduced reliance on modern methods and greater use of less effective contraceptive methods. However, these findings contrast with those of (Ochako et al., 2016) in Kenya, where older women were less likely to use traditional contraceptives, which found that women aged 25–34 years were more likely to utilize modern contraceptive methods than those aged 18–24 years, with older women generally less likely to use traditional methods.

One possible explanation for the observed age association is that differences in fertility intentions, perceptions of declining fertility with age, previous contraceptive experiences, or concerns about side effects may influence method choice. Almost half of the participants, 46.9% (n=198), reported that they did not want any more children, and, maybe due to the perception that fertility declines with age, reducing the risk of pregnancy, reliance on less-effective methods among older women may nonetheless increase the risk of unintended pregnancy. These findings highlight the need for age-responsive family planning counselling that addresses misconceptions about declining fertility and provides balanced information on effective contraceptive options throughout the reproductive life course.

Marital status was significantly associated with utilization of less effective contraceptive methods. Married or cohabiting women had 59% lower prevalence of using a less effective method than women who had never been in union (aPR = 0.41, 95% CI: 0.26-0.65), suggesting that stable unions facilitate access to more effective contraception and reduce reliance on less effective contraceptives. This finding is consistent with studies conducted across Sub-Saharan

Africa, which reported higher utilization of modern contraceptive methods among married women than never-married women, attributing this to greater partner involvement and engagement with family planning services (Boadu, 2022; Tesema et al., 2022). However, it contrasts with findings from Ethiopia, where never-married women were more likely to use modern contraceptives than married women (Fenta et al., 2024), and with qualitative evidence from Uganda showing that some married women relied on traditional or partner-approved methods because of husbands' opposition to hormonal contraception (Kabagenyi et al., 2016). The lower utilization of less effective contraceptive methods among married or cohabiting women may reflect differences in reproductive circumstances and partner relationships; women in established unions may have more stable fertility intentions and greater opportunities to discuss pregnancy spacing or limiting with their partners, which may facilitate selection of more effective methods. In contrast, never-in-union women may face different social or access-related circumstances that influence their contraceptive choice. It has important public health implications, as barriers such as stigma, confidentiality concerns, and perceived low pregnancy risk among never-in-union women may limit their access to and use of effective contraceptive methods, potentially increasing their risk of unintended pregnancy. These findings highlight the need for family planning programmes and policymakers to ensure equitable, confidential access to effective contraceptive methods for women regardless of marital status, while promoting supportive and informed couple communication where appropriate.

Employment was significantly associated with utilization of less effective contraceptive methods. Employed or self-employed women had a 34% lower prevalence of using a less effective method than unemployed women (aPR = 0.66, 95% CI: 0.48-0.91), suggesting employment is associated with greater use of more effective contraception among family planning users in the population. This finding is consistent with studies from West Africa, which reported higher modern contraceptive use among employed women (Terefe et al., 2024); a study in Kenya, where unemployed women were more likely to use traditional contraceptive methods (Ochako et al., 2016); and Ethiopia, where employment was positively associated with modern contraceptive use (Gebre & Edossa, 2020). The difference observed could be explained by the fact that employment may enhance women's financial autonomy, access to health information, and ability to obtain contraceptive services, thereby promoting the use of more effective contraceptive methods**.** This suggests that socioeconomic circumstances shape women's ability to access and choose effective contraceptive methods, which has direct relevance for equity in family planning service delivery. Family planning programmes should

therefore ensure that information and services are accessible to women regardless of employment status or socioeconomic circumstances, to reduce reliance on less effective contraceptive methods among economically disadvantaged women.

Partner influence was significantly associated with utilization of less effective contraceptive methods. Women whose method choice was primarily influenced by their partners were 1.51 times more likely to use a less effective method than those guided by personal preference (aPR = 1.51, 95% CI: 1.03-2.20). This finding demonstrates the relevance of socio-cultural and interpersonal factors to contraceptive choice. Partner influence may result in less-effective method use when the partner's preferences or concerns differ from the woman's reproductive needs due to perceived side effects of modern methods. This finding is consistent with evidence from Kenya, Uganda, and Ghana, where male dominance in contraceptive decision-making, misconceptions about modern contraceptives, and restrictive sociocultural norms contributed to greater reliance on traditional methods (Okenyoru et al., 2023; A. Namasivayam et al., 2022; Agyekum et al., 2022). However, other studies have shown that supportive male involvement can promote effective contraceptive use (Balogun et al., 2016; Mulatu et al., 2022). This difference may reflect the distinction between supportive partner involvement and partner control over the specific contraceptive method. A possible explanation is that women whose contraceptive decisions are partner-driven may prioritize their partners' preferences over their own needs. Where male partners hold misconceptions or favor fertility-awareness methods, women may adopt less effective options despite preferring more effective alternatives. Partner-driven decision-making may limit women's ability to choose methods based on their own reproductive needs and preferences, undermining reproductive autonomy at a population level. Policymakers and family planning programs should prioritize promoting women's reproductive autonomy alongside structured male engagement in family planning education, to support informed and voluntary joint decision-making rather than control over method choice.

Facility contact was significantly associated with utilization of less effective contraceptive methods. Women who had never visited a health facility for contraceptive services were 3.21 times more likely to use a less effective method than those who had ever visited a health facility (aPR = 3.21, 95% CI: 2.32-4.46). This finding is consistent with studies from Zambia, which identified health facility accessibility as an important determinant of contraceptive utilization (Silumbwe et al., 2018), India, where contact with health workers promoted sustained modern contraceptive use and reduced reliance on traditional methods (Bhan et al., 2026), East Africa

study, where health facility visits were associated with informed choice of modern contraceptive methods, (Zeleke et al., 2025), and a study in Nigeria, where contact with healthcare facilities motivated modern contraceptive uptake (Solanke et al., 2023). Contradicting these findings, a study in Pakistan and Uganda found that the content of counselling, rather than facility contact alone, predicted modern method use and continuation (Chakraborty et al., 2019). This finding may be explained by differences in access to contraceptive counselling and reproductive-health information. Women who have never visited a health facility may have limited access to accurate contraceptive information and counselling, increasing reliance on misconceptions or advice from informal sources and consequently the use of less effective methods. Facility visits also enable individualized counselling, side-effect management, and informed method selection based on reproductive intentions and medical eligibility, services unavailable to women who never access care. Limited facility contact represents a major, modifiable barrier to effective contraceptive use at population level, as it reduces opportunities for informed contraceptive choice and contributes to continued reliance on less-effective methods. From a policy and programme perspective, community-based family planning services, including the use of Community Health Promoters, should be strengthened to reach women with limited facility contact and link them to appropriate services.

Stock-outs were significantly associated with utilization of less effective contraceptive methods. Women who reported that contraceptive stock-outs influenced their method choice had a lower prevalence of less-effective contraceptive method use compared with those who reported that stock-outs did not influence their contraceptive choice (aPR = 0.61, 95% CI: 0.37-0.99). This inverse association was unexpected because stock-outs might reasonably be expected to limit access to preferred contraceptive methods. This finding differs from evidence that contraceptive stock-outs can reduce access to modern methods; a study in Western Kenya found that women experiencing stock-outs typically sought alternative modern methods or other facilities rather than switching to less-effective methods (Tumlinson et al., 2023). This is consistent with evidence from India showing that contraceptive availability alone does not determine method choice, as many women continued using traditional methods despite improved availability of modern contraceptives (V. Namasivayam et al., 2023). This interpretation is supported by the present study's facility-contact finding, where women who had no facility contact were over three times more likely to rely on less effective methods. Women who remain engaged with facilities likely receive counselling and alternative modern methods during stock-outs, whereas disconnected women may be unaware stock-outs are even

relevant and default to less effective methods regardless of supply conditions. However, these explanations were not directly measured and should therefore be considered hypotheses requiring further investigation. The confidence interval was also close to the null value, and the finding should consequently be interpreted cautiously. It should not be interpreted as evidence that stock-outs reduce use of less-effective contraceptive methods. The variable therefore likely reflects facility engagement and health-system literacy more than commodity availability itself. Engagement with health facilities and health-system literacy may influence contraceptive choice, highlighting the importance of maintaining women's access to reliable family planning information and services. Ensuring uninterrupted access to contraceptive methods is important for supporting informed contraceptive choice and consistent pregnancy prevention at the population level. This finding underscores the need to strengthen facility-based family planning services, ensure continuous contraceptive supply, and provide counselling on suitable alternatives during temporary stock-outs and when preferred methods are unavailable.

Partner communication was significantly associated with utilization of less effective contraceptive methods. Women who had not discussed family planning with their partner had 68% lower prevalence of using less effective contraceptive methods than those who had discussed family planning with their partners (aPR = 0.32, 95% CI: 0.16–0.63). This finding contrasts with studies from Cameroon and Ethiopia, where partner communication was associated with greater modern contraceptive (Njotang et al., 2017; Zelalem et al., 2021). The unexpected inverse association observed in the present study suggests that partner communication alone may not necessarily correspond to the selection of more-effective contraceptive methods. Partner communication does not automatically lead to informed or supportive decision-making. Partner communication may not necessarily result in the selection of more effective contraceptive methods. Where partners have a strong influence on contraceptive decisions, discussions may result in choices that reflect partner preferences rather than the woman's preferred method. This may partly explain the higher utilization of less-effective methods among women who discussed family planning with their partners in this study. The finding carries an important public health caution, communication promotion interventions that focus on encouraging couples to talk, without attention to accuracy of what's discussed, may in a way reinforce reliance on less effective contraceptives rather than resolve it. The finding should not be interpreted to mean that non-discussion of family planning is protective. Rather, it represents an observed adjusted association that may reflect differences

in partner involvement, decision-making, disclosure, or other unmeasured factors. Family planning interventions should therefore promote supportive, informed partner communication, that actively address misconceptions about contraceptive methods, and safeguard women's autonomy in contraceptive decision-making.

4.3 Strengths and limitations

The limitations of the study include the cross-sectional design, which limits the ability to establish causal relationships or temporal relationships between the identified factors and the use of less-effective contraceptive methods. Data on contraceptive use were self-reported and may therefore be subject to recall and social desirability bias. Self-reported contraceptive method use may also have resulted in some possibility of outcome misclassification, although a predefined operational classification was applied consistently. The multistage sampling design and equal allocation of participants across the selected clusters may have resulted in unequal selection probabilities and may therefore have implications for sampling weights and the precision of estimates. Interviewer-administered data collection may also have introduced interviewer effects. In addition, the study was conducted in Nandi County; therefore, the findings may not be generalizable to other settings with different socio-cultural and religious contexts. Finally, the study used a quantitative approach and did not include qualitative methods, which limited the ability to explore in depth the reasons, perceptions, and experiences underlying the observed associations.

Strengths of this study are that it addressed an important evidence gap by examining factors associated with the utilization of less effective contraceptive methods among current family planning users. This population has received limited attention. The use of a community-based design enabled the inclusion of women who may not routinely access health facilities, thereby providing findings that better reflect contraceptive practices at the community level.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

This study aimed to determine the prevalence and factors associated with utilization of less effective contraceptives among women using family planning methods in Nandi, Kenya. This study found that 25.4% of women using family planning methods in Nandi County relied on less-effective contraceptive methods. The Standard Days Method was the most commonly used. Use of less-effective methods was independently associated with age, marital status, employment status, partner influence on contraceptive method choice, health facility contacts, contraceptive unavailability, and partner communication on family planning.

The findings show that utilization of less-effective contraceptive methods is associated with individual, interpersonal, socioeconomic, and health-system factors. The high proportion of women who reported fear of contraceptive side effects also highlights the importance of accurate information and client-centred counselling to support informed contraceptive choices.

Strengthening access to family planning services, addressing misconceptions about contraceptive methods, and promoting supportive partner involvement are important for improving informed contraceptive decision-making. Community-based approaches are also needed to reach women with limited contact with health facilities. The findings on partner communication and contraceptive unavailability highlight areas that warrant further research to better understand their relationship with contraceptive method choice.

5.2 Recommendations

Strengthening enabling resources

The County government should integrate evidence-based family planning interventions into county health planning and the County Integrated Development Plan (CIDP), with emphasis on strengthening community-based family planning services, particularly through Community Health Promoters, to provide accurate contraceptive information and link women with limited health-facility contact to appropriate family planning services. This is important because women who had never visited a health facility for contraceptive services were more likely to use less-effective contraceptive methods.

Family planning programs should integrate contraceptive counselling into routine health and community contacts, with emphasis on contraceptive effectiveness, possible side effects, side-Thank you for the observation. The recommendations have been revised to link each recommendation to the relevant study findings, identify the responsible actors, and specify

feasible actions. Counterintuitive findings, particularly those on contraceptive stock-outs and partner communication, have been presented as areas for further investigation rather than causal effects.

Make informed choices and address concerns that may contribute to reliance on less-effective methods.

Health facilities and County Health Management Teams should continue monitoring the availability of contraceptive commodities and strengthen routine commodity-management systems to minimize interruptions in service availability. However, the observed association between reported contraceptive stock-outs and use of less-effective methods was counterintuitive and should not be interpreted as evidence that stock-outs reduce the use of less-effective methods. Instead, the finding warrants further investigation to understand the relationship between contraceptive availability, facility attendance, and method choice.

Addressing Predisposing

Family planning programmes and healthcare providers should provide age-responsive family planning counselling that addresses misconceptions about declining fertility with age and supports women to select contraceptive methods according to their reproductive intentions and preferences.

Family Planning Programmes: healthcare providers should promote supportive male engagement while safeguarding women's autonomy in contraceptive decision-making. Couple communication interventions should emphasize accurate information about contraceptive effectiveness and side effects and encourage supportive, voluntary communication rather than partner control over method choice. This recommendation is informed by the observed association between partner influence and use of less-effective contraceptive methods.

Ministry of Health, through the county governments, should ensure equitable access to family planning information and services, particularly for women who may experience socioeconomic or interpersonal barriers, so that employment status, marital status, or partner influence do not limit access to informed contraceptive choices.

Further studies to investigate the counterintuitive associations identified in this study, particularly those involving reported contraceptive stock-outs and partner communication. Longitudinal and mixed-methods studies would be useful for establishing temporality and

exploring the mechanisms underlying these associations. These findings should therefore be treated as areas for further investigation rather than established causal effects.

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APPENDICES

Appendix 1: Work Plan

Activity	Description	Timeline	Responsible person
Proposal development and approval	Writing the proposal and getting departmental and ethical approval	5 months	Principal investigator (PI)
Tool development and expert review	Designing questionnaires, interview guides, and observation checklists	1-2 months	PI and the supervisors
Ethical clearance and research permits	Submitting to ethics committee and seeking county permissions	1 month	IRB and relevant authorities in the county
Pre-testing of data collection tools	Testing tools in selected Sub-County and making necessary adjustments	2 weeks	investigator and the research assistants
Recruitment and training of research assistants	Hiring and training data collectors on research tools and ethical procedures	1 month	
Field data collection	Administering questionnaires, conducting interviews, and observations	2 momths	
Data cleaning, data entry and analysis	Checking and entering data into statistical software and analysing	2 months	
Report writing	Writing findings, discussion, and conclusions	1 month	

Final report submission and dissemination	dissemination Submitting report to university and sharing findings with stakeholders	1 week	

Appendix 2: Budget

S/no	ITEM	UNIT COST	QUANTITY	TOTAL
1.	**STATIONERY**			
A.	Printing paper reams	1	700	700
B.	Flash disk	1	1500	1500
C.	Pens	4	25	100
D.	A 4 size envelopes	3	30	90
E.	Notebooks	3	50	150
2.	**PRINTING SERVICES**			
A.	Questionnaires (informed consents)	3	450	1350
B.	Proposal copies	2	1000	2000
C.	Report copies	3	1000	3000
3.	**DATA COLLECTION**			
A.	Transport for the entire study (PI and 2 research assistants	30 days	200(3)=600	18000
B.	Facilitation fee for training of the research assistants	7 days	2000 (7)	14000
C.	Research assistant's	2	500(30)	30000
D. Internet & bundles			5000	5000
4.	**DATA ANALYSIS**			
A.	Data analysis	30,000	01	30,000
GRAND TOTAL				**TOTAL = KSH. 105,890**

Appendix 3: Participant Consent Form

Participant information and consent form

Study Topic: Factors Associated with Utilization of less effective Contraceptives Among Women Using Family Planning Methods in Nandi, Kenya.

Principal Investigator: Ms. Stella Chebet, student of Master of Public Health at Busitema University. Tel +254727674561 Email stellachebet05@gmail.com

Introduction: you are invited to participate in this research study by Ms Stella. The purpose of this consent form is to give you the information that will help you decide whether or not to be a participant in the study. Please feel free to ask any questions about the purpose of this research, about your participation in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research that is not clear.

This process is called 'informed consent' when we have answered all your questions to your full satisfaction, you may decide to be in the study or not. After your full understanding and voluntary agreeing to be in the study, I will request you to sign your name on this form.

Your decision to participate in this study is voluntary and also you have a right to withdraw from the study at any time without giving a reason for your withdrawal.

Do you want to continue? **YES/NO**

Purpose of the Study

The purpose of this study is to identify the proportion and factors associated with utilization of less effective contraceptive methods, with the findings aiming at improving family planning services and counselling quality.

Study Procedures

If you agree to participate in this study, you will be given a questionnaire and select an area of privacy at your convenience here. The interview will take approximately 45-60 minutes. The study questionnaires will cover topics such as socio demographic factors, reproductive health factors, socio cultural factors and health system factors.

Voluntary Participation

Your participation here is voluntary. You may choose to not to answer any question or withdraw the interview at any time. Your decision will not affect or interfere with your access to any services or support in the community.

Risks and Discomforts

There are minimal risks involved in this study. Some questions may make you feel uncomfortable especially those related to reproductive health matters. You are free to skip any question you do not wish to answer or that you find sensitive without any consequences.

Benefits

By participating in this study, you may benefit from learning different family planning methods and maybe referred to the nearest health facility for more guidance and support. While you may not directly benefit from the study, the information you provide will help researchers, policy makers and the ministry of health to improve family planning counselling services and reproductive health programs in Kenya.

Confidentiality

All information collected will be kept confidential, your name will be kept anonymous and will not appear anywhere in the questionnaire. Data will be stored securely and used only for research purposes.

Compensation

There will be no compensation for participating in this study, however appreciation tokens will be provided.

Contact Information

If you have any queries regarding the research, you can contact the principal investigator or Dr Richard Katuramu, Chairperson, Research and Ethics Committee. Busitema University Faculty of Health Sciences Tel: +256701154444 for issues to deal with participants rights and other ethical concerns.

Consent Form (Statement of Consent)

I have read this consent form or had the information read to me. I understand that the researcher will interview me on the utilization of the family planning methods, I understand that my withdrawal from this study is possible at any time I do not want to continue with this interview,

I understand this study is not aimed at harming me, I also understand that the information I will give to the researcher will be kept confidential, I fully acknowledge that the researcher has explained to me the full needs of the research and offer to answer any questions I may have relating to this study. I therefore freely and voluntarily consent to participate in this study.

Signature/Thumbprint of the participant……. Date ……..

Researchers Statement

I fully explained the necessary and required details of the research study to the participant above and to best of my knowledge I believe that the participant understood and has willingly given his/her consent.

Researchers Name:…….

Signature……Date…….

Appendix 4: Questionnaire

ENGLISH VERSION

SECTION A: IDENTIFICATION AND SCREENING QUESTIONS SECTION

101	Date of Interview	**DD-MM-YYYY**	**Codes**
	Participant ID		
102	Interviewers Name		
103	County		
104	Sub-County		
105	Ward		
106	Community Unit		
107	Age in completed years (18-49) (hint if <18 end the Interview)		
108	Currently pregnant? (hint: if Yes end the interview)	1. Yes 2. No	
109	Using Contraceptives to prevent Pregnancy (hint: if No end the interview)	1. Yes 2. No	

SECTION B: BACKGROUND CHARACTERISTICS

SOCIODEMOGRAPHIC CHARACTERISTICS

QNO	QUESTIONS AND FILTERS	OPTIONS	SKIPS
201	Age of Respondent (Write in Completed Years)	18, 19, 20…49	
202	Marital status of the respondent	1. Single 2. Married 3. Separated/Divorced 4. Widowed 5. Other, Specify……	

203	Religious Affiliation	1. Catholic 2. Protestant 3. Muslim 4. Traditional Religion 5. None 6. Other, Specify……	
204	What is your current occupation	1. Employed 2. Unemployed 3. Self- Employed	
205	What is the highest education grade /level/form you have completed?	1. No formal education 2. Primary 3. Secondary 4. Tertiary	
SECTION 3: REPRODUCTIVE HEALTH CHARACTERISTICS			
301	Have you ever given birth?	1. Yes 2. No	2 go to 305
302	Number of living children?		
303	Outcome of most recent pregnancy	1. Live birth 2. Miscarriage 3. Abortion 4. Stillbirth	
304	History of unintended pregnancy Probe (At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have more children at all?)	1. Wanted then 2. Wanted later 3. Did not want at all	
305	Fertility Intention	1. Have children in future 2. No more children 3. Undecided/don't know	

306	Have you ever used any contraceptive method before? (history of previous contraceptive use)	1. Yes 2. No	To go2 401
307	Which contraceptive methods have you ever used before? Previous contraceptive use (Tick all that apply)	1. Rhythm/ Calendar 2. Withdrawals 3. SDM 4. LAM 5. IUD 6. Implants 7. Injectables 8. OCPs 9. Emergency pills 10. Female condom 11. Male condom 12. Vasectomy 13. Female sterilization	
SECTION 4: CONTRACEPTICE USE AND PREFERENCE			
401	Knowledge of contraceptive methods with probes Hint: (Ask respondent whether she has ever heard of the following methods. Mark Yes or No.)		
401a	Have you ever heard about withdrawal method? Hint: (Men can be careful and pull out before climax)	1. Yes No	
401b	Have you ever heard about the rhythm/calendar method? Hint (Women avoid sexual intercourse during fertile days)	1. Yes 2. No 2. ‘	
401c	Have you ever heard about the Standard Days Method (Cycle Beads)?	1. Yes 3. No	

	Hint (Women use colored beads to track fertile days and use condom or avoid sex on these days).		
401d	Have you ever heard about the Lactational Amenorrhea Method (LAM)? Hint: used by postpartum women, a breastfeeding mother can temporarily avoid pregnancy after childbirth if her monthly periods have not returned.	1. Yes 2. No	
401e	Have you ever heard about the female condom? Hint: (woman inserts sheath in her vagina before sex to prevent pregnancy)	1. Yes 2. No	
401f	Have you ever heard about the male condom? Hint: (a man wears rubber sheath on his penis during sex to prevent pregnancy)	1. Yes 2. No	
401g	Have you ever heard about oral contraceptive pills? Hint: (a woman takes every day pill to prevent pregnancy for one month)	1. Yes 2. No	
401h	Have you ever heard about injectable contraceptives? Hint: (woman receives injection every three months to prevent pregnancy)	1. Yes 2. No	
401i	Have you ever heard about the intrauterine device (IUD)? Hint: A small device is inserted into the uterus by a healthcare provider to prevent pregnancy.	1. Yes 2. No	
401j	Have you ever heard about contraceptive implants? Hint: (small rods placed under the skin of upper arm to prevent pregnancy for 1-5 years)	1. Yes 2. No	
401k	Have you ever heard about emergency contraception?	1. Yes 2. No	

	Hint: (pills taken 72 hours after unprotected sex to prevent pregnancy)		
401l	Have you ever heard about female sterilization? Hint: (A woman can undergo an operation to permanently prevent future pregnancies).	1. Yes 2. No	
401m	Have you ever heard about male sterilization (vasectomy)? Hint: A man can undergo an operation to permanently prevent causing pregnancy)	1. Yes 2. No	
401m	Male Sterilization Probe (Men can have an operation to avoid having any more children permanently).	2. Yes 3. No	
402	Which contraceptive method are you currently using to delay or avoid pregnancy? Hint: (current use of contraceptive methods. Keep asking any other until they exhaust, Select one mentioned)	14. Rhythm/ Calendar 15. Withdrawals 16. SDM 17. LAM 18. IUD 19. Implants 20. Injectables 21. OCPs 22. Emergency pills 23. Female condom 24. Male condom 25. Vasectomy 26. Female sterilization	
403	Why do you prefer the above-mentioned contraceptive method?	1. No side effects 2. Convenience 3. Affordability 4. Health concerns 5. Partner influence 6. Others specify……	to go to 501
404	Are you willing to continue using your current contraceptive method in the future?	1. Yes 2. No	

		3. Undecided	
SECTION 5: SOCIO-CULTURAL FACTORS			
501	Have you ever discussed with your partner about the use of family planning methods?	1. Yes 2. No	To go 2 503
502	Does your partner approve of the contraceptive method you are currently using?	1. Yes 3. No	
503	Who mainly makes decisions regarding the number of children and use of contraceptives in your household?	1. Husband 2. Woman 3. Both 2. Others Specify....	
504	Who influence your contraceptive choice?	1. Peers 2. partner 3. Woman own choice 4. Others specify……	
505	Does your religious affiliation have an influence on your use of the contraceptives	1. Yes 2. No	
506	Do cultural or traditional beliefs in your community influence the choice of your contraceptive	1. Yes 2. No	
SECTION 6: HEALTH SYSTEM FACTORS			
601	Approximately how far is the nearest health facility from your home?	1. < 5KM 2. >5KM	
602	Has distance to the nearest health facility influence your choice to use a contraceptive method?	1. Yes 2. No	
603	Have you ever accessed the health facility for contraceptive methods initiation?	1. Yes 2. no	
604	Has unavailability of contraceptives in the health facility influence your method choice?	1. Yes 2. No	
THANK YOU			

KISWAHILI VERSION

SEHEMU A: MASWALI YA UTAMBULISHO NA KUCHUNGA

101	Tarehe ya Usajili	**DD-MM-YYYY**	**Codes**
102	Jina la anayehoji		
103	Kaunti		
104	Wilaya		
105	Kata		
106	Kitengo cha jamii		
107	Umri kwa miaka iliyokamilika (18-49) (kidokezo: ikiwa <18, malizia mahojiano)		
108	Uko na ujauzito kwa sasa? (kidokezo: ikiwa Ndiyo, malizia mahojiano)	3. Ndiyo 4. Hapana	
109	Je, unatumia mbinu za kupanga uzazi kuzuia mimba? (kidokezo: ikiwa Hapana, malizia usaili)	3. Ndiyo 4. Hapana	

SEHEMU B: TABIA ZA MSINGI

Nambari ya swali	**Maswali na Vichujio**	**Chaguzi**	**Ruka**
201	Umri wa Mshiriki	18, 19, 20…49 Sijui- 98	

202	Hali ya ndoa ya mshiriki	6. Hana ndoa 7. Ameolewa 8. Wameachana 9. Mjane 10. Nyingine, elezea……	
203	Uhusiano wa kidini	7. Kikatholiki 8. Maprotestanti 9. Msilamu 10. Dini ya Jadi 11. Hakuna 12. Nyingine, elezea……	
204	Kazi ya sasa	4. Ameajiriwa 5. Hajapewa ajira 6. Amejiajiri	
205	Elimu yako ya juu	5. Hakuna elimu rasmi 6. Elimu ya Msingi 7. Sekondari 8. Chuo kikuu	
SEHEMU 3: TABIA ZA AFYA YA UZAZI			
301	Je, umewahi kujifungua mtoto?	3. Ndiyo 4. Hapana	2 go to 303
302	Idadi ya watoto hai?		
303	Mpangilio wa uzazi	4. Ninataka watoto siku zijazo 5. Sitaki watoto zaidi 6. Sijaamua/ sijui	
304	Historia ya mimba isiyotarajiwa	4. Nilitaka wakati huo 5. Nilitaka baadaye	

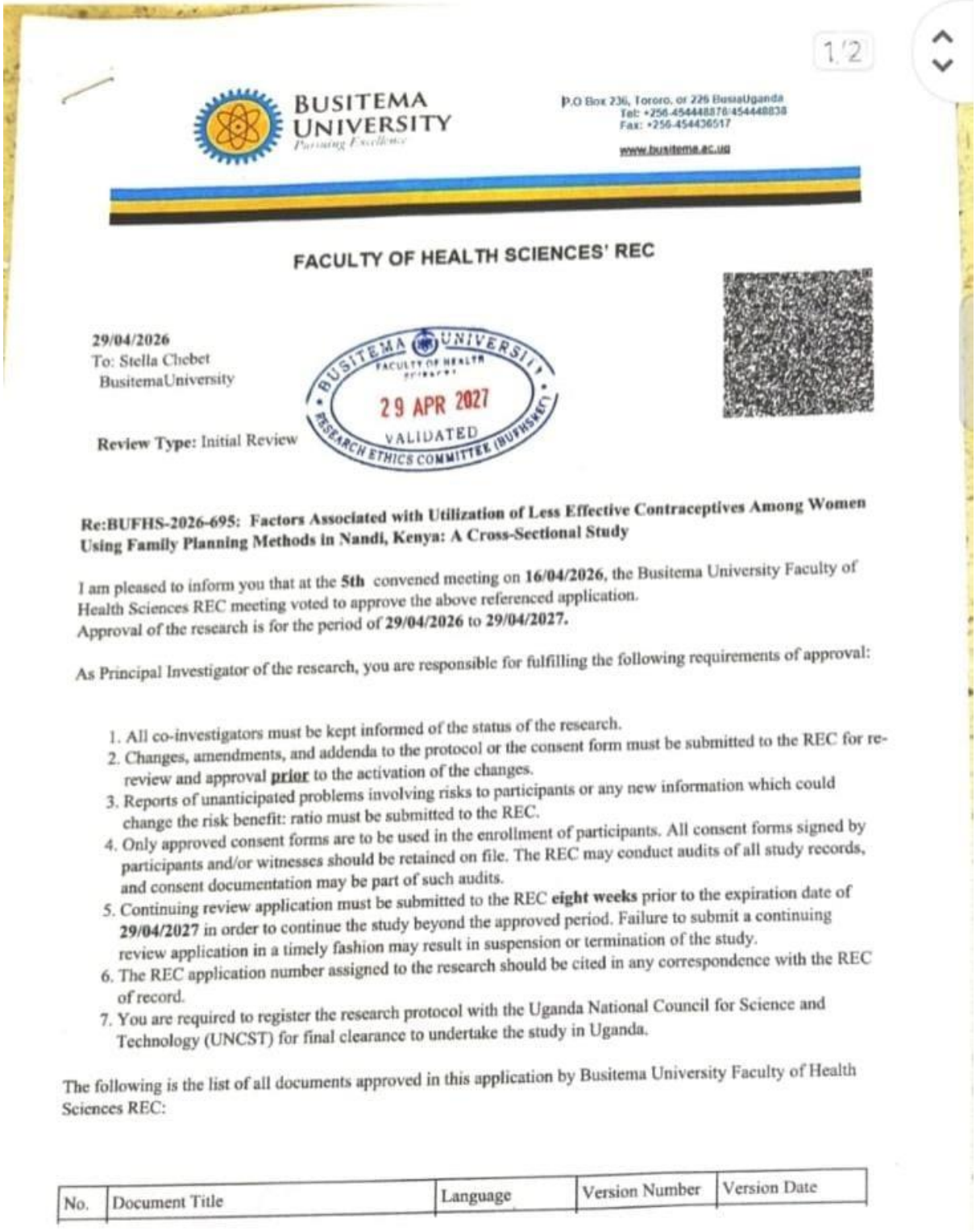
	(Angalia: wakati ulipopata mimba, je, ulikuwa unataka mimba wakati huo, ungependa kusubiri, au haukutaka watoto zaidi kabisa?)	6. Sikutaka kabisa	
305	Matokeo ya mimba ya hivi karibuni?	5. Kuzaliwa hai 6. Upotevu wa mimba 7. Mimba ya kutolewa 8. Kuzaliwa kifo	To go2 401
306	Historia ya utumizi wa mbinu za kupanga uzazi hapo awali	3. Ndiyo 4. Hapana	
307	Mbinu gani za kupanga uzazi ulizitumia hapo awali (weka alama zote zilizotajwa)	1. Kalenda 2. Kutolewa kabla ya nguvu kamili 3. Dawa za dharura 4. Kondomu ya kike 5. Kondomu ya kiume 6. Utoaji wa uzazi wa kudumu kwa wanaume 7. Utoaji wa uzazi wa kudumu kwa wanawake 8. IUD 9. Kunyonyesha mtoto 10. Vidonge vyta mdomo 11. Sindano 12. Vifaa vya kudumu 13. Bidi ya mzunguko	
SEHEMU 4: MATUMIZI YA MBINU ZA KUPANGA UZAZI NA UPENDELEO			

401	Uelewa wa njia za kupanga uzazi (weka alama zote zilizotajwa)		To go to 404
401a	Kutoa (Wanaume wanaweza kuwa makini na kutoa kabla ya kilele)	3. Ndiyo 4. Hapana	
401b	kalenda (Wanawake huacha ngono siku wanapohisi wanaweza kupata mimba)	4. Ndiyo 5. Hapana	
401c	Bidi ya mzunguko) (Wanawake hutumia bidi za rangi kufuatilia siku zenye wanaeza shika mimba na kutumia kondomu au kuepuka ngono siku hizo)	3. Ndiyo 4. Hapana	
401d	Mbinu ya kunyonyesha) (Kutumika na wanawake baada ya kujifungua)	3. Ndiyo 4. Hapana	
401e	Kondomu ya kike	3. Ndiyo 4. Hapana	
401f	Kondomu ya kiume	3. Ndiyo 4. Hapana	
401g	Vidonge vya mdomo	3. Ndiyo 4. Hapana	
401h	Dawa ya sindano ya kila miezi	3. Ndiyo 4. Hapana	
401i	IUD	3. Ndiyo 4. Hapana	
401j	Vifaa vya kudumu	3. Ndiyo 4. Hapana	
401k	Dawa za dharura	3. Ndiyo 4. Hapana	
401l	Utoaji wa uzazi wa kudumu kwa wanawake	3. Ndiyo 4. Hapana	

401m	Utoaji wa uzazi wa kudumu kwa wanaume	4. Ndiyo 5. Hapana	
402	Kwa sasa unatumia njia gani ya uzazi wa mpango ili kuchelewesha au kuepuka kupata ujauzito? (Endelea kuuliza kuhusu njia nyingine hadi atakapokuwa ametaja zote anazotumia. Chagua mojawapo ya njia alizotaja.)	1. Kalenda 2. Kutolewa kabla ya nguvu kamili 3. Dawa za dharura 4. Kondomu ya kike 5. Kondomu ya kiume 6. Utoaji wa uzazi wa kudumu kwa wanaume 7. Utoaji wa uzazi wa kudumu kwa wanawake 8. IUD 9. Kunyonyesha mtoto 10. Vidonge vyta mdomo 11. Sindano 12. Vifaa vya kudumu 13. Bidi ya mzunguko	
403	Kwa nini unaupenda huu mbinu ya kupanga uzazi uliyoitaja?	7. Hakuna madhara 8. Rahisi kutumia 9. Nafuu 10. Masuala ya kiafya 11. Ushawishi wa mwenzi	to go to 501
404	Una nia ya kuendelea kutumia mbinu yako sasa siku za usoni?	4. Ndiyo 5. Hapana	
SEHEMU 5: MASWALI YA KIJAMI			
501	Je, umewahi kujadili na mwenzio wako kuhusu njia za kupanga uzazi?	4. Ndiyo 5. Hapana	
502	Je, mwenzi wako anakubali njia uliyoitaja?	3. Ndiyo 4. Hapana	

503	Nani huchukua uamuzi kuhusu idadi ya watoto na matumizi ya mbinu za kupanga uzazi?	4. Mume 5. Mwanamke 6. Pamoja	
504	Nani anaathiri chaguo lako la njia za kupanga uzazi?	5. Marafiki 6. Mwenzi 7. Chaguo la mwanamke mwenyewe	
505	Je, dini yako inaathiri matumizi yako ya njia za kupanga uzazi?	3. Ndiyo 4. Hapana	
506	Je, imani za kitamaduni/utamaduni wa jamii yako zinaathiri chaguo lako la njia ya kupanga uzazi?	3. Ndiyo 4. Hapana	
SEHEMU 6: MASWALI YA MFUMO WA AFYA			
601	Umbali kutoka nyumbani hadi kituo cha afya	3. < 5KM 4. >5KM	
602	Je, umbali hadi kituo cha afya umeathiri uchaguzi wako wa mbinu za kupanga uzazi?	3. Ndiyo 4. Hapana	
603	Je, umewahi kufika kituo cha afya kupata huduma za kuanzisha mbinu za upangaji uzazi?	3. Ndiyo 4. Hapana	
604	Je, ukosefu wa mbinu za kupanga uzazi kwenye kituo cha afya umeathiri chaguo lako?	3. Ndiyo 4. Hapana	
AHSANTE SANA			

Appendix 5: Research ethics committee approval



1/2

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FACULTY OF HEALTH SCIENCES' REC

29/04/2026
To: Stella Chebet
BusitemaUniversity

BUSITEMA UNIVERSITY FACULTY OF HEALTH SCIENCES 29 APR 2027 VALIDATED RESEARCH ETHICS COMMITTEE (BUFHSREC)

Review Type: Initial Review

Re:BUFHS-2026-695: Factors Associated with Utilization of Less Effective Contraceptives Among Women Using Family Planning Methods in Nandi, Kenya: A Cross-Sectional Study

I am pleased to inform you that at the **5th** convened meeting on **16/04/2026**, the Busitema University Faculty of Health Sciences REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **29/04/2026** to **29/04/2027.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **29/04/2027** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Busitema University Faculty of Health Sciences REC:

No.	Document Title	Language	Version Number	Version Date

1	Response to Reviewers Letter_ Point by Point Corrections	English	Version 2.0	2026-04-26
2	Data collection tools	Kiswahili	Version 2.0	2026-04-26
3	Data collection tools	English	Version 2.0	2026-04-26
4	Main Consent forms	English	Version 2.0	2026-04-26
5	Protocol	English	Version 2.0	2026-04-26
6	Protocol	English	Version 2.0	2026--
7	Letter of clearance for Stella HDC	English	English	2026-03-03
8	Protocol	English	English	2026-03-03
9	Data collection tools	Kiswahili	Kiswahili	2026-03-03
10	Data collection tools	English	English	2026-03-03
11	Main Consent forms	English	English	2026-03-03

Yours sincerely,

BUSITEMA UNIVERSITY
FACULTY OF HEALTH
29 APR 2027
VALIDATED
RESEARCH ETHICS COMMITTEE (BUFHSREC)

Richard Katumwa

Appendix 6: NACOSTI Kenya license

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **658038**

Date of Issue: **10/June/2026**

RESEARCH LICENSE

This is to Certify that Ms.. STELLA CHEBET of Busitema University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nandi on the topic: FACTORS ASSOCIATED WITH UTILIZATION OF LESS EFFECTIVE CONTRACEPTIVES AMONG WOMEN USING FAMILY PLANNING METHODS IN NANDI, KENYA: A CROSS SECTIONAL STUDY for the period ending : 10/June/2027.

License No: **NACOSTI/P/26/4189190**

658038

Applicant Identification Number

Ag. 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

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to.
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. Neither the license nor any rights thereunder are transferable.
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix 7: Administrative clearance

COUNTY GOVERNMENT OF NANDI

Telephone: 0535252355
Email: nandidirectorhealth@gmail.cm
Website: www.nandi.go.ke

OFFICE OF THE COUNTY DIRECTOR HEALTH
Nandi County
P.O. BOX 5-30300
KAPSABET.

DEPARTMENT OF HEALTH AND SANITATION

Ref: Ref: CDH/NC/VOL.1/2026//25 23RD JUNE, 2026

Ms. Stella Chebet
ID No: 32495776
MPH Student
Busitema University
Student No: BU/GS24x/MPH/11
Ref: Permission to Conduct Research Study in Nandi County

Dear Ms. Stella Chebet,

RE: PERMISSION TO CONDUCT RESEARCH ON FACTORS ASSOCIATED WITH UTILIZATION OF LESS EFFECTIVE CONTRACEPTIVES AMONG WOMEN USING FAMILY PLANNING METHODS IN NANDI COUNTY, KENYA

We acknowledge receipt of your request and the accompanying documents, including the introductory letter, research proposal, ethical approval documents, and the NACOSTI research license, seeking permission to conduct the above-mentioned study within Nandi County.

Following review of the submitted documents, the Department of Health and Sanitation, Nandi County Government, hereby grants permission for you to undertake data collection for the study titled **"Factors Associated with Utilization of Less Effective Contraceptives among Women Using Family Planning Methods in Nandi County, Kenya: A Cross-Sectional Study."**

The Department recognizes the importance of this study in generating evidence to strengthen family planning services and reproductive health outcomes within the County. To promote local participation, facilitate coordination, and enhance ownership and utilization of the study findings, the County requests that two officers from the Department of Health and Sanitation be incorporated into the study team as co-researchers. Their participation will support technical input, field coordination, and dissemination of findings for program improvement.

You are advised to liaise with the County Reproductive Health Coordinator to facilitate the study implementation and ensure adherence to all ethical requirements, confidentiality provisions, and relevant County policies. Upon completion of the study, kindly share a copy of the final report with the Department, through this office, for reference and use in evidence-based planning and decision-making.

We wish you success in your research and appreciate your contribution towards improving reproductive health services in Nandi County.

Yours faithfully,

DIRECTOR HEALTH SERVICES
23 JUN 2026
HEALTH & SANITATION
COUNTY GOVERNMENT OF NANDI

Dr. Christine Chebet
County Director of Health Services
Department of Health and Sanitation
Nandi County

CC. SCMOHs Emgwen and Mosop
County Reproductive Health Coordinator