

**FACTORS ASSOCIATED WITH UPTAKE OF MODERN CONTRACEPTIVES
AMONG STUDENTS AT LUKENYA UNIVERSITY, KENYA**

MERCY N. NGANDA

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**A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH,
SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR AWARD OF THE DEGREE OF MASTER OF PUBLIC
HEALTH OF AMREF INTERNATIONAL UNIVERSITY**

JULY 2025

DECLARATION AND APPROVAL

Declaration by Candidate:

This thesis is entirely my original work and has not been presented for a degree in any other university or any other award.

Signature: 

Mercy N. Nganda

SHS/MPH/5247-2/2022

Date: 7th July 2025

Approval by Supervisors:

This thesis has been submitted with our approval as university supervisors.

Signature: 

Dr. Michel Mutabazi, PhD

Department of Health Systems Management,

Amref International University

Date: 7th July 2025

Signature: 

Dr. Hesborn Wao, PhD

African Population and Health Research Center

Date: 7th July 2025

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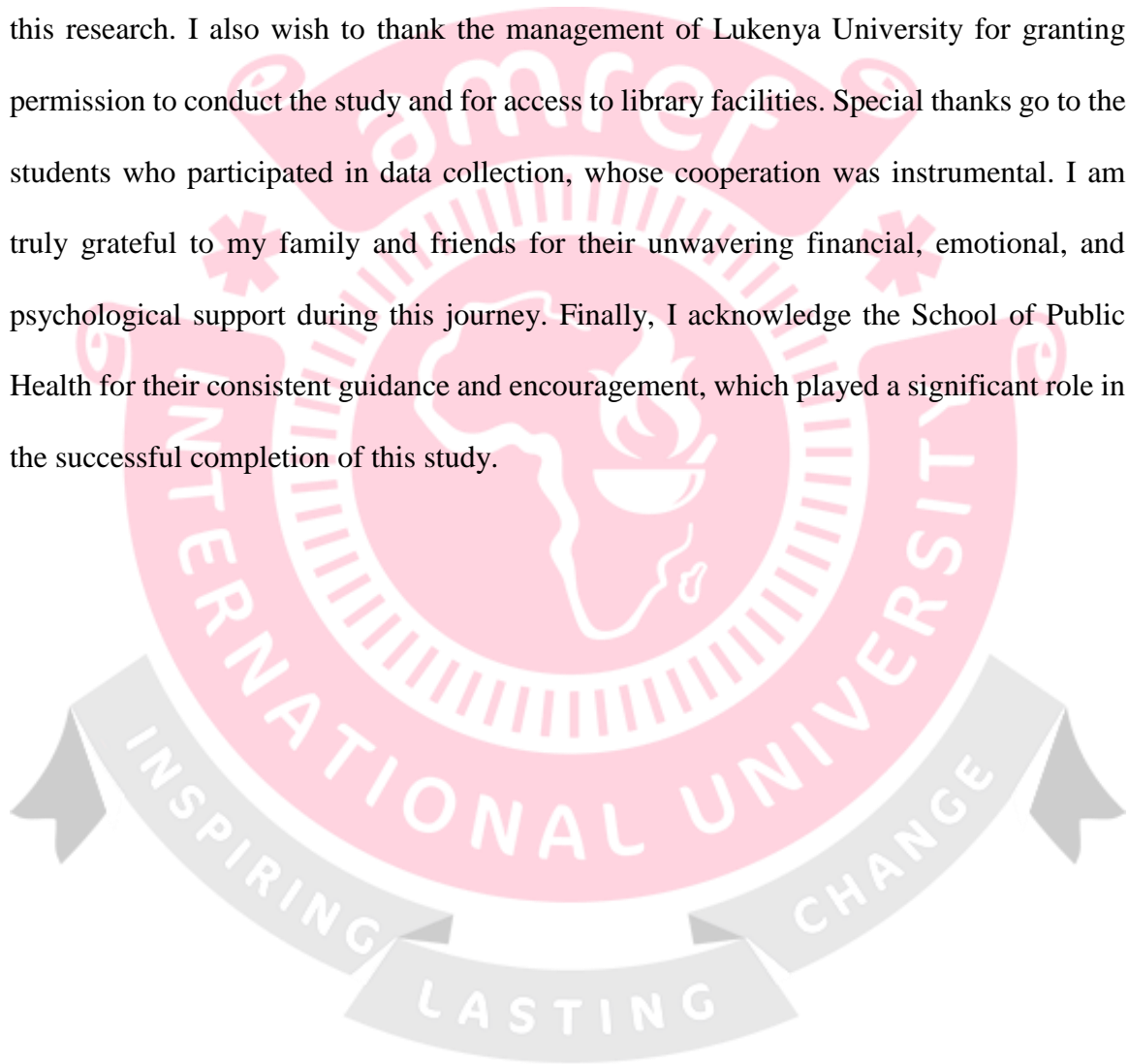
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ABSTRACT

Background: The use of contraceptives is a global public health priority, preventing unwanted pregnancies and associated health risks. In Kenya, modern contraceptive use is relatively high among unmarried women (70%), yet university students face a substantial unmet need. Despite the availability of contraceptive services at Lukenya University, uptake patterns remain unknown.

Objectives: The study aimed to determine modern contraceptive use among Lukenya University students, focusing on uptake rates, practices, and factors influencing usage.

Methodology: An analytical cross-sectional design was applied, using a multistage sampling technique to select 361 students. Data collection involved KAP questionnaires and key informant interviews. Quantitative data were analyzed with Python and SPSS version 27, employing descriptive and inferential statistics at a 95% confidence level. Chi-square, Fischer's test and t-tests were conducted to assess variable associations, while thematic analysis was applied to qualitative data. Ethical approval and informed consent were obtained.

Results: Among the 361 respondents, 54.1% were female and 49.5% male. Overall contraceptive uptake was low (44%). Knowledge of modern contraceptives was low, with 49.1% of males and 42.2% of females demonstrating awareness. Usage was higher among males (48.5%) than females (40.8%). Healthcare providers significantly influenced attitudes (81.1%), while peer influence accounted for 21.6%. Uptake was significantly associated with age ($p=0.032$), marital status ($p=0.021$), partner influence ($p=0.041$), and fear of side effects ($p=0.017$). Qualitative findings highlighted cultural beliefs, privacy concerns, and social stigma, particularly among female students, as major barriers.

Conclusion: Despite the moderate use of modern contraceptives, sustained and consistent usage remains low due to knowledge gaps, negative attitudes, and socio-cultural barriers. Comprehensive gender specific tailored SRH interventions for university students are needed to enhance uptake and address these challenges.

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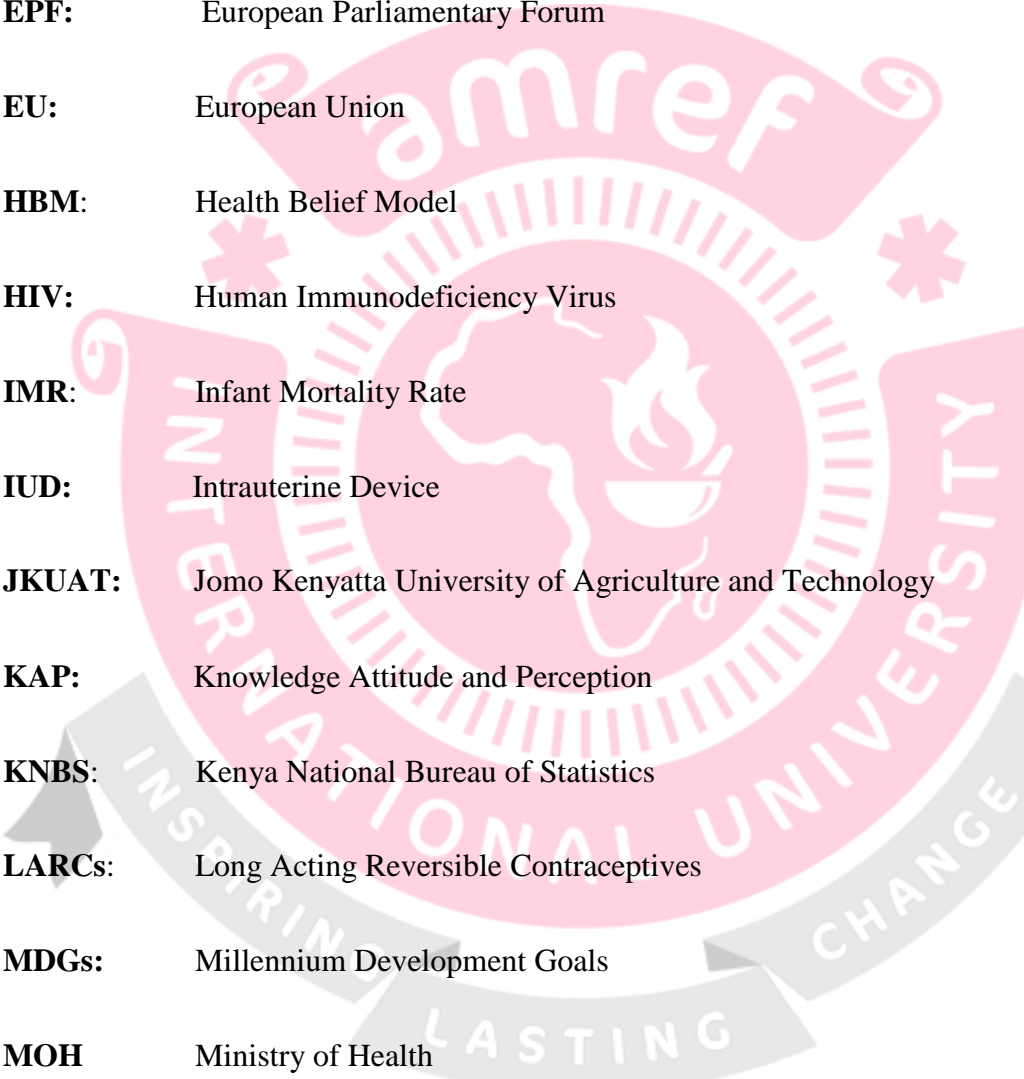
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LIST OF ABBREVIATIONS AND ACRONYMS

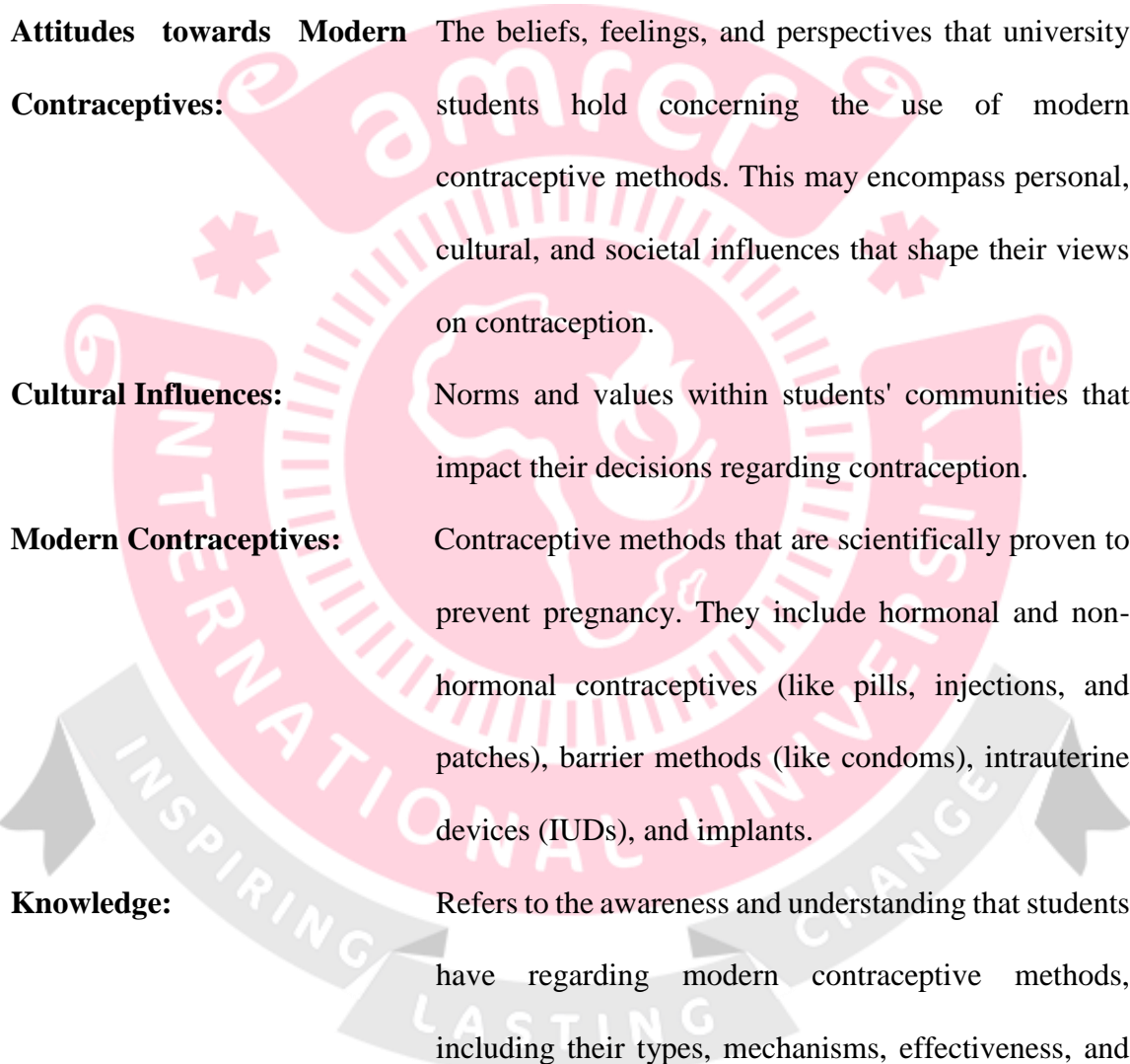


AIDS:	Acquired Immunodeficiency Syndrome
EC:	Emergency Contraception
EPF:	European Parliamentary Forum
EU:	European Union
HBM:	Health Belief Model
HIV:	Human Immunodeficiency Virus
IMR:	Infant Mortality Rate
IUD:	Intrauterine Device
JKUAT:	Jomo Kenyatta University of Agriculture and Technology
KAP:	Knowledge Attitude and Perception
KNBS:	Kenya National Bureau of Statistics
LARCs:	Long Acting Reversible Contraceptives
MDGs:	Millennium Development Goals
MOH	Ministry of Health
NASCOP:	National Aids and STI Control Program
NCPD:	National Council for Population Development
NCAPD:	National Coordinating Agency for Population and Development

PMA:	Performance Monitoring and Accountability
PBA:	Performance Based Incentive
PMS:	Premenstrual Syndrome
PTSD:	Post Traumatic Stress Disorder
SDGs:	Sustainable Development Goals
STDs:	Sexually Transmitted Diseases
STIs:	Sexually Transmitted Infection
TPB:	Theory of Planned Behavior
UN:	United Nations
UNAIDS:	United Nations Coordinating Agency for Population and Development
VCT:	Voluntary Counseling and Testing
WHO:	World Health Organization



DEFINITION OF KEY TERMS



Accessibility:	Access to contraceptive products in terms of physical locations, financial accessibility, and the presence of provider supportive services
Attitudes towards Modern Contraceptives:	The beliefs, feelings, and perspectives that university students hold concerning the use of modern contraceptive methods. This may encompass personal, cultural, and societal influences that shape their views on contraception.
Cultural Influences:	Norms and values within students' communities that impact their decisions regarding contraception.
Modern Contraceptives:	Contraceptive methods that are scientifically proven to prevent pregnancy. They include hormonal and non-hormonal contraceptives (like pills, injections, and patches), barrier methods (like condoms), intrauterine devices (IUDs), and implants.
Knowledge:	Refers to the awareness and understanding that students have regarding modern contraceptive methods, including their types, mechanisms, effectiveness, and side effects.
Practices:	The actual behaviors and choices made by students regarding the use of modern contraceptives. This includes how often they use contraceptives, the

methods they choose, and their adherence to these methods.

Socio-Demographic Factors: Characteristics such as age, gender, education level, socioeconomic status, and relationship status that might affect contraceptive use.

Uptake of Modern Contraceptives: The proportion of university students at Lukenya University who actively utilize modern contraceptive methods



CHAPTER 1: INTRODUCTION

1.1 Overview

The SDG 3.7 of the UN seeks to guarantee universal access to sexual and reproductive healthcare services, including family planning, information and education, and the incorporation of reproductive health into national policies and initiatives. Makueni County has made great strides in this area, with a 64.4% prevalence of modern contraception (KNBS, 2023). This exceeds both the national average of 56.9% (KNBS, 2023) and the worldwide average of 58.7% (WHO, 2022). The purpose of this study is to ascertain the degree of current contraceptive uptake among Lukenya University students and the factors associated with this uptake. The study will inform strategies and interventions aimed at increasing students' access to and usage of modern contraception.

1.2 Background of the Study

Modern contraceptives include a variety of safe and efficient birth control options that can lower the risk of contracting STDs, prevent unwanted pregnancies, and lower mother and newborn mortality (Negash et al., 2022). University students are among the young people most likely to engage in unsupervised sexual risk behaviors. The result of this could be unintended pregnancies and other STIs, which are current public health issues among students (Wang et al., 2015). Makueni County has been ranked among the top in the utilization of modern contraceptives at 75.7% with a demand of 80.1% (KNBS, 2023).

At Lukenya University, exact specifics on the uptake of modern contraceptives among the students is unexplored. The lack of institution specific data presents a gap in knowing

whether students at the university possess correct knowledge, have positive or negative attitudes to modern contraceptives including actual use. This gap in evidence presents a limitation in responding to reproductive health programming and presents an opportunity to design targeted and effective interventions based on the assessed knowledge levels, perceptions and practices as they relate to modern contraceptive uptake among students at the institution.

It is estimated that in developing countries, the use of modern contraception prevents 308 million unwanted pregnancies yearly (Ahinkorah et al., 2021). About 10.2% of students in a survey of 42 Chinese higher learning institutions reported engaging in sexual activity. 33.8% of them were pregnant unintentionally, and 53.5% had two or more abortions (Onebunne & Bello, 2019). Modern contraceptives also help low and middle-income nations with food security, a healthy and productive family, and sustainable development (Bahamondes & Peloggia, 2019). In order to improve health, wellbeing, and sustainable livelihoods, it is imperative that disparities in access to sexual and reproductive health services be minimized. Three targets in particular address these needs: gender equality, accurate information, and access to contraception (UN Women, 2018).

Although access to modern contraceptives has improved, there is still a large unmet demand for the uptake of contraception worldwide. Unmet need for modern contraceptives is the proportion of sexually active women who want to avoid getting pregnant but do not use any kind of modern contraception (Alidou et al., 2023). The unmet need for modern contraception is particularly high in Africa, where it is estimated that 53% of women in reproductive age do not use any form of contraception (Singh et al., 2021). A survey conducted by the Ministry of Health and the Kenya National Bureau of Statistics, found

18% of Kenyan women who are of reproductive age do not currently utilize contemporary contraception (KNBS, 2023). The unmet need for contraception is particularly high among university students: 25% of the students had an unmet need for contraceptives despite having a high level of awareness about them. This finding is based on a cross-sectional survey conducted in Uganda (Nsubuga et al., 2016).

(Deus, 2017), study on low uptake or non-use of contraceptives in Sub-Saharan Africa found that lack of education and awareness, lack of access to and misconception about the safety and effectiveness about the various methods of modern contraceptives is associated with non-use or low uptake of modern contraceptives. Furthermore, a major obstacle to the adoption of modern contraceptives is a lack of access to reproductive health services, particularly in low- and middle-income nations where access to healthcare is commonly limited (Negash et al., 2022).

Unsafe abortion is a significant public health issue. In 2016, Australia recorded 81,643 induced abortions, or 16.5 abortions per 1,000 women in the 15–44 age groups. Comparatively, 42 abortions per 1,000 women aged 15 to 44 were performed in Eastern Europe (Fumero et al., 2021). By contrast, an African research indicated that between 1.8 and 2.7 million abortions were performed annually in Nigeria, where the practice is only allowed when the mother's life is in danger (PMA, 2020). A study by Gerds et al. (2018), found that there were induced abortion amounting to 464,000 reported in Kenya in 2012, which is 48 per 1,000 in women of reproductive age. Additionally, significant proportions of the reported abortions were unsafe, leading to complications such as hemorrhage, sepsis, infertility and organ damage.

In Kenya, HIV infections and deaths among youth are a significant public health concern. The use of modern contraceptives for example male or female condoms etc., is pivotal in both preventing the transmission of HIV and managing the reproductive health of individuals living with or at risk of HIV, underscoring the need for integrated healthcare services. According to the UNAIDS (2019), an estimated 36,000 adolescents and youths aged 15-24 were newly HIV positive in 2019, representing 35% of all new HIV infections in the country. In addition, approximately 1,900 adolescents and young people died of AIDS-related illnesses in the same year (UNFPA, 2021). Due to a number of circumstances, including limited access to comprehensive sexual and reproductive health treatments, adolescents and young people are more likely to contract HIV because of limited knowledge about HIV transmission and prevention, and social and cultural norms that discourage open discussion about sexual health. Young people also frequently partake in activities like unprotected intercourse, having several sexual partners, and drug use, all of which raise their risk of contracting HIV (Negash et al., 2022)

Kenya's university students' sexual and reproductive health must be addressed for the country to meet its developmental objectives. The youth population, including university students, constitutes a significant portion of Kenya's population, and their sexual and reproductive health is essential for the country's overall health and development. Early and unwanted pregnancies can have a significant impact on a young student's education and career prospects, while STIs, including HIV, can have severe long-term health consequences (Mayega et al., 2010). Unintended pregnancies can lead to economic hardship and limited opportunities for women and their families, perpetuating a cycle of poverty and disadvantage. In addition, unsafe abortions can result in injury or death,

further highlighting the importance of access to contraception and emergency contraception. Therefore, addressing the reproductive health needs of university students can have a significant impact on the country's development.

Awareness of emergency contraceptive pills among university students in Kenya is lower than desired, despite their potential to reduce unintended pregnancies. Numerous studies have revealed that university students in Kenya have little understanding of emergency contraception and frequently hold false beliefs about its application (Nsubuga et al., 2016). One study conducted among Kenya Medical Training College students in Thika found that utilization of contraception was 26% (Mwaura, 2018).

According to Chola et al. (2020), on the trends regarding use of sexual and reproductive health services, contraception, and other related services in Kenya, these services were not widely used. In Kenya, at the Jomo Kenyatta University of Agriculture and Technology, a survey on undergraduate students' use of contraceptives found that slightly over a third (34.2%) of the participants were currently using at least one of the easily accessible contraceptives. Of these, 54.8 percent used condoms, 11.9 percent used emergency tablets, and 8% utilized injectables, daily pills, or coils (Bridge, 2015).

The study also found that students who identified with specific religions (Catholic, Protestant, and Islam) were less likely to utilize contraceptives. This tendency is linked to pre-marital sex lobbying and religious teachings, resulting in students being less likely to have premarital sex and, as a result, less likely to feel the need for contraception of any kind. The many forms of contemporary contraception are the subject of our next discussion (Akinsoji et al., 2015).

In the context of this study, Lukenya University, located in Makueni County, provides an ideal setting to investigate the factors associated with uptake of modern contraceptives among the diverse student population enrolled for study. The University is uniquely located in a rural setting. The nearest significant urban settlement is Mtito-Andei town, located some 25 kilometers away. Lukenya University has an on-location health facility which caters for students and the nearby populations. However, this study will specifically focus on the university students and exclude all other community members. There are no other health facilities in the neighborhood that the institution's population can easily access for health services, short of travelling to Mtito-Andei. The institution will therefore serve as a microenvironment for determining the factors that may influence the uptake of modern contraceptives, notwithstanding the impact of cultural and socio-economic factors on uptake, further enhancing the relevance as a study area. Lukenya University will allow for the researcher to assess uptake levels, accessibility and practices towards modern contraceptive among the students, adding to the broader discussions on reproductive health among these populations.

1.3 Statement of the Problem

According to a study conducted at Jomo Kenyatta University of Agriculture and Technology, the prevalence of contraceptive uptake among students was low at 34.2%. Notwithstanding the availability and accessibility of modern contraceptive methods, the uptake of these methods among university students remains low in many countries, including Kenya (Kayira, 2019). Uptake of modern contraceptives among university students is associated with the factors that are complex and multifaceted and require further

investigation to identify effective interventions and strategies to address the issue (Development of Strategies to Reduce Unmet Need for Modern, 2020).

While numerous studies have been conducted on contraceptives uptake among university students in Kenyan Universities, there is no empirical data on the contraceptive's behavior of students in Lukenya University. It is critical to state that a knowledge gap is an impediment in determining the awareness, accessibility and utilization of contraceptives at the University, much as there exists a University health clinic offering family planning services.

A research on Kenyatta University and Jomo Kenyatta University of Agriculture and Technology students' opinions toward abortion revealed that the embarrassment arising from quitting school, and financial hardships are among the things that drive female university students to get abortions (Nsubuga et al., 2016). This can be obviated by identifying the variables linked to uptake of contraceptives and developing appropriate intervention strategies. Condoms uptake in Kenyan universities remains low. Besides, strategies on creating awareness among the youths on the importance of using contraceptives to enhance utilization are limited. Bridge (2015) found that despite being aware of the availability of emergency contraception (EC), female students at the University of Nairobi exhibited inadequate knowledge regarding the appropriate timing and efficacy of EC use following unprotected intercourse.

Lukenya University was purposively sampled for this study because it is a private university located in a rural setting. Uptake of modern contraceptives by students within the university is unknown, including knowledge, attitudes and practices of the students

towards modern contraceptives as well as the socio-economic and socio-cultural factors associated with the use and non-use of modern contraceptives. Makueni county has been ranked among the top in the utilization of modern contraceptives at 75.7% with a demand of 80.1% (KNBS, 2023). This study aims to determine whether the presence of the university is a contributing factor due to the diverse socio-economic mix of students enrolled there. The rate of contraceptive uptake and the factors that contribute to it need to be determined because of the risks, health, and social issues involved with unprotected sexual activity and the failure of students to use contraceptives. Additionally, there is a need to address the concerns of sexually active students who do not use contraception methods. As such, strategies to increase awareness and correct misconceptions about emergency contraception are needed to ensure that these young people have access to reliable and effective contraception methods.

1.4 Research Questions

1. What is the uptake of modern contraceptive among students at Lukenya University?
2. What are the knowledge, attitudes and practices of students towards modern contraceptives at Lukenya University?
3. What are the socio-economic factors associated with the uptake of modern contraceptive among students at Lukenya University?
4. What are the socio-cultural factors associated with uptake of modern contraceptives among students at Lukenya University?

1.5 Objectives of the Study

1.5.1 Main Objective

The main objective of the study is to determine the factors associated with uptake of modern contraceptives among students at Lukenya University Campus.

1.5.2 Specific Objectives

The study will be guided by the following specific objectives

1. To determine the uptake of modern contraceptives among students at Lukenya University.
2. To assess knowledge, attitudes and practices of students towards modern contraceptive methods at Lukenya University.
3. To establish the socio-economic factors associated with uptake of modern contraceptives among students at Lukenya University.
4. To establish the socio-cultural factors associated with uptake of modern contraceptives among students at Lukenya University.

1.6 Justification

There are numerous compelling reasons to conduct a comprehensive study on contraceptive uptake among students at Lukenya University. For instance, the extent to which factors affecting uptake of modern contraceptives has not been explored in relation to Lukenya University. Majority of the studies on uptake of modern contraceptives

conducted previously have been done in universities in urban areas, with few focused on rural areas. As such, Lukenya University is justified for studying uptake of modern contraceptives. Furthermore, the study at Lukenya University is essential for comparative analysis that would help distinguish the difference in uptake rates of modern contraceptives from other similar learning institutions.

While there have been studies on various aspects of sexual health and contraceptive use elsewhere, focusing on contraceptive uptake specifically among university students sheds light on an often overlooked area of research such as high awareness and low uptake. Contraceptive awareness was high (96.1%), but overall utilization of the method was low (34.2%) in Kenya's Jomo Kenyatta University of Agriculture and Technology (Bridge, 2015). This study intends to determine if this may be the case and if so, why in Lukenya University. The findings of this study could serve to inform measures that could increase modern contraceptives uptake among university students not just in Lukenya University but in other universities in Kenya.

Every university has its unique socio-cultural, economic, and environmental context. A study specific to Lukenya University would provide insights that are tailored to the students' particular circumstances, which might differ significantly from those of students in other regions or institutions. Adding to the existing literature with study-specific results from Lukenya University can contribute to the broader understanding of contraceptive use patterns among Kenyan university students. This can help in comparative analyses and contribute to a more comprehensive national or even regional understanding of the issue. Insights from this study can inform university health services on how to better cater to students' needs regarding contraceptive advice and services. Understanding specific

student needs and preferences can lead to more student-friendly health services. Conducting this study at Lukenya University has the potential not only to fill gaps left by previous research but also to provide a solid foundation for interventions tailored specifically to this institution's students, contributing to improved reproductive health outcomes.

1.7 Significance of the Study

The fact that contraception protects women against high-risk pregnancies, unsafe abortions, reproductive tract infections, and STDs is one of the reasons it was included in the Sustainable Development Goals (SDGs) as a metric for measuring progress in maternal health (UN, 2022).

The majority of young people in Kenya currently lack correct information related to the usage of modern contraceptives (Wangima, 2016). Access to accurate and comprehensive reproductive health information is crucial for making informed decisions about contraception and preventing unintended pregnancies. Therefore, the goal of the current study is to fill in this knowledge gap and offer useful baseline data for decision-makers concerned with reproductive health at Lukenya University, so they can create family planning interventions that are specific to this population to increase its uptake (Wangima, 2016).

The study will contribute to the existing body of knowledge on the use of modern contraceptives among university students in Kenya. Most studies in Kenya have focused on the married women and adolescents, leaving a knowledge gap on the specific factors that affect modern contraceptive uptake among this group of young adults. It will also

highlight the specific determinants of unmet need for modern contraceptives among university students. Understanding these determinants will inform the development of targeted interventions aimed at addressing the specific barriers to modern contraceptive uptake among this population.

In addition, the study will provide evidence-based information to the university administration, health practitioners, and other stakeholders in the area of sexual and reproductive health. This information can inform programmatic decisions aimed at improving the sexual and reproductive health of students at Lukenya University and other universities in Kenya.

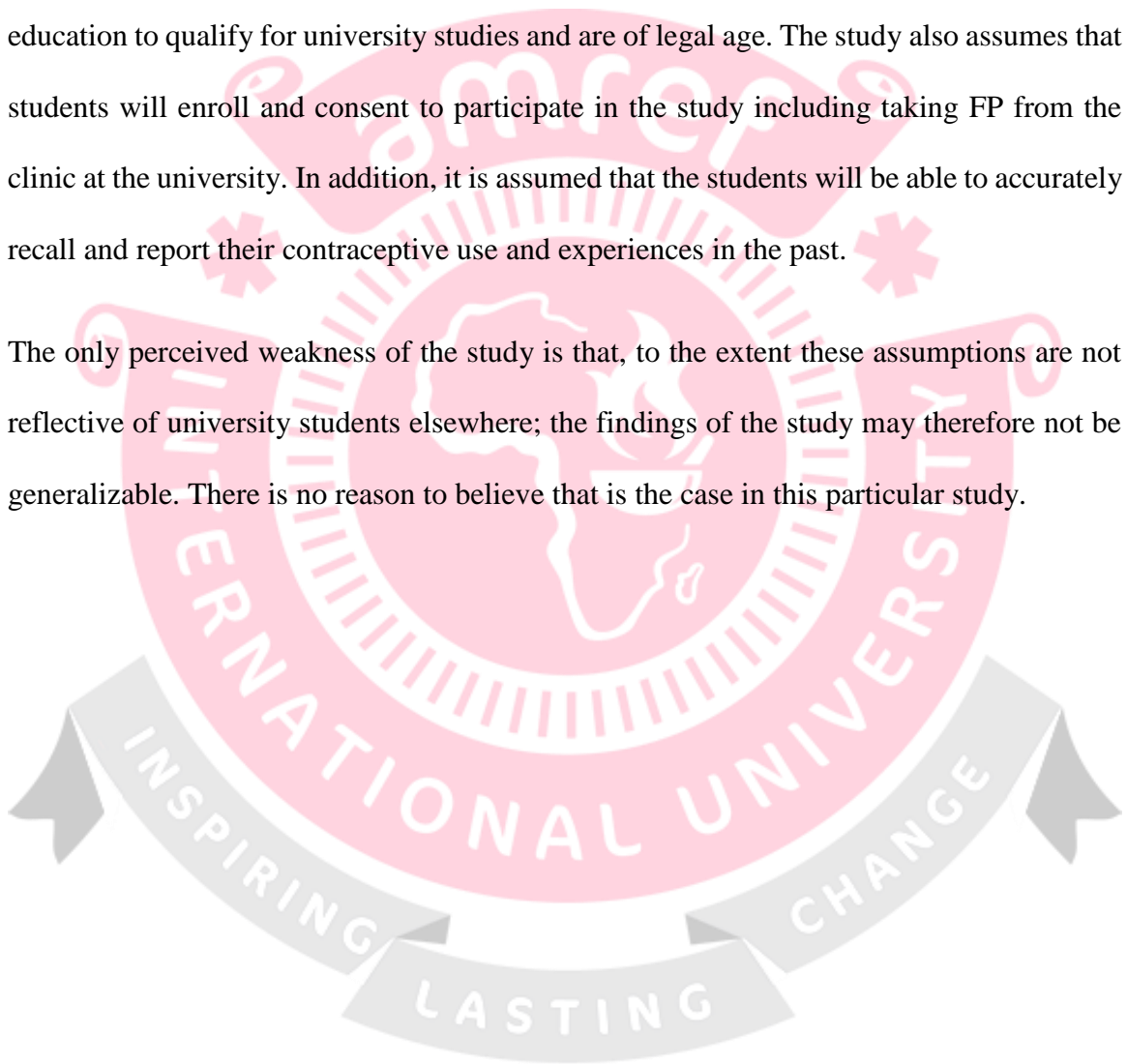
1.8 Scope of the Study

The study is limited to current students at Lukenya University, encompassing 1st- 4th year undergraduates, including 1st and 2nd year postgraduate students. It specifically focuses on the determinants of the uptake of modern contraceptives within this population. Universities and colleges often provide student health services, counseling centers, and resources related to sexual and reproductive health. These institutional factors may influence the availability, accessibility, and awareness of contraceptive options among university students, making it interesting to explore their impact on contraceptive uptake. The study does not include students from other universities or individuals who are not currently enrolled at the university's main campus in Mtito-Andei, Makueni County, Kenya.

1.9 Assumptions of the Study

In the context of this study it is assumed that participants are representative of the larger population of students in Lukenya University. The students enrolled at the university speak and understand both English and Kiswahili languages as most have up to secondary education to qualify for university studies and are of legal age. The study also assumes that students will enroll and consent to participate in the study including taking FP from the clinic at the university. In addition, it is assumed that the students will be able to accurately recall and report their contraceptive use and experiences in the past.

The only perceived weakness of the study is that, to the extent these assumptions are not reflective of university students elsewhere; the findings of the study may therefore not be generalizable. There is no reason to believe that is the case in this particular study.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter offers an in-depth review of existing relevant literature including the literature on the theoretical frameworks used by researchers, their strengths and weaknesses, and the empirical literature on key aspects of contraception use, including the factors that determine the use/non-use of contraceptives, prevalence of unmet need for family planning, the factors influencing this unmet need, and the practices regarding modern contraceptives use. By summarizing and presenting these findings, this chapter establishes a solid background, research gaps and enhances the understanding of the topic at hand.

2.2 The Theoretical Frameworks Used

The Health Belief Model (HBM) is the anchor pillar for this study, supplemented by the Diffusion of Innovations Theory, and the Theory of Planned Behavior (TPB). These are briefly reviewed next.

2.2.1 *Health Belief Model (HBM)*

In the field of public health and health psychology, the Health Belief Model (HBM) is a well-known theoretical framework. Social psychologists Hochbaum, Rosenstock, and Kegels created the Health Belief Model (HBM) in the 1950s. It takes into account an individual's beliefs regarding the possibility of a prospective health issue in order to predict and start preventative steps (Rosenstock, 1974). A number of important elements impact an individual's decision to participate in health-related behaviors. Perceived vulnerability to a health hazard, perceived seriousness of the issue, perceived advantages of taking

preventative action, perceived obstacles to doing so, cues to act, and self-efficacy are some of these aspects (Rosenstock, 1974). The model assumes that individuals are rational decision-makers who weigh the perceived costs and benefits of engaging in healthy behaviors. The research is anchored within this model as it allows for the researcher to investigate the role of individual beliefs', self-efficacy, and external influences in students' decision making regarding modern contraceptive uptake thereby informing on how interventions can be tailored to this specific population to increase awareness, accessibility and consistent use of modern contraceptives.

A person's perception of their personal risk of developing a specific health issue is known as perceived susceptibility. When people believe that a health issue is serious, they are more likely to be driven to take preventative measures. A person's perception of the advantages of a certain health habit in terms of lessening the likelihood or intensity of a health condition is linked to their perceived benefits. Perceiving substantial benefits enhances the probability of performing preventive measures (Werle, 2011).

Perceived barriers are people's opinions about the difficulties, expenses, or unfavorable elements of adopting a healthy activity. People may be less inclined to take preventive action if perceived barriers outweigh imagined advantages (Crichton, 2008). The external events or inducements that encourage people to adopt healthy behaviors are known as cues to action. These indicators can be factual, like health campaigns or advice from medical professionals, or they can be subjective, like a friend receiving a diagnosis of a specific illness (Ruppel, 2016). Self-efficacy is the belief that one can carry out a suggested health activity successfully. Adopting and sustaining healthy practices is more likely among people with higher levels of self-efficacy (Werle, 2011). The Health Belief Model is

frequently used in a variety of contexts pertaining to health such as understanding and promoting behaviors like vaccination, cancer screening, medication adherence, and health-promoting lifestyle changes (Pérez Dávila, 2020). It has also been utilized in the development and evaluation of health interventions aimed at improving individuals' health-related decision-making and behavior. For example, the HBM has been applied to increase the uptake of preventive screenings, such as mammography and colorectal cancer screening. By addressing individuals' perceptions of susceptibility, severity, and barriers, interventions can be tailored to enhance motivation and overcome perceived obstacles, leading to increased screening rates (Afriyie & Tarkang, 2019). Moreover, HBM is used in designing health campaigns and educational interventions to promote behaviors like smoking cessation, safe sex practices, and healthy eating habits.

Understanding individuals' beliefs and perceptions regarding these behaviors allows for the development of targeted messages and strategies to effectively change attitudes and motivate behavior change (Glanz & Bishop, 2010). By applying the HBM to the current study, the researcher will be able to assess students' perceptions and beliefs related to contraception, determine the variables influencing their decision-making process and design targeted interventions that address specific barriers and enhance perceived benefits. It will also help in tailoring educational campaigns, promoting awareness about the severity of negative health outcomes, and emphasizing the effectiveness and advantages of modern contraceptive methods.

In this study, HBM explores how students at Lukenya University make decisions on uptake of modern contraceptives based on perceived risks, benefits, barriers and severity. For example, if a student associates gaining weight with use of certain types of contraceptive,

the student is less likely to use contraceptives. However, if the same student attends a health program that gives correct information on the contraceptive linked to weight gain, then the students is likely to get encouraged to utilize contraceptives, thereby becoming confident in their ability to use correctly the contraceptive and recommend to peers.

The level of modern contraceptive uptake is considered within the realm of health behavior. It is imperative to highlight that the Health Belief Model has significantly impacted the creation and assessment of public health interventions by comprehending the factors that influence behavioral intentions. Treatments can be designed to improve behavior change, affecting areas such as safe sexual practices and healthy lifestyle choices. These treatments center on attitudes, subjective standards, and perceived behavioral control. In applying health belief model on uptake of modern contraceptives among university students, their perception and behavior plays a key role. The risks of unintended pregnancies and sexually transmitted diseases understood by students makes them take up contraceptive. The students who care little about consequences of unprotected sex may have lower prevalence of contraceptives. It is consequential to note that higher prevalence is clear among students who believe contraceptives enhance their reproductive health and prevent unwanted pregnancies.

Contextualizing HBM in relation to the knowledge, attitudes and practices linked to uptake of modern contraceptives is critical. People's decisions to use contraceptives are influenced by their awareness of the negative effects of unintended pregnancies, their belief that they can become pregnant, and their recognition of the advantages of using them. The use of contraceptives is influenced by both cultural and educational factors. The psychological aspects that influence the use of contraceptives, for example, include fear of adverse effects

and confidence in having a practical conversation about family planning with a spouse or health care provider. These factors are experienced by university students who are mothers. It is anticipated that programs aimed at increasing the use of contraceptives will include improving risk perception, lowering obstacles, and developing negotiating skills to promote adoption. Thus, medical guidance (calls to action) and assurance in the use of contraceptives.

Application of HBM model to establish the socio-economic and socio-cultural factors associated with uptake of modern contraceptives infers that individual perceptions will determine whether they adopt and practice specific health behaviors that may have an impact on their health outcomes if they think they are at risk for them. Furthermore, cues to action that foreshadow negative outcomes such as campus health talks if they think that their decision to adopt a health intervention would safe-guard them from serious repercussions. Moreover, persons who would take the required action are those who think that starting a new, healthy behavior would lessen their exposure to the negative effects (Fagbamigbe, 2021). Additionally, people's readiness to adopt a new health behavior may be influenced by economic status i.e. the ability to buy into and sustain continued use or the obstacles they face due to social norms such as stigma or misinformation. Lastly, people are more likely to modify their health-related behaviors if they think they can follow the basic guidelines for doing so (Fagbamigbe, 2021).

2.2.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is a widely used theoretical framework. It helps to explain and predict human behavior. According to this theory, three main elements affect

an individual's behavior: attitudes, subjective norms, and perceived behavioral control. Positive or unfavorable assessments of an action are referred to as attitudes. Subjective norms are the behavior-related expectations and felt social pressure from close relationships. Beliefs about one's capacity to carry out an action and the existence of outside restraints or enablers are both components of perceived behavioral control (Ajzen, 2015). In the context of health behavior, application of TPB in examining factors influencing actions such as stopping to smoke, fitness adoption, medication adherence, as well as safe sex practices. On the other hand, the application of TPB has widely influenced the development and evaluation of public health involvements (Asaolu et al., 2021). In order to encourage behavior change, interventions can be created to target attitudes, subjective norms, and perceived behavioral control by studying the elements that influence behavioral intentions connected to health habits, such as exercise or healthy eating. For instance, TPB has been used to develop effective interventions to increase vaccination rates, promote safe sexual behaviors, and encourage healthy lifestyle choices (Tobe, 2015).

In this study, TPB will look into how students at Lukenya University make decisions regarding their reproductive health in terms of attitude, for instance, whether they have a positive or a negative attitude towards contraceptives. It will also give insights in as far as subjective norms are concerned for example, to what extent are students influenced by peer or family in relation to uptake of modern contraceptives, i.e., are they inclined to adopt certain types of contraceptives. The TPB as it applies to this study could also shed light on to what extent students are in control of their decision making capabilities in terms of access, knowledge and correct usage of modern contraceptives.

Socio-economic and socio-cultural factors also shape contraceptive behavior. Economic factors such as economic status, level of education and access to health services may determine to what extent a student may have control over their ability to confidently afford and sustain continued use of contraceptives. Cultural factors such as religious doctrine for the Catholic and Muslim practitioners' limit or discourage contraceptive use. Some social norms and peer influence such as campus culture can also normalize or create stigma around contraceptive use. This contributes to a social visibility issue where students refrain from accessing contraceptives for fear of being seen and judged negatively by peers. Other socio-cultural factors such as partner involvement and autonomy in decision making may positively or negatively determine uptake and practice of contraceptives. These socio-economic and socio-cultural factors inter-play with individual beliefs to determine behavioral intentions and practice of uptake of modern contraceptives among university students.

While TPB is a widely utilized model, it is not without criticisms and limitations. One criticism is that TPB primarily focuses on conscious, intentional behaviors and may not adequately account for impulsive or habitual behaviors (Tobe, 2015). Furthermore, according to (Ajzen, 2015), a significant portion of TPB's measurements are self-reported, which raises the possibility of social desirability bias and may not always correctly reflect actions. Furthermore, TPB does not explicitly consider emotions and affective factors, which can significantly influence behavior. By applying the TPB to this study, the study will identify the specific factors influencing contraceptive uptake behavior among students at Lukenya University. This theory is likely to influence their behavior into planning and adopting specific behavior most importantly some of the student adopting modern

contraceptives for safe sex and birth control avoiding the resurgence of unwanted pregnancies.

2.2.3 Diffusion of Innovations Theory

The Diffusion of Innovations Theory is a theoretical framework that describes how novel concepts, methods, or technology proliferate and become ingrained in people's lives. Everett Rogers proffered this idea in 1962, and it has been applied extensively in a number of domains, such as public health, marketing, communication, and technology adoption. Over time people adopt and spread inventions through several channels, which are explained by the Diffusion of Inventions Theory (Rogers, 1962). The process of adopting an innovation involves several stages, beginning with awareness and concluding with adoption and validation. The hypothesis highlights how social networks, communication methods, and personal traits all have an impact on the adoption process (Peres et al., 2019).

In public health, the theory is used to promote the adoption of health behaviors and interventions. It helps identify barriers and facilitators to behavior change, design persuasive campaigns, and leverage social networks to accelerate the diffusion of health innovations (Greenhalgh et al., 2004). By applying the Diffusion of Innovations Theory to the current study, the researcher will understand the factors influencing the uptake of modern contraceptives, design targeted interventions to promote adoption, and leverage social dynamics and communication channels to disseminate accurate information about modern contraceptives.

Diffusion of Innovation Theory when applied to the study of modern contraceptive uptake, can illuminate the factors that influence individuals' decisions to adopt these methods.

Researchers can analyze how awareness and understanding of modern contraceptives spread through social networks and communication channels. By focusing on understanding the barriers to contraceptive use such as misconceptions, stigma, or access challenges interventions can be targeted more effectively. Furthermore, the theory encourages the development of strategic communication that addresses the specific needs and concerns of individuals considering contraceptive options. By designing targeted interventions that utilize social dynamics and effective communication, public health practitioners can promote the benefits of modern contraceptives more effectively, ultimately improving uptake rates. This approach ensures that accurate information reaches potential users, helping to dispel myths and increase acceptance, leading to better reproductive health outcomes.

In this study, the diffusion of innovations theory is applicable as it will offer a cogent framework for understanding how university students adopt new reproductive technologies through appropriate reproductive health program campaigns. The knowledge, attitudes and practices of students within this context is shaped by the ability to readily adopt contraceptives, especially among early adopters who later on influence their peers through the social groups and campus culture. Socio-economic factors such as educational level, economic status and access to youth friendly services influence perceived behavioral control and the comparable advantage of contraceptive use. The socio-cultural factors such as religious and cultural beliefs, societal stigma, partner beliefs towards contraceptives etc., are critical determinants of adoption. It will shed light on why certain contraceptives are perceived as safe and socially acceptable than others and therefore likely to diffuse rapidly.

This theory may help institutions to come up with programs that are student centered offering easy access to comprehensive reproductive health services.

2.3 Types of Modern Contraceptives

Modern contraceptives are of two categories: hormonal and non-hormonal.

2.3.1 Non-hormonal Contraceptives

2.3.2.1 Permanent Birth Control.

Those with a uterus may opt for bilateral tubal ligation (commonly referred to as "having your tubes tied") or tubal removal, both performed in medical facilities. Similarly, males can elect to undergo a vasectomy, which involves severing the tubes responsible for transporting sperm (Upadhayay et al., 2017). These surgical procedures can render individuals with sperm production incapable of inducing pregnancy or individuals who ovulate unable to conceive. These forms of permanent contraception boast a 99% success rate in preventing pregnancies.

2.3.2.2 Condoms.

Condoms, available in latex or polyurethane variants, offer contraception by preventing pregnancy 87% of the time when used accurately. There are condoms for men and women. To prevent sperm from entering the vagina during ejaculation, those for men are placed over an erect penis. Of 100 women whose partners use condoms, just two will become pregnant when they are used consistently and correctly (Kavanaugh & Anderson, 2013). Internal or female condoms are inserted into the vagina and provide contraception with a

success rate of 79%. This means that when the inserted condom is always used correctly, only 5 out of 100 women will become pregnant. It is worth noting that condoms provide protection against STDs and are among the most affordable and widely available forms of birth control (KNBS, 2023).

2.3.2.3 Spermicide and Gel.

Spermicides, containing agents that kill sperm, such as foams, suppositories, or film (used individually, not combined), provide contraception with a success rate of 79-86%. When employed consistently as directed, 18 out of 100 women will experience pregnancy annually. Inserted into the vagina shortly before intercourse, spermicides act by obstructing the cervix, preventing sperm from fertilizing an egg (KNBS, 2023).

2.3.2.4 Copper Intrauterine Device.

Non-hormonal IUDs utilize copper to prevent pregnancy. Copper affects sperm by altering their movement, making it difficult for them to reach an egg. Without sperm reaching an egg, pregnancy cannot occur. Among this particular IUD's many benefits is its long-lasting, non-hormonal nature, making it one of the most popular FP methods. If you decide to become pregnant or simply wish to remove the IUD, a healthcare professional can do so. Once the IUD is removed, your fertility returns to its usual state (World Health Organization (WHO), 2022).

2.3.2 Hormonal Contraceptives

These types of contraceptives come available as either hormonal or in a combined form.

2.3.2.1 Implant.

A slender rod, positioned beneath the skin of the upper arm by a healthcare provider, offers 99% effectiveness in preventing pregnancy. With fewer than 1 out of 100 women experiencing pregnancy annually while using the implant, it stands as a highly reliable contraceptive method. Lasting between 3 to 5 years, the implant releases progestin hormone to inhibit ovary egg release while also thickening cervical mucus, impeding sperm's ability to enter the uterus [World Health Organization] (WHO), 2018).

2.3.2.2 The Shot.

The hormone progestin is administered by injection by a healthcare provider into the arm or hip. It provides three months of contraceptive coverage, offering a 96% effectiveness rate in preventing pregnancy. With fewer than 1 out of 100 women experiencing pregnancy annually when consistently adhering to the injection regimen, also known as Depo-Provera, it serves as a reliable birth control option. This injection works by halting ovary egg release and thickening cervical mucus, hindering sperm's ability to enter the uterus (World Health Organization (WHO), 2022).

2.3.2.3 The Vaginal Ring.

A pliable ring placed into the vagina monthly provides contraception with a 93% success rate in preventing pregnancy. When consistently used as instructed, fewer than 1 out of 100 women annually experience pregnancy with this method. Releasing hormones, the vaginal ring hinders ovary egg release and increases cervical mucus thickness, impeding sperm's ability to enter the uterus (WHO, 2018).

2.3.2.4 Patch.

The patch, akin to a sticker, is affixed weekly to designated areas of the skin, offering contraception with a 93% efficacy rate in preventing pregnancy. When consistently adhered to as directed, fewer than 1 out of 100 women annually experience pregnancy with this method. Releasing hormones, the patch inhibits ovary egg release and increases cervical mucus thickness, hindering sperm from entering the uterus (Hagan & Buxton, 2012).

2.3.2.5 The Pill.

The combined pill, ideally taken consistently at the same time each day for optimal efficacy, is frequently utilized to alleviate menstrual cramping and bleeding while providing contraception with a 93% success rate in pregnancy prevention. When taken daily as instructed, fewer than 1 out of 100 women annually experience pregnancy with this method. Releasing hormones, which may be progestin-only or a combination, the pill works to inhibit ovary egg release and increase cervical mucus thickness, impeding sperm from entering the uterus (WHO, 2022).

2.3.2.6 Emergency Contraception.

Emergency contraception is viable for use up to five days post unprotected intercourse and is available in pill or intrauterine device (IUD) forms, each offering differing levels of effectiveness. This form of contraception operates by hindering ovulation and increasing cervical mucus density, yet it does not induce abortion (WHO, 2018).

2.3.2.7 Intrauterine Device.

A small t-shaped device, inserted into the uterus by a healthcare professional, serves as a highly effective contraceptive, preventing pregnancy 99% of the time. Less than one in every 100 women experiencing pregnancy annually when using an Intrauterine Device (IUD), it stands as one of the most reliable birth control methods. Available in both hormonal and non-hormonal (copper) varieties, the IUD offers flexibility, with durations ranging from 3 to 12 years based on the chosen type. Both non-hormonal and hormonal IUDs function by impeding sperm from fertilizing an egg (WHO, 2022).

2.4 Review of Empirical and Related Literature

2.4.1 Uptake of Modern Family Planning Methods

In most nations, there is still public health concern around the use of contemporary contraceptives, such as pills, injectables, IUDs, implants, condoms, and male and female sterilization. 1.1 billion Women of reproductive age in 2019 required family planning; of these, 842 million used modern contraceptives and 270 million did not receive the modern contraception they (Kantorová et al., 2020). By 2030, there will be 1.19 billion women worldwide who require family planning, and 918 million people who use modern contraceptives, more than half of whom live in low and middle-income nations will need family planning (Kantorová et al., 2020). Most countries in which women of reproductive age may need to avoid conception but are not utilizing modern contraception are located in Sub-Saharan Africa (Booklet, 2020).

According to KNBS (2023), reports that 57% of married women use modern methods of contraception, with 63% utilizing other methods. Among sexually active, single women aged 15–49, 70% use some form of birth control. 59% of these women, however, employ contemporary techniques. Sexually active single women are more likely to use the traditional method than married women, with 11% and 6% of them doing it, respectively. Among women who are currently married, injectables (20%), implants (19%), and contraceptive pills (8%), are the most often utilized techniques. The most popular method of contraception among sexually active unmarried women is male condoms (20%), which are followed by injectables (16%) and implants (11%).

The rate of modern contraceptive use among women aged 15 to 49 is twice as high in high-income nations as it is in low-income ones, at 67% and 34%, respectively (Ajaero et al., 2016). In sub-Saharan Africa, the rate of conception is high but the use of modern contraceptives is low; annually, 14 million unintended pregnancies occur, and 25% of women who are of reproductive age do not fit the criteria for using modern contraceptives (Genet et al., 2015; Martin et al., 2019). According to CITE, 32% of Tanzanian women between the ages of 15 and 45 use contemporary contraceptives. Despite the fact that the government of Zanzibar offers free modern contraceptive techniques in Unguja and Pemba, the prevalence of these methods is just 28% (Ajaero et al., 2016).

In Zanzibar, the percentage of unmet contraceptive need fell slightly to 28% in 2016, while modern contraceptives were expected to meet 27.3% of the demand (Martin et al., 2019). Pemba has an even lower rate of modern contraception usage (9.1%) than any other region in Tanzania (Ajaero et al., 2016). The use of contemporary contraceptives has been linked to a number of advantages, including preventing unintended pregnancies, maintaining a

healthy family size and spacing out children, providing lactating mothers with adequate recovery time, thus increasing caring time for the infant, and enabling them to engage in other social and economic activities (Kavanaugh & Anderson, 2013). Modern contraception has also been helpful in preventing HIV/AIDS and other STDs, guaranteeing consistent population growth that lessens competition for scarce resources.

Other research has indicated that the failure to use modern contraceptives as prescribed may lead to a number of negative consequences, such as a higher risk of pregnancy-related issues, a rise in unsafe abortions, poverty and a decrease in household and community economic security, including a rise in maternal fatalities (Abeid et al., 2023). Maternal mortality (MMR), infant mortality (IMR), and neonatal mortality (NMR) rates in Tanzania are 556 per 100,000 live births, 43 per 1000 live births, and 25 per 1000 live births, respectively. The loss of economically productive women in their reproductive years is linked to both family and national economic downturns (Abeid et al., 2023). Although the focus has been on urban regions, studies have been conducted in Tanzania to ascertain the prevalence and factors related with the use of modern contraceptives. There is limited research on the usage of contemporary contraceptives in Zanzibar, particularly in Pemba (Abeid et al., 2023). The study evaluated the use of contemporary contraceptives and the factors related among Pemba's Chake District's ages 18–45 of women who are of reproductive age.

With the first official statewide family planning program in sub-Saharan Africa, Kenya is considered one of the leading family planning countries in Africa (UNFPA, 2021). Established in 1982, the National Council for Population and Development (NCPD) was created by the Kenyan government. Reports from the NCPD show that the fertility rate fell

from 8.1 children per woman in 1977 to 6.7, 4.7, 4.6, and an astounding 3.4 in 1989, 1998, 2008, and 2016, in that order (Ackerson & Zielinski, 2017). With a population of 52 million 574 thousand in 2019, Kenya is one of the most populous countries in Africa (UN, 2022). However, there have been no reported changes in Family planning, remaining "business as usual" rather it is not an urgent concern for those in positions of power in government (Crichton, 2008).

2.4.2 The Level of Unmet Need for Family Planning Services

There were an estimated 73.3 million abortions occurred worldwide in 2019. However, this estimate includes both safe and unsafe abortions, and the study notes that the number of unsafe abortions is difficult to measure accurately. Every year, approximately 25 million unsafe abortions take place worldwide, with 97% of these occurring in developing countries and are responsible for approximately 13% of all maternal deaths, putting it among the leading causes of maternal death worldwide (UNAIDS, 2023). Unsafe abortion complications account for 30–40% of maternal mortality in Kenya, significantly higher than the global average of 13%. Unsafe procedures are responsible for most of the maternal mortality in Kenya, which stands at 355/100,000 live births (KNBS, 2023).

According to a report by the European Parliamentary Forum on Population and Development, approximately 23 million women in the European Union (EU) do not have access to modern contraception or do not use it consistently (UNAIDS, 2023). This represents about 15% of women of reproductive age in the EU. The unmet need for modern contraceptives is also a major issue in Asia and Sub-Saharan Africa. A report by the Guttmacher Institute also shows that in poor nations, an estimated 218 million

reproductive-age women desire to prevent pregnancy but do not use a modern method of contraception (Festin et al., 2016).

Africa has a disproportionately high unmet need for modern contraception, with an estimated 53% of women in reproductive age not getting the medication they need (I. Singh et al., 2021). According to a poll conducted by the Kenya National Bureau of Statistics and the Ministry of Health, over 18% of Kenyan women who are of reproductive age do not currently utilize modern contraception (National Coordinating Agency for Population and Development (NCAPD) (Singh et al., 2021). People can enhance general wellbeing, lower their chance of unplanned pregnancies, and improve their reproductive health by using these techniques.

When it comes to advancing reproductive health and giving people the power to make educated decisions about having children, the use of comprehensive family planning services is essential. While family planning services are commonly associated with adult populations, it is important to explore the level of unmet need for these services among university students. The unmet need for family planning services among university students has profound implications for their reproductive health and well-being. Unintended pregnancies, unsafe abortions, and reproductive health-related complications may arise as a result of inadequate access to contraception and family planning services (Akinsoji et al., 2015). Meeting the family planning needs of university students can contribute to their educational attainment, overall health, and future prospects.

Studies have indicated that university students often face challenges in accessing appropriate family planning services, leading to unmet needs. Research conducted among

college students has found varying levels of unmet need, ranging from moderate to high. A study by Kose et al. (2022), examined the level of unmet need for contraception among university students in Spain and explored potential differences based on nationality, social background, and attitudes. This study employed a cross-sectional design and collected data from a sample of university students in Spain. The researchers used a self-administered questionnaire to assess contraceptive use, unmet need, and demographic characteristics. The study found that the prevalence of unmet need for contraception among university students in Spain was relatively low. However, there were significant differences in unmet need based on nationality, with international students exhibiting higher levels of unmet need compared to domestic students. Social background and attitudes toward contraception were also associated with variations in unmet need among the student population.

Earlier work by Abbafati et al. (2020) explored the decision-making process and the trade-offs between using hormonal contraceptives and condoms among adolescents, including university students. This qualitative study used in-depth interviews to gather information about contraceptive decision-making among adolescents, including university students. The researchers conducted interviews with a diverse sample of adolescents and analyzed the data thematically to identify common patterns and themes related to the use of hormonal contraceptives versus condoms. The study revealed that adolescents, including university students, considered multiple factors when making contraceptive choices. These factors included concerns about pregnancy prevention, protection against sexually transmitted infections (STIs), relationship dynamics, trust in partners, and side effects of contraceptive methods. The findings highlighted the complexities and trade-offs involved in selecting between hormonal contraceptives and condoms among this population,

indicating the importance of comprehensive sexual and reproductive health education and counseling tailored to the needs of adolescents and university students.

In their study Chola et al. (2020) had examined factors associated with contraceptive use among late adolescent women, including university students. Data from the National Longitudinal investigation of Adolescent Health (Add Health), which included a nationally representative sample of American teenagers, were used in this investigation. The researchers analyzed survey responses from female participants who were late adolescents, including those who were university students. They examined various factors such as demographic characteristics, sexual behaviors, and contraceptive knowledge in relation to contraceptive use. The study found that contraceptive use among late adolescent women, including university students, was influenced by multiple factors. Factors associated with increased contraceptive use included older age, being in a romantic relationship, having higher levels of education, and positive attitudes towards contraception. On the other hand, factors such as lower socioeconomic status and less contraceptive knowledge were associated with lower levels of contraceptive use among this population group.

A study by Upadhayay et al. (2017) focused on the unmet need for family planning among female university students in Thailand. The researchers employed a cross-sectional survey design and collected data through self-administered questionnaires. The study aimed to determine the level of unmet need, identify the factors associated with it, and provide insights into the specific challenges faced by female university students regarding family planning in Thailand. It was found that 27.9% of female university students had an unmet need for contraception.

In Cameroon, Akoku et al. (2020) conducted a study to investigate the relationship between the use of oral contraceptives and premenstrual syndrome (PMS) in sexually active female university students. The study utilized data extracted from a larger research project on sexual and reproductive health conducted at the University of Yaoundé from July to August 2018. The study focused on 424 sexually active students who had participated in the larger project. In their research, the team employed Poisson regression analysis to investigate the association between oral contraceptive use and PMS. They also conducted stratified analysis to assess the impact of age on this relationship. The findings of the study revealed that a high proportion of female university students reported experiencing PMS symptoms before their last menstrual period.

Additionally, the study found that the use of oral contraceptives was positively associated with an increased risk of developing PMS symptoms. The association was further found to be influenced by age. These findings highlight the need for further research into the relationship between oral contraceptive use and PMS symptoms in young women, as well as the importance of healthcare professionals providing accurate information to women about the potential side effects of contraceptives to enable them to make informed decisions about their reproductive health. A qualitative study conducted by (Crawford et al., 2021) to explore the knowledge and utilization of natural, modern, and folkloric contraceptive methods among a group of unmarried university students in Calabar, Nigeria. The researchers collected data through focus group discussions conducted with both female and male participants residing in university halls. The findings of the study indicated that there is a lack of awareness and limited use of modern contraceptives among university students

in Calabar, Nigeria. Additionally, the use of folkloric contraceptive methods was found to carry risks such as physical harm and unintended pregnancy.

Similarly, a study in Nigeria examined the level of unmet need for contraception among university female students in Southeast Nigeria (IBEAGHA, 2021). The researchers utilized a cross-sectional design and collected data through self-administered questionnaires. The study aimed to assess the prevalence of unmet need, identify factors contributing to the unmet need, and emphasize the importance of addressing this issue among female university students in Nigeria. It was reported that 30.5% of female university students had an unmet need for family planning services. These findings highlight the significance of addressing the unmet need for family planning services among university students.

A study by Nsubuga et al. (2016) in Uganda looked into female university students' attitudes, perceptions, knowledge, usage of contraception, and sexual behavior. The poll was carried out in April 2014 at Makerere University's main campus in Kampala. A modified Poisson regression model inside a generalized linear model was used to get prevalence ratios. The survey discovered that almost all of the participants had some understanding about contraceptives and believed that using them would be beneficial. But in this specific situation, actual contraceptive use was shown to be less than ideal. It was also evident from the study that many female students had attempted to end a pregnancy, a strong indicator that the individuals experienced unplanned pregnancy.

2.4.3 Adoption of Modern Contraceptive Methods

According to Heisler and Van Eron (2012), University of New Hampshire students' attitudes around contraception have demonstrated how attitude affects practice. Oral contraceptives accounted for 58.4% of the total number of students that participated in the study, making them the most widely used primary technique. Male condoms (24.7%) and abstinence (7%), as well as the admission that 3.7% of students polled were sexually active and did not use any kind of contraception, were other noteworthy techniques.

A report on national estimates from the Guttmacher Institute from 2008, noted that birth control pills were the most common type of birth control used by women in the United States, with 10.7 million women using them. Furthermore, 10.4 million women chose tubal sterilization, making it the second most popular option, according to national data (Heisler & Van Eron, 2012). Women also believed that men ought to be in charge of birth control methods, according to (Heisler & Van Eron, 2012). Although 89% of women said that men and women should share responsibility for contraception, just 51.8% of women said that male and female relationships had shared responsibility. In addition, when evaluating the participants' attitudes, 24% of women believed that males should supply condoms and women should find oral contraceptives. Additionally, younger women in their first year of college were less likely than older women to express shared responsibility in practice (Katsiaficas, 2017).

A study by Heisler and Van Eron (2012) found that men's attitudes toward birth control were more unfavorable, which in turn affected their desire to use it properly. Risky contraceptive behaviors, such as not using a birth control method or using it inconsistently,

were more likely to be adopted by teenagers and adult women who had confused attitudes toward pregnancy or low drive to avoid pregnancy (Katsiaficas, 2017).

Miseducation, cultural or religious influences, ignorance, race, ethnicity, and nativity are some of the factors that can influence the use and practice of contraceptives. According to Heisler and Van Eron (2012), participants who were immigrants or members of minority groups were more likely to use risky contraceptive methods due to access and cost challenges. Other significant characteristics were also present, including age, education, and employment or school status. Women in relationships who were enrolled in school and not employed were less likely to use contraceptives, older women were less likely to use them inconsistently, and women in relationships with higher levels of education were less likely to not use them (Heisler et. al., 2012).

Comprehensive sexuality education, according to the World Health Organization, is crucial to preparing young people for successful, meaningful lives in a world where STIs, gender-based violence, unwanted pregnancies, HIV infection, and other health risks remain serious concerns (Herat et al., 2019). As youth are exposed to more sexually explicit content on the Internet and in other media, nations are realizing how important it is to give them the understanding, values, and abilities necessary to make moral decisions throughout of their life. To avoid serious issues, it is essential to provide young people with the sexual and reproductive health education and resources they require (UN, 2022).

It is noteworthy to mention that scientific data supports the favorable effects of sex education programs, including reduced incidences of teenage pregnancies, delayed sexual activity, and increased usage of contraceptives. Research has shown that having access to

comprehensive sex education can result in a decrease in the number of sexual partners and an increase in awareness about contraception options (Herat et al., 2019). Unfortunately, a lot of nations lack organized, structured training on sexuality and contraceptive techniques, which can make it more difficult for people to receive crucial information and services on sex and contraceptive methods (Herat et al., 2019). In order to empower people to make educated decisions regarding their sexual health, we must endeavor to offer more thorough sex education programs.

The 2019 Spanish Youth Survey on Sexual Health and Contraception highlights the youth's lack of information and education around sexuality and contraception, with 68.5% of respondents saying they received insufficient instruction. (Sanz-Martos et al., 2020). Young people learn how to handle their sexuality and intimate relationships within university settings (Kansra et al., 2021). However, these young people lack many resources to support decision making in specific situations, and professional training in sexuality is not a reality despite World Health Organization advocating for educational initiatives as a preventive tool for anyone, regardless of their sexual activity level, (UN, 2022). There are few educational programs on sexuality and the use of contraceptives among young people, and the research that has been done reveals a generally poor level of understanding (Kansra et al., 2021). The growth in college students' knowledge of sexuality and contraceptive methods is the only indicator that has been regularly used to confirm the effectiveness of educational programs meant to prevent unwanted births (UN, 2022), and further initiatives meant to prevent undesired outcomes like STIs connected to youth hazardous behavior (Sanz-Martos et al., 2020). Knowledge serves as the foundation for attitudes, and attitudes

and knowledge work together to minimize harmful sexual behavior (Santos et al., 2022). Knowledge, skills, and attitudes are all necessary components of educational programs.

Educational programs have historically been given using a vertical teaching style, and their efficacy has been measured in terms of knowledge acquisition rather than attitudes toward use, despite the fact that the latter is a crucial component of program success (Muchco, 2012). It is significant to highlight that the finest available scientific data forms the basis of the knowledge that young people learn about sex and contraception. Young people mostly obtain information from their social group and the Internet, which offer empirical knowledge derived from their personal experiences or knowledge derived from subpar scientific sources (Mkuu et al., 2018).

The value of having trustworthy sources of information is demonstrated by earlier studies on college students' attitudes on sexuality and the usage of contraceptives. These studies enable students to get the best possible knowledge and create opinions based on empirical data (Ajayi et al., 2016). A high risk of unintended pregnancy is linked to ignorance of contraceptives and their use, and the likelihood of unsafe contraceptive methods is increased by ambiguous attitudes on pregnancy and abortion (Ding et al., 2019). It is crucial to ascertain young people's level of knowledge, attitudes, behaviors, and requirements in order to safeguard them from the hazards related to sexual and reproductive health (Basaran, 2017).

Basaran (2017), conducted research in Kenya to ascertain the variables impacting sexually active youth in the Rift Valley Province's use of contemporary contraceptive techniques. Using a structured questionnaire, the study used a cross-sectional design. Those who were

sexually active and between the ages of 15 and 24 from different villages in Kenya's Rift Valley Province participated. To determine the factors influencing the use of contemporary contraceptives, logistic regression analysis was employed. The Rift Valley Province of Kenya's sexually active youth's usage of modern contraceptives was found to be significantly influenced by factors such as educational attainment, awareness of contraceptives, access to health facilities and partner support.

According to a Kenyan research, 72.1 percent of University of Nairobi undergraduate students studying health science were knowledgeable on various modern contraceptives, however, only 23% reported using the method consistently but with incorrect use of the method (Martin et al., 2019). A study by Ochako et al. (2017) used data from 2014, which included a sample of 9514 individuals from the previous year, to investigate the factors that led to men in Kenya taking modern contraception. The data were analyzed using bivariate and multinational logistic regression. As a result, it was shown that factors such as wealth index, religion, place of residence, desire for more children, media access, number of sexual partners, and interactions with medical professionals were important in determining how often males used modern contraception. Furthermore, compared to men living in rural regions and without regular partners, working class and wealthy men used contemporary contraception more frequently, had several sexual partners, had primary and above education, interacted with health care providers more frequently, and desired fewer children.

2.4.4 Knowledge, Attitudes and Practices on Modern Contraceptives

The foundation of the conceptual framework lies in individuals' understanding of contraceptives, encompassing knowledge about the definition of contraceptives and awareness of different types of methods available. Knowledge extends to understanding the mechanisms of action of various contraceptives and their effectiveness in preventing unwanted pregnancies. Individuals acquire knowledge from diverse sources, including formal education, healthcare providers, peers, family, and media. Attitudes are shaped by individuals' perceptions and beliefs about contraceptives, influenced by cultural, religious, economic and social factors. Attitudes may range from stigma and taboo surrounding contraceptive use to acceptance and normalization of contraceptive practices. Attitudes are also influenced by perceived benefits (e.g., reproductive autonomy, pregnancy prevention) and perceived risks (e.g., side effects, health concerns) associated with contraceptive methods.

Practices involve the decision-making process regarding contraceptive use, influenced by knowledge levels and attitudes towards contraceptives. Individuals select contraceptive methods based on various factors, including efficacy, accessibility, affordability, and personal preferences. Practices encompass the consistency and adherence to chosen contraceptive methods, influenced by factors such as ease of use, partner dynamics, and life circumstances. Understanding the interrelationships between knowledge, attitudes, and practices is essential for designing effective interventions aimed at promoting contraceptive uptake and improving reproductive health outcomes. Interventions may target multiple levels, including educational initiatives to enhance contraceptive knowledge, addressing social norms and attitudes through community-based approaches,

and improving access to contraceptive services and support systems. By addressing knowledge gaps, challenging stigma, and providing supportive environments, interventions can empower individuals to make informed decisions about their sexual and reproductive health, leading to improved contraceptive practices and overall well-being.

In poor nations, the percentage of young women reporting unplanned pregnancies and unfulfilled contraceptive needs is still significant (Akintade et al., 2011). Unwanted pregnancies raise the possibility of unsafe abortions among university students (Nsubuga et al., 2016). Contraceptive use has been emphasized as a critical intervention to prevent unwanted pregnancies and the negative consequences that follow (Alapján-, 2016). Enhancing the availability of contraception and other sexual and reproductive health services to all is one of the main objectives of the Millennium Development Goals (MDG) (United Nations. Economic and Social Commission for Asia and the Pacific, 2003). One in three women give birth before the age of 20, and pregnancy-related deaths during childbirth are twice as common in developing countries as they are in wealthy ones (United Nations. Economic and Social Commission for Asia and the Pacific, 2003).

The estimated 20 million unsafe abortions and 70,000 associated fatalities that occur annually are associated with women between the ages of 15 and 19 (United Nations. Economic and Social Commission for Asia and the Pacific, 2003). The number of unwanted pregnancies in sub-Saharan Africa alone is estimated to be 14 million each year, with women between the ages of 15 and 24 accounting for about half of these pregnancies (Kwabena et al., 2019). It is obvious that using efficient contraceptive techniques might potentially save 32% of maternal deaths, 90% of abortions, and 20% of pregnancy-related morbidity worldwide (Kwabena et al., 2019). An estimated 1.2 million unwanted

pregnancies took place in Uganda in 2008, accounting for almost half of the 2.2 million pregnancies in the nation (Nsubuga et al., 2016). When the age of one's first marriage and sexual debut are further apart, the possibility of becoming pregnant rises (Mensch et al., 2006). Of Ugandan women aged 25 to 49, nearly two thirds (64%) reported having their first sexual experience before turning 18 years old (Mayega et al., 2010)

As women enroll in colleges, their average age is often two years older than the median age of first sexual experience in Uganda, suggesting that they are generally engaged in sexual activity. Young single women are sometimes reluctant to talk about using contraception due to strong cultural and religious beliefs, which increases their risk of unplanned or unwanted pregnancies. In many traditional African cultural situations, getting pregnant before marriage is often frowned upon and results in societal rejection. There is a higher risk of maternal mortality in Uganda because abortion is illegal and is often performed by traditional herbalists. Despite engaging in high-risk sexual activities, Ugandan university students did not have access to HIV/AIDS-related programs or services related to sexual and reproductive health, according to the findings of two important surveys that were conducted among them (Nsubuga et al., 2016). The results also revealed that while a quarter (25%) of university students did not meet their requirement for contraception, they were highly aware of them (Akinsoji et al., 2015). Sexual and reproductive health knowledge, attitudes, and perceptions (KAP) may influence the use of contraceptives, suggesting that KAP-based interventions may reduce the number of unintended pregnancies (Nsubuga et al., 2016).

2.4.5 Socio-Economic Factors Influencing Uptake of Modern Contraceptives

Among the several contemporary methods of contraception, there are numerous aspects to consider while deciding which one to use. Knowledge, a gender-equitable mindset, location (rural or urban), empowerment in decision-making, fear, social economic status, marital status, and religion are a few of the variables that affect the usage of contraceptive procedures. A 2015 study conducted in India indicated that while residency in an urban versus rural area was not relevant, a number of factors, including caste, religion, education, marital age, media exposure, and present age were (Bansal et al., 2022).

Age, education, work position, knowledge of the ovulatory cycle, marital status, and visits to a health facility were found to be major determinants of the choice and use of contraceptives in Ghana within the same year (Abdulai et al., 2020). Research in Ethiopia has demonstrated that urban women are more capable of deciding whether to use contemporary contraceptives than rural women (Bogale, 2017). Ownership of a radio or television, occupation, degree of education, number of living children, collaborative decisions regarding fertility, and conversation with a health care provider (Bogale, 2017).

A study by Lakew et al. (2013) demonstrated that the use of modern contraception was significantly predicted by a number of factors, including affluence, education, employment, having more children who are still alive, having house visits from medical professionals, participating in community health discussions, and being in a monogamous relationship. Living in rural locations, becoming older, being in a polygamous relationship, and experiencing the death of one's own kid have been demonstrated to have a detrimental impact on the usage of modern contraceptives.

In Melo-Koza, Woreda, Southern Ethiopia, in 2015, the use of modern contraceptive services was significantly higher among those who were older, had more education than a secondary school, owned fewer cattle, were married for the first time at the age of 18, had no deceased children, and desired fewer than six children, believed that modern contraceptives prevented unwanted pregnancies, and were encouraged by their husbands to use them (Tobe, 2015).

The age difference between partners and their level of education were found to be important in a Tanzanian study conducted in 2015 (Kidayi et al., 2015). There exists a substantial correlation between the use of modern contraceptives by reproductive age men and women and several parameters, including access to media, marital status, wealth, fertility preference, number of sexual partners, and place of residence. This was found in a recent study conducted in Kenya in 2017 (Ochako et al., 2017). The desire to become parents after two years, the travel time to a medical institution, radio listening, regional differences, and Uganda's educational attainment were shown to be important when deciding which modern contraceptive method to use and how to use it (Asiimwe et al., 2014).

As stated in the July 2014 Makerere research by Kakuru (2019), while being married or cohabiting decreased the use of contemporary contraceptives, greater education, living in an urban area, belonging to a wealthier quartile, and having less children all encouraged their use (Asiimwe et al., 2014). Students attending universities represent a population that is particularly vulnerable to HIV/AIDS infection. This is mostly related to early sexual initiation, irregular condom use, having many partners at once, intergenerational sex, and drug and alcohol misuse. Access to HIV/AIDS care and treatment can be greatly facilitated by HIV testing and counseling programs (Cheruiyot, 2022).

Knowing one's HIV status is a crucial first step in the majority of HIV preventive initiatives. Facilities that are essential to HIV prevention include Voluntary Counselling and Testing facilities (VCTs). VCTs have mostly been employed as gateways to care and treatment as well as stimulants for changes in sexual behavior. In an examination of 923 University of Nairobi students, over thirty percent said they had slept with more than one person in the preceding year, twenty-one percent did not use condoms when having sex, and twenty-one percent had intercourse after drinking. At Moi University in Eldoret, a representative sample of 1,917 university students participated in a prior HIV/AIDS evaluation. Of these students, 89% believed they were at risk for HIV infection, but only 28% had received an HIV test. Numerous students believed they were at risk due to the high level of reported sexual activity on campus (Cheruiyot, 2022).

Parents and the government have invested a great deal of money in colleges to educate the next generation of citizens and potential contributors to the country. If problems connected to unsafe abortions and delivery is not addressed, there may be discontinuities, delays, or even deaths. In such cases, this goal may not be accomplished. Early and unprotected intercourse can lead to several major health consequences, including unwanted and early pregnancies and STI (including HIV) infection (Christofides et al., 2014).

A JKUAT research found that 72.8% of the students reported using condoms. Ninety-six percent of students were unmarried, and sixty-six percent had engaged in sexual activity (Wangima, 2016). The majority of students prevented pregnancy by using condoms. It is possible that using condoms by themselves won't stop unwanted pregnancies and risky abortions, a concerning public health issue. Thus, research into alternative forms of

contraception that can be used in addition to condoms to avoid pregnancy, HIV infection, and sexually transmitted infections is necessary.

A research by Cadmus and Owoaje (2011) highlighted that although knowledge of unsafe abortions and unwanted pregnancies was not recorded, undergraduate students had sufficient understanding of HIV (79.8%) and the mechanisms in which HIV/AIDS and other STIs are related (70.9%). Thus, it's important to find out how many students are aware of and using contraceptives, as well as any barriers they might be facing to get access to these services.

2.4.6 Socio-Cultural Factors Associated with Uptake of Modern Contraceptives

In fertility literatures, the roles of culture and religion as determinants of reproduction have been extensively discussed. Every social group has its own set of traits, including social norms, beliefs, attitudes, and values. The usage of contraceptives in particular and health-seeking behavior in general are significantly influenced by a community's religious and cultural background. The largest opposition to contraception in the world is the Catholic Church, followed by The Muslim faith (Myo, 2022). Religion significantly influenced the choice and application of methods, according to a 2016 study conducted in Indonesia, found that compared to other contemporary techniques, the likelihood of selecting an injectable form of contraception was highly associated with Islam (Myo, 2022).

According to a family planning programme research in Indonesia, the inclusion of religious leaders in the formulation of policies has increased the acceptance and comprehension of family planning initiatives (Swamy et al., 2017). In Bangladesh, the relationship between religious beliefs and contraceptive use is operational at the community level but not at the

individual level. Women who live in non- religious communities are more likely to practice, religious women are less likely to do so (Marquez et al., 2017).

Traditional religious practices and cultural beliefs are ingrained in the systems of descent and lineage that govern society and maintain high fertility throughout Sub-Saharan Africa (Ndayizigiye, 2017). Due to male dominance in that society, women were compelled to bear a large number of children, according to a 2009 study conducted in a remote village in southern Ethiopia. This significantly influenced the women's decisions regarding fertility management (McCaslin, 2015). As per the 2010 Ethiopia Demographic and Health Survey (DHS), the majority of women said that religious leaders typically reject the use of family planning. The use of contraceptives was determined by characteristics such as religion and ethnicity (Taye, 2015). According to McCaslin (2015), between 25% and 50% of women in sub-Saharan Africa say that their religion has a negative influence on their usage of contraceptives.

In Kinshasa, the Democratic Republic of the Congo, Muanda et al. (2016) studied the connection between religion and the usage of contraceptives. When compared to Catholics, the prevalence of contraception was somewhat greater among all non-Catholic religious groups. The likelihood of using contraception was much lower among women who were religious. The prevalence of contraception was found to be higher among women who identify as Catholic or another Christian religion than among those who identify as Muslim (28%, 24 %, and 13%, respectively). Among Islamic women, the desire to have more children was positively correlated with their reduced usage of contraception.

In Tanzania, as in most African nations, traditional customs place a high value on having children (Hukin, 2012). These communities do not identify with family planning, and despite their wide cultural differences, they all share a desire for sons (Magesa, 2014). In Yoruba culture, a male child is regarded as a woman's "seat," indicating that she stays a guest in her husband's house until he gets a son. These traditions show how little value adult women are given (Boamah, 2012). This occurs as a result of the societal expectations placed on men, such as the need to succeed the father in order to advance in life and to maintain the prestige and influence of the family. A couple who only have daughters wind up having a lot of kids in the hopes of getting a boy, which results in big, unexpected families (Heisler et al., 2012). Male progeny desire is identified as a major determinant of contraceptive use, particularly among recently married women (Ndayizigiye, 2017).

According to Mañena-Netshikweta (2012), 60% of women in Bangladesh who had a son were more likely to use contraceptives than those who did not, and couples who wanted a male as their first child were more likely to do so. Young women of reproductive age utilize modern contraception at a low rate for a variety of reasons. According to (Peltzer & Pengpid, 2015), study on the factors linked to contraceptive non-use in both men and women, there is a higher probability of non-use of contraceptives among those who are younger, are religiously affiliated, have higher levels of intrinsic religiosity, and engage in sexually protective behavior.

2.5 Identification of Knowledge Gap

Existing studies have explored various determinants of contraceptive use such as knowledge, attitudes, access to services, and sociocultural factors. However, there is a need

for more in-depth exploration of these determinants among university students through use of Focus Group Discussions among students. Further research can delve into specific factors such as peer influence, educational environment, social support networks, and financial constraints that may play a role in unmet need and contraceptive uptake among this population. In addition, many existing studies on contraceptive use among university students have focused on specific regions or countries. Thus, there is a need for research that encompasses a broader local perspective to capture the diverse experiences and determinants. Additionally, there may not have been as much research on the use of contraceptives in colleges as there is now, and recent advancements may not have been covered in the literature as of the most recent knowledge update in January 2022.

The literature analysis that is provided indicates that modern contraceptive use and the unmet need for family planning services among a range of groups, including women and international students, are given a lot of attention. Notwithstanding, there exist potential lacunae in the literature and avenues for more investigation, specifically concerning college students' adoption of family planning services. A few European nations and Sub-Saharan Africa, in particular Tanzania, Zanzibar, and Kenya, are the main subjects of the literature. To comprehend how cultural, economic, and regional differences may affect university students' use of contraceptives, more study with a wider geographic focus is required. Furthermore, more in-depth research is needed to determine the precise elements that influence university students' decisions about contraception, even if some aspects impacting contraceptive use, such as socioeconomic position, knowledge, and attitudes, has been explored.

Peer pressure, interpersonal dynamics, and knowledge of various forms of contraception are a few examples of such variables. Nonetheless, investigating this subject can offer important insights on college students' sexual health and reproductive practices. As such, Lukenya University brings in a mixture of urban and rural setting. Moreover, this study will explore determinants of unmet need of the uptake of modern contraceptives among university students at Lukenya University, Makueni County, Kenya. The initiatives taken by the Kenyan government, such as the Kenya Health Policy Frameworks and the National Health Sector Strategic Plans, have played a significant role over time, as the use of contraceptives has increased.

Along with improvements in health financing and service delivery, the government's efforts towards family planning have been further strengthened by the adoption of the new Population Policy in 2000, which prompted renewed efforts towards family planning (KNBS, 2023). The introduction of the voucher program in 2006, which provided financial assistance for family planning services to low-income women, and the Performance-based incentive (PBI) programs for family planning providers have also been significant in improving the availability of high-quality services. Over time, family planning services have been more widely available and accepted thanks to the National Reproductive Health Strategy and the acknowledgement of Community Health Workers as primary providers of these services (KNBS, 2023).

2.6 Conceptual Framework

The following is the perceived conceptual framework of the possible factors that influence uptake of contraceptive among university students attending the on-campus clinic at Lukenya University informed by the HBM and other reviewed theories relevant for this study.

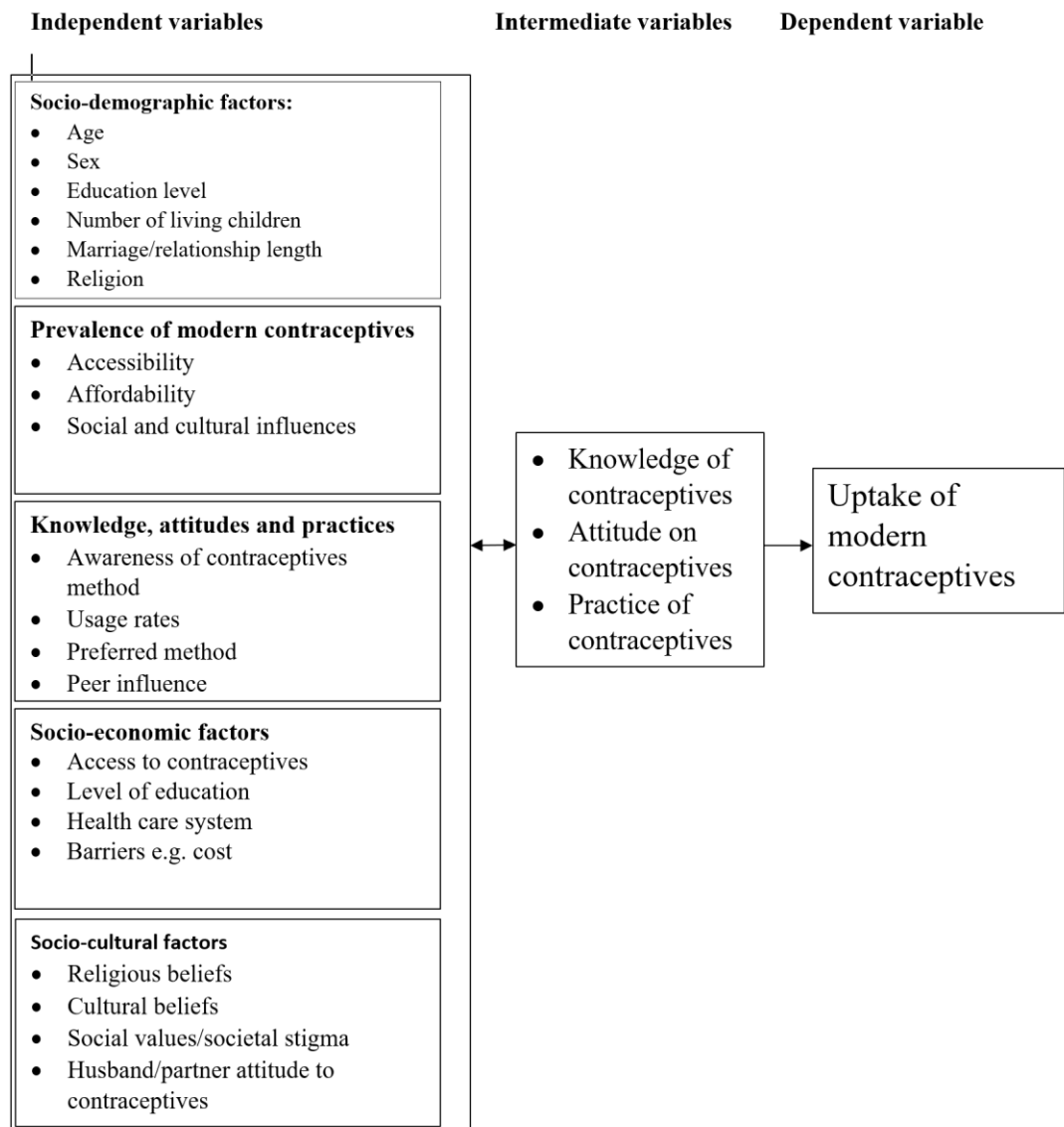


Figure 1:: Conceptual Framework

2.6.1 Socio-demographic Factors

Socio-demographic factors such as age, number of living children, marriage relationship and duration, and intention to have children is critical in uptake of modern contraceptives. Understanding these socio-demographic factors is vital for tailoring family planning programs to the specific needs and challenges of diverse populations. Effective strategies should address these factors to promote informed decision-making and increase the accessibility and acceptance of modern contraceptives.

2.6.2 Socio-economic Factors

Socio economic factors, such as women access, cost, healthcare systems, and time to get emergency treatment affect unmet needs of contraceptives.

Accessibility: In economically disadvantaged areas, access to contraceptives may be limited due to financial constraints or inadequate healthcare infrastructure.

Affordability: Cost can be a significant barrier to contraceptive use, especially for methods such as long-acting reversible contraceptives (LARCs) which may have higher upfront costs.

Education and healthcare systems: Higher levels of education and employment opportunities can positively influence contraceptive knowledge and usage, as individuals may have better access to information and resources.

2.6.3 Socio-cultural Factors

Social cultural factors include: Traditions and Customs: Cultural beliefs and traditions surrounding sexuality and reproduction can influence contraceptive practices. In some cultures, discussing contraception openly may be taboo or considered inappropriate.

Gender Dynamics: Power dynamics within relationships can impact contraceptive decision-making. In cultures where men hold more decision-making authority, women may have limited control over their reproductive choices.

Language and Communication: Cultural nuances and language barriers can affect the dissemination of information about contraceptives. Effective communication strategies must consider cultural sensitivities and preferences. Efforts to improve knowledge, attitudes, and practices regarding contraceptives must be context-specific and address the unique economic, social, and cultural factors at play. This could involve comprehensive sexual education programs, community-based interventions, and policies that promote equitable access to contraceptive services while respecting cultural beliefs and values.

Characteristics of family planning methods such as side effects, costs and source influences unmet needs of contraceptives. It determines if an individual will take up contraceptive or not, much as they are potential contraceptive users.

CHAPTER 3: METHODOLOGY

3.1 Introduction

In this chapter, the study sought to determine the prevalence and the factors influencing the choice of modern contraceptives among the students at Lukenya University. The study also sought to evaluate the practices of the students including determining the sources of contraceptives at Lukenya University. It is divided down as: study design, study setting, study population, sampling techniques, data collection procedure, reliability and validity of the study, data analysis procedure, ethical considerations and study limitations.

3.2. Study Design

The study utilized analytical cross-sectional design to determine the prevalence of modern contraception and explore the factors associated with the choice of modern contraceptive uptake by students at Lukenya University. With the mixed method study design, the researcher study was able to combine the aspects of quantitative and qualitative research. The integration of qualitative and quantitative provided a more comprehensive picture than either one alone (Austin et al., 2021). With the analytical cross-sectional, the researcher was be able to describe uptake of contraceptives in a particular time that this study was conducted, assessing the point prevalence of uptake of modern contraceptives and establishing the factors that influence the uptake of modern contraceptives as shown in Chapter 4. In addition, and specifically, the study employed qualitative descriptive design to investigate how practices are influenced by the knowledge and attitude students may have towards the uptake of modern contraceptive at Lukenya University.

The qualitative descriptive method provided rich context-specific data regarding the barriers, enablers, and socio-cultural determinants of contraceptive utilization that may be less easily accessed via quantitative methods. It was the most suitable for the design of pragmatic interventions and policy recommendations that are institution specific.

3.3. Study Setting

The study was conducted at Lukenya University, a private university. The University is uniquely located in a rural setup, situated in Mtito-Andei, Makueni County, Kenya. The University provides academic programs in Education, Business Management, and Agriculture. It hosts a culturally diverse population from across the country. A health clinic is located within the university and is furnished to accommodate the requirements of the university students and the nearby local community. The health clinic offers contraceptives management services (e.g. injectables, implants, combined pills etc.), emergency services, nutrition, MCH and anti-natal care to the community in and around the university. Staff at the health clinic includes a one health records officer, two clinical officers and one nurse. The clinic has the capacity to admit patients for observation for up to two days before referring to the higher-level hospitals in nearby towns.

3.4 Study Population

The study population comprised of the student fraternity enrolled in various courses at all levels of their study at the university, i.e. certificate, diploma, undergraduate, postgraduate and/or doctoral studies. This population was diverse in terms of financial status, ethnicity, religion and culture with ease of access to media and information. The study included both male and female students, as both genders were considered as users of contraceptives. The

students were 18 years and above, the national requirement age for one to be enrolled at university level. The clinic staff i.e. one clinical officer and at university administrative level, two Dean of Students were interviewed.

3.4.1. Inclusion Criteria

The study included eligible participants who were currently engaged in full-time study at the university both on-campus and on-line and had given consent to participate in the study. Online students were given the same questionnaire via google form, posted to their school email and online study discussion groups. As much as the University provide reproductive health services to both the student and the public, only students actively in session were included in the study.

3.4.2 Exclusion Criteria

The exclusion criteria for this study encompassed individuals who did not fall within the student demographic. Both the students and the public receive reproductive health services from the University clinic, as such, members of the public were excluded from the study. This ensured that the study focused solely on a specific subset of the population, allowing for a more streamlined and targeted analysis of the research objectives.

3.5 Sampling Procedure and Sample Size Determination

3.5.1 Sample Procedure

The study adopted a multistage sampling technique. In stage one, Cochran's formula was applied to estimate the study sample of 361. The 361 participants were randomly selected from the target population of 3757 using simple random sample method.

Stage 2 of the sampling was done after estimating the sample per school, considered as natural strata, using probability proportional to size approach. This approach ensured representation from the entire student population attending Lukenya University. Finally, simple random sampling was adopted to pick a representative sample from each stratum representing each school. Using student's list from the registrar's office with numbers serially numbered in ascending order, a random number generator was used to select participants to be enrolled from each stratum. Three research assistants were recruited and trained prior to data collection to guide enrolled participants through the study questionnaire. Self-administered questionnaires were pre-tested before data collection. The data collection tools were stored in labeled boxes for safekeeping, under the supervision of the P.I. The questionnaires were placed in envelopes to guarantee the anonymity of the respondents.

3.5.2 Sample Size Calculation

According to KDHS, 2022, the prevalence rate of contraceptive uptake is 63%, using the Cochran formula and the historical prevalence of contraceptive uptake,

$$n = \frac{z^2 \times p(1 - p)}{d^2}$$

Where: n = estimated sample size

d = margin of error (desired level of precision) = 0.05

P = expected prevalence or proportion = 0.63

q = (1 - 0.63)

$$Z = 1.96 \text{ (at 95\% level of confidence)}$$

$$d = \text{precision level of 5\%, } d = 0.05$$

The estimated sample (n)

$$n = \frac{1.96^2 \times 0.63(1-0.63)}{0.05^2} = 359 \text{ students}$$

Adjusting the sample size (n) for non-response (r=10%)

$$n_{adj_for_non-response} = \frac{n}{(1-r)}$$

$$n_{adj_for_non-response} = \frac{359}{(1-0.10)} = 398.889 \cong 399$$

The estimated sample size will be adjusted for finite population (target population N=3757).

$$n_{fpc_adj_final_n} = \frac{n_{adj_for_non-response}}{\left(1 + \frac{n_{adj_for_non-response} - 1}{N}\right)}$$

$$n_{fpc_adj_final_n} = \frac{399}{\left(1 + \frac{399-1}{3757}\right)} = 360.69 \cong 361$$

The final sample size adjusted for non-response rate and finite population to be used to estimate proportion of sample size in each department

$$n_{final} = 361$$

To calculate the sample size proportional to the departments in the school, we shall use (PPS method)

$$n_{k_j} = \frac{N_i}{N} \times n_{final}$$

Where: $k = 1, 2, \dots, 5$ (number of department = 5)

$n_{final} = \text{Desired sample size} = 361$

$N = \text{Total target population of the University}$

$N_i = 1, \dots, k$; Population in each department

$k_j = k_1, k_2, \dots, k_5$; $j = 1, 2, \dots, 5$ departments

$n_{k_j} = \text{Sample per department}$

Table 1: Sample Size

DEPARTMENT	POPULATION (N_i)	SAMPLE SIZE (n_{k_j})
School of Heath Sciences	30	$\frac{30}{3757} \times 361 = 3$
School of Business & Economics	460	$\frac{460}{3757} \times 361 = 44$
School of Agriculture, Technical Studies and Natural Sciences	341	$\frac{341}{3757} \times 361 = 33$
School of Education and Social Sciences	2696	$\frac{2696}{3757} \times 361 = 259$
Post Graduate Level	230	$\frac{230}{3757} \times 361 = 22$
TOTAL	3757	361

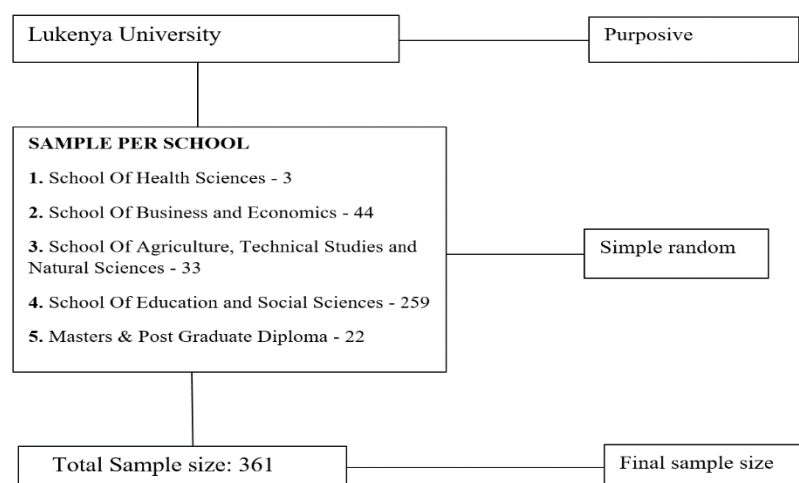


Figure 2:: Sampling Design

3.5.3 Qualitative Sampling Procedure

This study employed a purposive sampling strategy to recruit participants who could provide detailed insights into the uptake of modern contraceptives among university students. Participants were selected based on key criteria such as gender, age and administrative position in the university to ensure diversity and relevance to the study objectives. This approach enabled the selection of information-rich cases with the potential to yield in-depth understanding of the subject matter. Key informants were purposively sampled and included in the study. Health provider’s i.e. clinical officer and the two deans of students, one male and one female at the university were sampled to give insights from a professional and gender expert perspective.

3.6 Data Collection Instruments

The eligible study participants, who consented to participate were issued with a pretested structured questionnaires in the English language. These questionnaires were pre-designed

in a structured format featuring closed-ended questions, developed from the existing KAPs. The questionnaires included questions on modern contraceptives uptake, featuring the socio-demographic factors in the first section then the other sections aligning with the specific objectives. The study recruited participants who were readily available and accessible within Lukenya university setting. Qualitative data were collected through structured interviews, the two dean of students and one clinical officer from the University clinic were interviewed. While convenient, efforts were made to ensure the sample was diverse and representative of the university population in terms of demographics and other relevant characteristics such as level of study and departments.

3.7 Validity and Reliability

3.7.1 Validity

The KAP questionnaire was put through validation after its design, typically accomplished through face and content validation. In brief, face validation assessed whether the instrument was likely to fulfill its intended purpose, while content validation evaluated whether the questionnaire contains all necessary items, omitted unnecessary items, and was appropriately structured and presented. During validation, the questionnaire was distributed to university-assigned research supervisors, each independently rating each item as satisfactory or unsatisfactory on a validation form. The ones that were considered unsatisfactory, the experts provided improvement suggestions. The researcher then computed the content validity index, revised the questionnaire based on these suggestions, and circulated it once more for approval. As an additional and valuable validation component, the researcher to administer the questionnaire to a small number of volunteers from the target population to identify any difficulties faced in completing the questionnaire

and gather their suggestions. The questionnaire includes suggestions for enhancements that come from this approach. Co-investigators and the AMREF Ethics and Scientific Review Committee concerns will also be addressed to ensure the validity of the data collection tools.

3.7.2 Reliability of the Research Study

This mixed method research achieved reliability by following a series of rigorous practices that focused on accuracy and consistency of the results. As such, the research achieved reliability by adopting Cochran formulae for estimation, after which probability proportionate was used to calculate sample size using population as per each department. With the approximated results, the researcher was able to achieve best performance. The researcher also defined the variable to make it possible for all who were participating in the research to comprehend what was being measured. The researcher also carried out a pilot test of the instruments to be used for the study procedures increasing the reliability of the data that was collected. Data verification was done twice, first by the research assistants then by the P.I. The questionnaires' reliability was tested using Cronbach's alpha scale

3.8 Data Collection Procedures

Four research assistants were recruited and briefed on the purpose of the study and data collection procedure. They were then taken through a one day brief training on what the research was intending to achieve and their roles in achieving this goal. The research assistants were trained by the principal investigator on proper administration of the questionnaire to the study participants. They were thereafter required to each sign a non-disclosure/ data confidentiality agreement. The questionnaires were pre-tested prior to data

collection on 36 students from Lukenya who did not participate in the main study. The principal investigator enrolled and provided self-administered questionnaires and consent forms to the study participants in their preferred language either English or Kiswahili before collecting the data. The signed data non-disclosure forms included a brief explanation of the study, the P.I and Co-investigators information including affiliated institutions. The Co-Investigators were responsible for coordinating the research process, upholding the validity and integrity of the study as per Amref ESRC and NACOSTI ethical guidelines.

The P.I also had a letter from the affiliated institution under which the research was being carried to share with the Lukenya administration research department for authorization before data collection began. Questions regarding the study posed by the participants through the research assistants were relayed to the researcher who provided detailed explanations in simple terms. The research assistants also ensured any selected participant signed the consent form before collection of data. The online students were sent the same questionnaire and consent form to their online via school issued emails. After completion of the questionnaire, each questionnaire was checked for completeness by the principal investigator prior to data entry.

The selected Key Informant i.e. the clinical officer provided professional and gender specific insights on the types of modern contraceptives used and preferred by the students. They also provide insights on the challenges faced by the students in terms of access, myths and misconceptions, the practices and the types of reproductive health services offered at the student university clinic. From the administrative level, two dean of students were

interviewed. They offered insights from a gender perspective i.e. the female dean of students provided context on the issues faced by the female students which could not be addressed by the male dean of students. The male dean of students provided context on the issues and habits of the male students in terms of access, peer influence and negative consequences associated with risky sexual behavior. The two dean of students also clarified the resources provided and policies in place regarding the SRHR of students by the university administration.

To ensure participant anonymity, the researcher-maintained confidentiality throughout all stages of the data collection to ensure only truthful and accurate responses from the participants were recorded. This was achieved by generating random alpha-numeric, unique identifiers, using random generators function in python and pre-inscribed in the surveys by the statistician. These were issued in random so as to have some survey identifier that will help for reference especially during analysis. The participants were reminded that no names should be written on the surveys and that the surveys are 100% anonymous.

3.8.1 Outcome Variable

The outcome variable for this study is contraceptive use, defined as the use of any modern contraceptive method within the last six months. Participants were asked if they have used any form of contraception during this period, and responses were classified as either "Yes" or "No." This binary variable allowed for clear analysis of contraceptive use patterns and facilitated the application of statistical techniques such as chi-square. The chi-square test is a statistical hypothesis test used to analyze contingency tables, primarily to determine if

two categorical variables are independent. It examines whether there's a significant difference between observed and expected frequencies within the data. In this study, two-tailed chi-square test statistics was used, including Fisher's exact test to attain exact p-value where chi-square gave approximate p-values.

3.8.2 Explanatory Variables

This study examined the impact of various independent variables on modern contraceptive use categorized into three main groups. These included socio-demographic factors such as age, marital status, education level, and level of study, as well as socio-economic factors like length of relationship, number of children. Cultural and social factors such as religious beliefs, cultural norms, and partner attitudes toward contraception were considered, alongside knowledge-based factors like awareness of available contraceptive options, potential benefits and risks and past experiences with contraceptive methods. These variables were identified for their possible effects on modern contraceptive use and were analyzed to determine their individual and collective impact.

Table 2: Measurement of Variables in Research Questions

	Variables to be measured	Method of data collections for the targeted variables under each research question	Analysis to be applied
What is the modern contraceptive prevalence rate among students at Lukenya University?	<ul style="list-style-type: none"> • Types of modern contraceptives used 	Questionnaires & KII guide	Frequencies, percentages, tables and pie chart
What are knowledge, attitudes and practices towards modern contraceptives among students at Lukenya University?	<ul style="list-style-type: none"> • Awareness of modern contraceptives • Usage rates • Preferred method • Peer Influence 	Questionnaires & KII guide	Frequencies, percentages, tables, pie chart and chi-square tests
What are the socio-economic and socio-cultural factors associated with the uptake of modern contraceptive among students at Lukenya University?	<ul style="list-style-type: none"> • Religion & Culture • Societal stigma • Barriers e.g. cost • Healthcare system • Level of education • Husband/partner attitude toward contraceptives • Access to contraceptives 	Questionnaires & KII guide	Frequencies, proportions, tables and bar chart, chi-square, t-test, Fishers exact analyses.

3.9 Data Analysis and Presentation

3.9.1 Data Pre-processing

The questionnaires were checked for completeness and entered into excel sheet file where it was then cleaned, re-coded, summarized, and transformed into CSV files and exported to Python Jupiter notebook for analysis. Data transformation like merging responses with too many categories into few was done to make more sense of the results. The statistical program, python and all the associated and necessary libraries were used to analyze the collected data.

3.9.2 Descriptive Statistics

The preprocessed data for analysis was exported to Python for preprocessing. Descriptive statistics was employed to summarize the data and the numbers and percentages of students across the various categories of the explanatory variables were presenting in the tables. This process provided overview of the distribution and characteristics of the study population, facilitating a clear understanding of the variables under investigation. Knowledge measurement was carried out by asking students whether they know about modern contraceptive methods, how they work, where to obtain them and their effectiveness. The questions were selected from existing KAP items to identify the relevant questions for this study and modified where necessary. The scores were computed based on the number of correct answers or awareness methods. Higher scores indicated better knowledge. Attitudes measurement included use of a Likert scale e.g. strongly agree to strongly disagree with responses aggregated into an overall attitude score.

3.9.3 Inferential Analysis

To identify factors associated with modern contraceptive use among student participants, inferential analyses was done using a bivariate approach. Hypothesis testing was done to establish whether the dependent and independent variables were significantly associated with the contraceptive uptake.

In the first step, pair of covariates, a binary dependent variable, contraceptive use in the last 6 months, and other variables of interest e.g. age, number of children, intention to have children, marital status etc., were analyzed pairwise using a chi-square framework to assess its independent effect on modern contraceptive use. Chi square was used to analyze

categorical data, so as to determine the significant association of the variable. All the analyses were performed at 95% ($\alpha = 0.05$) level of significance, and covariates with a p-value less than 0.05 were considered significant and reported on tables.

Thematic analysis was employed in the analyses of the qualitative data. The qualitative data derived from interviews with key informants to discern recurring themes, patterns, and insights was processed. The analyses process involved coding of participants responses into themes that capture their opinions. The presentation of qualitative data consisted of direct quotes and excerpts from interviews with key informants to give some life to the qualitative tone and emphasized significant themes. Word cloud was generated alongside the frequently mentioned themes and presented in the table.

3.10 Ethical Considerations

The researcher sought ethical approval from AMREF International University Ethics and Review Committee, after which they proceeded to seek clearance from NACOSTI (National Commission for Science, Technology, and Innovation). The study consent and protocol were pre-approved by the Ethics Committee. All changes in the research protocol or its activities were reported to the Ethics Committee. An informed consent was provided in the English language and the participant were accorded time to discuss any areas of concern. Participation in the study was entirely voluntary and the participant were allowed to withdraw from the study at any point but give the reason for dropping out to be documented. Confidentiality of participants was ensured at all times. No participant's names were recorded on the questionnaire to ensure confidentiality. Data collection materials and consent forms were stored safely with access only by the research assistants and the principal investigator. The information provided by the participants was strictly

used for research purposes. During data entry and analysis, unique identifiers were assigned by the statistician to prevent mix up.

3.11 Study Constraints and Limitations

Some Participants took longer to answer the research questions because they were unaware or because they seemed to be concerned with their daily responsibilities. To overcome this barrier, the researcher took the time to explain to the respondents the significance of the study, informing them how long it took to fill in the questionnaire and gave them an introduction letter from AMREF International University. The research assistants provided guidance to the participants to complete the questionnaires and then submitted them to PI. The data was the shared with the statistician for cleaning and analysis. The researcher obtained explicit, informed consent from participants, ensuring they understood the purpose of the research, how their data would be used, and their right to withdraw at any time without penalty. However, some participants hesitated first thereby taking longer time for consenting and completing surveys.

CHAPTER 4: RESULTS

4.1 Introduction

In this chapter, the researcher presents the findings of the data collected and analyzed as per the set objectives and research questions set out in chapter one of the study.

A total of 361 (97%) of the 372 participants responded to the questionnaire. The remaining participants 11(3%) had partial or non-response to the distributed questionnaire and were omitted from the analysis. The pattern of omission was low and scattered, with no indication of systematic bias, and data completeness overall provides evidence toward the robustness of the findings.

4.2 Presentation of Results in line with Specific Objectives

4.2.1 Demographic and Social Characteristics

The mean age of all the participants is 22.7 years with a standard deviation of 3.2 years. The youngest participants are aged 18 years while the oldest are around 43 years of age. The total number of participants were 361 students in the study. The gender distribution was slightly female dominant, with 195(54.1%) being female and 166(45.9%) male. The majority of respondents were Christian 345(95.5) Muslims 13(3.7), and minority of other religions 0.8%. In the marital status category, majority, 280(77.7) of participants were single, 40(11) were married, 41(11.3) were divorced and others, either being in a union not legally formed.

The distribution by year of study showed that the largest number of respondents were in their 4th year 38.5%, followed by 1st year 23.3%, 3rd year 22.4%, and 2nd year 11.2%. Only a few of them constituted postgraduate students, with 1.7% in the first year of their

Master's, 2.3% in the second year of their Master's studies, and 0.5% undertaking a Postgraduate Diploma study. Participants who reported that they have children, majority, 299(80.3%) did not have children, 49(13.2%) had one child, 13(3.4%) had two, and 12(3.1%) had three children or above.

In regard to duration in relationship, more than half, 243(65.3%) indicated not being in a relationship, 46(12.4%) being in a relationship for a period less than a year, 71(19.2%) reported being in a relationship for 1 to 5 years, and 12(3.1%) relationship for over five years.

When participants were asked if they had plans to have children while in the relationship, 194(52.1%) reported that they wanted to have children, and 178 (47.9%) reported that they have no intention to have children yet.

Table 3: Demographic Characteristics

Characteristics	Category	Frequency	Percentage	Cumulative %
Gender	Male	166	45.9%	45.9%
	Female	195	54.1%	100%
Religion	Christian	345	95.5%	95.5%
	Islam	13	3.7%	99.2%
	Other	3	0.8%	100%
Marital status	Single	280	77.7%	77.7%
	Married	40	11.0%	88.71%
	Divorced & others	41	11.3%	100%
Level of Education	Undergraduate	345	95.5%	95.5%
	Postgraduate	16	4.5%	100%
Number of children	None	290	80.3%	80.3%
	one	48	13.2%	93.5%
	2 & above	23	6.5%	100%
Length in relationship	0	236	65.3%	65.33%
	<1 year	44	12.4%	77.7%
	1-5 years	69	19.2%	96.9%
	>5 year	12	3.1%	100%
Intention to have children	Yes	188	52.1%	52.1%
	No	173	47.9%	100%

Table 4: Demographic Characteristics: Age by Gender and Level of Study

Variable	Category	Mean Age(std)	(min, max)
Gender	Male	22.5(3.3)	(18, 43)
	Female	22.8(3.2)	(18, 41)

Variable	Category	Mean Age(std)	(min, max)
Level of study	Undergraduate	22.3(2.6)	(18, 24)
	Postgraduate	30.8(4.9)	(23, 43)

4.2.2 Age Distribution Disaggregated by Gender, Marital Status, Religion and Level of Study

The gender among the sample of participants is distribution closely, 54.1% females and 45.9% males, in the sample of the participants. Both females and males have a similar age range between 18 and 27 years. Majority of female's age is around the age 22 years, indicating that the largest proportion of girls have this age. The age distribution of male participants follows a distribution similar to that of female participants with the peak slightly lower than that of females. The male participants' distribution has highest density between ages 21 and 22years. Females seem to have a slightly higher concentration in the early twenties (20–23) years of age relative to that of male participants.

The majority of participants (79%) are single with their age distribution sharply peaking around 21 years of age. The other categories of marital status include, married (8%), divorced (1%), and "other" (11%), have significantly lower densities indicating that there are few participants in these categories. The married respondents are evenly spread between 22 and 26 years of age though with relatively low probability densities. The divorced category is negligible as this makes (1%) of the participants', suggesting that this group have nearly zero influence on the modern contraceptive uptake.

The results showed that first year's students are mostly between the ages of 18-20 years old with most participants aged 19 years. The second-year students, have a broader distribution mostly between the ages of 19 to 22 years. Third year students are cluster around the age range between 21 to 23 years, while the fourth years mostly clustered around 22 years and ranges between 22 to 24 of age. The postgraduate and masters' students are in the age ranging between 24 and 28 years, with a good number of participants' ranging from between 25 and 26 years.

Christian students form the majority of the religious groups. They have a broad age distribution between 18 to 30 years most participants' ages around 22 or 23 years. Muslim, Hindu and other religious groups have relatively small representation of students with ages ranging between 22 and 26 years. The characteristics established that the male and female distributions by age, gender, religion and level of education are more similar and comparable and offers better platform for evaluating the contraceptive uptake among the Lukenya university students.

4.3 Uptake of Modern Contraceptives among Students at Lukenya University

4.3.1 Modern Contraceptive Uptake

The three set of questions, examining the modern contraceptive uptake, contraceptive uptake in the last 6 months and current users of contraceptive are designed to evaluate the behavioral pattern in the uptake of the modern contraceptives among the participants.

Majority (67%) of students reported to have used modern contraceptives in their lifetime, 43.2% in the last 6 months and 45.9% are actively using modern contraceptives. Roughly,

24% of the participants potentially dropped-off from continued use and approximately 2% increased use of modern contraceptive in a span of 6 months.

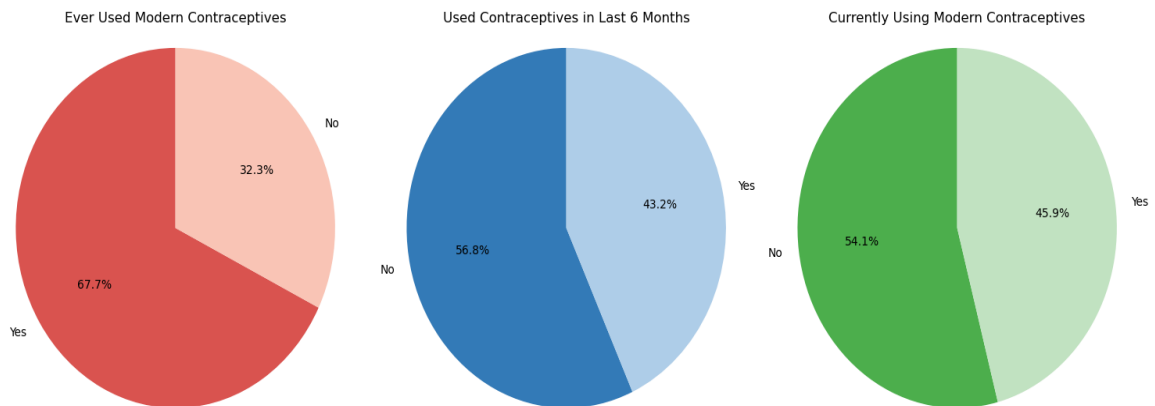


Figure 3: Contraceptive Uptake Levels

The most frequently self-reported type of modern contraceptive uptake was injectable contraceptives, 205(56.7%). This was followed by condoms, 57 (15.9%) and oral contraceptive pills 44 (12.4%). Implant use reported at 25 (6.9%). The same percentage 10 (5.41%) reported use of more than one method concurrently. Some other less common methods were multiple methods 9 (2.4%), withdrawal 5 (1.62%), and intrauterine devices 7 (1.88%), while some of the respondents 8 (2.1%) mentioned non-use of any type of modern contraceptive method.

Table 5: Types of Modern Contraceptives Uptake by Students

Modern Contraceptive	Number of users (n)	Percentage (%)	Cumulative %
Injectables	205	56.7%	56.7%
Pills	44	12.4%	69.1%
Implants	25	6.9%	76.1%
Multiple methods	10	2.4%	78.5%
Condoms	57	15.9%	94.3%
Withdrawal	5	1.6%	95.9%
IUDs	7	1.9%	97.8%
None	8	2.2%	100%

4.3.2 Disparities in Contraceptive Uptake

4.3.2.1 Age Disparity in the Uptake of Modern Contraceptives.

The age-related disparities in modern contraceptive uptake among students at Lukenya University indicates that the median age (23 years) of those who reported to have ever used the modern contraceptives is slightly higher than the non-users (21 years). Age disparity of users and non-users of contraceptive in the last 6 months, shows no difference in their respective median ages (22 years) for the non-users. Current and active users and non-users of the modern contraceptive does not differ in median age (22 years).

4.3.2.2 Disparity in Modern Contraceptive Uptake based on Number of Children.

Students with at least one child are 1.6 times more likely to have ever used contraceptives compared to those without children. While most contraceptive users have no children, for both current users and users in the last 6 months, students with at least one child are more likely to have used contraception recently or in the last 6 months than students without children.

Majority of the users and non-users of modern contraceptives have no children (with the highest density peaks at zero for both). Among the 67% of the student participants who ever used contraceptives, 78.4% have no children, 15.6% have one child while 6% have two or more children. While 81.2% none users have no children and up to 18.8% have at least one child.

Table 6: Contraceptive Uptake by Users and Non-users vs Number of Children

Contraceptive uptake		0 child	≥1 children
Users	Ever used modern contraceptives	78.5%	21.5%
	Used contraceptives in the last 6 months	76.1%	23.9%
	Current contraceptive use	75.8%	24.2%
Non-Users	Ever used modern contraceptives	81.2%	18.2%
	Used contraceptives in the last 6 months	80.1%	19.9%
	Current contraceptive use	85.3%	14.7%

4.3.2.3 Variation in Modern Contraceptive use by Gender.

On three key aspects of contraceptive uptake, male students have higher lifetime prevalence of contraceptive uptake (71.5%) compared to female students (62.1%). In the last 6 months, male students (47%) reported to have used contraceptives more than female students (39%). Male students (47%) are actively using contraceptives compared to female students (42.9%). Male students dominate female students in the use of contraceptives.

This study was further strengthened by the Key informant:

“Majority of the male students visited our facility for condoms as compared to women, this is probably because condoms were more readily available and the preferred method by

men to protect themselves and the ladies at the university. As such, there was no need for women to visit the facility when they were already protected by their male counterparts.”

4.3.2.4 Religious Disparities in Modern Contraceptive Uptake.

The Christians being the majority, have higher lifetime use of the contraceptives (67.1%), Muslims (58.3%) and other religions (Hindu, etc.) (33.3%). The recent and last 6 months uptake of contraceptives on Christian's category remains closely similar 44.7%, and 43.8% respectively. The Muslim category contraceptive uptake doubled up from 25% last 6 months to 50% currently. However, there was a reduction of the use from lifetime use (ever use) (58.3%) to 25% contraceptive uptake last 6 months. This was corroborated by the Key informant Interview:

“Religion plays a key role in contraceptive uptake, for instance, Muslim and Catholic students desisted from using modern contraceptives. This is due to their religion doctrine that forbids the uptake of modern contraceptives by their members.”

4.3.2.5 Disparities in Contraceptive Uptake across Different Stages of Relationship Duration.

The participants who reported to have ever used the modern contraceptives are 64.1% for those who are in no relationship, approximately 73% for both those who are in short-term (<1 year) and mid-term (1-5 years) relationship use contraceptives. In the relationship lasting over 5 years, contraceptive drops to 42.9% whereas majority 57.1% do not use any contraceptive method.

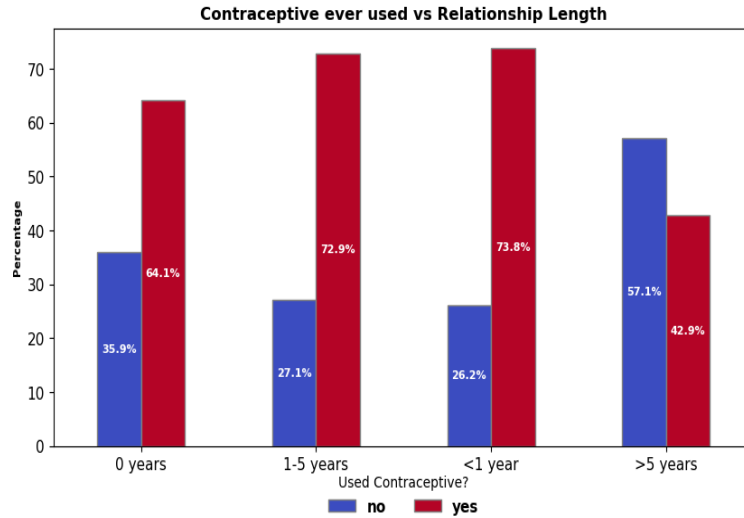


Figure 4: Contraceptives ever Used and Length of Relationship

There is low contraceptive use in the last 6 months among the participants who are in no relationship (0 years) and those in short-term (<1 year), 42.9% and 41.4%. The highest contraceptive use (52.5%) is among the participants who are in mid-term relationship (1-5 years), indicating highest uptake of contraceptive. There is an interesting shift in use of modern contraceptive in long-term relationship (>5 years) to none (0%).



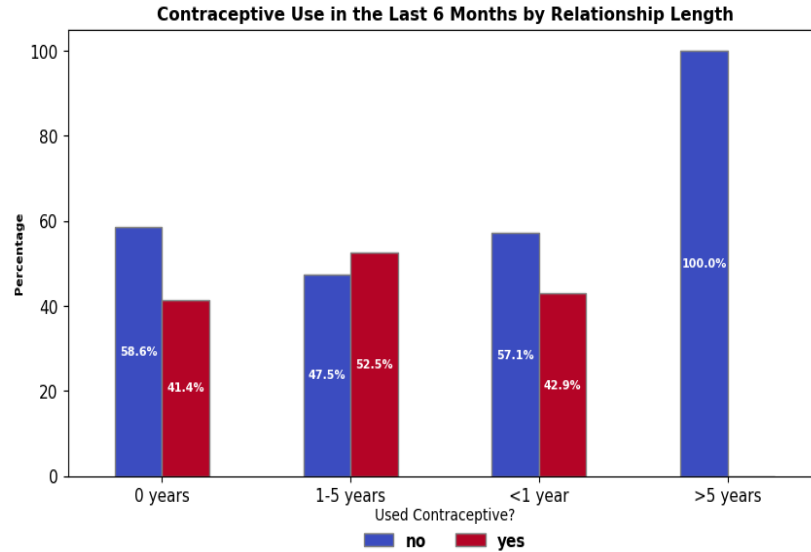
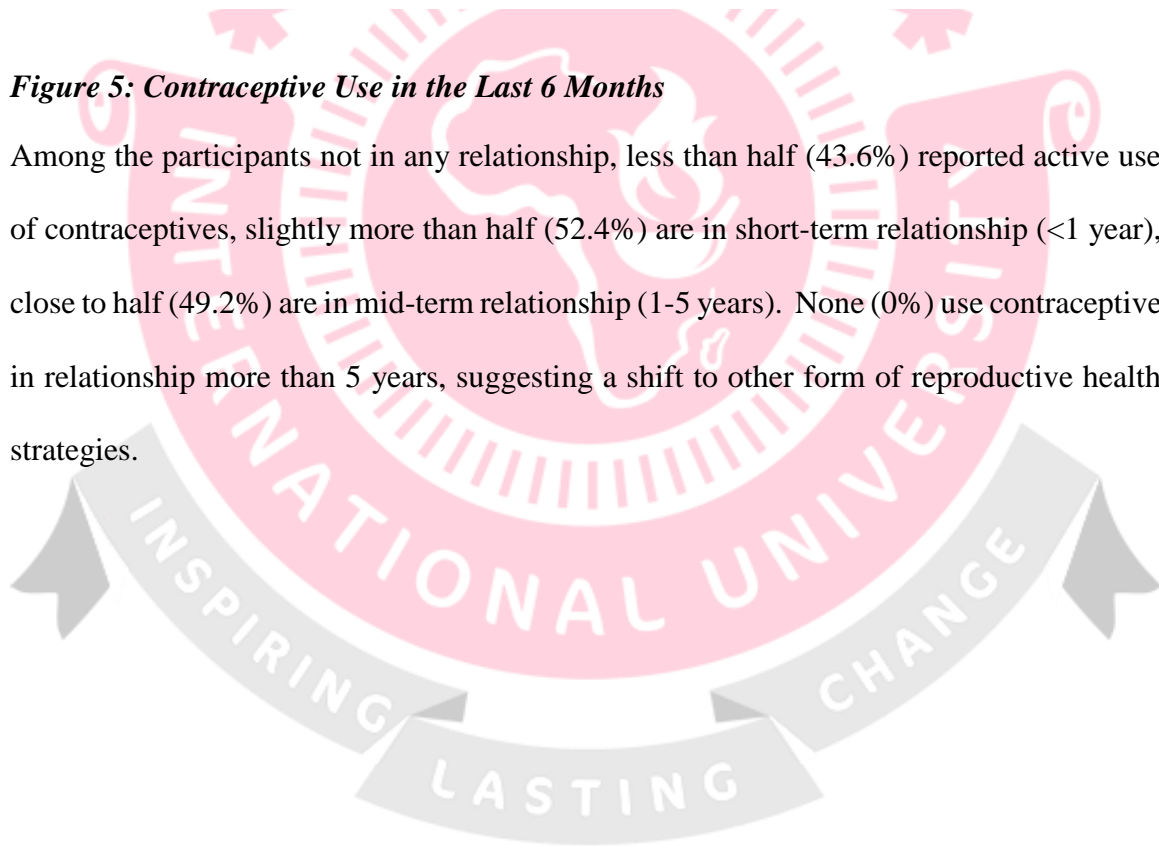


Figure 5: Contraceptive Use in the Last 6 Months

Among the participants not in any relationship, less than half (43.6%) reported active use of contraceptives, slightly more than half (52.4%) are in short-term relationship (<1 year), close to half (49.2%) are in mid-term relationship (1-5 years). None (0%) use contraceptive in relationship more than 5 years, suggesting a shift to other form of reproductive health strategies.



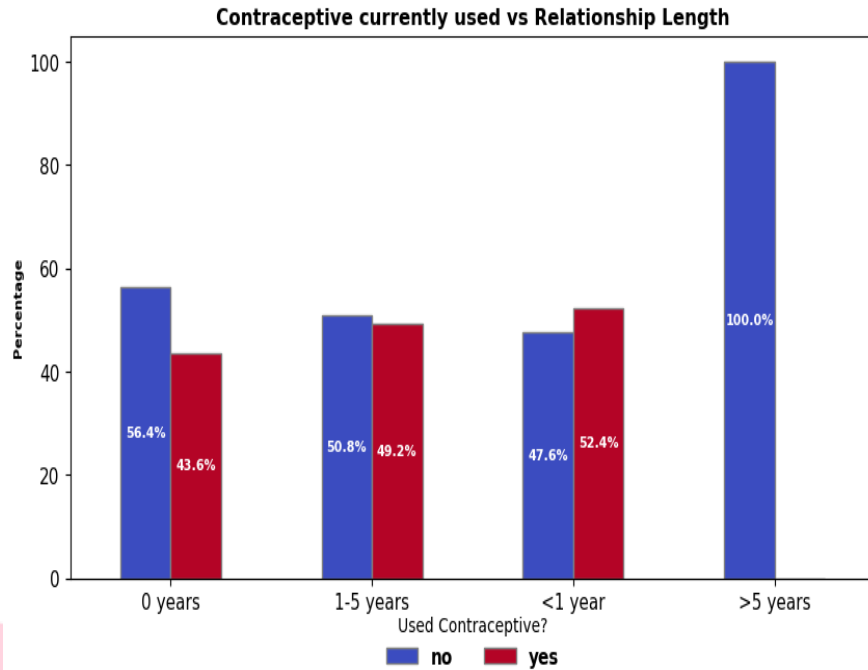


Figure 6: Current Use of Contraceptives vs Length of Relationship

4.3.2.6 Disparities in Contraceptive use based on Reproductive Intentions.

Only 32.1% of those who have no intention to have children reported to use contraceptive while majority (52.3%) of the participants who have intention of having children reported to have used contraceptives last 6 months. 73.3% of participants who intend to have children reported lifetime use of contraceptives, while 59% of those who do not intend to have children reported to ever use contraceptives.

Among the active users of modern contraceptives, approximately, 1 in every 2 (52.3%) of the participants who intend to have children uses contraceptives. On the other hand, approximately, 3 in every 10 (36.5%) participants who do not intend to have children use contraceptives.

4.3.2.7 Accessibility of Modern Contraceptives.

In total, more than half 53.5% of the participants considered contraceptives accessible (34.1%) or very accessible (19.4%) while, 14.9% of the participants do not have access the contraceptives. About 31.5% have varied experience or lack clarity about contraceptive accessibility.

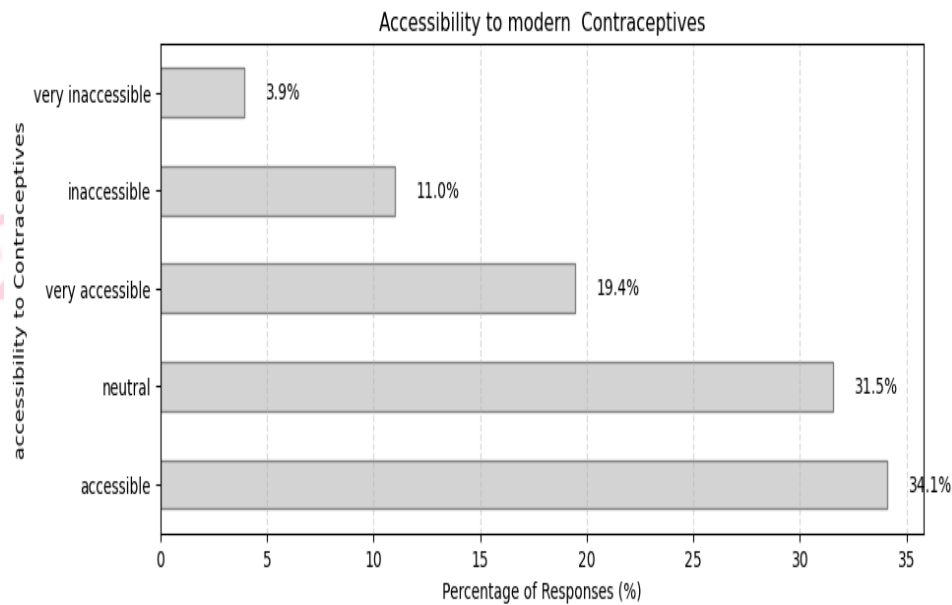


Figure 7: Accessibility of Modern Contraceptives

4.3.2.8 Barriers to Modern Contraceptive Uptake.

The most dominant barriers of contraceptive uptake are cost, privacy concerns and health concerns accounting for more than half (52.2%) of all the barriers cited by the respondents. This was further corroborated by the KII 3.

“In spite of institutional support, there are several barriers to students using contraceptives on campus. Privacy issues and societal stigma are reported as significant obstacles, especially to female students who will go off-campus in attempt to avoid

stigmatization or negative judgment by fellow students or clinic workers. There are also financial barriers in accessing some forms of the modern contraceptives, such as emergency pills, as this will most likely be interpreted to mean one had unprotected sex coupled with the fact that this emergency pills are not subsidized.

In addition, students frequently are faced with shortages of contraceptives, mostly where distribution depends on government stocks or for institutional reasons. Out-of-stock forces the students to obtain contraceptive supplies from alternative sources, mostly out of campus. Furthermore, myths and misconceptions aggravate the situation, such as the myth that contraceptives cause infertility, thus discouraging use. Conscientious, cultural, and religious beliefs, particularly among the Muslim and Catholic communities, also discourage contraceptive use. In some literature, Islam would require a spouse to consult the partner, which is also another form of barrier.

These barriers limit students' capacity to make informed and healthy decisions about their reproductive health, reinforcing unhealthy behaviors and driving up health inequities. As explained by one clinical officer, one of the reasons uptakes is not at 50% is just because of the myths and misconceptions."

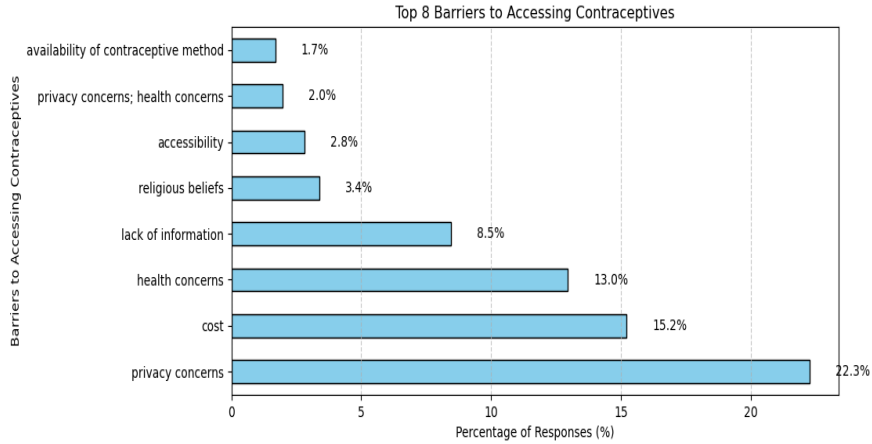


Figure 8: Barriers to Contraceptive Uptake

4.4 Knowledge, Attitudes and Practices of Students towards Modern Contraceptive Methods at Lukenya University

Knowledge and attitudes were assessed as elements influencing uptake and practices.

4.4.1 Level of Practice based on Modern Contraceptive Knowledge

The proportion of the participants who reported to have some form of modern contraceptive knowledge was 44.2%. About 30.2% and 25.6% were either not sure or have no knowledge of modern contraceptives.

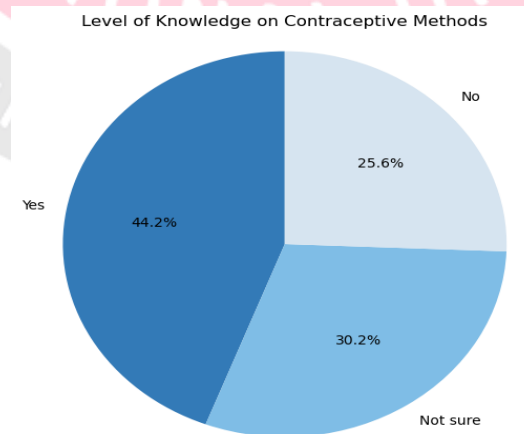


Figure 9: Level of Knowledge

4.4.2 Sources of Knowledge on Modern Contraceptive Uptake

The top three most cited sources of modern contraceptive knowledge are school health programs (35.4%), friends or peers (29%) and media (TV, Internet, etc.) (25.9%). Qualitative findings supported this as the clinical officer remarked students would give reasons such as “*I was advised by my roommate that we should go for family planning.*” These makes a cumulative proportion of 89.3% of all the sources of knowledge cited. More than half (54.3%) the participants reported to have attended reproductive health education sessions in school, while 45.7% reported not to have attended the SRHR sessions.

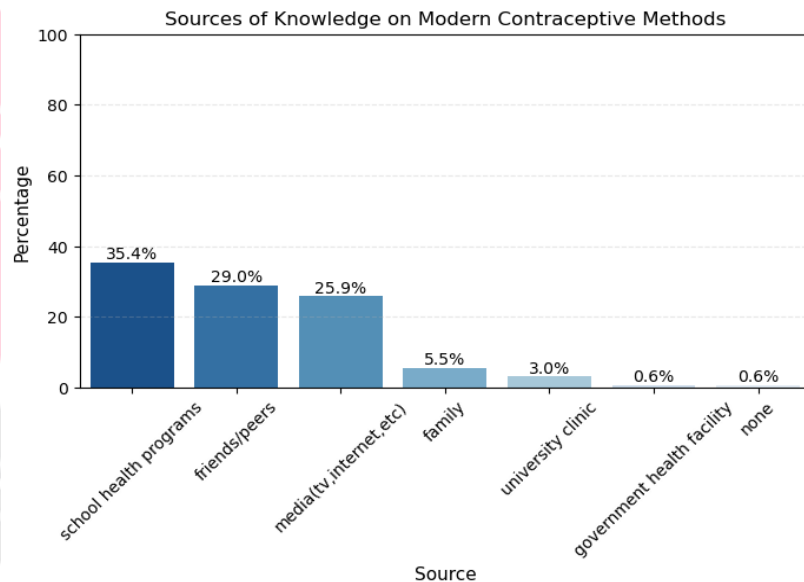


Figure 10: Sources of Contraceptive Knowledge

4.4.3 Gender Practice differences based on Knowledge of Modern Contraceptive Uptake

There is no significant difference (p -value=0.4274, α =5%) between the males (49.1%) and females' (42.2%) level of knowledge among the participants. Among those who feel they don't have knowledge of contraceptives, 23.3% are males and 26% are females. A

proportion of 31.8% females and 27.8% males have a mixed feelings of their level of contraceptive knowledge.

4.4.4 Level of Practice of Modern Contraceptives based on number of children and Knowledge

Majority (58.3%) of those who are confident of their contraceptive knowledge have 2 children while 25% reported to have no knowledge on contraceptives. 46% of those who have children and those with over 3 children have nearly same level of knowledge 46% and 45.5% respectively. With no significant difference, ($p\text{-value}=0.7674$, $\alpha=5\%$), in their level of knowledge. Between 34% and 16.2% have are not sure of their level of knowledge on contraceptives.

4.4.5 Level of Practice based on the duration of Relationship and Knowledge

Almost equal proportion of those who have been in relationship between 0 and 1year, 43.7% and 43.2% respectively. Majority, 51.5% of those who have been in relationship between 1 to 5 years have sufficient knowledge on modern contraceptives and only 45.5% with over 5 years relationship have modern contraceptive knowledge. Approximately 30% in all the categories reported to no knowledge on modern contraceptives. The difference in the level of knowledge and length of time in relationship are not significantly different ($p\text{-value}=0.3764$, $\alpha=5\%$).

4.4.6 Level of Practice based on Reproductive Intentions and Knowledge

The relationship between level of knowledge and intention to have children is statistically significant ($p\text{-value}=0.0000$, $\alpha=5\%$). Higher knowledge of contraceptive is correlated with

the child bearing intention while low knowledge level is associated lower likelihood of intention to have children suggesting practice levels in terms of child spacing is determined by knowledge levels. Among participants whose response is not sure (22.3%) and those with no knowledge (19.0%) intends to have children while, 38.5% and 30.8% do not intend to have children.

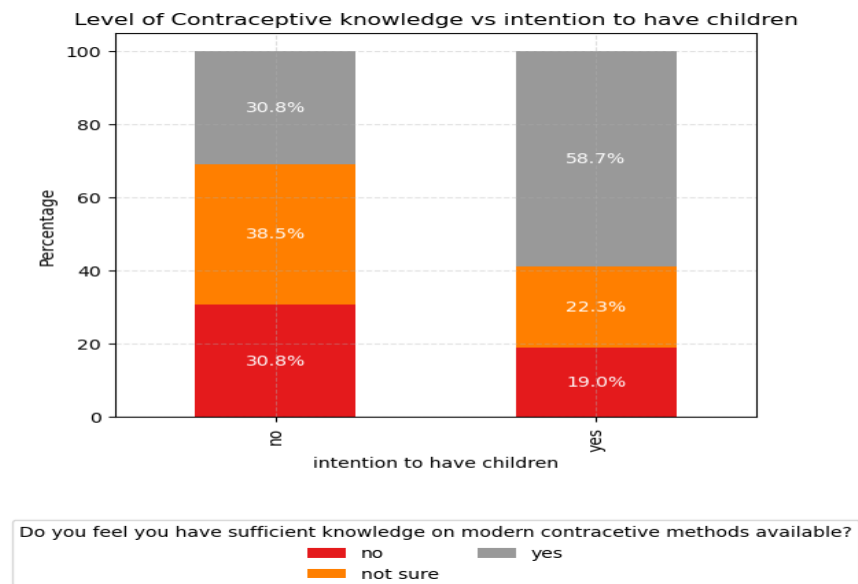


Figure 11: Level of Knowledge vs Intention to Have Children

4.4.7 Attitudes as Influencers of Uptake and Practice behaviors towards Modern Contraceptives

Majority (61.1%) of respondents believe that modern contraceptives have negative health effects. About 20.0% of respondents are not sure about the health effects following the use of modern contraceptive. Only 18.6% believe modern contraceptives do not have negative effects. The attitude was negative, with majority, 61.1% thinking there are negative side effects to contraceptive use.

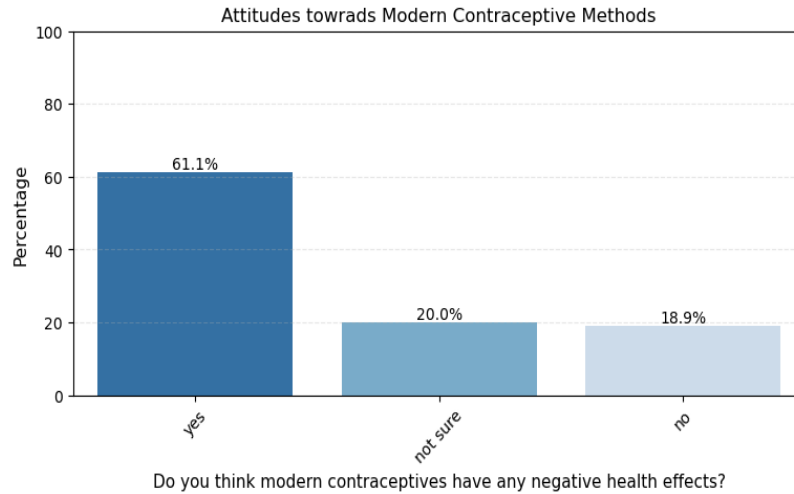


Figure 12: Attitudes towards Modern Contraceptive Uptake

4.4.8 Influence of Social and Interpersonal Networks on Uptake and Practices toward Modern Contraceptives

Personal knowledge/experience accounts for (51.5%), Peers (21.6%), Partner’s opinion (18.6%), Parents/guardians (7.9%), and Personal choice/experience (0.3%) of the person who influence ones’ attitude of using contraceptives.

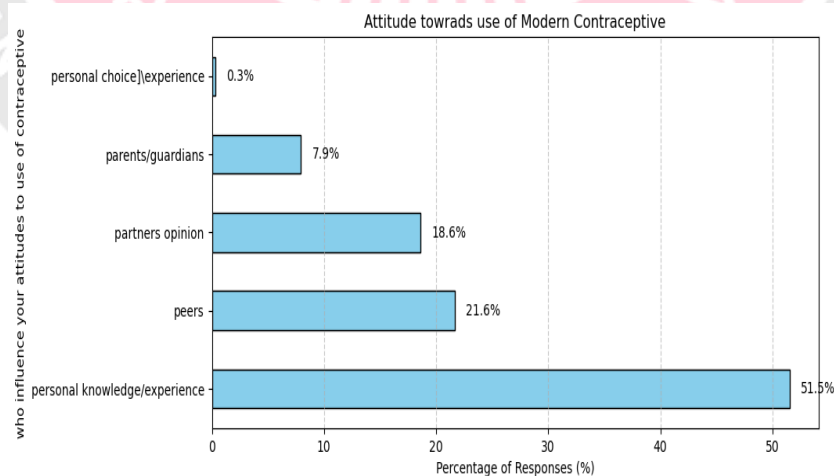


Figure 13: Influencers of Attitude towards Contraceptive Uptake

4.4.9 Key Influencers in decision-making around Modern Contraceptive Uptake and Practice

Of the persons who mostly influence the use of contraceptive, healthcare providers' accounts for (81.1%), religion accounts for (9.8%), ethnicity/Culture accounts for (7.6%) the rest accounts for up to (1.2%).

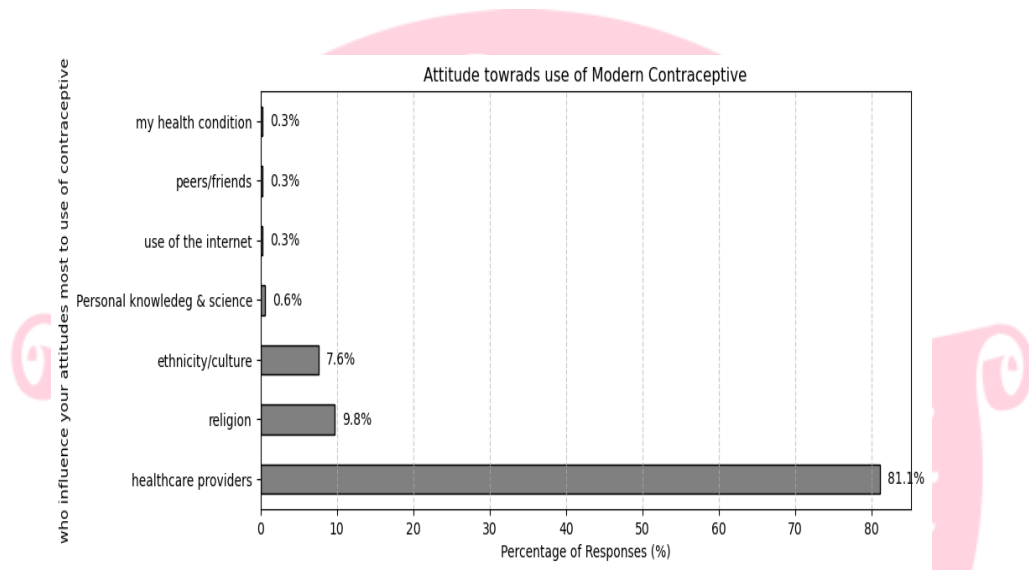


Figure 14: Influences on Contraceptive Uptake

4.4.10 Social Stigma on Uptake and Practice of Modern Contraceptives

More than half (54%) of the participants believe that social stigma is associated with the contraceptive use among the students, while 26.6% and 19.2% are either not sure or do not believe at all.

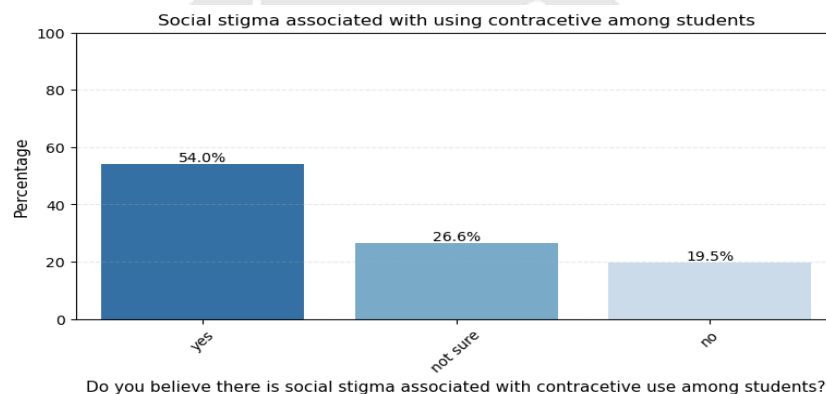


Figure 15: Social Stigma Associated with Contraceptive Uptake

4.4.11 Gender differences in Attitudes toward Modern Contraceptive Uptake and Practice

The participants' attitude between male and female thinking that contraceptive have negative effects on their health is statistically significant ($p - value = 0.0029, \alpha = 5\%$). Most of the female participants, 69.3%, think contraceptives have negative health effects ("Yes") while (16.1%) are not sure. More than half, 51.5% of the male participants thought that contraceptives have negative health effects ("Yes"), and (24.5%) are not sure. About 23.0% of the male students believe there is no negative health effects ("No")



Figure 16: Attitudes vs Gender

4.4.12 Attitudinal Shifts in Contraceptive Uptake across Relationship Lengths

There is strong statistical significance association between the length of relationship and the range of factors which influences the attitude towards the use modern contraceptive among the participants ($p - value = 0.0106, \alpha = 5\%$). The majority of respondents whose attitude is influenced by health providers across all ranges of the length of relationship are

ranges between, 63.6% and 85.2%. The rest of have little influence, under 12%, on the attitude of the participants to use contraceptives.

4.4.13 Practice of Modern Contraceptive

Majority of the respondents, (55.6%), indicate that they are not currently practicing any form of modern contraception. Equally, (44.4%) of the participants reported that they are currently practicing modern contraception.

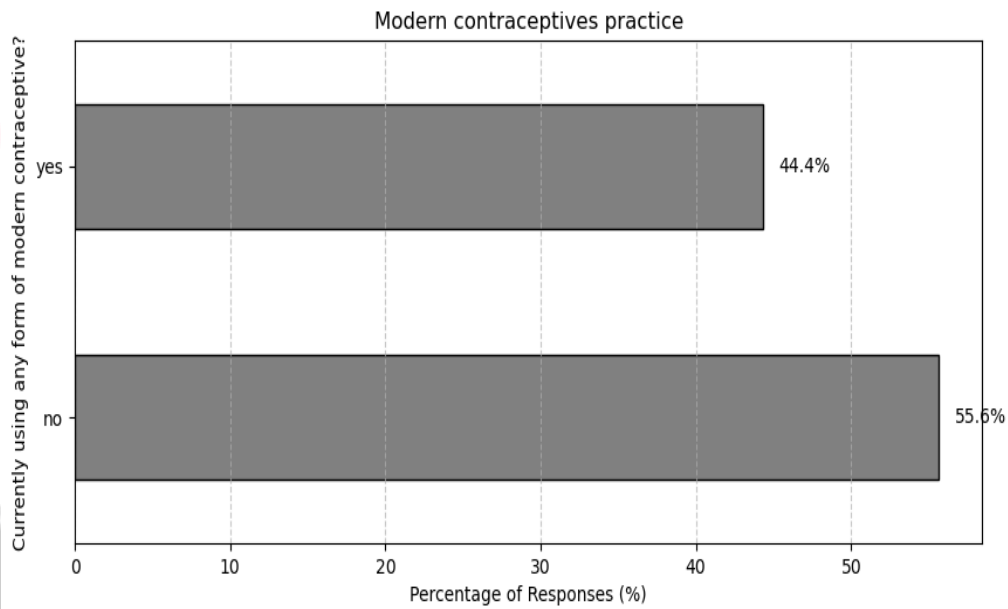


Figure 17: Current Practice of Modern Contraceptives

4.4.14 Levels of Practice of modern contraceptive

The largest group (30.8%), reported never practicing any form of modern contraception, 26.8% rarely used modern contraceptives and 24.1% use contraceptives sometimes. About 18.0% consistently use modern contraceptives.

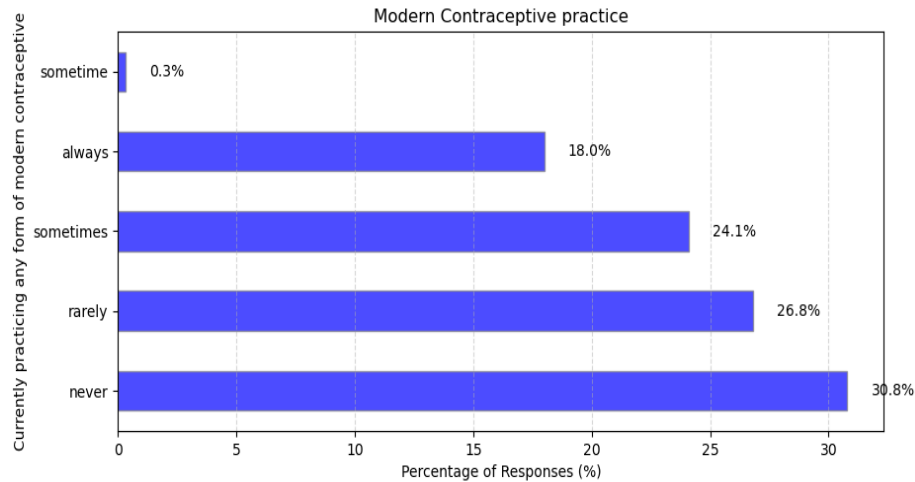


Figure 18: Level of Practice of Modern Contraceptive

4.4.15 Gender Differences in Contraceptive Practices

A larger proportion of females (56.3%) reported not using modern contraceptives, while 40.8% report using them. A slightly higher proportion of males (51.5%) reported using modern contraceptives, while 48.5% report not using them. There is no significant association between the participants practicing contraceptives and the gender (males and females) $p - value = 0.1826$ at $\alpha = 5\%$.

4.4.16 Contraceptive Practices by Number of Children

The $p - value = 0.0559$ at $\alpha = 5\%$, indicating that there is no statistically significant association between the number of children and current contraceptive use among the participants.

59.2%, respondents with 0 children reported not using modern contraceptives ("no") while 40.8% reported using ("yes"). 57.4%, respondents with 1 child reported using modern contraceptives ("yes") than those not using them ("no") 42.6%. The proportion increased, to 66.7%, respondents with 2 children reporting using modern contraceptives ("yes") than

those not using ("no") 33.3%. A percentage decline to 54.5% of respondents with 3 children reporting using modern contraceptives ("yes") than those not using ("no") 45.5%.

4.4.17 Contraceptive Practices in Relation to Fertility Intentions

The $p - value = 0.0040$ at $\alpha = 5\%$, indicating that there is strong statistical significance association between the intention to have children and current contraceptive uptake among the participants. Almost 1 in every 2 participants who intend to have children, reported to use modern contraceptives, while only 48.1% of the participants who do not intend to have children use contraception.

4.5 The Socio-Economic Factors Associated with Uptake of Modern Contraceptives among University Students at Lukenya University

4.5.1 Bivariate Analyses

A Chi-square test of independence was conducted to determine the association between the use and non-use of modern contraceptives (Yes, No) among the 361 participants. Key assumptions for the Chi-square test were examined and found to be sufficiently met, as all expected cell frequencies were ≥ 5 and percentage cells less than five did not meet the violation threshold of 20%. Categories that were too many were re-grouped. All explanatory variables being compared to the dependent variable, the use or non-use of contraceptives are all categorical, except age, which was analyzed using two independent sample t-test. The rest were analyzed with Pearson's chi-square of association. As shown in Table below, the summaries of the assumption tests results are presented.

Table 7: Summaries of the Assumptions Tests Results

Variable	DF	Cells < 5	% Cells < 5	Assumptions Met
Gender vs. Contraceptive use	1	0	0.0%	Yes
Marital Status vs. Contraceptive use	2	1	0.0%	Yes
Intention to Have Children vs. Contraceptive use	1	0	0.0%	Yes
Level of Education vs. Contraceptive use	1	1	0.0%	Yes
Relationship Length vs. Contraceptive use	3	1	12.5%	Yes
Number of Children vs. Contraceptive use	2	1	0.0%	Yes

Table 8: Lifetime use of contraceptives

Current use of contraceptives	Statistical-test	DF	(χ^2)_value	P-value
Number of children vs. Contraceptive Use	Chi-square (χ^2)	2	1.541	0.6728
Level of Education vs. Contraceptive Use	Chi-square(χ^2)	1	2.235	0.1349
Mean Age of users vs. non-users	t-test (2-sample)	78	2.159	0.0319
Age vs. Contraceptive Use	t-test (2-sample)	78	4.831	0.0286

According to the study, number of children, level of education do not significantly impact lifetime use of modern contraceptive uptake.

“The uptake was fairly good in that at least 40% of the student use contraceptive and a majority of the users who visit the clinic were ladies, the clinic records are the data sources used to track the contraceptives usage, and to encourage uptake we have discussion with the students on what contraceptives they would want available in the clinic. Condoms

and injectable are the most common modern contraceptives used by the students at Lukenya University”

Table 9: Contraceptive Use in Last 6 Months

Contraceptive use in last 6 months	Statistical-test	DF	χ^2 _value	P-value
Number of children vs. Contraceptive Use	t-test (2-sample)	2	1.389	0.7080
Level of Education vs. Contraceptive Use	Chi-square(χ^2)	1	16.303	0.0122
Mean Age of users vs. non-users)	t-test (2-sample)	78	2.159	0.0320
Age vs. Contraceptive Use	t-test (2-sample)	78	4.831	0.0287

The study level significantly influences contraceptive use in the last 6 months ($\chi^2(df = 1, n = 355) = 16.303, p - value = 0.0122$), suggesting that higher study levels are linked to more frequent contraceptive use. The intention to have children is highly significant ($\chi^2(df = 2, n = 355) = 12.928, p - value = 0.0003$), confirming that people who do not plan to have children use contraceptives more regularly. Age remains to be a significant factor ($t(df = 78) = 2.159, p - value = 0.0320$ and $t(df = 78) = 4.831, p - value = 0.0287$), indicating different age groups have different contraceptive use patterns. Relationship length is not significant ($\chi^2(df = 1, n = 355) = 7.714, p - value = 0.0523$), suggesting some potential influence but non-significant. This was further corroborated by the KII who stated that:

“When students are admitted at the University, they face challenges with the pregnancies. However as they progress to higher levels, these challenges disappear because they now begin to use contraceptives. Probably because as of higher learning and experience”.

Table 10: Current Use of Contraceptives

Lifetime use of contraceptives	Statistical-test	DF	(χ^2)_value	P-value
Number of children vs. Contraceptive Use	t-test (2-sample)	2	2.813	0.4212
Level of Education vs. Contraceptive Use	Chi-square(χ^2)	1	19.096	0.0040
Mean Age of users vs. non-users)	t-test (2-sample)	78	2.159	0.0319
Age vs. Contraceptive Use	t-test (2-sample)	78	4.831	0.0286

Level of education is significantly associated with use of modern contraceptives($\chi^2(df = 1, n = 355) = 19.096, p - value = 0.0040$), indicating that participants on higher level of study are more likely to use modern contraceptives. Age remains one of the significant factors associated with use of contraceptive use of modern contraceptive($t(df = 78) = 2.159, p - value = 0.0319$ and $t(df = 78) = 4.831, p - value = 0.0286$).

This is in agreement with the corroboration by the KII:

“Level of study plays a major role in contraceptives uptake. Our records indicate that first years are vulnerable to pregnancies because their uptakes of contraceptives are low. As they progress to the senior levels, they adopt contraceptive uptake and then finally issues regarding pregnancies become silent. Age of students also plays a significant role in the uptake of modern contraceptives and that majority of the students between the ages of 19-23 easily adopt contraceptive use. They are also the majority using contraceptives at the clinic. Consequently, these students do not have intentions to have children and so they adopt contraceptive use and that according to them, pregnancies interrupt their academic calendar and so they easily adopt contraceptive uptake.”

4.6 Socio-Cultural Factors Associated with Uptake of Modern Contraceptives

Table 11: Lifetime use of contraceptives

Current use of contraceptives	Statistical-test	Test-statistic	P-value	Test-statistic	Fishers Exact sig (2 sided)	Fishers Exact sig (1 sides)
Gender vs. Contraceptive use	Chi-square(χ^2)	2.807	0.0939	0.396.	0.043*	0.025***
Marital Status vs. Contraceptive Use	Chi-square(χ^2)	2.079	0.3535	0.115		0.354
Relationship Length vs. Contraceptive Use	Chi-square(χ^2)	4.413	0.2202	7.229		0.196
Intention to have children vs. Contraceptive use	Chi-square(χ^2)	6.858	0.0088	7.617	0.013*	0.007***

This study assessed the association between socio-cultural factors and lifetime contraceptives use among university students. Chi-square and fisher's exact tests were used to assess the significance of the association. For gender and contraceptives use, Chi-square test did not show a statistically significant association ($\chi^2 = 2.807$, $p = 0.0939$), however, Fisher's Exact test was significant for both the two-sided ($p = 0.043$) and one-sided ($p = 0.025$) tests.

The association between intentions to have children had strong statistical significance. The chi-square test result was significant at ($\chi^2 = 6.858$, $p = 0.0088$), supported by Fisher's Exact Test (2-sided $p = 0.013$; 1-sided $p = 0.007$). The test indicated that people who do not intend to have children are significantly more likely to use contraceptives, emphasizing the central role of fertility intentions in shaping reproductive behavior.

Table 12: Contraceptives use in the last 6 months

Contraceptive use in last 6 months	Statistical-test	Test-statistic	P-value	Test-statistic	Fishers exact 2 sided	Fishers exact 1 sided
Gender vs. Contraceptive use	Chi-square(χ^2)	1.835	0.1754	1.835	0.347	0.193
Marital Status vs. Contraceptive Use	Chi-square(χ^2)	0.062	0.9694	0.062		0.378
Relationship Length vs. Contraceptive Use	Chi-square(χ^2)	7.714	0.0523	9.365		0.0523** *
Intention to have children vs. Contraceptive use	Chi-square(χ^2)	12.928	0.0003	12.928		0.001***

The relationship length and contraceptives use yielded statistically significant results. Chi-square $\chi^2 = 7.714$, p-value of 0.0523, and Fisher's Exact Test (1-sided) also reported a p-value of 0.0523. In as much as this result is just above the conventional threshold of 0.05, it indicated a potential trend where longer relationship duration may be associated with increased contraceptive use, warranting further investigation.

A highly significant association was found between intention to have children and contraceptive use in the last six months. The Chi-square test produced a statistic of $\chi^2 = 12.928$ with a p-value of 0.0003, and Fisher's Exact Test (1-sided) confirmed this with a p-value of 0.001. These results strongly indicate that individuals who do not intend to have children are significantly more likely to have used contraceptives recently.

Table 13: Current use of contraceptives

Lifetime use of contraceptives	Statistical-test	Test-statistic	P-value	Test-statistic	Fisher's exact sig 2 sided	Fisher's exact(1sided)
Gender vs. Contraceptive use	Chi-square(χ^2)	0.396	0.5289	2.807	0.254	0.146
Number of children vs. Contraceptive Use	t-test (2-sample)	2.813	0.4212	7.688		0.170
Relationship Length vs. Contraceptive Use	Chi-square(χ^2)	7.229	0.0649	11.672		0.008*

The Chi-square test approached significance with $\chi^2 = 7.229$ and a p-value of 0.0649. More notably, Fisher's Exact Test (1-sided) revealed a statistically significant result ($p = 0.008$), implying that individuals in longer-term relationships were more likely to have used contraceptives.

4.7 Thematic Analysis of Key Informants

Sexual and reproductive health (SRH) is a critical aspect of student well-being, yet the use of modern contraceptives remains a persistent challenge in the majority of university populations. The following section offers an examination of qualitative data collected from in-depth interviews with key stakeholders at the university, mainly the two Dean of Students, and the Clinical officer. The aim was to study student uptake taking into account how attitudes and knowledge influence practices of modern contraceptives and institutional policies guiding sexual reproductive health (SRH) services.

In this study, inductive coding, thematic analysis, and content analysis were employed in order to bring out insightful observations on modern contraceptive uptake. The coding of data into sentences and phrases that were relevant to the research questions was done using

NVIVO. The broader themes were searched by examining the codes and grouping them into categories based on similarities and/or patterns emerging. Themes reflecting important themes about the data in relation to the research objectives emerged. Some codes were redundant, and overlapping were combined while some were split to arrive at refined thematic structure. Each theme was clearly described and contextualized, ensuring it captured the essence of what the participants were expressing. The detailed analysis for each theme was done and few quotes were included in the results. The summary of the emerging phrases was summarized in the frequency table and displayed in a word cloud.

The following frequencies of words and phrases arose and were synthesized in the table. This confirms the quantitative findings at best.

Table 14: Word frequencies

Word/Phrase	Frequency (word count)	Percentage (%)
Contraceptive	35	23%
Students	30	20%
Pregnancy	22	14%
Abstinence	18	12%
Misconceptions	15	10%
Privacy	12	8%
Access	10	7%
Education	10	7%

4.7.1 University Policy and Contraceptive Awareness

The university is aware of students' sexual and reproductive health (SRH) requirements through the provision of various forms of contraceptives, such as condoms, injectables' (e.g., Depo-Provera), and emergency contraception. Condoms and injectables' are provided free of charge, whereas students buy emergency contraceptive pills.

Abstinence is promoted by the university as the most preferred practice but also acknowledges the necessity of using modern contraceptives if the circumstance requires

so. The institution, however, observes low readability and availability of sexual reproductive health (SRH) policies and how it influences access to contraceptive uptake efficacy. To combat this, the university ought to integrate such policies into orientation classes to help create student awareness and ensure all students are informed of their sexual reproductive health rights and services offered both on and off campus.

As the Dean of Students explained, *"The university provides, doesn't sell or something, it just provides and also counseling."*

4.7.2 Barriers to Contraceptive Access and Utilization

In spite of institutional support, there are several barriers to students using contraceptives on campus. Privacy issues and stigma are reported as significant obstacles, especially to female students who will go off-campus in attempt to avoid stigmatization or negative judgment by fellow students or clinic workers. There are also financial barriers in accessing some form of some contraceptives, such as emergency pills, as this will most likely be interpreted to mean one had unprotected sex coupled with the fact that this emergency pills are not subsidized.

In addition, students frequently are faced with shortages of contraceptives, mostly where distribution depends on government stocks or for institutional reasons. Out-of-stock force the students to obtain contraceptive supplies from alternative sources, mostly out of campus. Furthermore, myths and misconceptions aggravating the situation, such as the myth that contraceptives cause infertility, thus discourages the use. Conscientious, cultural, and religious beliefs, particularly among the Muslim and Catholic communities, also discourage contraceptive use. In some literature, Islam would require a spouse to consult the partner, which is also another form of barrier.

These barriers limit students' capacity to make informed and healthy decisions about their reproductive health, reinforcing unhealthy behaviors and driving up health inequities. As explained by one clinical officer, *"One of the reasons uptakes is not at 50% is just because of the myths and misconceptions."*

4.7.3 Student Attitudes toward Contraceptive Use

The university youngsters primarily need contraceptives for prevention pregnancy rather than STI prevention, thus bringing up arguments that women are more wary of pregnancy than other consequential effects sexual activities. It appeared largely that male students prefer condoms, while most female students prefer injectables because they are easy to use and can be concealed as well as counting on patient-doctor confidentiality. Peer influence both facilitates and constrains contraceptive behavior as this would lead one to rely on the peer information which may be wrong or bear compatibility issues.

This reflects a great knowledge gap regarding STI, as pregnancy prevention is prioritized over other health issues. Peer interventions can both disseminate beneficial information or spread harmful myths, depending on circumstances and conditions. A clinical officer remarked that students would give reasons such as, *"I was advised by my roommate that we should go for family planning,"* not taking into account individual needs differ from one person to the next.

4.7.4 Sexual Health Education and Awareness Activities

The university supports SRH awareness through peer educator clubs, mentorship clubs, and reproductive health discussion forums, which take place on a weekly basis. Occasionally, there are guest speakers from health organizations who are invited to

enhance the health education training or awareness sessions. First-year students remain highly vulnerable despite likely exposure to sex education before they joined the university, for a number of reasons such as new friends and new-found freedom leading to some sort of un-supervised, risky behavior.

While there are some attempts at this to be celebrated, they are inconsistent in scope and effect. There are systematic, university-wide sexual health literacy initiatives, especially for first-year students that would be necessitated. For example, as one Assistant Dean said, *"We have a Wednesday program where we discuss reproductive health, among others."*

4.7.5 The Need for Comprehensive Sex Education

Sex education is being taught in a few classes but not integrated into the entire academic curriculum. The discrepancy results in misinformation in addition to intermittent knowledge among the students. Teaching staff are recommended to integrate SRH topics, for instance, the usage of contraceptives, in addition to emphasizing abstinence.

With no shared strategy, sex education efforts remain diverse. Systematic sex education inclusivity throughout university disciplines might render students capable of making safe and informed decision. In one clinical officer's opinion, *"As much as they are counseled to abstain, they should also be educated about contraceptives."*

In concluding and making recommendation on the emerging themes from the qualitative data, there is the contraceptive clinic and SRH care applicable to students but a series of obstacles between students accessing or availing the same is identified as a major disruption to uptake of modern contraceptives. Privacy concerns, myths, price, and stock-outs cumulatively contribute to the problem of low uptake of the modern contraceptives.

There are such awareness-generating activities, such as on-campus SRH sessions, but are scarce in nature and numbers to create appropriate awareness and consolidate the student's contraceptive uptake status comprehensively.

Considering the above-emerging challenges, the following interventions are proposed, first, create unobtrusive distribution points, such as anonymous pick-up points, to reduce stigma. Provide all-time availability through collaboration with government and health partners to avoid out-of-stock and facilitate frequent contraceptive availability.

Secondly, strengthen awareness campaigns through expansion of peer educator programs and make sexual health literacy compulsory in student orientation and major courses. Thirdly, create and implement universal sex education by developing an SRH education module and integrate it into curricula.

Finally, improve affordability through by joining hands with the health partners in subsidizing the contraceptives and distributing them to all the students on an equal footing. Through these practices, the university will be able to provide a healthy, well-educated university community that enables students to make informed, safe and responsible reproductive health decisions.

CHAPTER 5: DISCUSSIONS

5.1 Introduction

This chapter discusses the findings and outcomes of the study according to the variables giving the research conclusion and recommendations to be adapted to improve consistent uptake of modern contraceptives among students at Lukenya and other universities.

5.2 Summary of Findings

In Kenya and globally, young people in tertiary institutions represent a critical demographic. They are often navigating new independence, peer influence, and developing identities, all while facing social, economic, and academic pressures. This unique context necessitates tailored, evidence-based approaches to SRH education and services. Contraceptive uptake among students is not just a matter of personal choice but is influenced by access, awareness, social norms, cultural beliefs, and institutional policies.

The chapter is structured into key thematic areas; a comprehensive summary of findings, conclusions organized by the study objectives, a critical discussion of findings, implications for policy and practice, recommendations for future research, and a final general conclusion. Each section integrates literature, theory, and local context to generate an all-inclusive understanding of the modern contraceptive uptake.

5.3 Discussions Guided by Specific Objectives

5.3.1 Uptake of Modern Contraceptives among Students at Lukenya University

The study found that a considerable proportion of students at Lukenya University had used modern contraceptives at some point in their lives, with 67% reporting lifetime use. The cut off between six months and current use was done to allow for categorization of usage patterns over time. Current use in this study referred to students who were engaging in active use of modern contraceptives at the time of data collection. Use within the last six month referred to students who for one reason or other used a form of modern contraceptive but is not actively using at the time of data collection. This was done to gain insights into whether there were patterns of total discontinuation, intermittent use or seasonal variations in uptake and practice patterns as the study results indicated. Recent and current usage patterns showed a significant decline, with 43.2% reporting usage within the last six months and only 44.4% indicating current use. This suggests a pattern of contraceptive discontinuation or intermittent use, possibly due to access issues, misinformation, cost or changes in relationship status. This study is in tandem with the study by Kayira (2019) whose findings revealed modern contraceptive costs, availability, provider attitude and students' contraceptive attitude as the main barriers to modern contraceptives uptake among university students. The finding is also consistent with that of Stereotypes et al. (2021), who reported fluctuating use of contraceptives among students in Eldoret, Kenya, though awareness was fairly high.

The demographic distribution showed a near-equal gender split, with the average age of respondents being 22.3 years. Contraceptive usage varied slightly by age and gender. Male

students reported higher usage across all timeframes compared to female students, a trend noted in the study carried out in Ghana by Mindel et al. (2022), which recognized higher male autonomy and reduced stigma as facilitating factors. The study also found significant differences in usage based on relationship status, intention to have children, and study level. For instance, students in mid-term relationships (1-5 years) reported the highest current use, while those in long-term relationships (>5 years) reported no use at all.

The most common preferred methods in terms of uptake were injectables, condoms, daily pills and implants. Female students were noted to prefer injectables due to the discreet benefit it gave in terms of privacy, an indication that social stigma and privacy concerns were a driving factor in choice of method. Similar trends were noted in a study conducted among university students in Uganda where students recorded a preference for injectables, to avoid judgement from peers and healthcare providers (Kabunga et al., 2024). Condoms were most preferred by male students due to ease of access.

5.3.2 Knowledge, Attitudes and Practices of Students towards Modern Contraceptives

Knowledge levels regarding contraceptives were moderate. While 44.2% of students expressed confidence in their knowledge, a combined 55.8% were either unsure or uninformed. The same trends were seen in a study at the University of Nairobi by Odhiambo et al. (2022), where misconceptions and fear of side effects reduced uptake even with exposure to health education. The high reliance on peer advice further complicates the issue. Peer influence, while potentially beneficial in some cases, often spreads myths and misinformation on contraceptive uptake. When not aligned with formal health education, such peer-led knowledge can reinforce stigma and fear. School health programs,

peers, and media were the most cited sources of information. Despite these channels, misinformation remains a significant issue, with many students holding negative perceptions about the health effects of contraceptives.

Attitudes toward contraceptive use were largely negative. Approximately 61.1% of participants believed modern contraceptives have adverse health effects, while only 18.9% believed they were safe. Peer and partner opinions played a significant role in shaping these attitudes. Additionally, a large percentage (54%) believed that contraceptive use is associated with social stigma. This is consistent with findings from a Nigerian university study conducted by Iliyasu et al. (2019), which found misinformation and societal stigma as major barriers to long-term contraceptive use. This supports the findings of Schaub et al. (2022), who found that shame has a major role in discouraging the use of family planning, primarily condoms, especially among young people who are single. Moreover, students reported that health talks and peer educator initiatives were either irregular or not mandatory, limiting their reach and impact. Young people believe that requesting a partner to use condoms will expose them as sexually inappropriate or unreliable, and that women who carry them are promiscuous (Schaub et al., 2022). In addition, young people observed that although married individuals may openly request family planning, they are repressed due to the stigma attached to obtaining contraception.

Practices mirrored these attitudes. While 44.4% reported current contraceptive use, the frequency and consistency varied. Only 18% of users reported regular use, with the rest indicating occasional or rare use. Females reported lower usage rates than males, and those with children were slightly more likely to use contraceptives than those without, a finding also reported by Izugbara (2015), who reported that women report higher stigma and fear

of judgment, especially in accessing services like condoms or emergency contraception. Mwaisaka et al. (2020) study in Kwale County, Kenya noted that stigma, misinformation and fear of judgment highly influenced the choice of contraceptive. The same study recorded injectables and pills as the preferred method to avoid public scrutiny. This study is also in agreement with the study by Oguntona et al. (2013) though much higher as compared to this study. It revealed that knowledge of contraceptive use among university undergraduates is high 98.90%. The attitude to contraceptives was positive and welcoming for the same study, which contradicts the results of this current study with 61.1% having a negative attitude towards modern contraceptives.

5.3.3 Socio-Economic Factors Associated with Uptake of Modern Contraceptives

The intention to have children was significantly associated with the use of modern contraceptives across all timeframes i.e. lifetime use, last six months and current use. Students who did not intend to have children were more likely to use contraceptives more regularly, likely not to interrupt their academic progress. The findings of this study are further corroborated by Oyebanji (2019) study in University of Ibadan, Nigeria, which noted that students intentionally delayed childbearing in order to avoid disrupting their academic progress.

The level of education was significantly associated with uptake of modern contraceptives across the two timeframes i.e. last six months and current use. The findings suggest that higher levels of study were linked to consistent contraceptive use. This underscores the long term influence of education on reproductive health behavior. Similar findings were noted in a study conducted in Ghana which looked into student attitudes on family

planning. The study noted that education was prioritized over childbearing, with higher uptake recorded in emergency pills and regular contraceptives (Gbagbo et al., 2019).

Age was also significantly associated with uptake of modern contraceptives. The findings revealed that different age groups had different contraceptive practice patterns. The lower undergraduates (1st and 2nd years) as revealed by KIIs were noted to have poor uptake and practice patterns, likely due to limited exposure to reproductive health information and services, with majority having just come from secondary school. The same group was also noted to be more vulnerable to pregnancy as their uptake was low. Consequently, the upper level undergraduates and Postgraduate students had higher uptake and a more consistent practice pattern, likely due to more exposure to reproductive health programs, including improved awareness and confidence in use and choice of family planning method.

The relationship length in relation to last six months and current use was found to be significantly associated with uptake of modern contraceptives. Students in relationships less than 5 years were found to have increased uptake and consistent contraceptive practices.

5.3.4 Socio-Cultural Factors Associated with Uptake of Modern Contraceptives

Religious and cultural values deeply influence student behavior. While the study population was majority Christian, Muslim and Catholic students reported lower uptake of contraceptives due to religious objections. Barriers to access to modern contraception included privacy concerns, cost, out-of-stock, and cultural or religious beliefs. Students often avoided campus health services due to fear of perceived judgment, often preferring

to seek SRH services away from the university. Myths about long-term infertility and religious objections further complicated access to and use of modern contraceptives.

A critical observation is that many students begin using contraceptives but do not sustain usage, likely due to personal experience, misinformation, fear of side effects, and/or negative peer influence. The qualitative study stated one of the barriers to uptake as *“One of the reasons uptake is not as 50% is just because of myths and misconceptions.”* The findings of Ng’eno et al. (2021), who found fear of side effects as a significant barrier in the Kenyan campuses. Religious and cultural concerns also emerged strongly. Muslim and Catholic respondents reported lower acceptability due to religious grounds, also similarly asserted by research in Tanzania by Mbeba et al. (2012) and in Ethiopia by Shah et al. (2020). The study also found that students who identified with specific religions (Catholic, Protestant, and Islam) were less likely to utilize contraceptives. This tendency is linked to pre-marital sex lobbying and religious teachings, resulting in students being less likely to have premarital sex and, as a result, less likely to feel the need for contraception of any kind (Akinsoji et al., 2015).

Statistical analysis based on gender and contraceptive use showed significant association. Male students had higher levels of uptake consistently across all three-time frames (lifetime use 71.5%; last six months 47% and current use 47%) when compared to female students (lifetime use 62.1%; last six months 39% and current use 42.9%). These findings suggested that gender plays a significant role in influencing contraceptive behavior, with possible implications related to gender norms, decision-making power, and access to reproductive health services. The findings are supported by Njoroge et al. (2020) study which noted that

male students reported higher contraceptive use than female students at JKUAT with factors such accessibility and affordability associated with uptake.

The discrepancy between intention to have children and contraceptive use also warrants attention. The finding that students intending to have children are more likely to use contraceptives suggests an underlying rational approach to reproductive health planning. These students may view contraceptives as tools for life planning, supporting the argument for comprehensive reproductive life planning education as part of university programs. This statement is aligned with the findings of the study by (Chepkwony et al., 2019). Respondents who do not have any children were using more contraceptives (86.9%) than those who had at least one child at 13.1%.

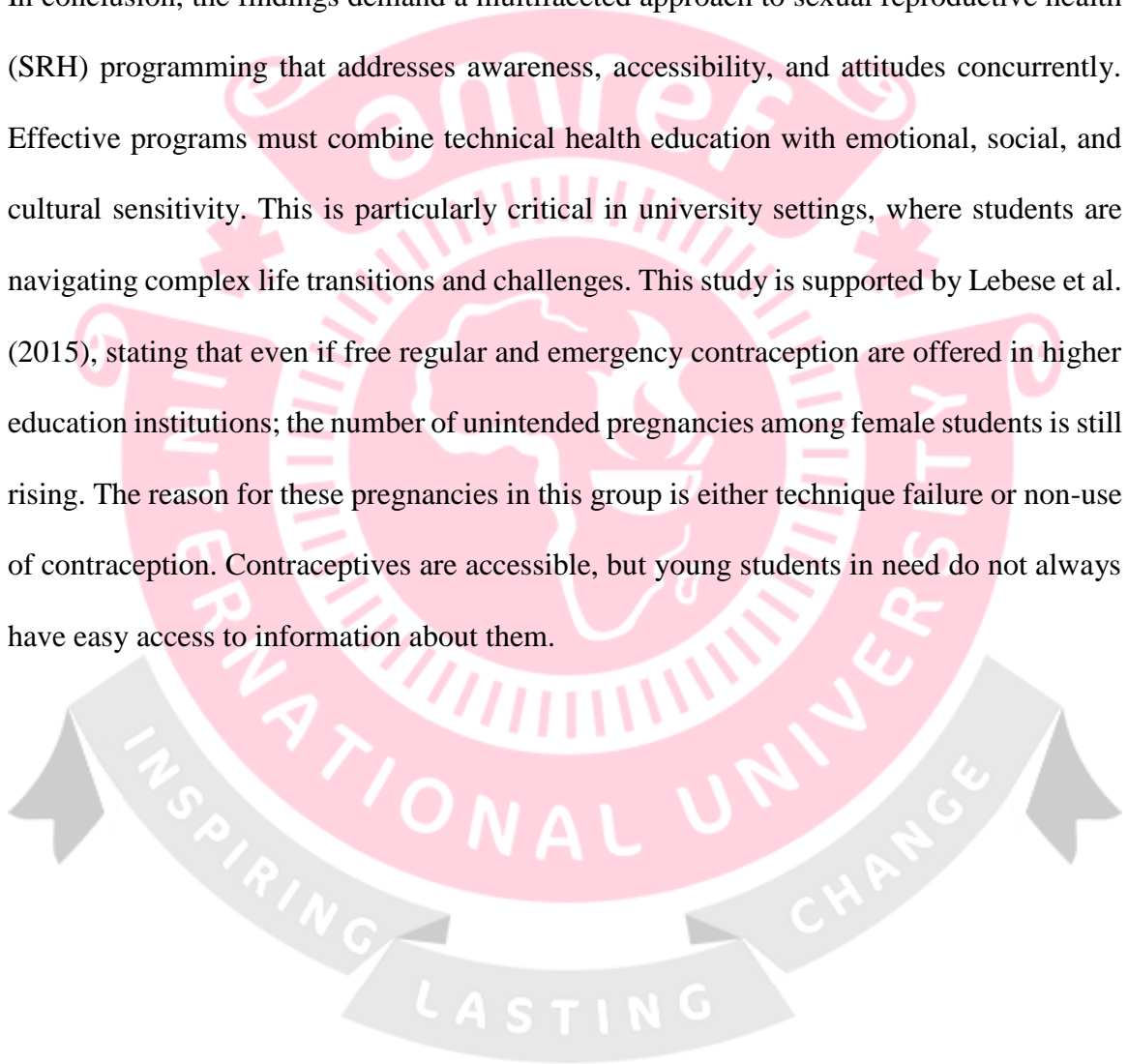
Gender dynamics also play a key role. Male students reported higher contraceptive usage, despite also holding more negative attitudes about health impacts. This contradiction may reflect social expectations; males are less scrutinized for their sexual behavior and thus may feel more comfortable accessing contraceptives, particularly condoms. Female students, by contrast, face greater stigma, judgment, and logistical barriers such as privacy concerns at campus clinics. This highlights the need for gender-sensitive sexual reproductive health (SRH) services that prioritize discretion, affordability, and trust among users and service providers.

The study paints a complex picture of contraceptive use among students at Lukenya University. While the availability of contraceptives is a step in the right direction, systemic, cultural, and informational barriers continue to hinder consistent and informed use.

However, this influence should be managed through dialogue rather than restriction, encouraging culturally sensitive education that respects beliefs while promoting health.

5.4 Conclusion

In conclusion, the findings demand a multifaceted approach to sexual reproductive health (SRH) programming that addresses awareness, accessibility, and attitudes concurrently. Effective programs must combine technical health education with emotional, social, and cultural sensitivity. This is particularly critical in university settings, where students are navigating complex life transitions and challenges. This study is supported by Lebesse et al. (2015), stating that even if free regular and emergency contraception are offered in higher education institutions; the number of unintended pregnancies among female students is still rising. The reason for these pregnancies in this group is either technique failure or non-use of contraception. Contraceptives are accessible, but young students in need do not always have easy access to information about them.



CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This study investigated modern contraceptive uptake among students at Lukenya University, examining patterns of modern contraceptive use, knowledge, attitudes, including the socio-economic and socio-cultural influencing factors. The findings demonstrate that while initial exposure and use of modern contraceptives are relatively high, consistent usage is hindered by a complex interplay of personal, social, and structural barriers.

Students face significant hindrances, including limited knowledge, negative attitudes, financial constraints, privacy concerns, and deeply embedded cultural and religious norms. While contraceptives are generally available, services are not optimally structured to support discreet, equitable, and continuous use of modern contraceptives. Additionally, the institutional response, though well-intentioned, lacks the visibility, clarity, and strategic integration necessary to empower students to make informed decisions about their sexual and reproductive health.

By understanding the various factors, such as demographic characteristics, knowledge and attitude that contribute to poor practices of contraceptives, policy maker at university and county level can develop better targeted interventions and strategies based on the study results.

6.2 Conclusion

6.2.1 Uptake of Modern Contraceptives among Students

The findings show a moderate level of knowledge in modern contraceptives uptake, with a majority of students (67%) having used them at some point in their lifetime. However, there is a notable decline in continued usage, with only 45.9% of participants reporting current use. This suggests that while initial access or awareness may be available, consistency in use is challenged by a range of personal, social, and systemic barriers. Notably, contraceptive use was relatively higher among older students and those in mid-term relationships.

6.2.2 Knowledge, Attitudes and Practices of Students towards Modern Contraceptive Use

Knowledge about contraceptives is uneven across the student population. With less than half of the students confidently identifying themselves as knowledgeable, there is a significant portion either uninformed or uncertain about contraceptive methods and their correct use. This contributes to prevalent negative attitudes, over 60% of participants believed contraceptives cause adverse health effects. These misconceptions appear more prevalent among male students. Practices mirrored these knowledge gaps, less than one in five students used contraceptives regularly, with most showing inconsistent or reactive use patterns. The influence of peers and misinformation from non-expert sources, including social media and friends, worsens these issues.

6.2.3 Socio-Economic Factors Associated with Uptake of Modern Contraceptives

Statistical analysis revealed significant associations between contraceptive use and variables such as age, level of study, and intention to have children. Older students and those at more advanced stages of their studies were more likely to use contraceptives, possibly due to higher maturity levels, better access to health education, or clearer life plans.

In as much as education is widely regarded as a key factor in shaping health behaviors, including family planning, this finding suggests that educational attainment alone does not directly influence whether individuals in this population currently use contraceptives. Similarly, the analysis revealed that the number of children a respondent had was not significantly associated with current contraceptive use. This indicates that having more children did not necessarily lead to greater contraceptive uptake, despite the assumption that individuals with higher parity may seek to limit or space births. These results suggest that both education and parity may play a more prominent role in initial or lifetime contraceptive use, rather than in determining ongoing or current use, and underscore the need to explore additional socio-cultural or behavioral factors that influence contraceptive decisions.

6.2.4 Socio-Cultural Factors Associated with Uptake of Modern Contraceptives

Relationship length and Intention to have children were significant, suggesting birth spacing and preparation for responsible parenthood. Gender dynamics also play a key role. Male students reported higher contraceptive usage, despite also holding more negative attitudes about health impacts. This contradiction may reflect social expectations; males

are less scrutinized for their sexual behavior and thus may feel more comfortable accessing contraceptives, particularly condoms. Female students, by contrast, face greater stigma, judgment, and logistical barriers such as privacy concerns at campus clinics. This highlights the need for gender-sensitive sexual reproductive health (SRH) services that prioritize discretion, affordability, and trust among users and service providers.

The university environment offers a critical window of opportunity to instill lifelong health-promoting behaviors. An all-inclusive, multi-pronged strategy that combines education, service delivery, policy reinforcement, and student engagement is necessary to improve contraceptive uptake and reproductive health outcomes. Empowering students with the knowledge, access, and confidence to make responsible choices will not only benefit individual well-being but also contribute to broader public health and development goals.

Future actions should be guided by the evidence presented in this study, ensuring that interventions are context-specific, inclusive, and sustainably resourced.

6.3 Recommendations

1. The university administration to consider providing a dedicated, student friendly SRH clinic, operating separately from the current clinic/dispensary in a different location offering privacy to enable students to access services without fear of judgement from peers.
2. The university administration and clinic officials to consider provision of tailored and gender specific SRH campaigns to improve awareness and minimize the

negative attitude, myths and misconceptions, poor uptake and practice levels towards modern contraceptives by students.

3. The university clinic to consider local collaboration with SRH centered NGOs to provide a localized and subsidized accessibility initiatives that includes provision of the more popular contraceptive methods preferred by students. Shortages, accessibility and cost challenges that negatively impact uptake may also reduce through such collaborations.
5. University administration and clinic officials to develop policy and SRH programs and accessible family planning services that promote gender equity, religious inclusivity and challenge restrictive cultural norms in contraceptive decision-making to enhance uptake and promote consistent long-term use of modern contraceptives among the students. Engaging religious and community leaders to develop gender-sensitive campus-based education.

6.4 Suggestion for Future Studies

While this study has provided valuable insights into contraceptive uptake among university students, several areas require further investigation to develop more effective and targeted interventions. The following suggestions outline opportunities for future research.

6.4.1 Gender Dynamics in Contraceptive Use

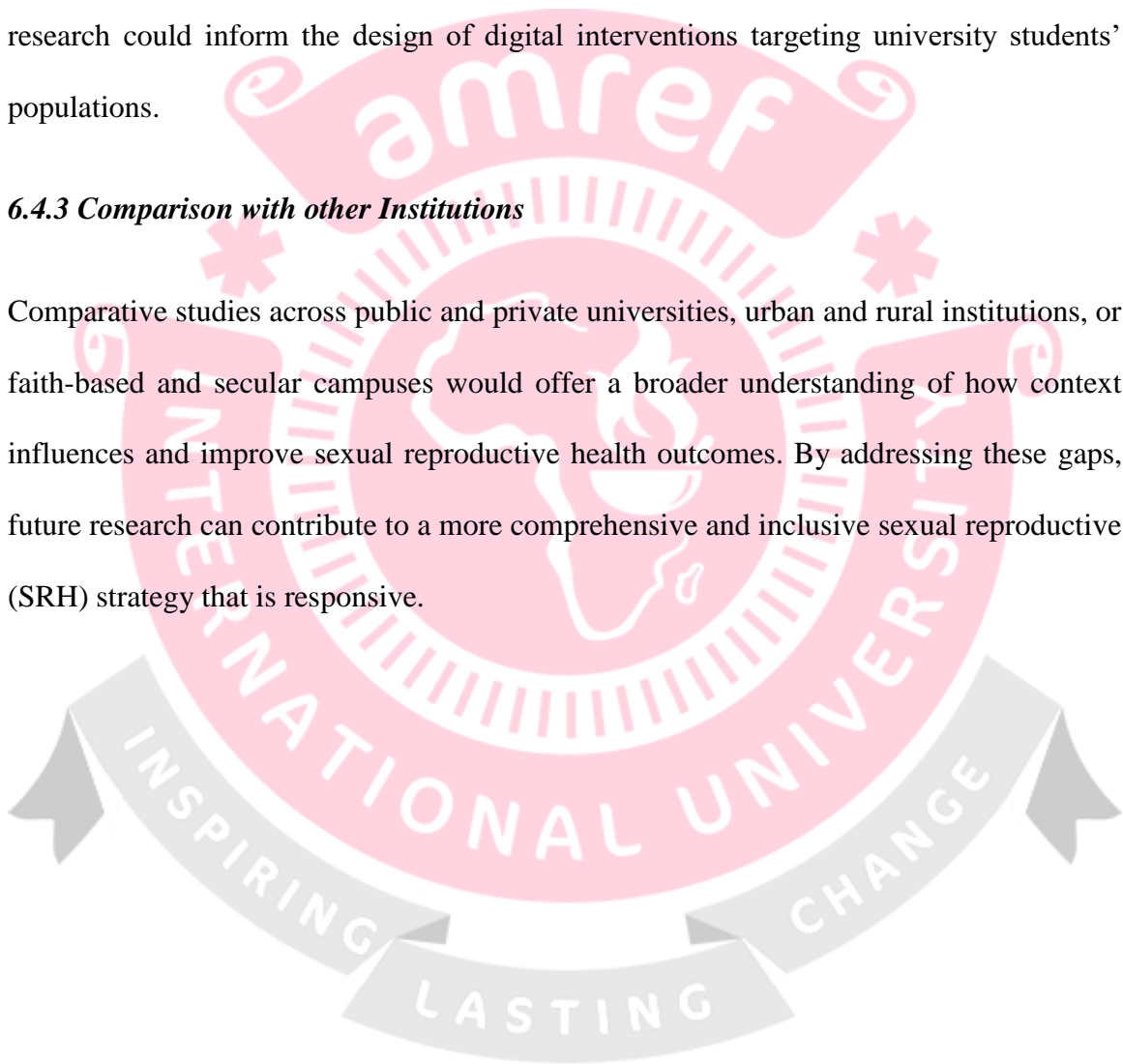
Longitudinal qualitative study exploring the underlying socio-cultural and institutional factors that shape gender specific contraceptive behaviors among university students to examine how power dynamics in relationships, peer influence and institutional SRH policies contribute to contraceptive decision making between genders.

6.4.2 Digital and Media Influence Studies

Given the high reliance on media and peer sources for contraceptive knowledge, future studies should explore how digital platforms (e.g., social media, YouTube, health apps) influence understanding and behavior regarding sexual reproductive health (SRH). This research could inform the design of digital interventions targeting university students' populations.

6.4.3 Comparison with other Institutions

Comparative studies across public and private universities, urban and rural institutions, or faith-based and secular campuses would offer a broader understanding of how context influences and improve sexual reproductive health outcomes. By addressing these gaps, future research can contribute to a more comprehensive and inclusive sexual reproductive (SRH) strategy that is responsive.



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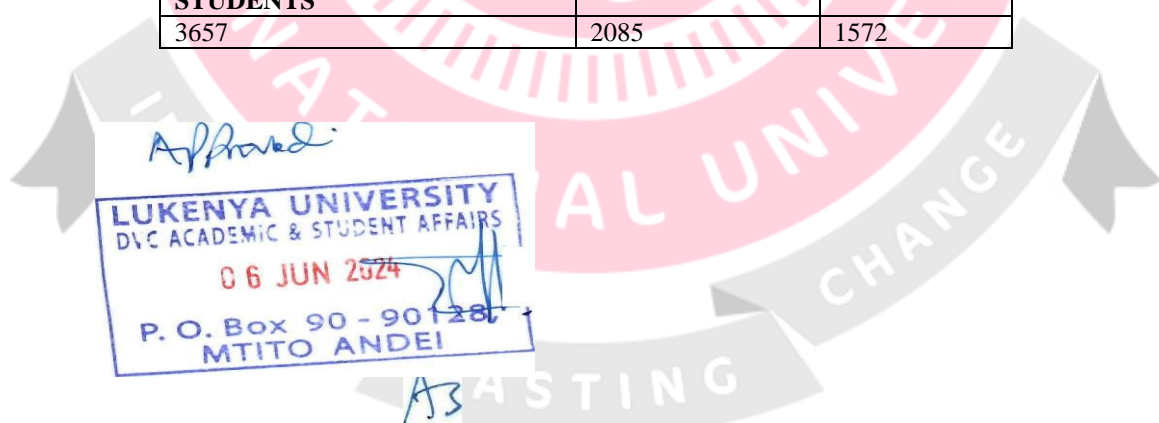
APPENDIX I: TARGET POPULATION



LUKENYA UNIVERSITY STUDENT DATA

Departments	Y1	Y2	Y3	Y4	Total
School of Health Sciences	30	-	-	-	30
School of Business & Economics	223	110	45	82	460
School of Agriculture, Technical Studies & Natural Sciences	213	55	57	16	341
School of Education & Social Sciences	698	730	731	537	2696
Short Courses	-	-	-	-	-
Total in Undergraduate	1164	895	833	635	2892
Total in Postgraduate level	154	76	-	-	230
Total in PhD level	-	-	-	-	-
Totals	1218	971	833	635	

TOTAL STUDENTS	NUMBER OF MALE	OF FEMALE
3657	2085	1572



APPENDIX II: Introduction-Consent-Withdrawal Forms

PART I: Informed Co-Explanation

Study Title: FACTORS ASSOCIATED WITH UPTAKE OF MODERN CONTRACEPTIVES AMONG UNIVERSITY STUDENTS AT LUKENYA UNIVERSITY, KENYA

Institutional affiliation: AMREF International University

Contact Information of the P.I and Co-Investigators

In the event that you have any inquiries, you may get in touch with the primary investigator at:

Mercy Nganda (Principal Investigator)

Email: Mercy.Nganda@mcampus.amref.ac.ke

AMREF International University

Dr. Michel Mutabazi, PhD

Email: michel.mutabazi@mcampus.amref.ac.ke

Dr. Hesborn Wao, PhD

Email: hwao2020@gmail.com

Introduction

My name is..... a research assistant involved in the study on “**FACTORS ASSOCIATED WITH UPTAKE OF MODERN CONTRACEPTIVES AMONG UNIVERSITY STUDENTS AT LUKENYA UNIVERSITY, KENYA.**” The study is being conducted by Mercy Nganda a student at the School of Community Health, AMREF International University (Principal Investigator) and the Co-investigators will be Dr. Michel Mutabazi and Dr. Hesborn Wao.

Objective of the study

The objective is to determine **Uptake of modern contraceptives among students attending Lukenya University.**

Duration of Study

The study will take place over a period of 12 months however, the collection of data will take 3 weeks approximately.

Who Can Participate: Students who are 18 years and above, currently enrolled for study at Lukenya University Main Campus, Mtito Andei.

Research Procedure: This participation permission form is the primary objective to get your agreement to take part in the study. In the event that you decide to take part in the survey, you will be given a questionnaire to fill out which will take about 15 minutes. The study will involve you taking assent before the researcher asks some questions in relation to contraceptive uptake relating to you.

Risks/ Benefits

There is no anticipated physical harm from this study. However, you will benefit from a free training on modern contraceptives, and also you will be advised on the choice of contraceptive that you use. This study will help mitigate miss-use of contraceptives within the University. Data collected will be used to enhance knowledge of modern contraceptives, including service delivery of same at the campus clinic.

Compensation

There are no monetary benefits that you will receive by agreeing to participate in the research study.

Voluntary Participation and Rights

Participation is entirely up to the individual. You have the option of participating or declining to do so. If you want to take part in the research, you have the option of avoiding providing responses to any questions that make you feel awkward or uncomfortable. You are free to quit at any moment if you decide that participating in the study is no longer something that interests you. Before you sign the permission form for the research, you

may ask whatever you want about it, and if you have any questions during the interview, you can ask for clarification whenever you need it.

Data Security and Confidentiality

The study team's data will be encrypted and password protected so that only the Principal Investigator has access. The data collected here will be utilized only for the study at hand (PI). Your identity will not be attached to the survey results in any way while they are being safely stored and analyzed.

Refusal to Participate or Withdrawal from the Study

You have absolute right to decline to join the study after the research assistant has introduced the study to you. You also have a right to stop or decline to answer any question asked to you in the midst of the interview. You therefore have a right to withdraw from the study at any moment without self-explanation. Furthermore, in the event you choose to withdraw from part or all of the study, you will be required to fill in a withdrawal consent form that allows either for already data obtained to be used in data analysis or deletion of data already collected.

Dissemination of Results

Dissemination of information to Lukenya University will be done through health education programs and health talks within the University. The report will also be shared with the Makeni County Public Health Office. These sessions include lectures, health talks based of Reproductive and sexual health and also, recommend measures that need to be taken to ensure management of healthy uptake of contraceptives.

Contact Information of Amref Health Africa in Kenya Ethics and Scientific Review Committee (ESRC)

In case you have any questions or concerns about this research, you may reach out to the AMREF (ESRC) through the following contacts:

The Research Officer

Amref Health Africa in Kenya

Wilson Airport, Lang'ata Road

Office Tel: +254 20 6994000

Mobile No: 0795746777

Fax: +254 20 606340

P.O Box 30125-00100

Nairobi, Kenya

Do you have any questions at this time?

Part II: Certificate of Consent

I have read the above information, or it has been read to me. I have had the opportunity to ask questions about the study and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to participate in this study.

Print name: [at least forename and surname]

Signature of Subject: _____ **Date:** _____

If visually impaired, physically impaired, mentally impaired or illiterate

I have witnessed the accurate reading of the Consent Form to the potential study subject, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print Name of Subject [at least forename and surname]
.....

Thumb/Foot print of Subject

Signature of Witness [A literate witness must sign and should be selected by the study subject and MUST have no connection to the research team]
.....

Date:

Statement by the researcher/person taking consent

I confirm that the study subject was given an opportunity to ask questions about the study, and all the questions asked by the study subject have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this Informed Consent Form has been provided to the study subject.

Print Name of researcher/person taking the consent [at least forename and surname]:

.....

Signature:

Date:

.....

Part III: Withdrawal Form

Having initially agreed to participate in the research (**FACTORS ASSOCIATED WITH UPTAKE OF MODERN CONTRACEPTIVES AMONG STUDENTS AT LUKENYA UNIVERSITY**) and following detailed explanation given concerning participation in the research in the co-explanation document, after further consideration; I would like to withdraw my agreement to participate in this study. (Tick the appropriate in the below options)

1. I hereby request to withdraw from the study but allow data collected to be used for analysis.

2. I hereby request to withdraw from the study and allow already collected data to be deleted.

Signature/ Thumbprint:

Date:

.....

I _____, confirm that the participant above has withdrawn from the study upon request.

Signature/Thumbprint:

Date:

.....

APPENDIX III: Questionnaire

Please indicate your response one the space provided

Section 1: Socio-demographic factors

1. Gender

- Male Female

2. Level of Study

- 1st year Master 1st year
 2nd year Master 2nd year
 3rd year Postgraduate Diploma
 4th year

3. How old are you?

4. How many children do you have?

- None
 1
 2
 3
 Above 3

5. Marital status

- Single
 Married (Civil AG/Church, Shariah law)
 Separated
 Divorced
 Widowed
 Other, specify _____

6. How long have you been in the relationship/married?

Never been married

Below 1 year

1-5 years

Above 5 years

7. Do you have intentions to have child/children currently?

Yes

No

8. Religion

Christian

Muslim

Hindu

Buddhist

Other, specify _____

SECTION 2: MODERN CONTRACEPTIVE UPTAKE RATE AMONG STUDENTS AT LUKENYA UNIVERSITY

9. a. Have you ever used any modern contraceptive method?

Yes

No

b. In the last 6 months have you been using any modern contraceptive method?

Yes

No

10. Are you currently using any modern contraceptive method?

Yes

No []

11. If yes, which type of contraceptive are you currently using? (Select all that apply)

Pills []

Condoms []

IUD []

Implants []

Injections []

Patch []

Others (specify): _____

12. How long have you been using your current contraceptive method?

<6 months []

6 months - 1 year []

1-2 years []

>2 years []

13. Have you experienced any side effects from your contraceptive method?

Yes []

No []

If yes, please specify: _____

14. Where do you usually obtain your contraceptives from?

University clinic []

Pharmacy []

Government health facility []

Private health facility []

Others, specify: _____

15. How did you first learn about modern contraceptive methods?

School health programs []

Friends/Peers []

Family []

University clinic []

Media (TV, Internet, etc.) []

Other, specify: _____

SECTION 3: KNOWLEDGE, ATTITUDE AND PRACTICES

16. Do you feel you have sufficient knowledge about the different modern contraceptive methods available?

Yes []

No []

Not sure []

17. While choosing your family planning, what are your main considerations?

Pregnancy prevention []

STD/I prevention []

Treating underlying gynecological condition (e.g.fibroids, PCOS etc.) []

Other, specify: _____

18. Do you know where to access modern contraceptive methods on or off campus?

Yes []

No []

19. Do you believe using contraceptives is important for preventing unwanted pregnancies?

Yes []

No []

20. Do you think using modern contraceptives has any negative health effects?

Yes []

No []

Not Sure []

21. Who influences your attitude towards the use of contraceptives the most?

Personal knowledge/experience []

Partners opinion []

Parents/Guardians []

Peers []

22. What influences your attitude towards the use of contraceptives the most?

Healthcare Providers []

Religion []

Ethnicity/Culture []

Other, specify: _____

23. Do you believe there is social stigma associated with using contraceptives among students?

Yes []

No []

Not Sure []

24. a. Are you currently using any form of modern contraceptive method?

Yes []

No []

b. If yes, which of the following contraceptive methods are you currently using?

Daily Pills []

Condoms []

IUD (Intrauterine Device) []

Implants []

Injectable's []

Emergency Contraceptive []

Sterilization (Tubal ligation/vasectomy) []

Diaphragm []

Lactation Amenorrhea method []

Coitus interruptus/withdrawal []

Others (specify): _____

c. If not using any modern contraceptive method currently, why?

Lack of information []

Side effects []

Ineffectiveness []

Difficulty in usage []

Partner's disapproval []

Personal choice []

Cultural/Religious reasons []

Fear of stigma []

Others (specify): _____

25. How consistently do you use contraceptives?

Always []

Sometimes []

Rarely []

Never []

26. Do you feel comfortable discussing contraceptive use with your partner/parents/guardian/healthcare provider?

Yes []

No []

Not Sure []

27. Whom would you recommend to get/utilize family planning services?

Single men/women []

Married couple []

Adolescents/Teenagers []

Young adults []

SECTION 4: FACTORS INFLUENCING THE UPTAKE OF MODERN CONTRACEPTIVE AMONG STUDENTS AT LUKENYA UNIVERSITY?

28. Would you seek your partner's consent prior to getting contraceptives?

Yes []

No []

Maybe []

29. How would you rate the accessibility of contraceptives to you?

Very Accessible []

Accessible []

Neutral []

Inaccessible []

Very Inaccessible []

30. What barriers, if any, do you face in accessing contraceptives? (Check all that apply)

Cost []

Accessibility []

Privacy concerns []

Lack of information []

Health concerns []

Cultural beliefs []

Religious beliefs []

Availability of contraceptive method []

Others, specify: _____

31. Who influences your decision to use contraceptives the most? (Tick all that apply)

Personal choice/Previous experience []

Partner []

Parents/Guardian []

Peers []

Healthcare Providers []

Perceived side effects []

Number of children desired []

Gender of children []

Other, specify: _____

32. Have you experienced any health concerns while using contraceptives?

Yes []

No []

33. If yes, which ones? (Tick all that apply)

Heavy bleeding []

Acne []

Weight gain []

Mood Swings (irritability) []

Depression []

Failure of method []

34. Have you attended any reproductive health education sessions?

Yes []

No []

35. Do you attend the university clinic for all/some of your family planning needs?

Yes []

No []

Maybe []

Thank you for participating in this survey

APPENDIX IV: Key Informant Interview Guide
FACTORS ASSOCIATED WITH MODERN CONTRACEPTIVE UPTAKE
AMONG STUDENTS AT LUKENYA UNIVERSITY

HEALTH SERVICE PROVIDERS AT THE CLINIC

1. What is the estimated percentage of students at Lukenya University currently using modern contraceptives? (Specify time period if data is available)

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.....
.....

2. What data sources are used to track contraceptive uptake among students? (e.g., clinic records, surveys)

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.....

3. Are there any specific contraceptive methods that are more popular than others amongst students? If so, which ones and why?

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4. What are the most common attitudes students' express regarding modern contraceptive use? (e.g., positive, negative, ambivalent)

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5. What are the observed practices regarding contraceptive use among students? Are there any patterns or trends?

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6. What are the main barriers to students accessing and using modern contraceptives at the university clinic? (e.g., cost, accessibility, stigma, lack of information)

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.....

7. What strategies are currently in place to improve student knowledge and access to contraceptives?

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.....

FACTORS ASSOCIATED WITH UPTAKE

8. What factors do you believe are most strongly associated with higher rates of modern contraceptive uptake among students? (e.g., age, relationship status, education level, religious beliefs, peer influence)

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9. What factors are associated with lower rates of modern contraceptive uptake?

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.....

10. Have you observed any differences in contraceptive uptake rates between different student demographics (e.g., gender, year of study, program of study)?

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11. What are the challenges you face in promoting modern contraceptive use among students?

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12. What are your suggestions for improving the uptake of modern contraceptives among Lukenya University students?

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.....

DEAN OF STUDENTS

A. University Policies and Initiatives

1. Are there any university policies or initiatives in place to support students' access to sexual and reproductive health services, including modern contraceptives?

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2. How does the university promote sexual health education and awareness among students?

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.....

3. What is the university's stance on comprehensive sex education?

.....
.....
.....
.....

THANK YOU FOR YOUR TIME

APPENDIX V: AMIU Approval Letter



AMREF INTERNATIONAL UNIVERSITY

GRADUATE SCHOOL

Email: amiu.deangraduatestudies@amref.ac.ke

P.O Box 27691-00506
Nairobi, Kenya
Tel. 0206993236

Website: <https://amref.ac.ke/>

FROM: Dean, Graduate School

DATE: 24th September 2024

TO: Mercy Nganda

REF: AMIU/ARP/5247-2/2022

RE: APPROVAL OF RESEARCH PROPOSAL

Following your full proposal presentation on 15th December 2023, and subsequent review of your revised proposal, Graduate School Board has approved your research work entitled, “**Factors Associated with Uptake of Modern Contraceptives among University Students at Lukenya University, Kenya.**”

You may now proceed with data collection subject to clearance with Amref Ethical Scientific Review Committee and the National Commission for Science, Technology & Innovation. Please note that ethical approval is a mandatory requirement for all research process.

Additionally, you are required to update Graduate School of your progress after every three months by submitting progress reports using the forms attached.

Sincerely,

Dr. Dancan Irungu
Dean, Graduate School & Director Health Entrepreneurship
CC: HOD Community Health

Amref International University
Langata Road

P.O. Box 27691 - 00506
Nairobi, Kenya

Tel: +254 20 699 3000
Fax: +254 20 600 9518

enquiry@amref.ac.ke
www.amref.ac.ke

APPENDIX VI: ESRC Approval Letter



Amref Health Africa in Kenya

REF: AMREF – ESRC P1773/2024

January 8, 2025

Mercy Nganda
Amref International University
P.O Box 27691-00506
Nairobi, Kenya
Tel: +254726347250
Email: mercy.nganda@mcampus.amref.ac.ke

Dear Mercy Nganda,

RESEARCH PROTOCOL: FACTORS ASSOCIATED WITH UPTAKE OF MODERN CONTRACEPTIVES AMONG STUDENTS AT LUKENYA UNIVERSITY, KENYA

Thank you for submitting your protocol to the Amref Ethics and Scientific Review Committee (ESRC).

This is to inform you that the ESRC has reviewed and approved your protocol. Your application approval number is ESRC P1773/2024. The approval period is from January 8, 2025 to January 7, 2026, and is subject to compliance with the following requirements:

- a) Only approved documents (including informed consents, study instruments, advertising materials, material transfer agreements, etc.) will be used.
- b) All changes including (amendments, deviations, violations, etc.) are submitted for review and approval by Amref ESRC before implementation.
- c) Death and life-threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the Amref ESRC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to Amref ESRC within 72 hours.
- e) Clearance for export of biological specimen must be obtained from the relevant government authorities for each batch of shipment/export.
- f) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- g) In case of late renewal, the Amref ESRC shall not be held responsible for any serious adverse events (SAEs) that may occur as a result of research activities that were carried out after the expiry of approval.
- h) Submission of an executive summary report within 90 days upon completion of the study to the Amref ESRC.
- i) All government regulations for prevention and control of the spread of COVID-19 including social distancing, provision of personal protective equipment for participants and research assistants should be adhered to during data collection. All research assistants should be monitored for COVID 19 symptoms and referred for testing in case they present with symptoms.

Board Members: Mr J Kimeu | Mr G Macharia | Ms M Githinji | Ms E Munyoki | Mrs M Kinoti | Dr D Soti | Dr G Gitahi

P.O Box 30125-00100 Nairobi, Tel: +254 (0)20 699 4000, Fax: +254 (0)20699 2331. www.amref.org

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for Global Health

APPENDIX VIII: Similarity Report





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