EFFECT OF COMPREHENSIVE HIV PREVENTION INFORMATION PACKAGE ON RISKY SEXUAL BEHAVIOUR AMONG YOUTH IN KAKAMEGA AND KERICHO COUNTIES, KENYA

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A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY (EPIDEMIOLOGY AND DISEASE CONTROL) IN THE SCHOOL OF HEALTH SCIENCES OF KENYATTA UNIVERSITY

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I dedicate this work to my spouse, parents, kids, friends, and family who have supported me throughout my academic career and offered a helping hand when it was needed. To Leon and Fleming, who helped me work on this thesis by staying up until extremely late in the evening.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Virus
ART	Antiretroviral Therapy
ARV	Anti-retroviral
AYP	Adolescent and Young People
DHIS	District Health Information Systems
HIV	Human Immunodeficiency Virus
HTS	HIV Testing Services
IEC	Information Education Communication
KAIS	Kenya AIDS Indicator Survey
KASF	Kenya AIDS Strategic Framework
KDHS	Kenya Demographic and Health Survey
KII	Key Informant interview
MOT	Mode of Transmission Study
NACC	National AIDS Control Council
NASCOP	National AIDS and STI Control Programme
OVC	Orphan and Vulnerable Children
PMTCT	Prevention of Mother to child Transmission of HIV
PrEP	Pre-exposure prophylaxis
SGBV	Sexual and Gender Based Violence
SPSSS	Statistical package for social sciences
SRH	Sexual Reproductive Health
STI	Sexually Transmitted Infection
TVET	Technical and Vocational Education and Training
UNAIDS	Joint United Nations Programme on AIDS
UNGASS	United Nations General Assembly Special Session on HIV and AIDS
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Abstinence	**:**	Not engaging in any form of sexual activity, that is oral, anal or vaginal; celibacy
Advocacy	**:**	Is an activity by an individual or group that promotes uptake or aims to influence decisions or interests of a group
AIDS	**:**	Is the most advanced stages of HIV infection. It is defined by the occurrence of any of more than 20 opportunistic infections.
Baseline	**:**	Beginning point. Data acquired at the start of an intervention or observation.
Comprehensive HIV knowledge	**:**	Is knowing that abstinence, consistent condom use and having one uninfected faithful partner prevents HIV, a healthy looking person can have HIV and rejecting the two most common misconceptions about AIDS.
Comprehensive HIV Prevention Information package		In this study refers to frequently asked questions on HIV, condom use dialogues, key messages on STIs and HIV testing.
Condoms	**:**	A latex or polyurethane sheath that covers an erect penis. A female condom is inserted into the vagina before sex.
Confidentiality	**:**	Refers to the right to privacy in interaction between the service provider and the client as well as the duty to keep client medical or personal information private.
Contamination	**:**	Occurs when members of the comparison group are affected by the intervention which also affects the outcome.
Counseling	**:**	Refers to private discussions between clients and their health care providers to assess their risk of contracting or spreading HIV
Endline	**:**	Data collected following an observation or intervention
Epidemic	**:**	Disease that spreads faster than usual within a subset of the Population in a specified geographic area
Evaluation	**:**	The study of a patient to determine the cause and effect of an illness or the study of a programme to determine its effectiveness.
Heterosexual	**:**	A person who engages in sexual activity with someone of the other sex.

HIV	**:**	HIV stands for Human Immunodeficiency Virus. HIV is the virus that causes AIDS.
HIV Testing Services (HTS)	**:**	Is the full range of services that a client is offered together with HIV testing.
Inclusion/Exclusion criteria	**:**	The social or medical norms that dictate whether or not someone can enroll in or take part in a study.
Informed consent	**:**	Giving clients enough information to enable them make decisions to undertake HTC. Consent may be given verbally or in writing and must be voluntary (GOK, 2006**)**
Medium incidence counties	**:**	Are counties with more than 500 but less than 1000 new HIV infections annually (HIV Estimates 2022)
Risky sexual behavior	**:**	Refers to having multiple, concurrent partnerships, non-use of condoms, infection with syphilis and unawareness of HIV status
Sexually transmitted infection (STI)	**:**	Are infections that are passed on during sexual contact.
Spillover	**:**	Occur when the intervention has an impact (either positive or negative) on individuals not in the treatment group.
Youth	**:**	World Health Organization (WHO) defines “youth” as persons of 15 to 24 years old.

ABSTRACT

The world's biggest threat to development and public health is HIV. Youth in sub-Saharan Africa are primarily affected by this epidemic. Ex-spiraling infections have been linked to a lack of thorough preventive knowledge, inadequate condom usage, low use of HIV services and having more than one sexual partner. The United Nations framework for addressing the epidemic among youth calls for comprehensive sexual and reproductive health education. Despite availability of widening array of prevention methods, new HIV infections among youth in Kenya only reduced by 59% between 2015 and 2019. Various HIV prevention interventions have been implemented among the youth with minimal assessment of their effectiveness in reducing infections. This study was to investigate effects of comprehensive HIV prevention information package on risky sexual behaviour among youth in Kakamega and Kericho county. To achieve this, a non-randomized control trial was conducted using both qualitative and quantitative techniques. Using a purposive sampling, Kakamega County (intervention) and Kericho County (as control) were used. Kakamega and Kericho are both medium incidence counties with Kakamega having highest new HIV infections among youth in 2021. A sample of 495 youth at baseline and endline was determined using Suresh and Chandrashekara (2012) formula. Pretest questionnaire was administered to both intervention and control counties from November to December, 2021. Nine months later, a posttest questionnaire was given out from July to September, 2022 after providing comprehensive HIV prevention information package to the intervention county. The main outcome measure was safer sexual behavior through increased uptake of condoms, HIV testing services, reduced concurrent partnerships and syphilis infections. Formal interviews with youth using a pre-designed questionnaire and on-site observations were used to gather qualitative data. Inferential and descriptive statistics were used to analyze the quantitative data. Comprehensive HIV knowledge on HIV prevention was significantly higher amongst youths in intervention than in comparison county at end line (P=0.0001). The youths significantly utilized HIV prevention services at endline (83.6%), got information on HIV transmission, abstained and used condoms (t=12.248, df=2, p=0.0001). There was a significant difference in the number of youths who plan to use condoms in future after the intervention (χ^2=100.236, P =0.0001). The youths who had two or more sexual partners reduced by 6.1% in intervention county compared to 24.4 % in comparison county but was not significant (t=2.197, df=2, P =0.159). The intervention significantly increased utilization of HIV testing services from 60.1% to 83.0% (t=6.547, df=2, p=0.023). The Comprehensive HIV prevention information package had no significant effect on level of syphilis infection among the youths (P=0.575). The number of new infections have reduced in intervention county due to HIV awareness and education that improved knowledge among youth. The comprehensive HIV prevention information package was successful in reducing risky sexual behaviours among the youths. The findings of this study will inform the national rollout of a HIV prevention information package for safe sexual behaviour among youth.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Background information, the problem addressed, aims, justification, significance, hypothesis, limitations and conceptual framework are all included in this chapter.

1.2 Background

Human immune-deficiency virus is the World's most significant challenge in public health. In 2023 over 1.3 million new HIV infections were reported in the whole world compared to 1.4 million in 2021 (UNAIDS, 2024). This represents a 7.0 % decline. Approximately 360 000 youths in the world were infected with HIV in 2023 down from 400 000 in 2021 (UNAIDS, 2024). Globally, only one in three young people demonstrate accurate knowledge of HIV prevention (UNAIDS, 2020). The United Nations framework for addressing the epidemic among adolescents who disproportionately bear the high burden of HIV globally calls for comprehensive sexual and reproductive health education (UNESCO, 2018). A systematic review of behavioural HIV prevention interventions in low- and middle-income countries reported effectiveness in increasing comprehensive HIV Knowledge, condom use, reduced STIs incidence and reduced HIV infection. The interventions to reduce number of sexual partners were not found to be effective (GPC, 2019). A systematic review of school-based HIV prevention interventions in low- and middle-income countries found an effect on knowledge, attitudes and skills and self-reported sexual behavoiur (GPC, 2019). An assessment was conducted to assess the role of school-based HIV education interventions on sexual health behaviours. The school-based education interventions

was effective in promoting positive sexual health behaviours such as increased condom use, reduced multiple partnerships and delayed initiation of sexual activity (Niland et al., 2024). Evidence update for the US Preventive Services Task Force (USPSTF) found behavioral counseling interventions effective in reducing incidence of sexually transmitted infections (Henderson et al, 2020). Abstinence alongside condoms and other prevention strategies in high-income countries were effective in preventing new HIV infections and changing sexual behaviour among youth (GPC, 2019).

In 2023, an estimated 209 000 youth in Sub-Saharan Africa were infected with HIV. This represents a 15 % decrease from 247,000 in 2021 (UNAIDS, 2024). With a 38% decline since 2010, the East and South African areas experienced the biggest decline in new infections (UNAIDS, 2022). Merely 30% males and 19% of females aged 15 to 24, possess thorough understanding of HIV. Only 58.6% of males who were at a higher risk used condoms moderately, which was far below the global target of 90 % by 2020 (ICF, 2018). A systematic assessment on the effectiveness of HIV prevention interventions in changing sexual behaviour among youth in sub-Saharan Africa reported increase in condom use among males (GPC, 2019). A similar review in Sub- Saharan Africa found HIV prevention education intervention effective in improving HIV-related knowledge, particularly pertaining to transmission routes and improved knowledge of risk reduction through condom use (Faust and Yaya, 2018).

In Kenya, new HIV infections have stabilized at 16,752 people, down from 22,154 in 2021 (MOH, 2024). Young people, contribute to 42 % of new HIV infections in Kenya. Only 42.6% females and 69.6% males, 15-24 years old who had many sexual partners during the past 12 months were reportedly using condoms in the last sexual intercourse.

It had been found that 54 % the females and 55 % males in the age bracket had a comprehensive knowledge on HIV prevention (MOH, 2022). A school-based campaign for young people that discussed high HIV levels among adult men and the risk of unprotected sex was evaluated in a randomized controlled trial in western Kenya. The intervention reduced teenage pregnancy that was a proxy for a decrease in unprotected sex and HIV-related risk reduction (GPC, 2019).

Population in Kakamega county was 1,867,579 (KNBS, 2019) with a HIV prevalence of 3.6% as at 2021 (MOH, 2022). The county has approximately 388,255 young persons (15 to 24 years) contributing to 31 % of the 1198 new HIV infections in the county (MOH, 2022). Kericho county has a projected population of 995,566 with a HIV prevalence of 3.2 % as at 2021.The county has approximately 192 767 young people (15 - 24 years) who contributed 39 % of the 666 new infections in the county. Kakamega and Kericho County have a poverty prevalence of 49.2 and 44.2 respectively compared to the National at 45.2. HIV prevention programs for the young people in the two counties include provision of HIV testing services, condoms provision, PrEP and VMMC. Programmes on HIV preventions in the two counties are not being provided on an adequate scale and not sufficiently intense to reach young people who need them most.

1.3 Problem Statement

Youths, 15 to 24 years of age are the most affected group by HIV epidemic and at the same time contribute to 42 % of adult’s new infections in Kenya. Kenya's HIV response

places a strong emphasis on educating the public about the virus's routes of transmission so that they can avoid risky behaviors that increase their vulnerability to HIV infection. Despite the widening array of effective HIV prevention methods, young people in Kakamega and Kericho counties contribute 31 % and 39 % of the new HIV infections respectively (MOH, 2022). In 2021, Kakamega County had the highest new HIV infections among young people at 366. Comprehensive knowledge of HIV prevention was 58.% and 59.7% respectively in the two counties compared to the national average of 54.5 %. Percentage of 15 – 24 years old males who had many sexual partners and used condoms during their previous sexual intercourse in Kakamega and Kericho County was 56% and 45% respectively against the national target of 80 %. Those who received their HIV test results in 12 months preceding the survey in Kakamega and Kericho County were 38.6 % and 37.6% respectively (MOH, 2022). Percentage who had intercourse with a person who is neither their spouse or lived with them in Kakamega and Kericho county were 18.4 % and 33 % respectively (MOH, 2022). Prevalence of sexually transmitted infections in Kakamega and Kericho counties stands at 3.2 % and 4.2 % with syphilis positivity of 0.8 and 0.4 % respectively (MOH, 2022).

People should prevent HIV if they have comprehensive HIV knowledge. The comprehensive HIV prevention information package encourages youth to engage in safer sexual conduct through increased condom use, HIV testing uptake, reduced concurrent partnerships and sexually transmitted infections. This study was therefore designed to find out effects of designed package on comprehensive HIV prevention information on risky sexual behaviour of youths.

1.4 Justification

Kenya set a target of 75 % reduction in new HIV infections which translates to less than 8,000 new infections by 2025. The Kenya Fast Track Plan has an objective of reducing new infections of HIV among young people by 40 %. To achieve Kenya's target by 2025 demands effective and efficient delivery of HIV prevention interventions. For young people, interventions that increase condom use and comprehensive knowledge of HIV prevention will contribute to reduction of adult new infections in Kenya that is currently estimated at 22,154 per year.

Several HIV prevention interventions among young people, have been implemented with minimal or no assessment of their effects on risky sexual behavior. The current study will be informative on the relevance and effectiveness of the strategies that the country is implementing in addressing risky sexual behavior among the young people. The comprehensive HIV prevention information package will empower the young people to make informed decisions concerning their risky sexual behavior and reduce their vulnerability to HIV infection. Over 80 % of HIV transmission is through sex. There is currently no effective vaccine for strategic HIV prevention, hence reducing risky sexual behaviors among young people is therefore essentially the only pragramatic best practice in reducing their exposure to HIV infection. If we prevent new infections among young people, we will enhance health and productivity and reduce future treatment costs and ill-health liabilities at individual and family levels. The study has provided new evidence to inform design and implement interventions to reduce risky sexual behaviour among youth.

1.5 Research questions

1. What is the level of comprehensive knowledge on HIV prevention among youth in Kakamega and Kericho counties?
2. Which combination HIV prevention strategies are commonly used by youth in the study counties?
3. What is the effect of comprehensive HIV prevention package on condom uptake among the study subjects?
4. Does provision of comprehensive HIV Prevention information package affect uptake of HIV testing services among the study subjects?
5. What is the effect of comprehensive HIV Prevention information package on the number of concurrent partnerships among the study subjects?
6. What is the effect of comprehensive HIV Prevention information package on the syphilis infection levels.

1.6 Null Hypotheses

HO1: There is no effect of comprehensive HIV prevention information package on comprehensive knowledge on HIV prevention among Youth

HO2: There is no effect of comprehensive HIV Prevention information package on combination HIV prevention strategies used by the young people in Kakamega and Kericho counties

HO3: There is no significant effect of comprehensive HIV prevention information package on condom uptake among young people

HO4: The comprehensive HIV prevention information package has no effect on uptake of HIV testing and counseling services

HO5: The comprehensive HIV prevention package has no significant effect on concurrent sexual partners

HO6: There is no effect of comprehensive HIV prevention information package on the levels of syphilis infection among youth

1.7 Objectives

1.7.1 General objective

To investigate the effect of comprehensive HIV prevention information package on risky sexual behavior among young people aged 15-24 years in Kakamega and Kericho counties.

1.7.2 Specific Objectives

1. To determine the effect of comprehensive HIV prevention information package on levels of comprehensive knowledge on HIV among youth in Kakamega and Kericho counties
2. To establish the effect of comprehensive HIV prevention information package on HIV prevention strategies commonly used by the study subjects
3. To determine the effect of comprehensive HIV prevention information package on condom uptake among the study subjects
4. To establish the effect of comprehensive HIV prevention information package on uptake of HIV testing services by the study subjects
5. To analyze the effect of comprehensive HIV prevention information package on number of concurrent sexual partners among the study subjects

6. To evaluate the effect of comprehensive HIV prevention information package on the levels of syphilis infections among the study subjects

1.8 Significance of the study

Increased advocacy will be made for national rollout of the comprehensive HIV prevention information package to contribute to reduction of HIV infections amongst young people. The study provides a justification for a HIV prevention information package that is most effective for young people's HIV response. This will inform the relevance and effectiveness of the strategies that the country is implementing in addressing HIV prevention for young people (15 to 24 years). The study also generated useful literature for referencing by scholars.

1.9 Limitations and Delimitations

1.9.1 Limitation

1. This research was undertaken in only two counties which were not randomly selected and may not capture some issues in other counties. Major assumption of the study was that the young people who were randomly selected were representative of the youth in these Counties.
2. The study did not have control over other organizations implementing similar HIV prevention interventions that might have diluted the effect of my intervention. I did not have control over movement of the study participants in the two counties.

3. The study was based on self-reported sexual behaviour. Participants might have given false impression of their situation. Sufficient time was ensured for each interview.
4. Language barriers and recall bias may possibly have occurred. However, completing two interviews helped to lessen recall bias. Participants were asked if they had ever used English during questionnaires and interviews, which were done in the language. The research assistants received training on giving responders enough time to remember. At the county health information office, the overall data on self-reported service uptake was likewise confirmed.
5. The study's inability to generalize its findings was hampered by the measurement bias, short sample size and selection bias. To get outcomes that are more broadly applicable, more research with bigger sample sizes will be needed.

1.9.2 Delimitation

1. There was a big number of potential participants available for the study. However, the study focused only on 495 young people in proportionate sample from Kakamega and Kericho County
2. The questionnaire was able to gather information on the respondents' potential factors like gender, age, residence and other prevention programmes the youth received. The confounders were measured at baseline and endline while analysis was adjusted for changes over time in the confounders
3. Nandi county bordering Kakamega and Kericho counties was eliminated from the study to form a buffer (Park, 2020). This reduced the proximity and hence less likelihood of contamination.

4. Participants in the study received guarantees of confidentiality and anonymity. To find any differences between the self-reports and the monitoring process data, the questionnaire data was triangulated.
5. The use of open-ended response items in survey instruments was minimized to maintain the manageability of the data collected.
6. The intervention was implemented through the ACU focal person and sub county AIDS Coordinator as part of school health programme to ensure sustainability and follow-up beyond the study

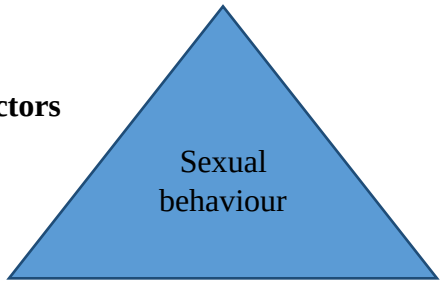
1.10 Study Frameworks

1.10.1 Theoretical Framework

A combination of behavioral, cognitive and environmental factors, influence sexual behavior (Bandura, 1978). "Cognitive" factors are personal traits that influence performance and can cause it to increase or decrease. Ten cognitive components directly influence "behavioral" characteristics, but environmental influences can also have an indirect impact. Understanding the logical relationship between modifiable and non-modifiable variables connected to sexual behavior is made easier by the learning theory method.

Cognitive factors (Personal factors)

Environmental factors



Behavioural factors

Figure 1.1: Social learning theory (Bandura, 1978)

1.10.2 Conceptual Framework

The IMB Model of Behavior-Change (Fisher et al., 2003) served as the foundation for this study. Information, motivation, and behavioral skills are the three main factors impacting HIV prevention behavior. According to this paradigm, individual behavior plays a crucial role in HIV risk management (Kalichman *et a*l., 2002). The socioeconomic, behavioral norms and cultural environment in which young people live influence their HIV- risky behaviors. This makes up the structural domain of the framework. The comprehensive HIV prevention information package is the intervening variable offered within the policy on combination prevention. HIV prevention programs may not be taken up by young people if certain aspects of the health system, such as waiting times, provider attitudes, availability, and service costs, are present (Crankshaw et al., 2012). A comprehensive HIV prevention information package will reduce acquisition of HIV by promoting safer sexual behaviors among young people. This translates into preventive activities in the final section of the framework and highlights the desired outcome of safe sexual behavior through increased condom use, HIV Testing and counselling as illustrated in figure. 1.2.

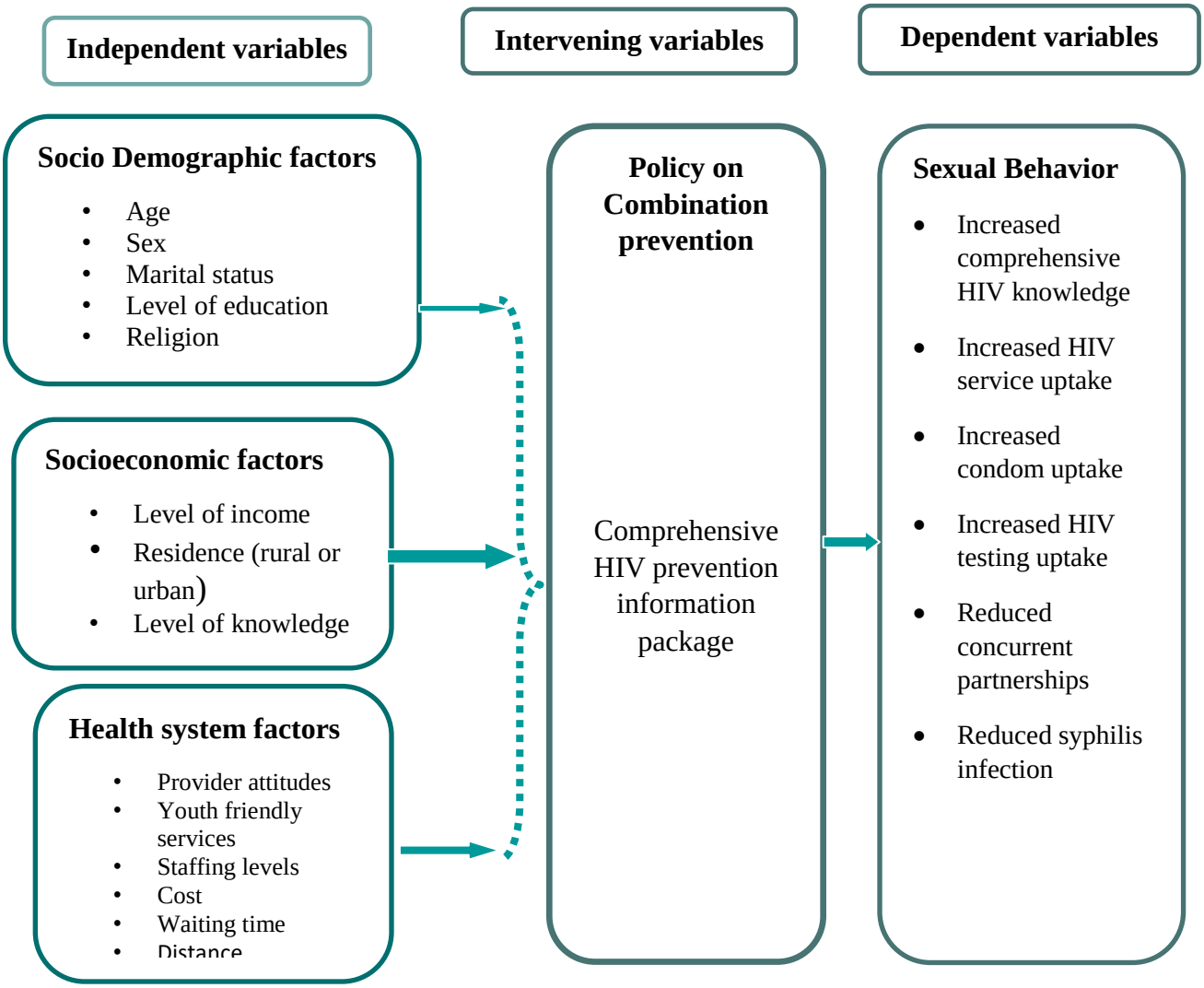


Figure 1.2: Conceptual Framework (Crankshaw et al., 2012).

1.10.3 Health belief model conceptual framework for HIV prevention

The study was also grounded on the Health Belief Model (HBM) that is effective in HIV prevention and adoption of safer sexual behaviors. The HBM has six constructs grouped into three categories: individual perceptions, modifying factors, and likelihood of action (Orji *et al*., 2012). The HBM proposes that a person will take action to prevent

HIV if they regard themselves as susceptible or at risk of contracting HIV, if they perceive seriousness or consequences of living with HIV, if they believe the benefits of available preventive actions would reduce the susceptibility or severity or lead to other positive outcomes (perceived benefits). A person will also prevent HIV if they perceive few negative attributes (perceived barriers) or costs of HIV prevention or cues that prompt one to take HIV prevention information and self-efficacy or perceived confidence in taking HIV prevention to reduce risk of HIV infection as shown in figure 1.3.

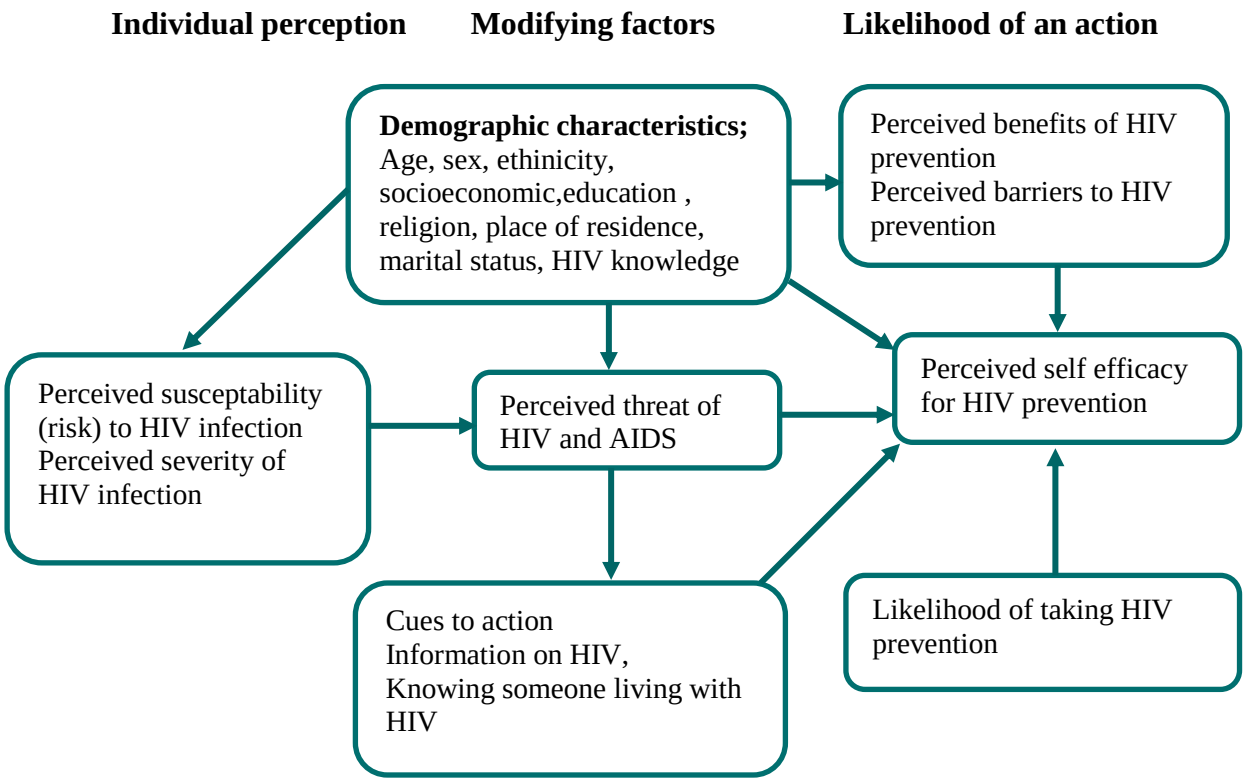


Figure 1.3: Health belief model conceptual framework for HIV prevention

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter highlights information from various publications on the research problem. It starts by discussing the epidemiology of HIV and AIDS. This is followed by HIV prevention and utilization of intervention packages among young people. The last section provides a summary of gaps in knowledge of HIV prevention strategies for young people.

2.2 Epidemiology of HIV and AIDS

Globally, there were 1.5 million cases of new HIV infection in year 2021. This means that there are approximately 4110 new HIV infections every day, which is a 32% drop from 2010 levels. More than 75% of those living with HIV in 2021 were taking antiretroviral treatment and 85% of the people were aware that they had the disease. In 2021, over 68% of HIV-positive individuals worldwide had suppressed viral loads. The death rate from AIDS has decreased by more than 52% from its peak in 2010. In 2021, there were 26 million HIV-positive cases in the world; of which, 54% were in east and southern Africa and 13% were in the west and central Africa. Six percent resided in Western, Central, and North America and fifteen percent in Asia and the Pacific (UNAIDS, 2022).

AIDS related deaths in Kenya increased from 21,000 in 2019 to 22,373 in 2021. A total of 1,128,796 people were living with HIV and were accessing antiretroviral therapy in Kenya, up from 1,121,900 in 2019 representing 0.6 % increase in ART coverage (MOH, 2022). Kakamega county has a HIV prevalence of 3.6 with approximately 50

991 people living with HIV. A total of 1198 people got newly infected in 2021 compared to 1480 in 2020. AIDS related deaths in Kakamega county increased from 577 in 2020 to 712 in 2022. Over 86 % of people living with HIV in Kakamega county are on ART. Kericho county has a HIV prevalence of 3.2 with approximately 22 182 people living with HIV. A total of 666 people got newly infected in 2021 compared to 728 in 2020. AIDS related deaths in Kericho county increased from 407 in the year 2020 to 502 in 2022. In Kericho County, more than 68% of HIV-positive individuals are receiving antiretroviral therapy. Both Kakamega and Kericho counties are bordered by Nandi county. With over 18681 persons living with HIV, the county has an HIV prevalence of 2.8. A total of 555 persons in Nandi county contracted the virus for the first time in 2021 as opposed to 557 in 2020. Nandi County saw an increase in AIDS-related deaths from 353 in 2020 to 423 in 2022. Over 60% of HIV-positive individuals in Nandi County were found to be receiving antiretroviral therapy (MOH, 2022).

2.3 HIV prevention among young people

Globally, over 400 000 young people aged 15 -24 years were newly infected with HIV in 2021 down from 450 000 in 2019 (UNAIDS, 2022). The Sub-Saharan African region had approximately 269 000 young people aged 15-24 years who got newly infected in 2021 down from 332 100 in 2019. In sub-Saharan Africa, 6 in 7 new HIV infections among adolescents aged 15–19 years are in girls (UNAIDS, 2022). The East and South African region had estimated 220 000 young people aged 15-24 years who got newly infected in 2021 down from 250 000 in 2019 (UNAIDS, 2022). New HIV infections are three times higher among adolescent girls and young women (aged 15 to 24 years) than

among males of the same age (UNAIDS, 2022). Only 25% of adolescent girls and 17% of adolescent boys aged 15–19 years in eastern and southern Africa were tested for HIV in the past 12 months and received the result of the last test. Only one third of young people have comprehensive HIV knowledge, with lower levels of knowledge among young women compared to young men (UNAIDS, 2022).

New HIV infections in Kenya have stabilized at an average of 22 154 people down from 34 540 in 2020 (MOH, 2023). Young people aged 15-24 years contribute 42 % of all new HIV infections in Kenya, two thirds of which are from young women. Only 42.6% females and 69.6% males, 15-24 years old with many sexual partners during the past 12 months were reportedly using condoms in the last sexual intercourse. It had been found that 54% the females and 55 % males in the age bracket had a comprehensive knowledge on HIV prevention (MOH, 2022). Kakamega county had approximately 388 255 young people aged 15-24 years who contributed 31 % of the 1198 new HIV infections in the county (MOH, 2022). Kericho county had approximately 192 767 young people aged 15-24 years who contributed 39 % of the 666 new HIV infections in the county. Comprehensive knowledge of HIV prevention in Kakamega and Kericho counties was 58% and 59.7% respectively. Percentage of 15 – 24 years old males who had many sexual partners and used condoms during their last sexual intercourse in Kakamega and Kericho County was 56% and 45% respectively. Those who received their HIV test results in 12 months preceding the survey in Kakamega and Kericho County were 38.6 % and 37.6% respectively (MOH, 2022).

2.3.1 Comprehensive knowledge on HIV prevention among young people

There was a significant increase in Chinese first-year University students' understanding about HIV and AIDS after receiving an educational intervention. The health education program resulted in a significant increase in awareness, from 48.59 percent to 76.24 percent demonstrating the importance of the intervention in HIV prevention (Liu *et al*., 2020). A quasi experimental study was conducted to assess the effect of sexual and reproductive health education on knowledge and attitude about safer sexual behaviors among first-year students in Ethiopia. There was significant difference in comprehensive HIV knowledge, contraceptive use and attitude towards risk sexual behaviors in the intervention group (Boti, et al., 2023).

A randomised controlled trial was conducted to assess the effectiveness of a HIV/AIDS educational intervention among female adolescents in Tehran, Iran. The educational intervention significantly increased adolescents HIV knowledge and protected them from misconceptions, wrong attitudes and risky behaviors and unsupportive social environment that expose them to greater HIV risk (Khalajabadi *et al*., 2020). An evaluative research approach was used to assess the effectiveness of a structured teaching programme on transmission and prevention of HIV among high school adolescent girls in Bengaluru, India. The structured teaching programme was effective in improving the knowledge of the adolescent girls on transmission and prevention of HIV/AIDS (Stephen *et al*., 2020). An intervention study was conducted to assess the effect of peer health education on HIV and AIDS knowledge amongst in-school adolescents in secondary schools in Nigeria. Peer health education improved the HIV

knowledge of the secondary school students which was very low at the baseline (Ezelote et al., 2024).

2.3.2 Combination HIV Prevention services commonly used by the young people

An evaluation on impact of service utilization and health outcomes carried out on adolescents and youth sexual and reproductive health in Zimbabwe (Muchabaiwa and Mbonigaba, 2019) increased HIV testing, STIs screening and treatment in the intervention group. A similar study by Jommaroeng *et al*. (2020) on behavioral changes for men who have sex with men and transgender women in Thailand reported a positive significant effect on condom use, HIV testing and STIs screening uptake (Jommaroeng *et al*., 2020). Community Face to Face Health Education Intervention significantly improved Knowledge and Perception about HIV Services in the Buea Health District, Cameroon (Samba *et al*., 2020).

A cluster-randomised trial was conducted to estimate the impact of community-based, peer-led SRH service provision on knowledge of HIV status and other SRH outcomes among young people in Lusaka, Zambia. Delivering community-based, peer-led SRH services increased knowledge of HIV status among young people in the intervention arm. Additional implementation research is needed to understand how to improve uptake of broader SRH services, beyond uptake of HIV testing (Hensen et al., 2023). A similar peer-led community-based intervention increased coverage of key sexual and reproductive health services (SRH) among young people in Lusaka, Zambia (Phiri et al., 2024).

2.3.3 Condom uptake among the young people

A peer education intervention in selected schools in Northern Malawi increased condom usage and lowered multiple sexual partnerships in the intervention after 8 months (Mwale and Muula, 2019). A quasi-experimental study was conducted to assess effects of comprehensive sexuality education on the comprehensive knowledge and attitude to condom use among first-year students in Arba Minch University, Ethiopia. The intervention significantly increased students' comprehensive knowledge and attitude towards condom use (Boti et al., 2019).

A safe sex education program increased condom usage frequency among PLWH in Southern Malaysia (Abdilah *et al*., 2022). A peer-led HIV education intervention conducted among young people in northwest Nigeria improved comprehensive STI knowledge and condom use following sustained exposure to the peer sessions (Akuiyibo et al., 2021). Comprehensive sex education increased contraceptive use among young women aged 15-24 years in the United States (Cheedalla et al., 2020).

2.3.4 Uptake of HIV testing services among young people

A smartphone-based pilot HIV prevention intervention consisting of short videos and text messages had significantly higher post-intervention intentions to seek HIV testing in India (Chakrapani *et al*., 2023). An online health promotion program was implemented in Hong Kong, China, to evaluate effects on utilization of HIV testing during COVID-19. It was reported that, at 6 months, compared to those in the comparison group, participants who were subjected to intervention had a higher uptake (Wang *et al*., 2023). A campus based and peer delivered HIV self testing intervention

was implemented to assess its effect on uptake of HIV testing services among university students in Zimbabwe. The peer delivered HIV self testing intervention offered at the campus setting increased uptake of HIV testing services given the stigma associated with facility HTS (Mukora-Mutseyekwa et al., 2022). Exposure to Comprehensive sexuality education (CSE) was associated with increased access to HIV testing for adolescent girls both in and out of school in South Africa (George et al., 2022). In Western Kenya, adolescents' uptake of HIV test and connection with care providers was markedly enhanced by a comprehensive adolescent-focused HIV education (Kose et al., 2018).

2.3.5 Concurrent sexual partners among the young people

A quasi experimental study by Mwale and Muula investigated the effectiveness of a school based risk reduction behavioural intervention in Northern Malawi.The intervention group had lower likelihood of engaging in sexual activity and having a large number of sexual partners and a higher likelihood of reporting using condoms when engaging in sexual activity (Mwale and Muula, 2019). A resilience-based HIV prevention intervention among youths in South Africa after 3-months follow-up had a higher tendency of intervention group to participate in several romantic relationships, transactional sex and intergenerational sex than baseline (Mbengo *et al*., 2022). A similar HIV prevention program conducted among Thai Men never decreased the number of sexual partners and STI reinfection rate after 3-month follow-up (Thato *et al*, 2018). In a study conducted in New York, the prevention intervention arm reported significantly fewer sexual partners and fewer sexual activities compared to participants in the control group (El-Bassel *et al*., 2019).

2.3.6 Levels of syphilis infections among the young people

Research carried out by Thato *et al*, (2018) revealed that knowledge on HIV, benefits of condom use, risky behaviors and HIV reinfection were significantly increased. In that study, intervention group used condoms more frequently. as compared to the control. However, the program did not reduce the numbers of sexual partners and STI re-infection rate after 3-months (Thato *et al*., 2018).

A quasi-experimental sexuality educational intervention conducted in Northern Nigeria increased STI knowledge and reduced risk sexual behaviour among young people in school (Yohanna et al., 2023). A Cluster-Randomized Control Trial conducted to determine the effects of a Sexual Risk-Reduction Intervention for in school teenagers aged 14 -19 in Columbia increased knowledge about sexually transmitted infections and greater behavioral intention toward condom use (Gómez-Lugo *et al*., 2022). A study in South Africa that integrated economic strengthening and prevention HIV education interventions did not significantly affect prevalence of sexually transmitted disease infection and behaviour among adolescents at endline (Burke *et al*., 2020).

2.4 Summary of gaps in knowledge of HIV prevention strategies

The research on the effect of HIV prevention interventions revealed that young people have low risk perception and still engage in risky sexual behaviors that increase their exposure to HIV infection. Most studies reviewed were based on self-reports of respondents hence possibility of underreporting risky sexual behaviour. There is low comprehensive HIV knowledge and HIV prevention service uptake among the youth. Multiple concurrent partnerships and level of sexually transmitted infections is high among the youth. The percentage of respondents screened or tested for HIV and other STIs was based on self-reports making it difficult to conclude effectiveness of interventions in most studies. The intervention period was less than six months with limited follow-up in most studies making it difficult to determine the sustainability of the intervention beyond the study. Some HIV prevention interventions were not based on a theoretical or conceptual framework and implementation research was limited. There is no research study that has been conducted to determine the effect of comprehensive HIV prevention information package on risk sexual behaviour among the youth. Therefore this study seeks to address the above mentioned gap with the findings informing the development of a HIV prevention information package that is most effective for young people's HIV response.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This chapter covers the study design, variables under examination, study population, sampling strategy, sample size estimation, instrument construction, data collection and analytic techniques, intervention package, and ethical considerations.

3.2 Research design

Non-randomized control trial building on both qualitative and quantitative methods was adopted. A pre-test data collection questionnaires were administered to both intervention and comparison counties in November, 2021. The post-test questionnaires were administered after nine months of administration of "HIV prevention information package" to the intervention county. Six months was short for the intervention to have effect while 12 months was too long for youth who are very mobile to minimize dropout rate. The main outcome measure was reduced risky sexual behavior through increased condoms uptake and HIV testing, fewer people having concurrent partnerships and lower syphilis infection.

A non-randomized control trial is used when random assignment of individuals into treatment and comparison group is not possible. Multiple factors influence participation of individuals in the programme and no guarantee that other factors are similar between the treatment and comparison groups. Non-randomized controlled trial depends on the evidence supporting this interpretation, which generally rely on the transparency and rigor with which supporting assumptions are reported and tested. Lack of randomization often facilitates recruitment of a larger proportion of participants, hence increase in

generalization. Eligibility was also restricted to individual youth with same baseline characteristics or confounders. The results were adjusted for possible confounders using logistic regression to ensure unbiassed estimation of intervention effect.

3.3 Variables

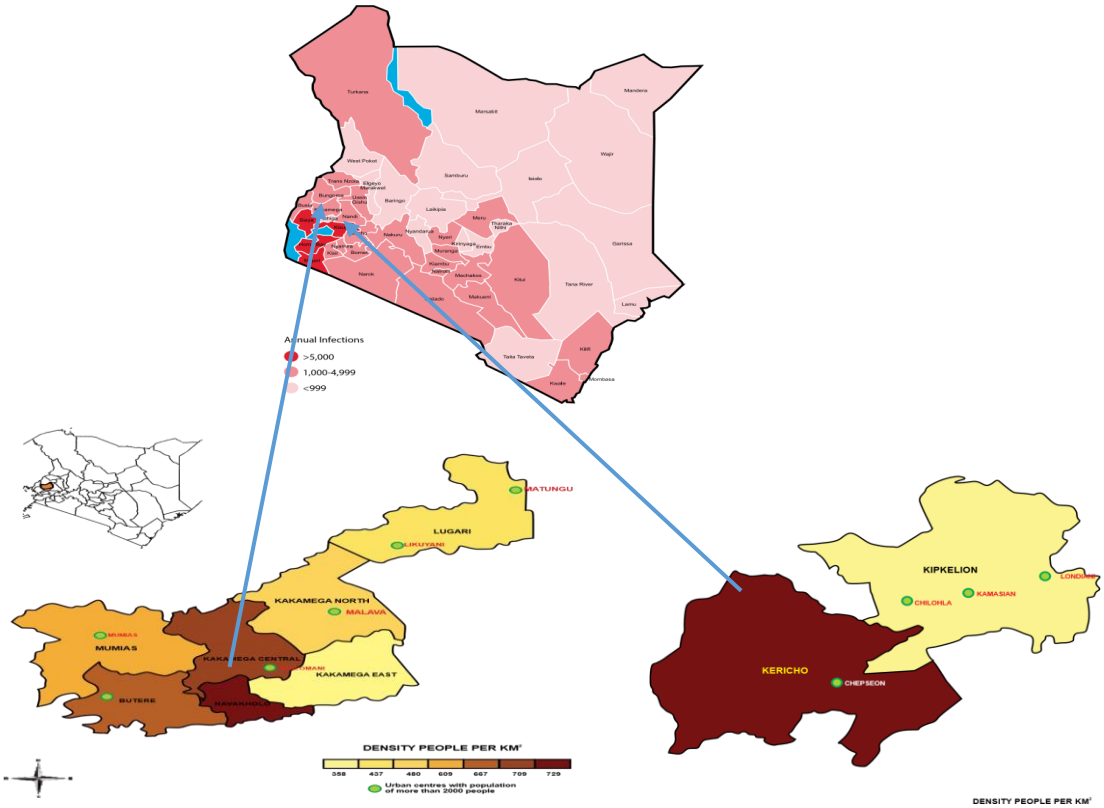
A comprehensive HIV prevention information package for young people formed the intervening variable. An increased comprehensive HIV knowledge, condom uptake, HIV testing service uptake, reduced concurrent partnerships and reduced syphilis infection were the dependent variables. The socioeconomic and cultural context within which the young people are located influence HIV risk behavior. Respondent' socio-demographic, social economic factors were the independent variables which influenced the dependent variables that inform attitude and practices among the young people. Health system factors such as; provider attitude, waiting time, availability and cost of services may impact uptake of HIV prevention services among young people (Crankshaw *et al*., 2012). The comprehensive HIV prevention information package will reduce acquisition of HIV by promoting safer sexual behaviour among young people through increased comprehensive HIV knowledge, condom uptake, HIV testing services uptake, reduced concurrent partnerships and reduced syphilis infection as illustrated in Figure 1.2.

3.4 Study site

The study was undertaken in Kakamega and Kericho counties of Kenya, which are both medium incidence counties. A medium incidence county has more than 500 but less than 1000 new HIV infections annually (HIV Estimates, 2022). Kakamega county is

located in western part of Kenya lying between longitudes 34. 20’ and 35E and latitudes 0. 15° and 1 N of the Equator (Kakamega CIDP, 2023). Kericho county is located in the South Rift of the Great Rift Valley lying between longitudes 35º 02’ and 35º 40’ and between the Equator and latitude 0023’south (Kericho CIDP, 2023). The two counties were purposively selected because they are medium incidence with Kakamega having the highest new HIV infections among youths in 2021 at 366 (MOH, 2022).

Nandi county is geographically located between Kakamega county (Intervention area) and Kericho county (Comparison area) to prevent effect of spillover or mixing of youths from the two study counties. The sub counties in the two counties were ranked into urban, cosmopolitan and rural. Three sub counties of Lurambi, Lugari and and Navakholo in Kakamega County represented an intervention group of urban, cosmopolitan and rural respectively. Similarly Ainamoi, Kipkelion East and Sigowet/ Soin sub-county in Kericho County formed the comparison group representing urban, cosmopolitan and rural respectively. Kakamega County has a projected population of 1,867,579 and HIV prevalence of 3.9. Young people aged 15 to 24 years contribute 27 % of all new infections in the county. Kericho county on the other hand has a projected population of 995,566 with 3.4% HIV prevalence. Young people, 15-24 years contributed to 32 % new HIV infections in the county (MOH, 2020). Figure 3.1 below shows the map of the study counties.



Kakamega County **Kericho County**

Figure 3.1: Map showing study sites

3.5 Study Population

The research involved all sampled young people in Kakamega and Kericho County, targeting 495 respondents. The criteria for inclusion of participants were age of 15-24 years and ability to give informed consent. The unit of study was Kakamega and Kericho as intervention and comparison counties respectively. Participants were selected from youth group meetings to represent out of school youths and from colleges and technical institutions in the intervention and comparison county to represent in school youths. Consenting young people residing in the intervention and control counties between November 2021 and September 2022 were the study participants.

3.5.1 Inclusion Criteria

1**.** A young person residing in the study counties for at least one year

2. 15-24 years and were able to give consent

3. Youths less than 18 years of age who assent in addition to parental consent

3.5.2 Exclusion Criteria

1. Young people who don't consent

2. Youths who were unwell

3. Mentally disturbed youths.

3.6 Sampling techniques and sample size determination

3.6.1 Sampling techniques

The study focused on young people of 15 to 24 years, residing in Kakamega and Kericho counties, Kenya. Due to financial and logistical constraints, it was not feasible to administer the survey in all the 47 counties. The two counties, Kakamega and Kericho, were purposively selected as intervention and comparison counties respectively because they are both medium incidence counties and could therefore be validly compared. Stratified sampling was used to select three sub counties in the intervention and Comparison County to represent urban, cosmopolitan and rural youth respectively. Simple random sampling was used to choose colleges and technical institutions to represent the in-school youth. Purposive sampling was used for the out of school youths at congregation points, youth group meetings and outreaches. Individual youths who consented in both counties were invited to fill a questionnaire at baseline and after 9 months of providing comprehensive HIV prevention information package in

the intervention county. The study employed consecutive sampling to ensure that all obtainable individual participants were included and provided information. As far as non-probability sampling goes, consecutive sampling was thought to have the best overall population representation. All consenting young people in the intervention and comparison counties were included in the sample. Change in condom uptake, HIV testing services, having concurrent sexual partners and infection of syphilis in the intervention sub counties was compared with the comparison sub counties.

3.6.2 Sample size Determination

For intervention studies, Suresh and Chandrashekara (2012) formula was used in calculation of a representative sample.

$$n = DEFF \times \frac{\left[Z_{\alpha/2}\sqrt{2\bar{p}\bar{q}} - Z_{1-\beta}\sqrt{p_1q_1 + p_2q_2}\right]^2}{(p_1 - p_2)^2}$$

Where

n **=** Sample size required from each condition (pre- and post-intervention)

p_1**=** The estimated proportion of comprehensive knowledge at baseline survey

p_2 =The estimated proportion of comprehensive knowledge at endline

***DEFF*=** The estimated design effect - here it is assumed the DEFF will be the same for both surveys

α = Level of significance (“alpha”), 5% (95% confidence interval)

1- β Power, assumed 80%

$\bar{p} = \frac{p_1 + p_2}{2}$ and $\bar{q} = 1 - \bar{p}$ in equal sample sizes

$q_1 = 1 - p_1$

$q_2 = 1 - p_2$

$\boldsymbol{Z_{\alpha/2}}$ is the level of significance

$\boldsymbol{Z_{1-\beta}}$ is the Z-value

The Kenya Demographic and Health Survey indicated 63.7% of males and 54.2% females, 15-24 years of age had a thorough understanding of HIV and AIDS (MOH, 2014). This translates to an average of 59% comprehensive knowledge among both male and females. It is estimated that the intervention will increase comprehensive knowledge among this age group by 10%. It is assumed that a design effect of 1.25 account for within-county clustering, and a desired precision of ±5% points. The number was increased by 10% to account for incomplete data.

$p_1 = .59$, $q_1 = .41$

$p_2 = .69$, $q_2 = .31$

$\alpha = .05$, therefore $Z_{\alpha/2} = 1.96$

$\beta = .20$, therefore $Z_{1-\beta} = -.842$

DEFF = 1.25

Calculation of $\bar{p}$, when samples are equal in size:

$$\bar{p} = \frac{.59 + .69}{2} = .64, \quad \bar{q} = 1 - .64 = .36$$

$$n = 1.25 \times \frac{\left[1.96\sqrt{2(.64)(.36)} - (-.842)\sqrt{(.59)(.41) + (.69)(.31)}\right]^2}{(.59 - .69)^2} = 1.25 \times \frac{3.604}{.01} \approx 450$$

Adjusting for 10% non-response rate (Israel, 1992)

$$n = \frac{450 * 110}{100} = 495 subjects$$

A sample size of 495 youths, at the baseline and 495 in the endline survey were used. I used stratified probability proportionate to size (PPS) method (Cochran 1963) to obtain the required number of young people per county. The population of interest in each county was sampled proportional to its size as illustrated, table 3.1 and 3.2.

Table 3.1: Sampling of youth from study counties

	County	**Youth (15-24 years) population**	**Sample**
1	Kakamega	388 255	331
2	Kericho	192 767	164
3	Total	581022	495

Table 3.2: Sampling of youth from study sub counties

	County	Sub county	Youth(15-24 years)	Sample
1	Kakamega	Lurambi	42322	140
2	Kakamega	Lugari	25431	85
3	Kakamega	Navakholo	32100	106
	Sub total		99853	331
4	Kericho	Ainamoi	37122	68
5	Kericho	Kipkelion East	25638	47
6	Kericho	Sigowet/Soin	26724	49
	Sub total		89484	164
	Total			**495**

3.6.3 Sampling college youth

The youths were obtained from the college or technical institution in the selected sub counties. The tertiary institutions were selected by simple random sampling while the individual youth were selected by consecutive sampling. Two colleges or technical institutes were sampled per Sub County as illustrated, table 3.3.

Table 3.3: Sampled colleges

	Sub county	College/Technical institute	No of Youths	Sample
1	Lurambi	Sigalagala National Polytechnic, Town campus	600	39
		Kakamega County Polytechnic	465	31
	Sub-total		1065	70
2	Lugari	Chekalini County polytechnic	128	13
		Kabras County polytechnic	296	29
	Sub-total		424	42
3	Navakholo	NavakholoTechnical and Vocational college	642	36
		Emulaha Vocational Training Centre	306	17
	Sub-total		948	53
4	Ainamoi	Kericho Teachers Training College	996	18
		Kericho Township Technical and vocational college	937	16
	Sub-total		1933	34
5	Kipkelion East	Kimasian Technical and Vocational College	721	16
		Chepseon Youth Polytechnic	303	07
	Sub-total		1024	23
6	Sigowet/Soin	Kiptere Vocational Training Centre	350	18
		South Rift Technical Training Institute	146	07
	Subtotal		496	25
	Total			247

3.6.4 Sampling out of school youth

Two hundred and forty eight out- of- school youths participated in the study as shown below. Because there was no available register for out of school youth, respondents were recruited using non-probability, Respondent driven chain-referral sampling. The initial sample of out of school youth (seeds) was purposefully obtained through community youth groups meetings, outreaches and motorbike stages to serve as the initial contacts for recruiting from the target population. Eligible participants were young people in the ages of 15-24 years who have resided in the respective sub-counties for at least one year. After selection and enrollment of initial subjects, they were asked to invite 2 - 3 of their male or female peers from their social networks to also participate. Participants were asked to meet the researcher at the youth empowerment center in the afternoon of the recruitment day or in the morning of the second day for screening for eligibility and administering informed consent. Recruitment of target sample size in respective sub counties was therefore achieved through peer-to-peer referral process. When peer recruitment proceeds through a large number of waves or referrals, a sample stabilizes and becomes independent on the initial subjects or seeds from which recruitment began and thereby overcoming any biases (Lu *et al*., 2013). All consenting out of school in the respective sub-counties were enrolled in the study, table 3.4.

Table 3.4: Sampling out of school youth

	Sub county	Congregation point	Initial number of youths (seeds)	No. of unproductive youths	No. of referrals (excluding seeds)	Total number of youth invited/screened	No of youths eligible & consented (Sample)
1	Lurambi	Youth group meetings	2	0	2	26	21
		Outreaches	2	0	2	26	21
		Motobike stages	3	0	2	39	28
	Subtotal						**70**
2	Lugari	Youth group meetings	2	0	2	26	16
		Outreaches	1	0	2	13	8
		Motobike stages	2	0	2	26	19
	Subtotal						**43**
3	Navakholo	Youth group meetings	2	0	2	26	17
		Outreaches	1	0	2	13	9
		Motobike stages	3	1	2	36	27
	Subtotal						**53**
4	Ainamoi	Youth group meetings	1	0	2	13	9
		Outreaches	1	0	2	13	8
		Motobike stages	2	0	2	26	18
	Subtotal						**35**
5	Kipkelion East	Youth group meetings	1	0	2	13	7
		Outreaches	1	0	2	13	6
		Motobike stages	1	0	2	13	8
	Subtotal						**21**
6	Sigowet/ Soin	Youth group meetings	1	0	2	13	8
		Outreaches	1	0	2	13	6
		Motobike stages	2	1	2	23	12
	Subtotal						**26**
	Total sample						**248**

3.7 Construction of research instruments

Structured questionnaires and scheduled interviews with some use of direct observation were used in data collection. Interviews were done using pretested questionnaire. Cross checking answers of informants (participants) with several informants was conducted

until accurate content was achieved. The following research instruments were designed for the study;

a. Questionnaires

Pretested questionnaires (appendix I.A) were used to collect baseline and endline data before and after provision of comprehensive HIV prevention information package as the intervention. The questionnaires consisted of questions on socio demographic characteristics, comprehensive HIV knowledge, combination HIV prevention strategies, condom uptake, HIV testing services, concurrent partnerships and syphilis infection levels. The questionnaire was constructed through literature review and consultation with my supervisors at the University.

b. Key informant Interview Guide

Key informant interview guide (appendix I.B) was used to collect data from the key informants at baseline and endline in the intervention and comparison county. The interview guide had questions on the sexual practices among the youth, HIV prevention services commonly used by the youth, levels of syphilis infection and challenges in preventing new HIV infections among the youth. The interview guide was constructed in consultation with my supervisors to collect additional in-depth information from expert stakeholders on the study questions.

c. Focus Group Discussion Guide

Focus Group Discussion guide (appendix I.C) was used to collect data from youth at baseline and endline in the intervention and comparison county. Focus Group Discussion guide had questions on HIV situation among youth, source of HIV

information, perception on condom use, STIs infection, sexual practices among youth and their role in HIV prevention. The Focus Group Discussion guide was designed in consultation with my university supervisors to gain an in-depth understanding of issues being investigated.

3.7.1 Pre-Testing

Prior to the main study, pretesting was conducted using 50 young people in Machakos County. This formed 10 % of the sample size (Connelly, 2008). Data was collected from 25 young people in a randomly selected sample of 3 youth groups meetings and 25 young people from two Colleges or technical institutes in Machakos County. Data was collected using a detailed questionnaire, scheduled interviews and some direct observation. The pretest county is medium incidence and was characteristically similar to participant counties. The young people who participated in pretest study were not recruited in the main study. The pretest study was important and enabled the researcher in identification of problems and omissions in the instrument, as well as checking the time spent in responding. Pretesting was also meant to increase the data's validity, reliability, clarity, and accuracy. Uncertain or ambiguous questions were either rephrased or removed after the pretest study data was analyzed.

3.7.2 Validity

The questionnaire was sufficiently detailed to gather all the data required to address the goals and purposes of the research. Gunning Fog Index was used to conduct a readability test. A fog index below 12, suggested that the questionnaire was intended for a large readership. Questionnaire utilized for the study was tested in the field first.

Kenyatta University supervisors also examined the questionnaire to ensure its validity. With the consent of the supervisors, a pre-test was carried out with participants who weren't in the sample and adjustments were made as needed. Data from other sources were compared to results from this study. These findings have implications for understanding how a comprehensive HIV prevention education package may affect risky sexual behavior among teenagers in Kenya. Scaling up the comprehensive HIV information package will contribute to safe sexual behaviors among young people in Kenya through increased condom uptake; HIV Testing and counselling, reduced number of concurrent partners and reduced syphilis infection.

3.7.3 Reliability

Reliability was improved by pretesting the questionnaire. Research Assistants were trained on how to administer the research instruments. The same questionnaire was used during the interview and its sub-parts were measured. To increase reliability of the data collected, triangulation was undertaken including performing two separate interviews per county in addition to direct observation. Computer application SPSS was utilized to analyze the data from the pilot test. A reliability coefficient was computed using Cronbach's alpha on the data collected from subjects. A Cronbach's alpha coefficient rating of 0.7 or more implied that there was a high degree of reliability of data.

3.8 Data Collection Techniques

Primary data was collected from youths in both intervention and comparison groups by using a self-administered questionnaire. This made it possible to get the relevant information, which could be referred in making clarification if necessary. Four key

informant interviews were conducted with program implementers to establish HIV prevention strategies available for young people. Six Focus Group Discussions with 8-10 youth was conducted for the qualitative study. Both the intervention and comparison counties used a comparable questionnaire at the start and end of the study period. The survey additionally gathered data regarding possible confounding variables including age, gender, place of residence, and previous participation in HIV prevention programs. Post test data was collected 9 months after implementing the comprehensive HIV prevention information package in the intervention county. The youth in comparison county continued to receive HIV information and services in their nearest health facilities as shown in figure 3.2 below. Data checked for any missing values and internal consistency throughout the collection period. Filled questionnaire responses were coded and entered into a spreadsheet in SPSS for statistical analysis.

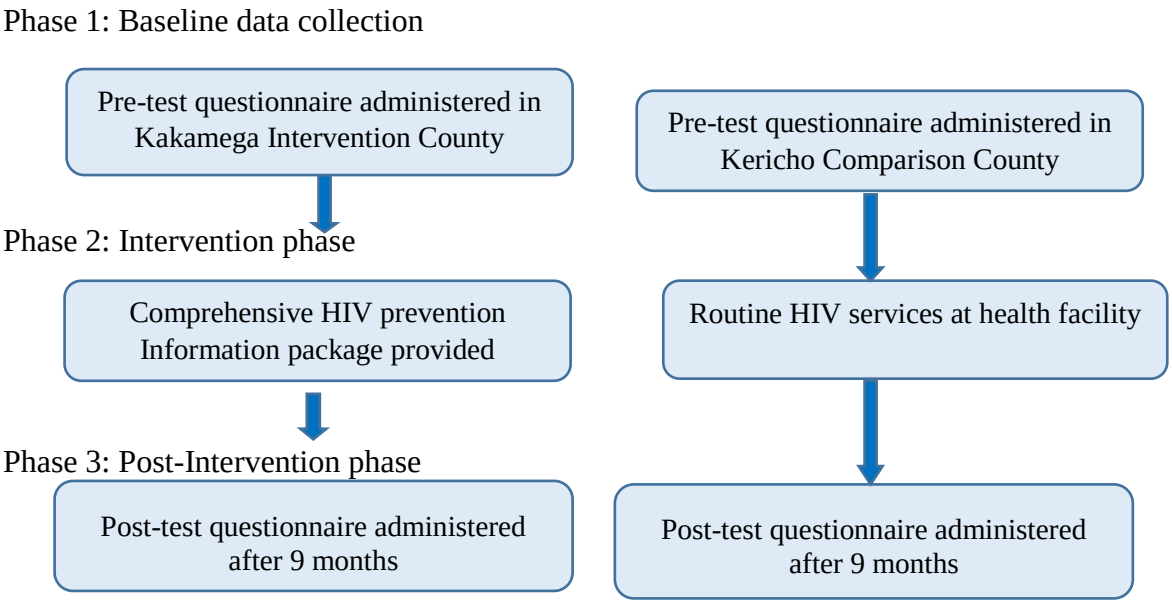


Figure 3.2: Intervention Flow Chart

3.8.1 Delivery of Intervention Package

The comprehensive HIV prevention information package was provided to the youth in the intervention county after the baseline assessment. The HIV prevention information package had 3 contact sessions offered termly for 9 months. Each contact session was 3 hours long consisting of presentation, experience sharing, group discussion and practical demonstration. Two local peer facilitators were trained on the comprehensive HIV Prevention information package to facilitate termly sessions with the youth. The youth were meeting at the county Youth Empowerment center every last Saturday of the education intervention month. The youth not available on Saturday were reached every last Wednesday of the intervention month. Those in the intervention and comparison county had Nandi county as a buffer to avoid spilling over of the intervention.

Youthful HIV testing counselors from partner organizations were referred to the youth empowerment center to offer the service. During baseline assessment, youth in the comparison county were informed to continue receiving routine HIV services offered at health facilities. The pretest questionnaire was administered at baseline and posttest at end line after 9 months of providing the HIV prevention information package to the youth in the intervention county as shown in figure 3.3 below. HIV prevention programs for the youths in the two counties include provision of HIV testing services, condoms provision, PrEP and VMMC. The comprehensive HIV prevention information package will empower the youth utilize HIV services and reduce their vulnerability to HIV infection.

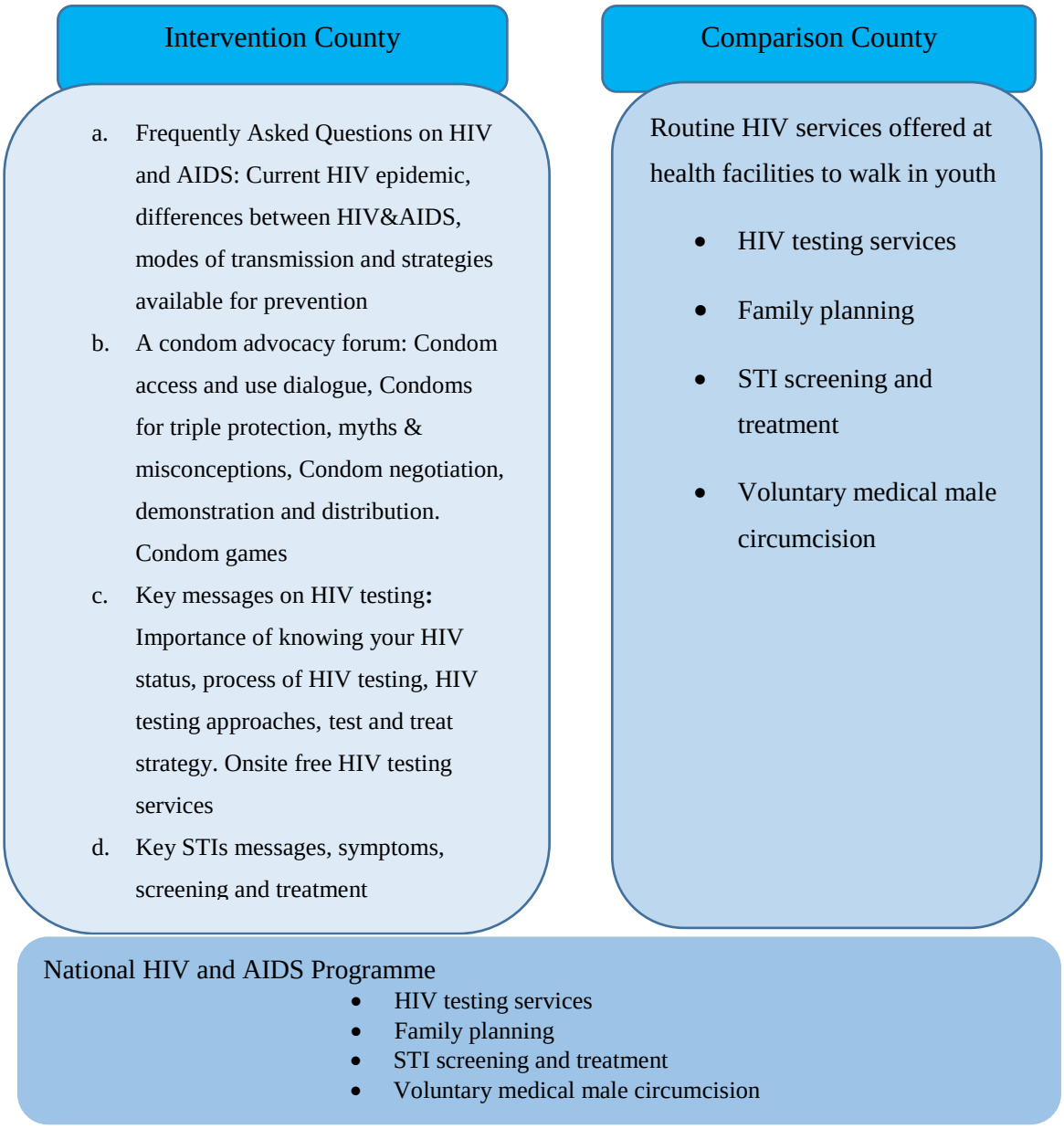


Figure 3.3: Intervention package

3.9 Data analysis

The quantitative data was entered into SPSS and analyzed using descriptive statistics. These include mean, median, frequencies and standard deviation. The Difference-In-Difference (DID) regression model was used to compare outcomes between

intervention and comparison county at baseline and after 9 months of the intervention at end line. A Chi square and t-test determined the effect of the comprehensive HIV prevention information package and tested for any significant differences.

Qualitative data obtained from focus group discussions and interviews with key informants were translated, transcribed, and then imported into the NVivo software for thematic analysis. Data at various moments in time were analyzed to create the patterns from the rising themes. At the start and finish lines, potential confounders were measured. The analysis was then modified to account for any variations in the confounders over time. Logistic Regression was used determine predictors of significant change in the intervention site. The tests were done at 95% Confidence interval level and the logistic regression was statistically significant at P-value less than 0.05.

3.10 Logistical and Ethical Considerations

The research was given approval by Kenyatta University Graduate School and Ethical Review Committee**.** The approval number is PKU/2302/11441. A research permit was obtained from National Commission for Science, Technology and Innovation (NACOSTI) under license number NACOSTI/P/21/12386. Permission to collect data was also sort from the County officers in the two Counties. Participants signed a consent form and confidentiality was ensured. Before minors aged 15 to 17 offered their assent, permission was obtained from their parents. No participant's name appeared on the questionnaire form. Interviews were conducted in a closed room. Participants were made aware that no intrusive procedures would be performed, and that there would be

no consequences for declining to participate or for leaving the study during the data gathering phase. Youth in the comparison county were exposed to the HIV prevention information package after administering the posttest questionnaire. The communities were informed about the research study through chiefs' during barazas. The peer facilitator was also identified from the local community. Access to database was restricted by password. Completed questionnaires were securely kept and accessed only by authorized members of the team.

CHAPTER FOUR: RESULTS

4.1 Introduction

Research findings from structured questionnaires, focus group discussions and interview result for the study are presented.

4.2 Socio -demographic Characteristics of Respondents

4.2.1 Youth's Socio - demographic information

A total of 495 respondents from Kericho and Kakamega were involved in this study with 100% response rate at baseline and endline. Most of the respondents were from Kakamega (66.7%) based on the proportionate sample size. Young adults aged 15–24 years were involved. A change in some of the demographic characteristics between baseline and endline was likely due to self reports affected by different types of biases related to reporting, recall and desirability. Majority of the respondents 61.2% were in their tertiary education level and only 10.7% were married as summarized in table 4.1.

Table 4.1: Socio -demographic characteristics of the study participants

Demographic information	**Category**	**At Baseline (N = 495)**	**End line (N = 495)**
County	Kericho	164 (33.1%)	164 (33.1%)
	Kakamega	331(66.9%)	331(66.9%)
Sex	Male	233 (47.1%)	233 (47.1%)
	Female	262 (52.9%)	262 (52.9%)
Age (Years)	15 – 19	185 (37.4%)	183(37.0%)
	20 – 24	306(61.8%)	312(63.0%)
	Non -response	3 (0.6%)	-
Education level	None	10 (2.0%)	10 (2.0%)
	Primary	58 (11.7%)	26(5.3%)
	Secondary	113 (22.8%)	95(19.2%)
	Tertiary	303 (61.2%)	355(71.7%)
	Non -response	11 (2.2%)	10 (2.0%)
Religion	Christians	456 (92.1%)	466(94.1%)
	Muslims	32(6.5%)	26 (5.3%)
	Others	3 (0.6%)	2 (0.4%)
	Non -response	4 (0.8%)	1 (0.2%)
Marital status	Married	53 (10.7%)	57(11.5%)
	Single	400 (80.8%)	414 (83.6%)
	*Others	34(6.9%)	21 (4.2%)
	Non -response	8 (1.6%)	3 (0.6%)

*Represents divorcees, separated or cohabiting

4.3 To determine the effect of comprehensive HIV prevention information package on levels of comprehensive knowledge on HIV among youth in Kakamega and Kericho counties

4.3.1 Knowledge on HIV prevention among youth in Kakamega and Kericho at baseline and at end of the research

At baseline, 74.6% youths in Kakamega and 81.7% in Kericho were aware that one reduces chances of having HIV virus by abstaining from sex. Fifty five percent of the youths in Kakamega and 65.2 % in Kericho, knew that having just one uninfected sexual partner leads to reduction of getting HIV. The youths were aware that use of condoms reduces a person's chance of getting HIV virus (75.2% and 71.3%, in Kakamega and Kericho respectively). It was further established that the youths were well informed that it is possible for a healthy looking person to be HIV positive and a woman infected with HIV can give birth to a child not infected.

At the end of the intervention, the number of youths aware that people reduce their chances of having HIV virus by abstaining from sex increased in Kakamega county by 23.6% but decreased in Kericho county by 4.9%. The number of youths who knew that "using condoms reduces chances of getting HIV virus" increased in Kakamega county by 21.7% but decreased in Kericho county by 0.6%. A notable increase in the number of Kakamega youths was also recorded in those who were informed on the possibility for a healthy looking person to be HIV positive.

A comparison of knowledge on HIV prevention levels in the two counties was done at the baseline and at the end line using independent t-test with variance not equal ($P \leq$

0.05). At the baseline there were significant differences in knowledge on HIV prevention among youths in Kericho from those in Kakamega on; abstinence, having one sex partner and getting HIV from mosquito bite (P=0.036, 0.039, 0.022 respectively). There was a similar difference in knowledge on HIV prevention in the two counties during the end line except on getting HIV from mosquito bite. It was established that respondents were aware of ability of a woman infected with HIV to give birth to a child who is HIV negative and that nobody gets infection by sharing food with HIV positive persons. At the endline, knowledge on HIV prevention among youth from Kakamega were significantly higher in the test items than those in Kericho as shown in table 4.2.

Table 4.2: Comparison of knowledge on HIV prevention in Kericho to Kakamega youths at baseline and at end line

Statement	Proportional responses (%)					
	At baseline			At end line		
	Kakamega	Kericho	P-value	Kakamega	Kericho	P-value
People reduce their chances of having HIV virus by abstaining from sex	247(74.6)	134(81.7)	0.036	325(98.2)	126(76.8)	0.0001*
Having just one uninfected sex partner reduces chances of getting HIV	181(54.7)	107(65.2)	0.039	311(93.9)	93(56.7)	0.0001*
Using a condom reduces a person's chance of getting HIV virus	249(75.2)	117(71.3)	0.803	321(96.9)	116(70.7)	0.0001*
It is possible for a healthy looking person to be HIV positive	216(65.3)	124(75.6)	0.012	304(91.8)	106(64.6)	0.0001*
Mosquito bite can transmit HIV virus	55(16.6)	17(10.4)	0.022	10(3.0)	19(11.6)	0.001*
A woman infected with HIV can give birth to a child not infected.	270(81.6)	142(86.6)	0.281	317(95.8)	124(75.6)	0.0001*
Someone can get HIV by sharing food with an infected person	25(7.6)	5(3.0)	0.080	2(0.6)	11(6.7)	0.001*
One can get HIV because of witchcraft or due to supernatural means	15(4.5)	2(1.2)	0.131	4(1.2)	6(3.7)	0.108

* significant difference in the raw at $p < 0.05$

In Kericho, the youth knowledge were significantly different on the possibility for a health looking person to be HIV infected (t=2.253, P=0.026) and that for an infected woman to give birth to a child not infected with HIV (t=-2.008, P= 0.046). This indicated that at the time of intervention most youths did not think that it is possible for a health looking person to be HIV infected as shown in table 4.3.

Table 4.3: Comparison of knowledge on HIV prevention during the baseline and at endline in Kericho county

Statement	**t -value**	**P -value**
Chances of having HIV virus reduce by abstaining from sex	0.830	0.408
Having just one uninfected sex partner who has no other sex partners reduce chances of getting HIV	1.566	0.120
People reduce their chance of getting HIV virus by using a condom every time they have sex	0.120	0.905
A healthy looking person can be HIV infected	.253	0.026
A person can get HIV virus from mosquito bite	0.156	0.876
There is a possibility that a woman infected with HIV can give birth to a child not infected with HIV	2.008	0.046
One can get HIV infection by sharing food with someone who is infected with HIV	1.506	0.134
It is possible to get HIV because of witchcraft or other supernatural means	0.726	0.469

*Represents significant difference at $p < 0.05$

Change in the knowledge on HIV prevention among the youth in Kericho county was not significant in all the test items except for the possibility of a healthy looking person to be HIV infected and an infected woman can give birth to a child not infected.

After intervention, in Kakamega, there was a significant difference in knowledge of the youths. More youths were aware that; people can reduce their chance of having HIV by abstaining from sex; by having one uninfected sexual partner and using a condom every time they have sex and that it is possible for a health looking person to be HIV infected. However few youths reported that; a person can get this virus by sharing food with someone who is infected with HIV and from mosquito bites ($P<0.05$) as shown in table 4.4.

Table 4.4: Comparison of knowledge on HIV prevention during baseline and at endline in Kakamega

Statement	**t -value**	**P -value**
People reduce chances of having HIV virus by abstainance from sex	8.931	0.0001*
Chance of getting HIV virus is reduced by having just one uninfected sex partner who has no other sex partners	11.386	0.0001*
Using a condom every time one have sex reduce chances of getting HIV virus	7.743	0.0001*
It is possible for a health looking person to be HIV infected	7.942	0.0001*
A person can get HIV virus from mosquito bite	5.296	0.0001*
A woman infected with HIV can give birth to a child not infected with HIV	5.435	0.0001*
It is possible to get HIV virus by sharing food with someone who is infected with the virus	3723	0.0001*
One is able to get HIV because of witchcraft or other supernatural means	0.185	0.853

*significant difference at $p<0.05$

There was significant change in the knowledge on HIV prevention among the youth in Kakamega county in all the test items except for; “a person is able to get HIV because of witchcraft or other supernatural means” as shown in table 4.5.

4.3.2 Interview findings from the youth

Using qualitative analysis carried out verbatim on knowledge levels of the youths, the general view regarding HIV situation among young people revealed that HIV is high among youth due to lack of knowledge and ignorance. Lack of HIV information and where to get services makes them engage in risky sex early sometimes under influence of alcohol and drugs. Myths and misconceptions on HIV and prevention methods like PEP exist among youth. Many youths are idle, have low self esteem and are undergoing peer pressure that leads them to dress indecently and engage in sex early. These has resulted into AIDS wiping out young people. The youth, however, noted that most people with HIV are in the village. One of the youths in Kakamega county at baseline said that;

> “*Low risk perception among AYPs since there is treatment even if I get infected, after all HIV is like any other disease like malaria. Youth don’t fear getting infected since they will take lifelong ART.It is better to have HIV than cancer.”*

The youths noted that, there are orphans due to HIV related deaths and that lifelong treatment may have side effects. They recognize that HIV is real, toxic, dangerous and has no cure although girls fear pregnancy not HIV. They stated that anyone infected with HIV can take ARVs to live long and productive life. Another youth respondent in Kericho county at baseline said that;

"A girl would rather get HIV than pregnancy. Youth don't fear HIV because treatment available and is not visible like pregnancy."

Youth acknowledge that poverty, unemployment and lack of economic empowerment opportunities increases their vulnerability to HIV infection. Sponsor, intergeneration sex and transactional sex are drivers of new HIV infections among youths. Although HIV is preventable, early engagement in sex among youth can lead to increase in infection. It does not mean that a thin person can be having HIV. When one gets infected with HIV, it is not the end of life. It is only a myth that having sex with a child cures HIV.

A respondent during FGDs in Kericho county at endline said;

"I became more educated and gained skills on how to handle various situations on HIV prevention."

A second respondent during FGDs in Kakamega county at endline said;

"I gained knowledge on how to avoid contracting HIV and how to take care for those who have without stigmatizing them."

The Kakamega County AIDS and STI coordinator, said that the number of new infections have reduced due to HIV awareness and education campaigns. There is need to sensitize young people in order to reduce the rate of new HIV infection.

4.3.3 Hypothesis one (HO1) testing

In this objective, the hypothesis tested was;

HO1: There is no significant effect of comprehensive HIV prevention information package on knowledge on HIV prevention among young people. Based on the results of

the study, youths were significantly (P=0.0001) more aware that they could reduce their chance of getting HIV virus by abstaining from sex; they could reduce chance of getting HIV virus when they have only one uninfected sexual partner and reduce their chances of getting HIV virus by using condom whenever they have sex. The researcher therefore rejects the null hypothesis and adopt the alternative hypothesis;

Ha1: There is a significant effect of comprehensive HIV prevention information package on knowledge on HIV prevention among young people.

4.4 To establish the effect of comprehensive HIV prevention information package on HIV prevention strategies commonly used by the study subjects in the two counties.

4.4.1 HIV Prevention strategies utilized by the youth during baseline and during endline in the study counties

During the baseline survey, more youths from Kakamega utilized HIV prevention services compared to those youth in Kericho. However, using independent t –test, there was no statistical difference in usage of Information on HIV transmission (P=0.444) and no significant difference in HIV testing services (HTS) with active referrals to lifelong ART for HIV- positive (P=0.135). This results changed after the intervention where there was a significant positive difference in all the test items on HIV prevention services utilized at endline in Kakamega than Kericho (P<0.05) as summarized in table 4.5.

Table 4.5: Comparison of HIV prevention services utilized at baseline and at end of study

HIV Preventive services	Proportional responses (%)					
	Baseline			Endline		
	Kericho (n = 164)	Kakamega (n = 331)	P-value	Kericho	Kakamega	P-value
Information on HIV transmission, abstinence, consistent and correct condom use	98 (59.8)	217(65.6)	0.444	93(56.7)	321(96.9)	0.011*
HIV testing services (HTS) with active referrals to lifelong ART for HIV- positive	22 (13.4)	64(19.3)	0.135	28 (17.1)	218(65.9)	0.0001*
Pre-Exposure Prophylaxis (PrEP)	5 (3.0)	28(8.5)	0.028	10 (6.1)	28(8.5)	0.0001*
Post violence care	6 (3.6)	29(8.8)	0.045	8 (4.9)	18(5.4)	0.0001*
Enrollment to lifelong ART	4(2.4)	24(7.3)	0.034	7 (4.3)	15(4.5)	0.0001*
PMTCT for pregnant and lactating adolescent girls	7 (4.3)	33(9.9)	0.035	9 (5.5)	23(6.9)	0.0001*
Condom promotion and distribution, negotiation skills and facilitated access	22 (13.4)	70(21.1)	0.052	29 (17.7)	104(31.4)	0.0001*
Voluntary Medical Male Circumcision (VMMC)	11 (6.7)	59 (17.8)	0.001	12 (7.3)	49(14.8)	0.0001*
STI screening and treatment	15 (9.1)	35 (10.6)	0.694	18 (10.9)	49(14.8)	0.0001*
Prevention, diagnostics and treatment of Tuberculosis(TB)	12 (7.3)	44 (13.3)	0.054	11 (6.7)	32(9.7)	0.0001*
Other prevention strategies	1 (2.1)	7 (2.1)	-	4 (2.4)	9(2.7)	0.0001*

* significant difference at $p \leq 0.05$

4.4.2 Comparison of HIV prevention strategies preferred by the youth in the two counties

At the baseline, comparing the HIV strategies the youth would prefer in the two Counties, the findings showed that the preferences differed in the two counties. Youths in both Counties significantly utilized PrEP, Post-violence care, ART, PMTCT, condoms, VMMC and TB services as shown in table 4.6.

Table 4.6: HIV prevention strategies the youths in Kakamega and Kericho would be willing to use in future at baseline

Strategy	**Kakamega (n = 331)**	**Kericho (n = 164)**	**χ^2 value**	**P value**
Information on HIV transmission, abstinence, consistent and correct condom use	216	99	0.486	0.486
HIV testing services (HTS) with active referrals to lifelong ART for HIV positive	64	22	2.376	0.123
Pre-Exposure Prophylaxis(PrEP)	28	5	4.930	0.026*
Post violence care	29	6	4.123	0.042*
Enrollment to lifelong ART	24	4	4.586	0.032*
PMTCT for pregnant and lactating adolescent girls	37	7	4.550	0.033*
Condom distribution and promotion, negotiation skills and facilitated access	70	22	3.955	0.047*
Voluntary Medical Male Circumcision (VMMC)	59	11	10.798	0.001*
STI screening and treatment	35	15	0.184	0.668
Prevention, diagnostics and treatment of Tuberculosis(TB)	44	12	3.845	0.050*
Others	7	1	7.199	0.007*

* significant difference at $p \leq 0.05$

At the endline, a comparison of the two counties (Kericho and Kakamega) on HIV services showed that use of strategies during the baseline was significantly different after the intervention (P<0.05). More youth were willing to; use condom promotion and distribution, negotiation skills and facilitated access; Information on HIV transmission, abstinence, consistent and correct condom; willing to go for HIV testing services (HTS) with active referrals to lifelong ART for HIV positive; VMMC, PrEP, PMTCT, get STI screening and treatment; ready for prevention, diagnostics and treatment of Tuberculosis (TB) as summarized in table 4.7.

Table 4.7: HIV prevention strategies the youth in Kakamega and Kericho would be willing to use in future at endline

Strategy	**Kericho (n = 164)**	**Kakamega (n = 331)**	**χ^2 value**	**P value**
Information on HIV transmission, abstinence, correct and consistent condom use	79	319	22.857	0.0001*
HIV testing services (HTS) with active referrals to lifelong ART for HIV positive	29	305	86.637	0.0001*
Pre-Exposure Prophylaxis(PrEP)	7	108	80.765	0.0001*
Post violence care	5	32	32.501	0.0001*
Enrollment to lifelong ART	12	23	14.457	0.0001*
PMTCT for pregnant and lactating adolescent girls	6	31	28.663	0.0001*
Condom promotion, negotiation skills and facilitated access	24	254	82.987	0.0001*
Voluntary Medical Male Circumcision (VMMC)	7	33	4.314	0.038*
STI screening and treatment	12	272	135.126	0.0001*
Prevention, diagnostics and treatment of Tuberculosis(TB)	9	74	68.183	0.0001*
Others	4	11	0.388	0.533

* significant difference at $p < 0.05$

4.4.3 Available HIV services to the youths

The public health officer and Adolescent Focal Officer in the key informants' interview indicated that HIV prevention services available for young people are; HIV counselling and testing; Condom distribution and demonstration; Pre exposure prophylaxis; Post exposure prophylaxis; HIV sensitization; PreP; PEP and Condoms. During the focus group discussion with the youths, the places to find HIV services were noted to be from; dispensary, clinics, colleges, Public Health center/hospital, supermarkets, Church-Youth conference, Community outreach and medical camps.

Some of the experiences shared by the youth in accessing HIV prevention services include that the services were good and the youth got to know that still you can live with an infected person without being affected. That accessing HIV services help the youth to live an enjoyable life avoid discrimination on the community. Condom dispensers are empty due to lack of free condoms and those available in shops are expensive. Youth also fear picking and carrying condoms from health facility. We don't easily access HIV test kits. Youth gained knowledge on HIV and available prevention options hence no need to fear testing. The HIV and AIDS education enlightened the youth to abstain from sex and motivate the youths on importance of prevention from sex. Other experiences the youths talked about during focus group discussions is that they were handled well when they went for the services. Although the services are good, they are not accessible in remote areas.

One of the respondents during FGD in Kericho at baseline stated;

> "*Fear of disclosure and lack of trust or confidentiality make youth reluctant to seek services at health facilities. There is also negative attitude towards young people seeking HIV services."*

A second respondent during FGD in Kericho at endline noted that;

> "*In the public hospital-the topic was interesting and a bit scary but the nurses were cool and generous*"

Some youth reported fear of accessing HIV services at public health facilities. There is lack of youth friendly services that assure confidentiality due to attitude of health care workers.

A third respondent during FGD in Kakamega at baseline noted that;

> "*If the nurse knows you, she will inform your parents that you were at the hospital even before you reach home. When I come to seek help in hospital and finds a nurse that knows me, later on you will hear them talking about you. After that the probability of coming back is nil*."

A fourth respondent during FGDs in Kakamega at endline stated;

> *"More young people need HIV prevention services, but are unable to utilize them because they lack information."*

Key informants noted the different HIV prevention services that are available to AYP to include; use of condoms, abstinence, being faithful to one partner and use of use of drugs i.e., PrEP and PEP. These services are got from; VCTs, Public Health facilities, Some private hospitals, Health camps, Chemists, over the counter, public campaigns on HIV awareness and mobile VCTs.

According to the key informants, HIV prevention services commonly used by the youths are HIV counseling and testing, PrEP, PEP, Condoms .Peer to peer education/sensitization and condom distribution and demonstration. Results of the focus

group discussion with the youths indicated that the HIV prevention services available to them and their peersare being faithful to a sexual partner, HIV self-testing, Screening of blood before transfusion, Correct and consistent Condom use, Abstinence, PrEP, PEP and Health education.

4.4.4 Hypothesis tested (HO2)

The second hypothesis tested in this objective was (HO_2): There is no significant difference in HIV prevention strategies used by the youths in intervention to those in nonintervention area. Result of this study showed that use of Pre-Exposure Prophylaxis (PrEP), enrollment to lifelong ART; use of Voluntary Medical Male Circumcision, PMTCT for pregnant and lactating adolescent girls were significantly higher in intervention as compared to nonintervention area

(P=0.0001, P=0.011). The researcher fails to accept the null hypothesis and note that; **Ha_2**: “There is a significant difference in HIV prevention strategies used by the youths in intervention to those in the nonintervention area.

4.5 To determine the effect of comprehensive HIV prevention information package on condom uptake among the study subjects

4.5.1 Condom uptake by the respondents in the two counties

In Kakamega County the number of youths who had experienced a demonstration on condom use increased significantly at the endline whereas in Kericho, the number showed a decrease at the end of this survey. Figure 4.1.

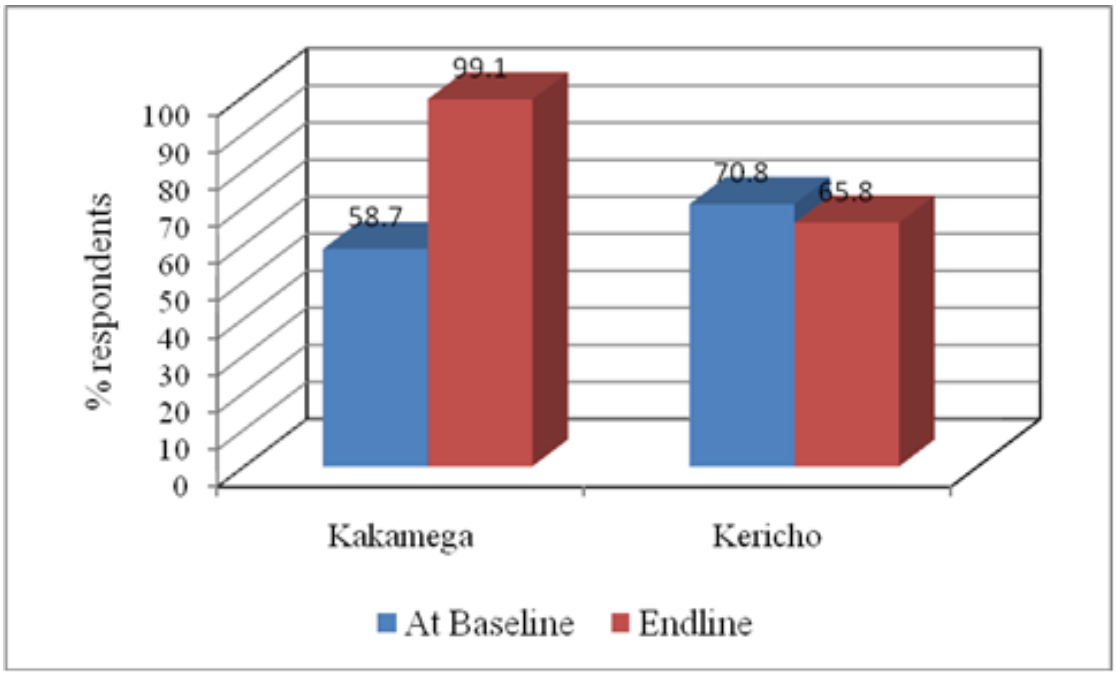


Figure 4.1: Percentage number of youth who had experienced demonstration of condom use in the two counties at baseline and endline

In the two counties, the youths who used condoms the last time they had sex at baseline and those who used condoms at the end of the survey were as indicated in figure 4.2 Condom use increased by 17.7% in the intervention county compared to 9.4% in the comparison county. This showed that there was a significant effect of condom use after intervention (t=3.265, P= 0.001).

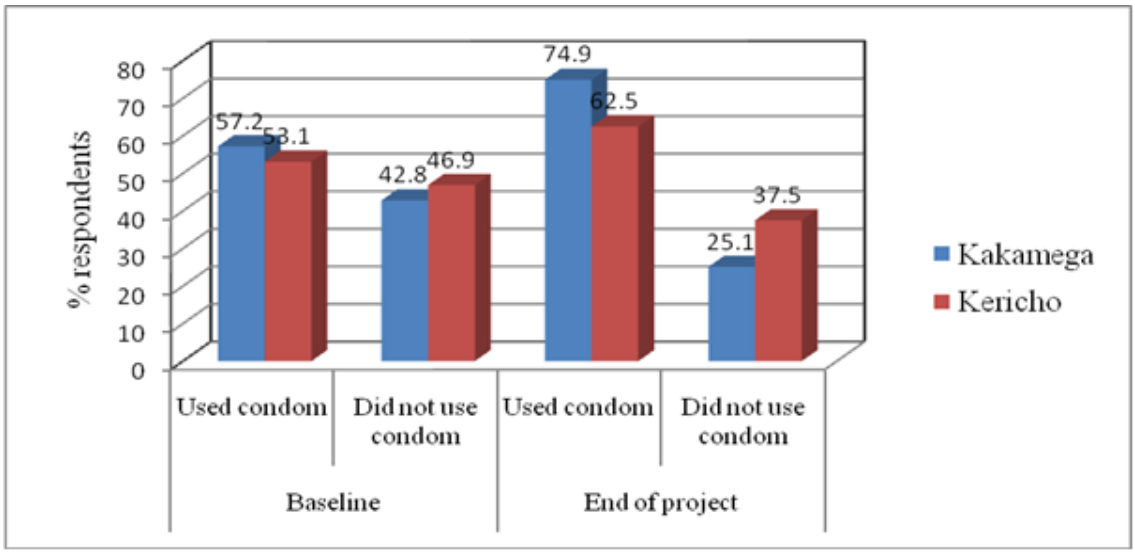


Figure 4.2: Percentage of youth who used condoms in the two counties at baseline and end of study

The decision to use condoms during sex was made by either the respondents themselves, by their partners or both of them. Association of the various opinion by respondents gender, showed that there was a significant association (χ^2= 10.297, P=0.016). In most instances, male respondents themselves suggested the use of condoms for their female partners. However, at times the suggestion were made by their partners. For the female respondents, they either suggest use of condoms by themselves to their partners or wait for the decision to be made by both sexes as shown in table 4.8.

Table 4.8: Suggestion for the use of condoms during sex

	Suggestion for use of condoms				
Gender	**Self**	**Partner**	**Joint decision**	**Do not remember**	**Total**
Male	90 (42.9%)	51 (24.3%)	40 (19.0%)	29 (13.8%)	210
Female	77 (37.7%)	34 (16.7%)	65 (31.9%)	28 (13.7%)	204
χ^2 – value			10.297		
P- value			0.016*		

*significant difference at $P \leq 0.05$

During the FGD, the youths reported some of the challenges they encounter as they use condoms including the fear to pick and carry condoms from health facility. There are high STIs cases due to unprotected sex. Free condoms are not enough and buying condoms in shop or supermarket is expensive.

One Key informant in Kakamega at endline said;

> *"Now we have a serious engagement in the County Polytechnic due to increased STIs after the HIV prevention training sessions. We request you to continue supporting this campaign even in other colleges to reach our young people.* Sub-county AIDS and STIs Coordinator and AYP Focal person, Kakamega."

4.5.2 Use of condoms by the youth in the last 9 months in Kakamega and Kericho

In the last nine months at the time of baseline study, most of the youths (34.9%) used condoms more than three times. Merely 26.1% of the youths used condoms only once. At the end of survey, more youth (47.1%) used condoms more than three times in the last nine months whereas 21.8% used them once, table 4.9.

Table 4.9: Frequency of condom use in the last 9 months

	Proportional responses n (%)			
Frequency of condom use	**During baseline**	**At end of survey**	**r value**	**P value**
Once	129(26.1)	108 (21.8)		
Twice	47 (9.5)	58 (11.7)		
Three times	60 (12.1)	65 (13.1)		
More than three times	173 (34.9)	233 (47.1)		
Non - response	86 (17.4)	31 (6.3)	0.877	0.051*

*significant difference at $P \leq 0.05$

During baseline, the main reason youth used condoms during sex was to prevent both STD/HIV and pregnancy. Other reasons were; they did not trust the partner, avoid pregnancy, because the partner wanted to use, just to avoid STD/HIV (48.3%). At the end of study, the main reason for using condom was to prevent STD/HIV (62.6%). other reason was to prevent pregnancy as shown in table 4.10.

Table 4.10: Reasons given by the youth for condom use during the last nine months

	Proportional responses (%)		
Reasons for condom use	**At baseline (N = 495)**	**At endline**	**P- value**
Prevent both STD/HIV and pregnancy	239(48.3)	105 (21.2)	
Avoid pregnancy	54 (10.9)	35 (7.1)	
Prevent STD/HIV	99 (20.0)	310(62.6)	
Did not trust partner	24 (4.8)	12 (2.4)	
Partner wanted to use	6 (1.2)	2 (0.4)	
Other reasons	11 (2.2)	4 (0.8)	
Non -response	62 (12.5)	27 (5.5)	0.303

4.5.3 Condom use during last sex among youth in Kakamega and Kericho County

In Kakamega county, condom use during last sex increased by 24.9% from the baseline 53.9% to 78.8%. However, in Kericho, condom use shifted from 63.2% at the baseline to 73.0% at endline representing an increase of 9.8% as shown in figure 4.3.

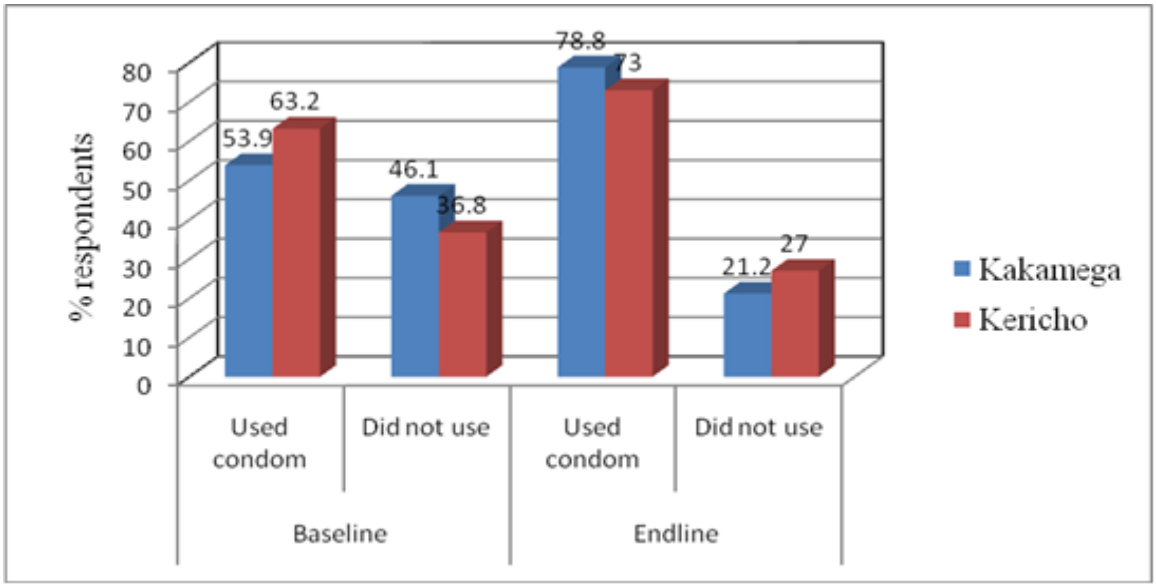


Figure 4.3: Condom use during last sexual encounter by the youth in Kericho and Kakamega at the baseline and at the end of the study

4.5.4 Reasons for failure to use condoms during last sex

During their last sex, at the baseline, 18.0% of the youths failed to use condoms mainly because they trusted their partners and 14.9% because it does not make sex enjoyable. Other reasons given were; Condom not available, not safe, the partner objected the use condom. At the end line, trusting the sexual partner was main reason the youth did not using condoms as shown in table 4.11.

Table 4.11: Reasons given by the youth for failure to use condoms during their last sex

	Proportional responses n(%)	
Reasons for not using condoms	**At baseline (n= 495)**	**At endline (n= 495)**
Trusted the partner	89 (18.0)	89 (18.0)
Do not make sex enjoyable	74 (14.9)	49 (9.9)
Condom not available	50 (10.1)	54 (10.9)
Partner objected	27 (5.5)	37 (7.5)
Condom not safe/faulty	25 (5.1)	15 (3.0)
Use other contraceptives	24 (4.8)	32 (6.5)
Do not know about condom	24 (4.85)	14 (2.8)
Too expensive	23 (4.6)	55 (11.1)
Did not think it was necessary	15 (3.0)	15 (3.0)
Do not know where to get condoms	8 (1.6)	9 (1.8)
Others	19 (3.8)	23 (4.8)
Non committal	117(23.6)	-

Based on the FGD, the youth felt that using condoms is not sweet and the condom can sometimes burst. In general, 35.8% of the youth always used condom with their partners during sex as shown in figure 4.4

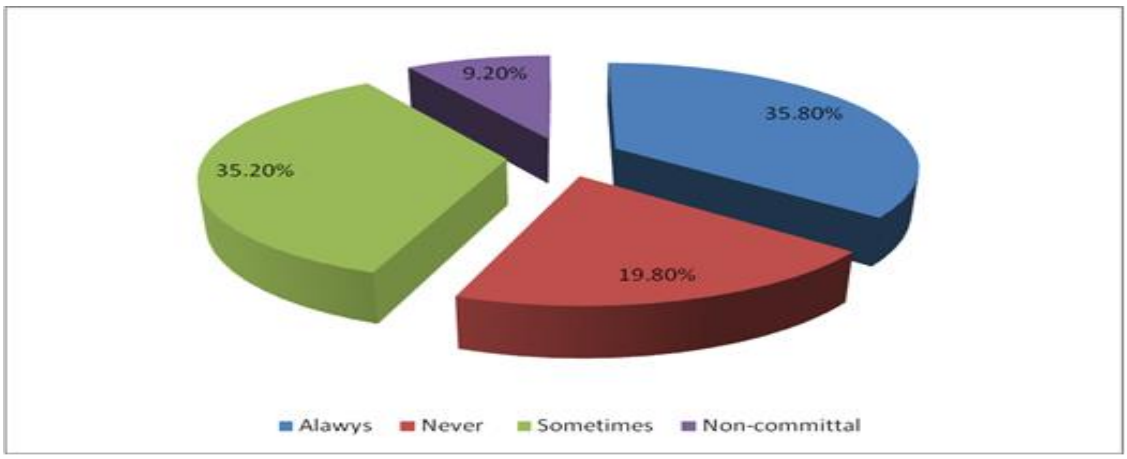


Figure 4.4: General level of condom use among the youth at the baseline

4.5.5 Availability of condoms in Kakamega and Kericho County

In Kakamega 52.7% of the youth were able to get condoms readily any time they would like to have sex while in Kericho, 50.3% of the respondents were able to get condoms as shown in table 4.12. Using a chi-square test, there was no significant difference in the availability of condoms in the two Counties ($\chi^2 = 0.180$, P= 0.687).

Table 4.12: Condom access in Kakamega and in Kericho County

County	**Readily get condom**	**Do not readily get condom**	**Total**
Kakamega	174 (52.7%)	156 (47.3%)	330
Kericho	83 (50.3%)	82 (49.7%)	165
χ^2 value		0.180	
P value		0.687	

4.5.6 Sexual practices among young people that can spread new HIV infections

Based on the findings from the key informants, some of the practices among the youths that can spread HIV are unprotected sex and multiple sexual partnership. It was reported that the youth are having sex with a people with unknown HIV status and knowingly infecting others without disclosure. It was also reported that high peer pressure, use of drugs and alcohol and the notion of "I will go for treatment if I get infected" fuels new HIV infections among the youth.

Another key informant in Kericho at endline stated;

> "*the rise in new HIV infections is due to stigma, some youth don't want to die alone and so they continue spreading*."

4.5.7 Youth's perception/experiences in using condoms when having sex

Some of the experiences and fears stated by the youths during focus group discussion were the fear of condom burst if the girl is not ready or wet and not checking expiry date. It was also reported that most youth trust their partners and ask them not to use condoms or partner declineusing. Condoms may be available but there is fear of picking in public places. Condoms are available in facilities in the open which is a challenge for youth to pick.

One of the youth respondent in Kakamega during baseline FGD confessed and said;

> *"Youth don't like using condoms because it is not sweet. Condoms makes sex less enjoyable and has side effect due to the lubricant that irritates the sexual partner."*

A second respondent in Kakamega during endline FGD stated;

> "*Condoms makes me last longer than one hour and I am now able to satisfy my partner initially I used to take less than 2 minutes without condoms"*

A third respondent during FGD in Kakamega at endline stated;

> *"Condoms are best for HIV prevention. I will be using condoms when having sex with my partner and remain faithful."*

A fourth respondent in Kericho during endline FGD stated;

> "*Like if I go there and ask for condoms and I'm told there no condoms I will not be like I will not have sex because there no condoms*."

4.5.8 Plans to use condoms in the two counties

At the end of this research, more youth (87.1%) in Kakamega than those in Kericho county (43.0%) plan to use condoms in the near future as shown in table 4.13. Using chi square statistics, this finding showed a χ^2 of 100.236, P=0.0001 showing a significant difference in Kakamega youth to Kericho youth plan to use condoms in future.

Table 4.13: Youth plan on use of condoms any time when having sex in future in Kakamega and Kericho

Plan to use condoms in future	**Kakamega**	**Kericho**	**χ^2 -value**	**P -value**
Yes plan	276 (87.1%)	65 (43.0%)		
Do Not plan	41 (12.9%)	86 (57.0%)	100.238	0.0001*

*significant difference at $P \leq 0.05$

4.5.9 Recommendation from the youth focus group discussions and key informants

The youth suggested for introduction of condom pick point center or condom dispensing machines within learning institutions to reduce stigma. Youth focal person proposed sensitization of young people, school health talk and peer education to reduce new HIV infections among young people. To the public health officer, new HIV infection can be reduced by consistent sensitization on HIV prevention messages, embracing youth friendly services, intensifying HIV testing services and Condom promotion.

4.5.10 Implications of sexual practices among young people in relation to HIV infection and strategies do in the organization have to address the situation

During the key informant interview, it was established from the public health officer that early pregnancy, school dropout, prevalence of STI and HIV as the implication of risky sexual practices. These lead to early marriages and high rate of gender based violence. Youth focal person noted mitigation of these are; creating youth friendly environment; having school health talks and media education. She felt that there is need to involve CBOs and NGOs to support in provision of basic items such as sanitary pads and school fees to reduce vulnerability of youth from poor households. Teachers need to be sensitized on basic HIV information to cascade to learners in institutions.

4.5.11 Hypothesis HO_3 tested

In this objective, the third hypothesis tested was (HO_3): HIV prevention information package have no significant effect on condom uptake among young people. The results of this objective indicated that condom use the last time youths had sex significantly increased by 17.7 % in the intervention county compared to 9.4 % in the comparison county ($t=3.265$, $P=0.001$). The findings further showed that a significantly higher number of youths (87.1%) had intention to use condoms anytime they have sex in future ($\chi^2=100.236$, $P=0.0001$). There was an improvement in condom uptake as expressed during focus group discussion.

Most youths suggested for an introduction of condom pick point centers within tertiary institutions of learning and have stigma reduced. The researcher therefore fails to accept

the null hypothesis and adopt alternative (Ha_3); HIV prevention information package have significant effect on condom advocacy uptake among young people.

4.6 To establish the effect of comprehensive HIV prevention information package on uptake of HIV testing services by the study subjects

4.6.1 HIV testing services uptake in the two counties

In Kakamega, the percentage of youth who had been tested for HIV in the end of the survey increased from 60.1% to 83.0% and the youth who were willing to go for HIV testing in the future after survey increased from 83.4% to 98.3%. There was a significant uptake of HIV testing services (t=6.547, p=0.023) as summarized in table 4.14.

Table 4.14: Youths uptake of HIV testing services in the two counties

Statement	**Baseline**		**Endline**	
	Kakamega	**Kericho**	**Kakamega**	**Kericho**
Have tested for HIV	187 (60.1%)	102 (64.6%)	274 (83.0%)	89 (56.0%)
Tested for HIV in the past nine months	139 (45.4%)	88 (55.3%)	196 (59.6%)	89 (56.3%)
Youths were willing to go for HIV testing in the future after survey	256 (83.4%)	148 (92.5%)	288 (98.3%)	136 (88.3%)
t-value	4.913		6.547	
df	2		2	
P-value	0.039*		0.023*	

*Represents significant difference at $P \leq 0.05$

Sharing of the HIV test results showed that majority of the youth were HIV negative (50.5%) and 26.2% of them were not ready to share their HIV results. This indicated a HIV prevalence of 6.9% in the study area. Some of the youth (16.4%) failed to collect the result. At the end of survey, 55.9% were HIV negative, 16.4% of the youth were HIV positive while 14.9% declined to share their HIV status as shown in figure 4.5 a and b.

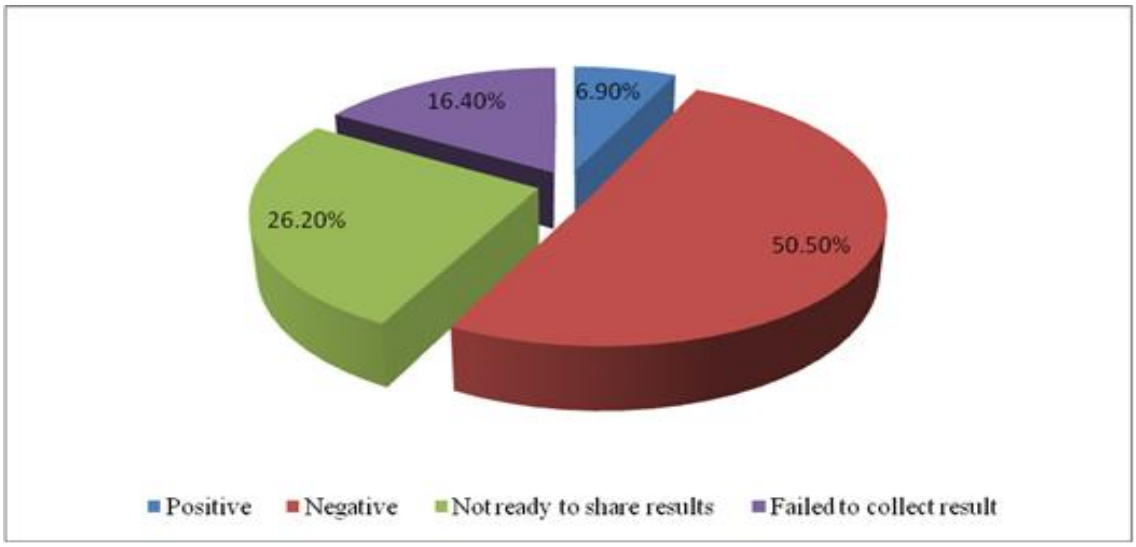


Figure 4.5a: HIV status of the respondents at the baseline of the study

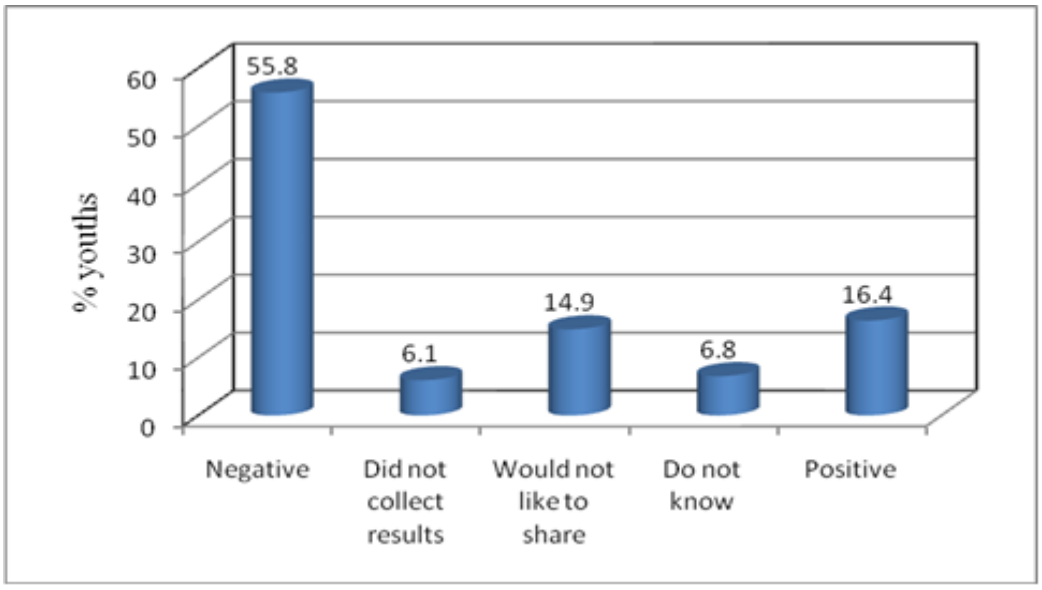


Figure 4.5b: HIV status of the respondents at the end of the study

4.6.2 Reasons for the youths not willing to have HIV test

The major reasons given by the youth at the baseline indicated that most of the youths fail to have HIV test was; do not know how to manage the shock and stress of knowing the status (20.4%) and they are afraid of knowing their status (19.0%). At the end of the survey, the main reasons were; afraid of knowing status (17.6%) and faithful and so do not need one (17.6%). Key HIV massages had a substantial improvement on the number of youth; not knowing how to manage the shock and stress of knowing the status (5.1%), not seeing the importance of the test as there is still no cure (3.1%), afraid of knowing status (1.4%), cultural/ religious barrier (0.6%) and having no trust in confidentiality (0.4%) as summarized in table 4.15.

Table 4.15: Reasons for youths' not going for HIV test

	Proportional responses (%)	
Reasons	**At the baseline (N = 495)**	**End of survey**
Afraid of knowing status	94 (19.0)	87 (17.6)
Faithfull and so do not need one	74 (14.9)	87 (17.6)
Cultural/ religious barrier	13 (2.6)	10 (2.0)
Do not know how to manage the shock and stress of knowing the status	101(20.4)	74 (14.9)
Do not see the importance of the test as there is still no cure	28 (5.7)	13 (2.6)
Do not know where to take the test	14 (2.8)	11 (2.2)
Do not have the resources to take the test	22 (4.4)	20 (4.0)
Do not trust confidentiality	18 (3.6)	16 (3.2)

4.6.3 Barriers and recommendation from the youth focus group discussions

The findings from FGDs indicated that the main reasons youth don't test for HIV is fear of is fear of the HIV testing outcomes due to lifelong drug burden. Other reasons the youth gave was exposure through unprotected sex, multiple partnerships, partners advise and to protect the breastfeeding baby. The youth fear being ssuspected as high risk by health worker when go for HIV testing. The youth also mentioned shortage of HTS counselors and unavailability of HIV testing kits in health facilities.

A youth in Kakamega during baseline FGD said;

> *"I suspected my partner was unfaithful so I went to test so that I can get a new partner*."

Another youth during FGD in Kericho at baseline stated;

"*There is no treatment, so why test for HIV?"*

During endline FGD in Kericho, a youth respondent said;

"I knew my HIV Status so that I prevent myself from getting it."

In Kakamega county endline FGD, another youth respondent stated;

"It was good and encouraging since you see the HIV results yourself."

Most in school youth are requesting to have testing centers like VCT 'within learning institution.

They wanted HTC trainings to be conducted within the school so that they can easily have testing on monthly basis. They felt that HIV prevention programs should be held within the colleges like out reaches so that they can easily get proper basic information HIV.

4.6.4 Test for hypothesis four (HO_4)

The fourth hypothesis, HO_4 tested was: HIV prevention information package has no effect on HIV testing and counseling services. After intervention, the number of youths who accepted to have HIV test significantly increased from 60.1% to 83.0% (t= 6.547, p=0.023). Those who were willing to have HIV test in future increased from 83.4% in Kakamega to 98.3%. Fewer youths did not know how to manage the stress of knowing their HIV status. From this finding therefore, the researcher fails to accept the null hypothesis and adopt the alternative (Ha_5): HIV prevention information package has effect on HIV testing and counseling services.

4.7 To analyze effects of comprehensive HIV prevention information package on number of concurrent sexual partners among the study subjects

4.7.1 Concurrent sexual partners among the youths in the two counties

The youths were asked to state; whether they were in any sexual relationship; the number of different people they had sex with in the last nine months; if they used condoms when having sex and the number of people, they plan to have sex with in future. The findings revealed that a total of 380 youths (76.8%) were in a sexual relationship while 23.2% were not at endline. In Kericho, the number of youth who had two or more sexual partners reduced at endline to 36.6% from the previous 61.4%. Similar reduction in the number of sexual partners was also noted in Kakamega County, where the number reduced to 17.6% at the end of the survey but was not significant (t=2.197, p=0.159) as summarized in table 4.16.

Table 4.16: Number of youths in sexual relationship in Kakamega and in Kericho at baseline and at end of the survey.

	Baseline		**Endline**	
	Kakamega	**Kericho**	**Kakamega**	**Kericho**
Youths in sexual relationship	198 (65.6%)	102 (66.7%)	279 (84.5%)	101 (56.4%)
Youth having one partner	116 (59.2%)	9 (8.9%)	193 (69.2%)	50 (49.5%)
Youths having two or more partners	47 (23.7%)	62 (61.4%)	49 (17.6%)	37 (36.6%)
t-value	1.608		2.197	
df	2		2	
P-value	0.249		0.159	

4.7.2 Concurrent sexual partners by gender

During the endline survey, 13.7% of the male youth in Kakamega and 32.4% of male youth in Kericho had two or more sexual partners. In Kakamega, less females (6.4%) compared to males had two or more sexual partners. Similarly, less females in Kericho (11.4%) than males had two or more sexual partners as shown in table 4.17.

Table 4.17: Gender of the youth having one, two or more sexual partners in the counties

County	Demography	Category	Number of sexual partners in last nine months			
			One	Two or more	χ^2 - value	P -value
Kakamega (n = 249)	Gender	Male	83 (33.3%)	34 (13.7%)		
		Female	116(46.6%)	16 (6.4%)	11.507	0.003*
Kericho (n =105)	Gender	Male	31 (29.5%)	34 (32.4%)		
		Female	28 (26.7%)	12 (11.4%)	4.791	0.091

*Represents significant difference at $P \leq 0.05$

4.7.3 Implications of sexual practices among young people in relation to HIV infection and strategies to address the situation

During the key informant interview, it was established that the public health officer early pregnancy, school dropout, prevalence of STI and HIV as the implication of sexual practices. These lead to early marriages and high rate of gender based violence. Youth focal person noted mitigation of these are; creating youth friendly environment; having school health talks and media education. She felt that there is need to involve

CBOs and NGO to support in provision of basic items like sanitary pads and school fees to reduce vulnerability of youth from poor households. Teachers need to be sensitized on basic HIV information to cascade to learners in institutions.

A youth respondent during FGD in Kericho at endline stated;

"I decided to have only one sexual partner after a good conversation with the nurse at the hospital."

Another youth respondent during FGD in Kakamega at endline said;

"I decided to abstain from sex and motivate the young people to prevent HIV."

4.7.4 Hypothesis testing for the fifth objective

In this objective, the hypothesis tested was; HO_5: Comprehensive HIV prevention information package has no effect on number of concurrent sexual partners among the youths. The number of youth who had two or more sexual partners reduced at endline by 6.1% and 24.8% in Kakamega and Kericho counties respectively. The reduction was however not significant (t=2.197, p=0.159). In future, more youths (73.7%) compared to those in the last nine months (45.5%) would like to have only one sexual partner. After the intervention therefore only 5.5% of the youths indicated they will still opt to have two or more sexual partners. In general, However using statistical analysis, comparison of knowledge on HIV amongst the youths at the baseline with the endline on concurrent sexual partners showed no significant change (t=0.875, P=0.411). The researcher there accepts the null hypothesis.

4.8 To evaluate effects of comprehensive HIV prevention information package on the levels of syphilis infections among the study subjects

4.8.1 Knowledge on diseases transmitted through sexual intercourse in the two counties

In the two study counties, at the end of the survey, higher number of youths were aware of HIV (95.8% and 73.8% respectively) and Syphilis (94.3% and 74.4% respectively). In Kakamega, knowledge about gonorrhea was higher (90.9%) at the end of the survey compared to the baseline (49.2%). There was a significant change in knowledge after intervention (t=3.322, P=0.021) as shown in table 4.18.

Table 4.18: Youth knowledge on common diseases transmitted through sex in Kakamega and Kericho

	Proportional response (%)			
Disease	**At baseline**		**At endline**	
	Kakamega (n =331)	**Kericho (n =164)**	**Kakamega (n=331)**	**Kericho (n =164)**
HIV	223 (67.4)	121 (73.8)	317 (95.8)	121 (73.8)
Syphilis	194(58.6)	127 (77.4)	312 (94.3)	122 (74.4)
Gonorrhea	163 (49.2)	94 (57.3)	301 (90.9)	81 (49.4)
Chlamydia	44 (13.3)	22 (13.4)	94 (28.45)	16 (9.8)
Herpes simplex	44 (13.3)	21 (12.8)	78 (23.6)	10 (6.1)
Others	3 (0.91)	0 (0.0)	3 (0.91)	7 (4.3)
t value	1.713		3.322	
P value	0.147		0.021*	

*Represents significant difference at $p < 0.05$

4.8.2 Levels of syphilis infections among youth

During the last nine months, 18.2% of the youths had experienced unusual sores/ulcers, swellings or itching of genital area at the baseline study as shown in figure 4.6a. However at the end of this survey, 24.4% noted they had experienced unusual sores, swellings or itching of genital area as shown in figure 4.6b.

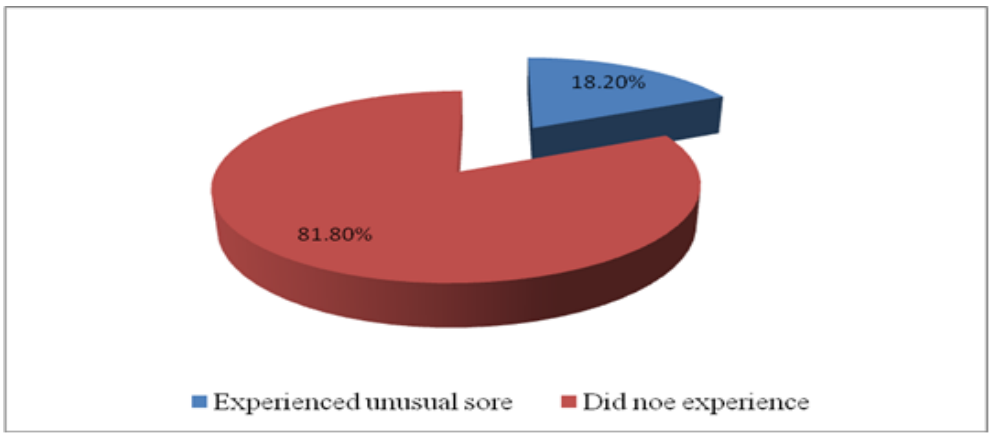


Figure 4.6a: At baseline survey, Youths experiencing unusual sores of genital area in the last nine months

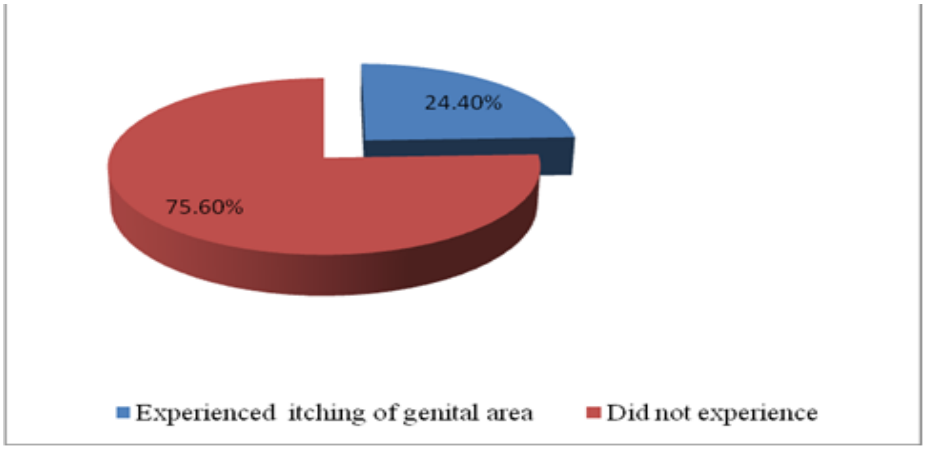


Figure 4.6b: Youths experiencing unusual sores of genital area in the last nine months at endline survey

4.8.3 Youth seeking for treatment

When they saw these symptoms at the time of baseline survey, 57.3% of the youth sought treatment for the symptoms whereas 42.7% did not seek for any treatment. After the intervention, at the end of this survey, 29.5% sought for treatment while the rest 71.5% did not seek for any treatment.

Time taken by majority of the youth to seek treatment after experiencing the symptoms varied with the individuals. Majority of the youth at the baseline and after this survey seek treatment within one week (44.2% and 34.0% respectively). The rest receive treatment after more than a week and more than one month as summarized in table 4.19.

Table 4.19: Duration taken by the youth to seek treatment after experiencing the symptoms

	Proportional response (%)	
Time	**Baseline (N = 104)**	**At end of survey**
Within 1 week	46 (44.2)	114(34.0)
More than 1 week	11 (10.6)	13 (3.9)
Within 1 month	26 (25.0)	25 (7.5)
More than one month	8 (7.7)	29 (8.7)
Others	4 (3.8)	83 (16.8)
Do not remember	9 (8.7)	71 (14.3)
T value	0.543	
P value	0.611	

There was no significant difference in number of youth who experienced unusual sores in their genital area and those who sought treatment after experiencing the symptoms in Kakamega compared to Kericho at endline. The increased reporting of syphilis cases in

the intervention county can be attributed to increased knowledge on the symptoms and the need to seek treatment. However, there was a significant difference in percentage of youth in the intervention county who informed their sexual partners after experiencing the syphilis symptoms (.χ^2 = 9.695, p= 0.008) as summarized in table 4.20.

Table 4.20: Comparison of syphilis infections in study counties at baseline and endline

Statement	**Proportional response (%)**							
	Baseline				**Endline**			
	Kakamega	**Kericho**	**χ^2**	**P**	**Kakamega**	**Kericho**	**χ^2**	**P**
Experienced unusual sore in genital area	63 (70.0)	27(30.0)	0.469	0.533	85(70.2)	36(29.8)	0.383	0.575
Sought treatment after experiencing the symptoms	73(64.0)	41(34.0)	1.368	0.280	98(67.1)	48(32.9)	1.830	0.401
Informed their sexual partners after experiencing symptoms	104(72.7)	39(27.3)	0.589	0.471	114(69.1)	51(30.9)	9.695	0.008*

*significant difference at P ≤ 0.05

4.8.4 Reasons for Youths failure to seek treatment

The main reasons why the youth did not seek treatment of syphilis symptoms in Kakamega county were no money (27.3%), did not know they were sick (26.1%), did not have time to go to hospital (9.1%) and hospital do not treat such diseases (2.8%). For Kericho county, the main reasons for not seeking treatment of the syphilis

symptoms were did not know they were sick (29.3%), no money (21.6%), did not have time to go to hospital (17.2%) and hospital do not treat such diseases (7.8%) as summarized in table 4.21.

Table 4.21: Reasons for not seeking treatment of the syphilis symptoms

	Proportional responses (%)	
Reasons	**Kakamega**	**Kericho**
No money	48 (27.3)	25 (21.6)
Do not have time to go to the hospital	16 (9.1)	20 (17.2)
Hospital do not treat such diseases	5 (2.8)	9 (7.8)
Do not know that was sick	46 (26.1)	34 (29.3)
Other reasons	61 (34.7)	28 (24.1)
t value	0.848	
P value	0.069	

4.8.5 Levels of syphilis infection among young people

Public health officer noted that currently syphilis is not so prevalent due to high level of sensitization and treatment options available. However the youth focal person stated that syphilis is noted 1 or 2 cases per month. The rate is high since there is no use of condom as it is scarce. The youth noted that openness is still a challenge and there is no youth friendly health facility that they can open up as a safe space. There are high STIs cases due to unprotected sex. The youth delay going for treatment due to lack of information. The STIs photos they have seen in the presentations is the turning point to unprotected sex to avoid getting infected.

One youth respondent during FGD in Kakamega at endline stated;

"Hallo, I am a student at the Youth Polytechnic, affected with an STI for over a year. I am treated but it keeps on recurring. I have even used pessaries but the discharge does not end. I am treated in public hospitals, may be if you could help me get treatment. Text from student"

Another youth respondent during FGD in Kericho at endline stated;

"I knew I was going to queue, but the nurse helped me gain knowledge and skills on how to prevent STDs."

A youth respondent during FGD in Kakamega at endline said;

"The experiences I got from the HIV trainings helped me know how to prevent myself from HIV and other sexually transmitted infections."

The County AIDS and STI coordinator, said that the number of new infections have reduced due to HIV awareness and education campaigns. There is need to sensitize young people in order to reduce the rate of new HIV infection.

4.8.6 Challenges experienced by the youths

Challenges experienced in preventing HIV among young people noted by public health officer were; Youths are very mobile- you locate them at one point the following session they are not there. There also Myths and misconceptions on HIV/AIDs, youth are not consistent especially with condom use and they are easily influenced by their peers. Youth Focal person noted challenges of; stigma, ignorance, discrimination or non-disclosure of the HIV status by the youth to their partners.

4.8.7 Test of the sixth Hypothesis ($H0_6$)

In the sixth objective of this study the tested hypothesis ($H0_6$); There is no effect of comprehensive HIV prevention information package on the levels of syphilis infection among young people. Despite the intervention, the study revealed that there was no significant difference in number of youth who experienced unusual sores in their genital area in Kakamega compared to Kericho at endline (X^2=0.383, p=0.575). Most of the males and female respondents still failed to inform their partners, when they noticed itching of the genitalia. However, the finding from Public health officers discussion showed that currently syphilis is not so prevalent due to high level of sensitization and treatment options available. The researcher therefore accept the null hypothesis.

4.9 Predictors of significant change in the intervention site at regression level

Logistic regression analysis conducted determined the prediction of the dependent variable on the socio demographic status of religion, age, parent/guardian employment status, level of education, gender and marital Status. The tests were done at 95% Confidence interval level and the logistic regression was statistically significant at P-value less than 0.05 as summarized in the table 4.22. For example, testing for HIV was influenced by gender, age, religion and whether a parent or guardian is employed. In terms of gender, male participants were more likely to have HIV test with odds ratio of 2.056 times higher compared to female respondents. With regards to religion, Christians were likely to test for HIV with odds ratio of 0.457 times higher than the Muslims.

Table 4.22: Predictors of significant change in intervention county

Logistic Regression					
Dependent variable	**Independent variable**	**B**	**df**	**Sig.**	**Exp(B)**
Can a person get HIV virus from mosquito bite?	Religion	2.351	1	0.019*	10.500
Have tested for HIV	Age	1.478	1	0.000*	4.386
	Parent employed	0.989	1	0.009*	2.688
People can reduce their chances of getting HIV virus by abstaining from sex	Age	1.065	1	0.003*	2.902
People who use a condom during sexual encounter lower their risk of contracting the HIV virus.	Age	0.858	1	0.007*	2.359
It is possible for a healthy looking person to be HIV infected	Level of education	0.506	1	0.002*	1.658
An HIV-positive mother may give birth to a kid who is not infected.	Age	0.625	1	0.047*	1.869
Sharing food with an HIV-positive individual can expose a person to the virus.	Level of education	-0.701	1	0.021*	0.496
Is it possible for someone to contract HIV through witchcraft or other paranormal means	Religion	1.682	1	0.005*	5.379
Promotion and distribution of condoms, competence at negotiating, and easier access	Age	1.164	1	0.042*	3.204
School/College	Age	1.624	1	0.011*	5.071
	Level of education	0.754	1	0.039*	2.126
Chemist/Pharmacy	Level of education	1.396	1	0.024*	4.039
Impact of condom distribution and promotion	Level of education	0.913	1	0.012*	2.492
Voluntary Medical Male Circumcision(VMMC)	Gender	-0.809	1	0.023*	0.445
STI screening and treatment	Level of education	0.415	1	0.022*	1.514
Used a condom the last time had sex with a partner	Gender	-0.463	1	0.042*	0.63
Use other contraceptives	Level of education	1.094	1	0.038*	2.985
Use condoms any time when having sex in future	Age	0.472	1	0.034*	1.603
	Gender	0.721	1	0.001*	2.056
Have tested for HIV	Age	0.975	1	0.000*	2.65
	Religion	-0.782	1	0.036*	0.457
	Marital Status	-0.69	1	0.034*	0.502
Willing to go for HIV test afterwards	Level of education	0.512	1	0.043*	1.669
Afraid of knowing HIV status	Age	1.437	1	0.031*	4.209
Have heard about diseases that are transmitted during sexual intercourse	Level of education	0.425	1	0.027*	1.53
Chlamydia	Level of education	0.642	1	0.034*	1.9
During the last nine months, experienced unusual swelling or itching of genital area	Religion	0.77	1	0.038*	2.159

*Represents significant difference at $p < 0.05$

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the findings based on set goals and concludes with suggestions for programming, policy and additional research.

5.2 Discussion

5.2.1 Comprehensive knowledge on HIV prevention among the youth

At the end of the research, comprehensive HIV knowledge of the youth from intervention was higher in the test items than those in Comparison county. There was a significant difference in knowledge of HIV prevention among the youths in the intervention county. This concurs with a non-randomized study that examined the effectiveness of an education intervention that improved the knowledge on HIV prevention among first year university students in China (Liu *et al*,. 2020). At the conclusion of an evaluation to find out the effect of HIV and AIDS Education programs on preventative behaviors among female adolescents in Tehran, significant improvements in the teens' experimental group's HIV awareness were noted (Khalajabadi *et al*., 2020). A similar study among first year university students in Ethiopia increased comprehensive HIV knowledge in the intervention group ((Boti, *et al*., 2023). A structured teaching programme in Bengaluru, India was effective in improving the knowledge of the adolescent girls on transmission and prevention of HIV/AIDS (Stephen *et al*., 2020). A similar peer health education intervention improved the HIV knowledge of the secondary school students in Nigeria at endline (Ezelote et al., 2024). Improved comprehensive HIV knowledge will empower the

youth to adopt safer sexual behaviors that will reduce their vulnerability to HIV infection.

5.2.2 Combination HIV Prevention services commonly used by the youth

Comparison of HIV prevention services utilized at baseline and at endline in both counties revealed a significant difference in all HIV preventive services utilized by the youths in the intervention county ($P<0.05$). There was also a significant differences in the HIV prevention services that youths were willing to use in future. This finding concurs with an evaluation on impact of service utilization and health outcomes carried out on adolescents and youth sexual and reproductive health in Zimbabwe (Muchabaiwa and Mbonigaba, 2019) that increased HIV testing, STIs screening and treatment in the intervention group. A similar intervention study on behavioral changes in Thailand reported a positive significant effect on condom use, HIV testing and STIs screening uptake (Jommaroeng *et al*., 2020). The findings concur with a Community Face to Face Health Education Intervention significantly improved Knowledge and Perception about HIV Services in the Buea Health District, Cameroon (Samba *et al*., 2020). Implementing a community-based, peer-led SRH services increased knowledge of HIV status among young people in in Lusaka, Zambia (Hensen *et al*., 2023).

5.2.3 Condom uptake among the study subjects

Condom use during last sex increased by 24.9 % from the baseline of 53.9% to 78.8% in the Intervention county. However, in comparison county, condom use shifted from 63.2% at the baseline to 73.0%, an increase of 9.8%. More youths (87.1%) in intervention than those in comparison County (43.0%) planned to use condoms in the

near future. This finding showed a χ^2 of 100.236, P=0.0001 showing a significant difference in intervention youth to comparision youth plan for future use of condoms. This concurs with a peer education intervention in selected schools in Northern Malawi that resulted to increasing condom usage and lowered multiple sexual partnerships in the intervention after 8 months (Mwale and Muula, 2019). Comprehensive sex education increased contraceptive use among young women aged 15-24 years in the United states (Cheedalla *et al*., 2020). A similar study among first year students in Ethiopia increased contraceptive use among the intervention group (Boti, *et al*., 2023). The findings also concur with a safe sex education program that increased condom usage frequency among PLWH in Southern Malaysia (Abdilah *et al*., 2022).

A peer-led HIV education intervention conducted among young people in northwest Nigeria also improved comprehensive STI knowledge and condom use following sustained exposure to the peer sessions (Akuiyibo *et al*., 2021). Although the intervention increased comprehensive HIV knowledge and condom use, the risk of transmitting HIV and other sexually transmitted infections can only be prevented by correct and consistent condom use. A reduction in teenage pregnancies, HIV incidence and other sexually transmitted infections are outcomes associated with consistent and correct condom use.

5.2.4 Uptake of HIV testing services among the study subjects

The number of youths in intervention county, who had been tested for HIV at endline survey increased from 60.1% to 83.0% and those willing to be tested for HIV in future

after the current survey increased from 83.4% to 98.3%. In comparison county, youths who had been tested for HIV at endline, decreased from 64.6% to 56.0% and those who were ready to get HIV test after this survey decreased from 92.5% to 88.3%. This finding concurs with a smartphone-based pilot HIV prevention intervention consisting of short videos and text messages that had significantly higher post-intervention intentions to seek HIV testing (Chakrapani *et al*., 2023). An online health promotion program in Hong Kong, China increased uptake of HIV testing among intervention group during COVID 19 (Wang *et al*., 2023). A peer based HIV self testing intervention offered at the campus setting increased uptake of HIV testing services among university students in Zimbabwe given the stigma associated with facility based testing (Mukora-Mutseyekwa *et al*.,2022). The findings also concur with a study in South Africa where there was increased access to HIV testing for adolescent girls both in and out of school in South Africa after exposure to comprehensive sex education (George *et al*., 2022). In Western Kenya, adolescents' uptake of HIV test and connection with care providers was markedly enhanced by a comprehensive adolescent-focused study finding (Kose *et al.,* 2018).

5.2.5 Concurrent sexual partners among the study subjects

Youths who had more than one sexual partner reduced at the endline in intervention county to 17.6% from the previous 23.7%. Similar reduction in the number was noted in comparison County, where the number reduced to 36.6% at the end of the survey. During the endline survey, 13.7% of the male youths in intervention county had two or more sexual partners compared to 32.4% of males in comparison county. In intervention county, less females (6.4%) compared to males had two or more sexual

partners (χ^2=11.507, P=0.003). This finding is concurs to a resilience-based HIV prevention intervention among youths in South Africa where the participants at the 3-months follow-up had a higher tendency to participate in several romantic relationships, transactional sex and intergenerational sex than baseline (Mbengo *et al*., 2022). A similar HIV prevention program conducted among Thai Men never decreased the number of sexual partners and STI reinfection rate after 3-month follow-up (Thato *et al*, 2018). The findings were contrary to a study conducted in New York, where participants in the prevention intervention arm reported significantly fewer sexual partners and fewer sexual activities compared to participants in the control group (El-Bassel *et al*., 2019). A school based quasi experimental study in Northern Malawi also reported lower likelihood of engaging in sexual activity and having a large number of sexual partners in the intervention group at endline (Mwale and Muula, 2019). The study did not have control over similar HIV prevention interventions that might have diluted the effect of the intervention. The findings makes me think to drop concurrent partnerships as indicator for HIV prevention or conduct a randomized community control study to see the effect. The risk of HIV transmission is also low where sexual partners have achieved viral suppression.

5.2.6 Levels of syphilis infections among the study subjects

In Intervention County, the percentage of youths who experienced syphilis symptoms increased marginally to 70.2% at endline from 70.0% at baseline. For Comparison County, the percentage of youth who experienced syphilis symptoms reduced to 29.8% at the end of the survey from 30.0% at baseline. The intervention increased knowledge about syphilis symptoms and the need to seek treatment early hence increased self

reporting during the research. There was however significant difference in percentage youth in the intervention county who informed their sexual partners after experiencing syphilis symptoms (=9.695, p=0.008). The findings concur with a similar intervention study among in school teenagers in Columbia that increased knowledge about sexually transmitted infections and greater behavioral intention toward condom use (Gómez-Lugo *et al*., 2022). A similar HIV prevention program conducted among Thai men never decreased the number of sexual partners and STI reinfection rate after 3 months followup (Thato *et al*, 2018).

The findings also concur with a study in South Africa that integrated economic strengthening and prevention HIV education interventions which did not significantly affect prevalence of sexually transmitted disease infection and behaviour among adolescents at endline (Burke *et al*., 2019). Significant post-intervention gains in students' knowledge, attitudes, and practices in the experimental group were observed in a related study on the effects of a sexuality education program on young people's STI knowledge, attitudes, and risk behavior in Northeast Nigeria (Yohanna et al., 2022). The increased self reporting on syphilis infection levels in my study can be attributed to the intervention which increased knowledge about syphilis symptoms and the need to seek early treatment.

5.3 Conclusions

Despite the extensive HIV prevention information implemented, the youths surveyed had poor perceptions of the risk of HIV infection and continued to participate in unsafe

sexual practices that increased their risk of contracting the virus. The conclusions in this study were;

1. On objective one from data analyzed, the comprehensive HIV prevention information package was successful in increasing the youths HIV knowledge (P=0.0001).
2. On objective two from the data analyzed, the comprehensive HIV prevention information package significantly increased utilization of combination HIV prevention services among the youths (P=0.0001, P=0.011).
3. For objective three from data analyzed, the comprehensive HIV prevention information package significantly increased condom uptake among the youths (P = 0.001).
4. For objective four from data analyzed, the comprehensive HIV prevention information package significantly increased HIV testing uptake among the youths (P=0.023).
5. For objective five from data analyzed, the Comprehensive HIV prevention information package had no significant effect on concurrent sexual partners among the youths (P=0.159).
6. For objective six from data analyzed, the Comprehensive HIV prevention information package had no significant effect on level of syphilis infection among the youths (P=0.575).

5.4 Recommendations

5.4.1 To policy makers and programming staff

1. The Ministry of Health to review the minimum package for young people in the Fast Track plan to include comprehensive HIV prevention information.
2. The Ministry of Health to expand the combination HIV prevention services to include comprehensive HIV prevention information package.
3. The Ministry of Health to include comprehensive HIV prevention information package in condom promotion
4. The ministry of Health to roll-out of the comprehensive HIV prevention package as part of HIV counseling and testing
5. The ministry of Health to promote alternative prevention interventions for multiple partnerships that include abstinence among youth
6. The Ministry of health and stakeholders to develop additional prevention package for sexually transmitted infections including syphilis

5.4.2 Recommendations for further research

1. Establish possible effects of comprehensive HIV prevention information package on teen pregnancy, sexual and gender based violence

2. Effect mobile based HIV prevention messaging on risk sexual behavior among youth

REFERENCES

Abdilah, A., Kadir, H., Mani, K., and Muthiah, G. (2022). Effectiveness of a Safe Sex Education Module in Improving Condom Use among People Living with HIV: A Randomised Controlled Trial. *Int. J. Environ. Res. Public Health* 2022, *19*, 10004. https://doi.org/10.3390/ijerph191610004

Akuiyibo, S., Anyanti, J., Idogho, O., Piot, S., Amoo, B., Nwankwo, N., and Anosike, N. (2021). Impact of peer education on sexual health knowledge among adolescents and young persons in two North Western states of Nigeria. Reprod Health. 2021 Oct 12;18(1):204. doi: 10.1186/s12978-021-01251-3. PMID: 34641895; PMCID: PMC8513198.

Bandura, A. (1978). Social Learning Theory of Aggression. *Journal of Communication, Vol. 28, pp. 12–29*. https://doi.org/10.1111/j.1460- 2466.1978.tb01621.x

Boti, S.N., Hussen, S., Shegaze, S. M., Zerihun, E., Godana, B. W., Abebe, S. (2023). Effectiveness of curriculum-based sexual and reproductive health education on healthy sexual behaviors among year one students at Arba Minch University: A quasi-experimental study. PLoS ONE 18(10): e0288582.https://doi.org/10.1371/journal.pone.0288582

Boti, N., Hussen, S., Shegaze, M. *et al.* (2019). Effects of comprehensive sexuality education on the comprehensive knowledge and attitude to condom use among first-year students in Arba Minch University: a quasi-experimental study. *BMC Res Notes* 12, 700 (2019). https://doi.org/10.1186/s13104-019-4746-6

Burke, H. M., Chen, M., Murray K, *et al. (2020).* The effects of the integration of an economic strengthening and HIV prevention education programme on the prevalence of sexually transmitted infections and savings behaviours among adolescents: a full-factorial randomised controlled trial in South Africa *BMJ Global Health* 2020;5:e002029.http://dx.doi.org/10.1136/bmjgh-2019-002029

Chakrapani,V., Kumar, P., Kaur, J., Shunmugam, M., and Mukherjee, D.,(2023). A Smartphone-Based Pilot HIV Prevention Intervention (Sakhi) among Transgender Women Who Engage in Sex Work in India: Efficacy of a Pre- and Post-Test Quasi-Experimental Trial *Venereology 2023***,** 2(1), 30-42; https://doi.org/10.3390/venereology2010003

Cheedalla, A., Moreau, C., Burke, A. E. (2020). Sex education and contraceptive use of adolescent and young adult females in the United States: an analysis of the National Survey of Family Growth 2011-2017. Contracept X. 2020 Nov 20; 2:100048. doi: 10.1016/j.conx.2020.100048. PMID: 33336187; PMCID: PMC7732995.

Cochran, W. G. (1963). *Sampling Techniques*, 2nd Ed. John Wiley and Sons Inc, New York, USA. Available fromhttps://doi.org/10.1002/bimj.19650070312

Connelly, L. M. (2008). Pilot studies. Medsurg Nursing, 17(6), 411-2.

Crankshaw, T. L., Matthews, L., Giddy, J., Kaida, A., Ware, C. N., Smit, J., and Bangsberg, D. (2012). A conceptual framework for understanding HIV risk behavior in the context of supporting fertility goals among HIV-serodiscordant couples. *Reproductive Health Matters*, 20:sup39, 50-60, DOI: 10.1016/S0968-8080(12)39639-0

El-Bassel, N., Gilbert, L., and Goddard-Eckrich, D. (2019). Effectiveness of a Couple-Based HIV and Sexually Transmitted Infection Prevention Intervention for Men in Community Supervision Programs and Their Female Sexual Partners: A Randomized Clinical Trial. *JAMA Netw Open*. 2019; 2(3):e191139. doi:10.1001/jamanetworkopen.2019.1139

Ezelote, C.J., Osuoji, N.J., Mbachu, A. J., Odinaka, C. K., Okwuosa, O.M., Oli, C.J., Ignatius, C. G (2024). Effect of peer health education intervention on HIV/AIDS knowledge amongst in-school adolescents in secondary schools in Imo State, Nigeria. BMC Public Health. 2024 Apr 12; 24(1):1029. doi: 10.1186/s12889-024-18536-4. PMID: 38609960; PMCID: PMC11015591.

Faust, L., and Yaya, S. (2018). The effect of HIV educational interventions on HIV-related knowledge, condom use, and HIV incidence in sub-Saharan Africa: a systematic review and meta-analysis. BMC Public Health. 2018 Nov 13; 18 (1):1254. doi: 10.1186/s12889- 018-6178-y. PMID: 30424761; PMCID: PMC6234686.

Fisher, W. A., Fisher, J. D., and Harman, J. (2003). *The information-motivation-behavioraI skills model: A general social psychological approach to understanding and promoting health behavior*. In J. Suls & K. A. Wallston (Eds.), Retrieved from https://doi.org/10.1002/9780470753552.ch4

George, G., Beckett , S., Reddy, T., Govender, K., Cawood, C., Khanyile, D., Kharsany, A.B.M.(2022).Role of Schooling and Coprehensive Sexuality Education in Reducing HIV and Pregnancy Among Adolescents in South Africa. J Acquir Immune Defic Syndr. 2022 Jul 1; 90(3):270-275. doi: 10.1097/QAI.0000000000002951. Epub 2022 Mar 18. PMID: 35302969; PMCID: PMC9177157.

GOK. (2006). Kenya HIV, Prevention and Control ACT. Nairobi, Kenya: National Council for Law Reporting

Gómez-Lugo, M., Morales, A., Saavedra-Roa, A. (2022). Effects of a Sexual Risk-Reduction Intervention for Teenagers: A Cluster-Randomized Control Trial. *AIDS Behav* 26, 2446– 2458. https://doi.org/10.1007/s10461-022-03574-z

GPC. (2019). The effectiveness of behavioural interventions to prevention HIV. A compendium of evidence. Geneva: Global HIV Prevention Coalition; 2017, updated 2019.

Henderson, J.T., Senger, C. A., Henninger, M., Bean, S.I., Redmond, N., O'Connor, E.A. (2020). Behavioral Counseling Interventions to Prevent Sexually Transmitted Infections: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA.* 2020; 324(7):682–699. doi:10.1001/jama.2020.10371

Hensen, B., Floyd, S., Phiri, M. M., Schaap, A., Sigande, L., Simuyaba, M., Mwenge, L., Zulu- Phiri, R., Mwape, L., Fidler, S., Hayes, R., Simwinga, M., Ayles, H. (2023). The impact, of community-based peer-led sexual and reproductive health services on knowledge of HIV status among adolescents and young people aged 15 to 24 in Lusaka, Zambia: The Yathu Yathu cluster-randomised trial. PLoS Med. 2023 Apr 21; 20(4):e1004203. doi:10.1371/journal.pmed.1004203. PMID: 37083700; PMCID: PMC10121029.

ICF. (2018). *The DHS Program*. Rockville, Maryland, USA: ICF International. Retrieved from https://www.dhsprogram.com/

Israel, G. D. (1992). *Sampling the Evidence of Extension Program Impact*. Program Evaluation and Organizational Development, IFAS, University of Florida.

Jommaroeng, R., Richter, K. A., Chamratrithirong, A. and Soonthorndhada, A. (2020). The effectiveness of national HIV prevention education program on behavioral changes for men who have sex with men and transgender women in Thailand", *Journal of Health Research*, Vol. 34 No. 1, pp. 2-12. https://doi.org/10.1108/JHR-12-2018-0163

Kakamega CIDP. (2023). Kakamega County Integrated Development plan, 2023 -2027

Kalichman1, S., Stein, A. J., Malow, R., A verhart, C., Dévieux, J., Jennings, T.,…Feaster, D.J. (2002). Predicting protected sexual behaviour using the Information-Motivation-Behaviour skills model among adolescent substance abusers in court-ordered treatment. *Psychol Health Med*. 2002; 7(3):327-338

Kericho CIDP. (2023). Kericho County Integrated Development plan, 2023 -2027

Khalajabadi, F. F., Darabi, F., and Yaseri, M. (2020). The Effect of Theory-Based HIV/AIDS Educational Program on Preventive Behaviors among Female Adolescents in Tehran: A Randomized Controlled Trial. J ReprodInfertil. 2020 Jul-Sep; 21(3):194-206. PMID: 32685417; PMCID: PMC7362097.

KNBS. (2019). Kenya Population and Housing Census. Nairobi, Kenya: Kenya National Bureau of Statistics. Available from www.knbs.or.ke

Kose, J., Tiam, A., Ochuka, B., Okoth, E., Sunguti, J., Waweru, M., Mwangi, E., Wolters, T., and Rakhmanina, N. (2018). Impact of a Comprehensive Adolescent-Focused Case Finding Intervention on Uptake of HIV Testing and Linkage to Care among Adolescents in Western Kenya. J Acquir Immune Defic Syndr. 2018 Nov 1;79(3):367-374. doi:10.1097/QAI.0000000000001819. PMID: 30063649; PMCID: PMC6203422.

Liu, Y., Lu, L., Wang, Y.Y., Wilkinson, M.R., Ren, Y.M., Wang, C.C., Zhang, F.B., Gao, J., and Liu, S. (2020). Effects of health education on HIV/AIDS related knowledge among first year university students in China. *Afr Health Sci. 2020* Dec; 20(4):1582-1590. doi:10.4314/ahs.v20i4.10.PMID: 34394218; PMCID: PMC8351845.

Lu, X., Malmros, J., Liljeros, F., Britton, T. (2013). Respondent-driven Sampling on Directed Networks. *Electronic Journal of Statistics* 7: 292-322.

Mbengo, F., Adama, E., Amanda, T.B., Bhana, A., Yamoah, A.E., Zgambo, M.(2022). Impact of you only live once: A resilience-based HIV prevention intervention to reduce risky sexual behaviour among youth in South Africa, Act a Psychologica, Volume 230, 2022,103757, ISSN 0001-6918, https://doi.org/10.1016/j.actpsy.2022.103757

MOH. (2019). *Kenya Population–based HIV Impact Assessment.* Nairobi, Kenya: National AIDS and STI Control Programme

MOH. (2014). *Kenya Demographic and Health survey.* Nairobi, Kenya: Kenya National Bureau of Statistics

MOH. (2014). *Kenya HIV Prevention Revolution Road map*. Nairobi, Kenya: National AIDS Control Council

MOH. (2024). *Kenya HIV Estimates Report*. Nairobi, Kenya: National Syndemic Diseases Control Council

MOH. (2023). *Kenya HIV Estimates Report*. Nairobi, Kenya: National Syndemic Diseases Control Council

MOH. (2022). *Kenya HIV Estimates Report*. Nairobi, Kenya: National AIDS Control Council

MOH. (2020). *Kenya HIV Estimates Report*. Nairobi, Kenya: National AIDS Control Council

MOH. (2018). *Kenya HIV County Profiles.* Nairobi, Kenya: National AIDS Control Council

Muchabaiwa, L., Mbonigaba, J., (2019). Impact of the adolescent and youth sexual and reproductive health strategy on service utilization and health outcomes in. PLoS Zimbabwe ONE 14(6): e0218588. https://doi.org/10.1371/journal.pone.0218588

Mukora-Mutseyekwa, F., Mundagowa, P. T., Kangwende, R. A. Murapa, T., Tirivavi, M., Mukuwapasi, W., Tozivepi, S.N., Uzande, C., Mutibura, Q., Chadambuka, M. E, and Machinga, M. 2022. Implementation of a campus-based and peer-

delivered HIV self-testing intervention to improve the uptake of HIV testing services among university students in Zimbabwe: the SAYS initiative. *BMC Health Serv Res* 22, 222 (2022). https://doi.org/10.1186/s12913-022-07622-1

Mwale, M., and Muula, S. A. (2019). The efficacy of peer education in sexual behavioral change among school-going adolescents in Northern Malawi: A quasi experiment, *Journal of HIV/AIDS & Social Services*,18:3,229-247, doi:10.1080/15381501.2019.1620664

NACC. (2015). *Kenya's Fast Track Plan to End HIV and AIDS Among Adolescents and Young People.* Nairobi, Kenya: National AIDS Control Council

Niland, R., Flinn, C., and Nearchou, F. (2024). Assessing the role of school based sex education in Sexual health behaviours: a systematic review. Cogent Psychology, 11(1). https://doi.org/10.1080/23311908.2024.2309752

Orji, R., Vassileva, J., and Mandryk, R. (2012). Towards an effective health interventions design: an extension of the health belief model. Online J Public Health Inform. 2012; 4(3)

Park,Y. S., Konge, L., Artino, A. R.(2020). The Positivism Paradigm of Research, Academic Medicine: May 2020 - Volume 95 - Issue 5 - p 690-694 doi: 10.1097/ACM.0000000000003093: Accessed November 2020

Phiri, M. M., Schaap, A., Hensen, B., Sigande, L., Simuyaba, M., Mwenge, L., Phiri, Z.R., Phiri, R., Mwape, L., Floyd, S., Fidler, S., Hayes, R., Simwinga, M., and Ayles, H. (2024). The impact of an innovative community-based peer-led intervention on uptake and coverage of sexual and reproductive health services among adolescents and young people 15–24 years old: results from the Yathu Yathu cluster randomised trial. *BMC Public Health* 24, 1424 (2024). https://doi.org/10.1186/s12889-024-18894-z

Stephen, N., Gusen, N. J., Kumzhi, P.R., Gaknung, B., Auta, D.A., Bulndi, L.B., Mbursa, C., Kumari, V. P, Nanvyat, N. (2020). Effectiveness of structured teaching programme on transmission and prevention of human immunodeficiency virus/acquired immune deficiency syndrome among adolescent girls in Lowry Memorial High School, Bengaluru. Indian J Sex Transm Dis AIDS. 2020 Jan-Jun;41(1):73-82. doi: 10.4103/ijstd.IJSTD_102_17. Epub 2018 Mar 26. PMID: 33062987; PMCID: PMC7529178.

Samba, M. B., Njamnshi, A. K., Nsagah, D. S., & Vincent, V. S. (2020). Impact of Community Face to Face Health Education Intervention on Knowledge and Perception about HIV Services by Men in the Buea Health District. *American Journal of Epidemiology and Infectious Disease, 8*(2), 91-99. DOI: 10.12691/ajeid-8-2-5

Suresh, K.P., and Chandrashekara, S. (2012). Sample Size estimation and Power analysis for Clinical research studies. *PubMed*, 2012, doi: 10.4103/0974-1208. 97779

Thato, R., Daengsaard, E., and Sukrak, N. (2018). The Effect of a Brief HIV Prevention Program on Risk Reduction Behaviors Among Thai Men Diagnosed With Sexually Transmitted Infections, *Asian Nursing Research*, Volume*12, Issue 4,2018, Pages 265-272, ISSN 1976-1317*, https://doi.org/10.1016/j.anr.2018.10.003.

UNAIDS. (2020). *UNAIDS Estimates.* Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS, 2020.

UNAIDS. (2022). *UNAIDS Estimates.* Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS, 2022.

UNAIDS. (2024). *UNAIDS Estimates.* Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS, 2024.

UNESCO. (2018). International technical guidance on sexuality education: an evidence-informed approach. Paris: UNESCO; 2018.

Wang, Z., Chan, P. Sf., Xin, M., Fang, Y., Chidgey, A., Yu, F., Ip, M., Chen, S., and Mo, K.H.P.(2023). An Online Intervention Promoting HIV Testing Service Utilization among Chinese men who have sex with men During the COVID-19 Pandemic: A quasi-experimental Study. *AIDS Behav* (2023). https://doi.org/10.1007/s10461-023-04100-5

Yohanna, W., Agbaje, O. S., Ene, O. C., Ofili, P. C., and Umoke, P. I. C. (2023). Effects of a sexuality education programme on young people's STI/HIV knowledge, attitudes and risk behaviour in Northeast Nigeria. *Health Education Journal, 0*(0). https://doi.org/10.1177/00178969221139815.

APPENDICES

Appendix 1: Research Instruments

A. Semi-Structured questionnaire

Instructions

1. Answer all questions that you can. It will take less than 20 minutes to complete the survey
2. You are free to modify any answer provided if desired
3. Do not indicate your name on the questionnaire

1. Identification

County……..

Sub county……

2. Socio demographic data

a. What is your gender?

	Male	1
	Female	2

b. How old are you ?

	15-19 yrs	1
	20-24 yrs	2

c. What is your level of education?

	None	**1**
	Primary	**2**
	Secondary	**3**
	Tertiary	**4**

d. What is your religion?

	Christian	1
	Muslim	2
	Other	3

e. Marital status?

	Married	1
	Single	2
	Other	3

f. Is your parent/guardian employed?

	Yes	1
	No	2

3. Level of comprehensive HIV Knowledge

a. Have you ever had of an illness called HIV/AIDS?

	Yes	1
	No	2
	Don't know	3

b. Can people reduce their chance of getting HIV virus by abstaining from sex?

	Yes	1
	No	2
	Don't know	3

c. Can people reduce their chance of getting the HIV virus by having just one uninfected sex partner who has no other sex partners?

	Yes	1
	No	2
	Don't know	3

d. Can people reduce their chance of getting the HIV virus by using a condom every time they have sex?

	Yes	1
	No	2
	Don't know	3

e. Is it possible for a healthy looking person to be HIV infected?

	Yes	1
	No	2
	Don't know	3

f. Can a person get HIV virus from mosquito bite?

	Yes	1
	No	2
	Don't know	3

g. Is it possible for an infected woman to give birth to a child not infected with HIV ?

	Yes	1
	No	2
	Don't know	3

h. Can a person get HIV by sharing food with someone who is infected with HIV?

	Yes	1
	No	2
	Don't know	3

i. Can a person get HIV because of witchcraft or other supernatural means?

	Yes	1
	No	2
	Don't know	3

4. Combination HIV prevention strategies

a. Which of the following HIV Prevention services have you ever utilized?

	Abstinence, Information on transmission, correct and consistent condom use	1
	HIV testing services (HTS) with active referrals to lifelong ART for HIV-positive	2
	Pre-Exposure Prophylaxis (PrEP)	3
	Post violence care	4
	Enrolment to life long ART	5
	Use of PMTCT by pregnant and lactating adolescent girls	6
	Condom promotion &distribution, negotiation skills and facilitated access	7
	Voluntary Medical Male Circumcision (VMMC)	8
	STI screening and treatment	9
	Prevention, diagnosis and treatment of tuberculosis (TB)	10
	Other specify……	11

b. Where do you generally receive these prevention services ?

	Public Hospital/clinic	1
	Private clinic	2
	School/College	3
	Church	
	Chemist/Pharmacy	
	Community Health worker/Outreach workers	4
	Other specify	5

c. What are your experiences of accessing these HIV prevention services?

d. Which of the following HIV prevention services will you be willing to utilize in future after this survey?

	Information on; abstinence, HIV transmission , consistent and correct condom use	1
	HIV testing services (HTS) with active referrals to lifelong ART for HIV-positive	2
	Pre-Exposure Prophylaxis (PrEP)	3
	Post violence care	4
	Enrolment to life long ART	5
	Being informed about PMTCT for pregnant and lactating adolescent girls	6
	Condom promotion &distribution, negotiation skills and facilitated access	7
	Messages on Voluntary Medical Male Circumcision (VMMC)	8
	STI screening and treatment	9
	Prevention, diagnosis and treatment of tuberculosis (TB)	10
	Other specify……	11

5. Condom uptake

a. Has anyone ever demonstrated to you how to use a condom?

	Yes	1
	No	2

b. If yes, who?

	Health worker I	1
	Community workers	2
	Friends	3
	Taught myself	4
	Partner	5
	Other (Specify)……..	6

c. Does the use of a condom during sexual intercourse protect you from HIV?

	Yes	1
	No	2
	Don't know	3

d. Have you ever used condoms during sex?

	Yes	1
	No	2

e. If yes, did you use a condom last time you had sex with your partner?

	Yes	1
	No	2

f. Who suggested condom use that time?

	Myself	1
	My partner	2
	Joint decision	3
	Don't remember	4

g. In the last nine months, how many times did you use condoms?

	Once	1
	Twice	2
	Three times	3
	More than three times	4

i. What is the main reason you used a condom on that occasion?

	Prevent STD /HIV	1
	Avoid pregnancy	2
	Both prevent STD/HIV and pregnancy	3
	Did not trust partner	4
	Partner wanted to use	5
	Other……..	6

j. Please give reasons for your non-use of a condom during you last sex

	Too expensive	
	Not available	
	Partner objected	
	Do not make sex enjoyable	
	Trust the partner	
	Condoms not safe/faulty	
	Don't know where to get condoms	
	Use other contraceptives	
	Didn't think it was necessary	
	Don't know about condoms	
	Other (specify)	

k. In general, how often do you use condoms with your partner/s?

	Always	1
	Never	2
	Sometimes	3

l. Can you readily get condoms anytime you would like to have sex?

	Yes	1
	No	2

m. Do you plan to use condoms anytime when having sex in future?

	Yes	1
	No	2

6. HIV testing service uptake

a. Have you ever tested for HIV?

	Yes	1
	No	2

b. If yes, how many times did you get tested for HIV in the past nine months?

	Once	1
	Twice	2
	Three times	3
	More than three times	4

c. If you don't mind, would you share with me your results?

	Positive	1
	Negative	2
	Did not collect results	3
	Would not like to share results	3
	Do not know	4

d. Will you be ready to go for HIV testing in future after this survey?

	Yes	1
	No	2

e. If no, why don't you want to have a HIV test?

	I am afraid of knowing my status	1
	I am faithful and so don't need one	2
	Cultural/religious barriers	3
	Don't know how to manage the stress and shock of knowing my status	4
	Don't see the importance of the test as there is still no cure	5
	Don't know where to take the test	6
	Don't have resources to take the test	7
	Don't trust confidentiality	8
	Other (specify)	9

7. Concurrent sexual partners

a. Are you in any sexual relationship?

	Yes	1
	No	2

b. If yes, how many different people did you have sex with in the last nine months?

	None	1
	one	2
	Two or more	3

c. Do you use condoms anytime when having sex with your partners?

	Yes	1
	No	2

d. How many different people do you wish to have sex with in future?

	None	1
	one	2
	Two or more	3

8.Level of syphilis infection

a. Have you ever heard of diseases that can be transmitted through sexual intercourse?

	Yes	1
	No	2

b. If yes, name some of the most common diseases that can be transmitted through sexual intercourse

	HIV	1
	Syphilis	2
	Gonorrhoea	3
	Chlamydia	4
	Herpes Simplex	5
	Don't know	6
	Other (specify)	7

c. During the last nine months, have you experienced unusual sores/ulcers, swelling or itching of genital area?

	Yes	1
	No	2

d. If yes, did you seek treatment for these symptoms?

	Yes	1
	No	2

e. How long after first experiencing these symptoms did you seek treatment?

	Within one week	1
	More than one week	2
	Within one month	3
	More than one month	4
	Don't know/Remember	5
	Other (specify)	6

f. If no, what are the reasons for not seeking treatment of these symptoms?

	No money	1
	Don't have time to go to hospital	2
	Hospital don't treat such diseases	3
	Don't know that I was sick	4
	Other (specify)	6

g. During the time you experienced these symptoms, did you inform your sexual partners?

	Yes (all of them)	1
	No	2
	Some of them, not all	3

Thank you for completing the questionnaire

B. Key Informant Interview Guide

Check list for Key Informant Interviews with young people Program providers

Dear respondent, young people aged 15-24 years contribute almost half of new HIV infections in Kenya. We are interested in establishing the combination HIV prevention strategies available for young people. The information collected may be published but the names of the institution and respondents won't be included in the report. So, feel free to share your experience which will contribute to improvement in the current approach of HIV prevention among young people in Kenya

Socio-demographic information

Job Title…….

Age……

Gender……

1. Which HIV prevention services are available for young people?
2. Which HIV prevention services are commonly used by young people?
3. What are the levels of chlamydia/syphilis infection among young people?
4. What challenges do you experience in preventing HIV among young people?
5. What else needs to be done to reduce new HIV infections among young people?
6. What are the implications of sexual practices among young people in relation to HIV infection and what strategies do your organization have to address the situation?

C. Focus Group Discussion Guide for young people Guide

How are you all! Before we start, I would like to remind you that we are interested in knowing what each of you think, so please feel free to be to share all your opinions. Please don’t tell anyone outside this group about what you hear during this discussion. I will ensure that information collected during this session will remain confidential. Let's start by introducing ourselves.

1. General view regarding HIV situation among young people in the county

2. Where do you obtain information regarding HIV/STI prevention?

3. Possible HIV prevention strategies among young people

3. What is your perception of using condoms when having sex?

4. Condom use and its challenges among young people

4. STI infections among young people

5. Sexual practices among young people that can spread new HIV infections

6. The role young people can play to prevent new HIV infections

Appendix 2: Additional data analysis

Gender * who suggested condom use that time? Cross tabulation

			who suggested condom use that time?				
			Myself	My partner	Joint decision	Dontremmember	Total
Gender	Male	Count	90	51	40	29	210
		% within Gender	42.9%	24.3%	19.0%	13.8%	100.0%
	Female	Count	77	34	65	28	204
		% within Gender	37.7%	16.7%	31.9%	13.7%	100.0%
Total		Count	167	85	105	57	414
		% within Gender	40.3%	20.5%	25.4%	13.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.297[a]	3	.016
Likelihood Ratio	10.377	3	.016
Linear-by-Linear Association	2.731	1	.098
N of Valid Cases	414		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.09.

In the last nine months, how many times did you use condoms?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once	129	26.1	31.5	31.5
	Twice	47	9.5	11.5	43.0
	Three times	60	12.1	14.7	57.7
	More than three times	173	34.9	42.3	100.0
	Total	409	82.6	100.0	
Missing	System	86	17.4		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.297[a]	3	.016
Likelihood Ratio	10.377	3	.016
Linear-by-Linear Association	2.731	1	.098
N of Valid Cases	414		
Total	495	100.0	

What is the main reason you used a condom on that occasion?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prevent STD/HIV	99	20.0	22.9	22.9
	Avoid pregnancy	54	10.9	12.5	35.3
	Both prevent STD/HIV And pregnancy	239	48.3	55.2	90.5
	Did not trust partner	24	4.8	5.5	96.1
	Partner wanted to use	6	1.2	1.4	97.5
	Other	11	2.2	2.5	100.0
	Total	433	87.5	100.0	
Missing	System	62	12.5		
Total		495	100.0		

Please give reasons for your non-use of a condom during your last sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	too expensive	23	4.6	6.1	6.1
	Not available	50	10.1	13.2	19.3
	Partner objected	27	5.5	7.1	26.5
	Do not make sex enjoyable	74	14.9	19.6	46.0
	Trust the partner	89	18.0	23.5	69.6
	Condoms not safe/faulty	25	5.1	6.6	76.2
	Don’t know where to get condoms	8	1.6	2.1	78.3
	use other contraceptives	24	4.8	6.3	84.7
	didn’t think it was necessary	15	3.0	4.0	88.6
	don’t know about condoms	24	4.8	6.3	95.0
	other	19	3.8	5.0	100.0
	Total	378	76.4	100.0	
Missing	System	117	23.6		
Total		495	100.0		

In general, how often do you use condoms with your partner/s

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	always	177	35.8	39.4	39.4
	Never	98	19.8	21.8	61.2
	Sometimes	174	35.2	38.8	100.0
	Total	449	90.7	100.0	
Missing	System	46	9.3		
Total		495	100.0		

Can you readily get condoms any time you would like to have sex?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	257	51.9	57.1	57.1
	No	193	39.0	42.9	100.0
	Total	450	90.9	100.0	
Missing	System	45	9.1		
Total		495	100.0		

Do you plan to use condoms anytime when having sex in future?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	236	47.7	52.0	52.0
	No	218	44.0	48.0	100.0
	Total	454	91.7	100.0	
Missing	System	41	8.3		
Total		495	100.0		

In the past nine months, were you tested for HIV?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	227	45.9	48.8	48.8
	No	238	48.1	51.2	100.0
	Total	465	93.9	100.0	
Missing	System	30	6.1		
Total		495	100.0		

If you don't mind, would you share with me your results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Positive	34	6.9	7.8	7.8
	Negative	250	50.5	57.3	65.1
	Did not collect results	81	16.4	18.6	83.7
	would not like to share results	71	14.3	16.3	100.0
	Total	436	88.1	100.0	
Missing	System	59	11.9		
Total		495	100.0		

Will you be willing to be tested for HIV in future?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	404	81.6	86.5	86.5
	No	63	12.7	13.5	100.0
	Total	467	94.3	100.0	
Missing	System	28	5.7		
Total		495	100.0		

Appendix 3: Ethical clearance from KUERC

KENYATTA UNIVERSITY
CENTER FOR RESEARCH ETHICS AND SAFETY

Fax: 8711242/8711575
Email: chairman.kuerc@ku.ac.ke
Nairobi, 00100

P. O. Box 43844,

Tel: 8710901/12

Website: www.ku.ac.ke
Our Ref: **KU/ERC/APPROVAL/VOL.1**

Date: 23/08/2021

Joab Khasewa
P.O BOX 43844-00100
Nairobi.

Dear Sir,

RE: EFFECT OF COMPREHENSIVE HIV PREVENTION INFORMATION PACKAGE ON RISKY SEXUAL BEHAVIOUR AMONG YOUTH IN KAKAMEGA AND KERICHO COUNTIES, KENYA

This is to inform you that ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** has reviewed and approved your above research proposal. Your application approval number is ***PKU/2302/I1441.*** The approval period is ***23/08/021 to 23 /08 2022.***

This approval is subject to compliance with the following requirements;

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

vii. Submission of an executive summary report within 90 days upon completion of the study to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE***

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

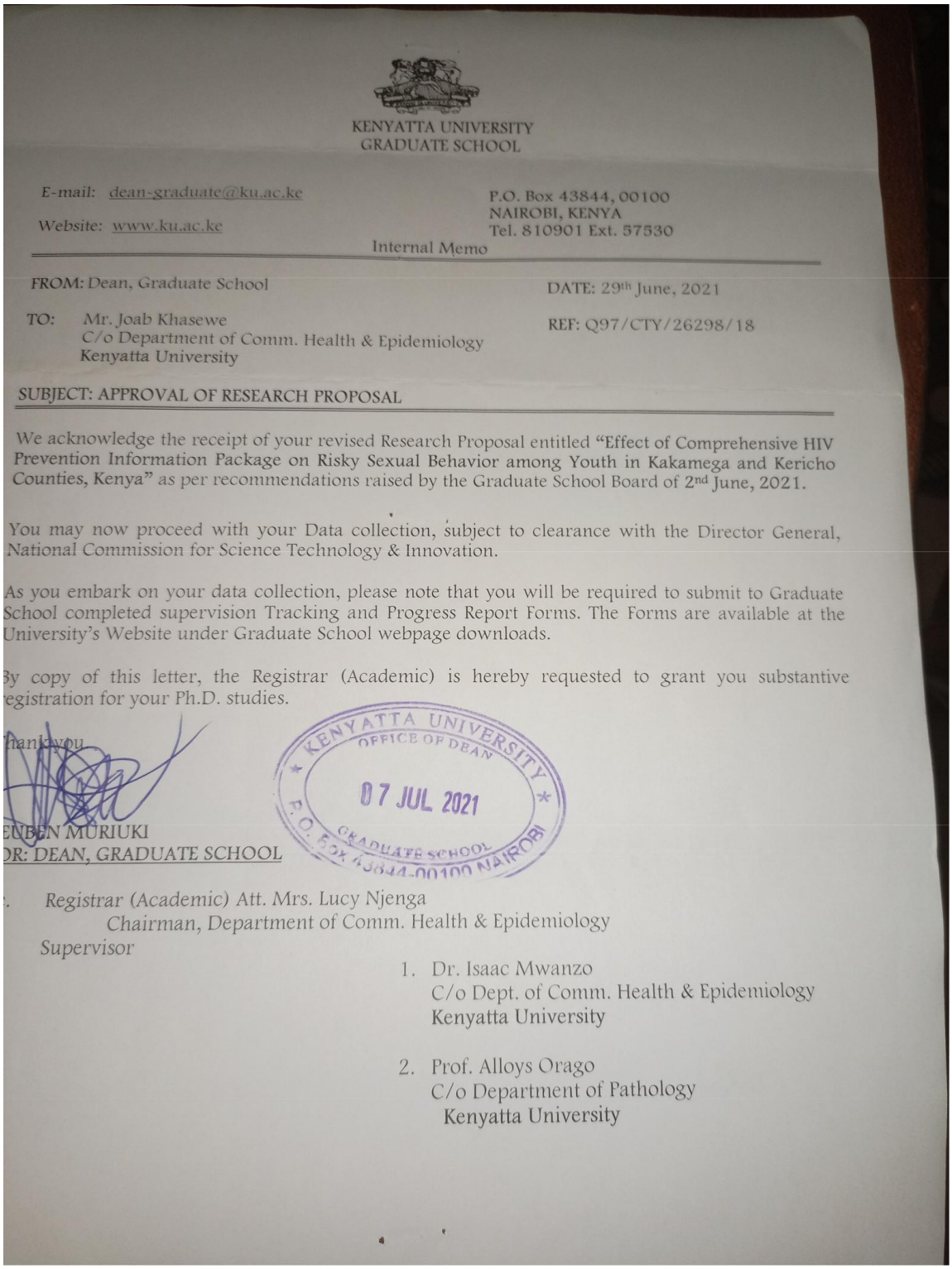
To serve you better, researchers are kindly requested to access and complete a customer feedback form and sent it back online as you continue with research and upon completion of data collection found on the following website link; ;(https://docs.google.com/forms/d/1ytWefDwvyz5h1oz_VIn0xbxg3uGdlDzMXFWNDsMrRPQ/edit?usp=sharing

Yours sincerely

Prof. Judith Kimiywe

Director: Center for Research Ethics and Safety

Appendix 4: Letter from KU Graduate School approving the proposal



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School

DATE: 29th June, 2021

TO: Mr. Joab Khasewe
C/o Department of Comm. Health & Epidemiology
Kenyatta University

REF: Q97/CTY/26298/18

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

We acknowledge the receipt of your revised Research Proposal entitled "Effect of Comprehensive HIV Prevention Information Package on Risky Sexual Behavior among Youth in Kakamega and Kericho Counties, Kenya" as per recommendations raised by the Graduate School Board of 2nd June, 2021.

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking and Progress Report Forms. The Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you

KENYATTA UNIVERSITY OFFICE OF DEAN 07 JUL 2021 GRADUATE SCHOOL P.O. Box 43844-00100 NAIROBI

REUBEN MURIUKI
FOR: DEAN, GRADUATE SCHOOL

c. Registrar (Academic) Att. Mrs. Lucy Njenga
Chairman, Department of Comm. Health & Epidemiology
Supervisor

1. Dr. Isaac Mwanzo
C/o Dept. of Comm. Health & Epidemiology
Kenyatta University

2. Prof. Alloys Orago
C/o Department of Pathology
Kenyatta University

Appendix 5: Research License from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **953347**

Date of Issue: **23/August/2021**

RESEARCH LICENSE

This is to Certify that Mr.. Joab Khasewa of Kenyatta University, has been licensed to conduct research in Kakamega, Kericho, Machakos on the topic: Effect of comprehensive HIV prevention information package on risky sexual behavior among youth in Kakamega and Kericho counties, Kenya. for the period ending : 23/August/2022.

License No: **NACOSTI/P/21/12386**

953347

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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

Appendix 6: Permission from study counties

REPUBLIC OF KENYA

THE PRESIDENCY
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

County Commissioner
Kakamega County
P O BOX 43 - 50100
KAKAMEGA

Telephone: 056 -31131
Email: cckakamega@yahoo.com
When replying please quote:

Ref: ED.12/1/VOL.V/189

Date: 21st September, 2021

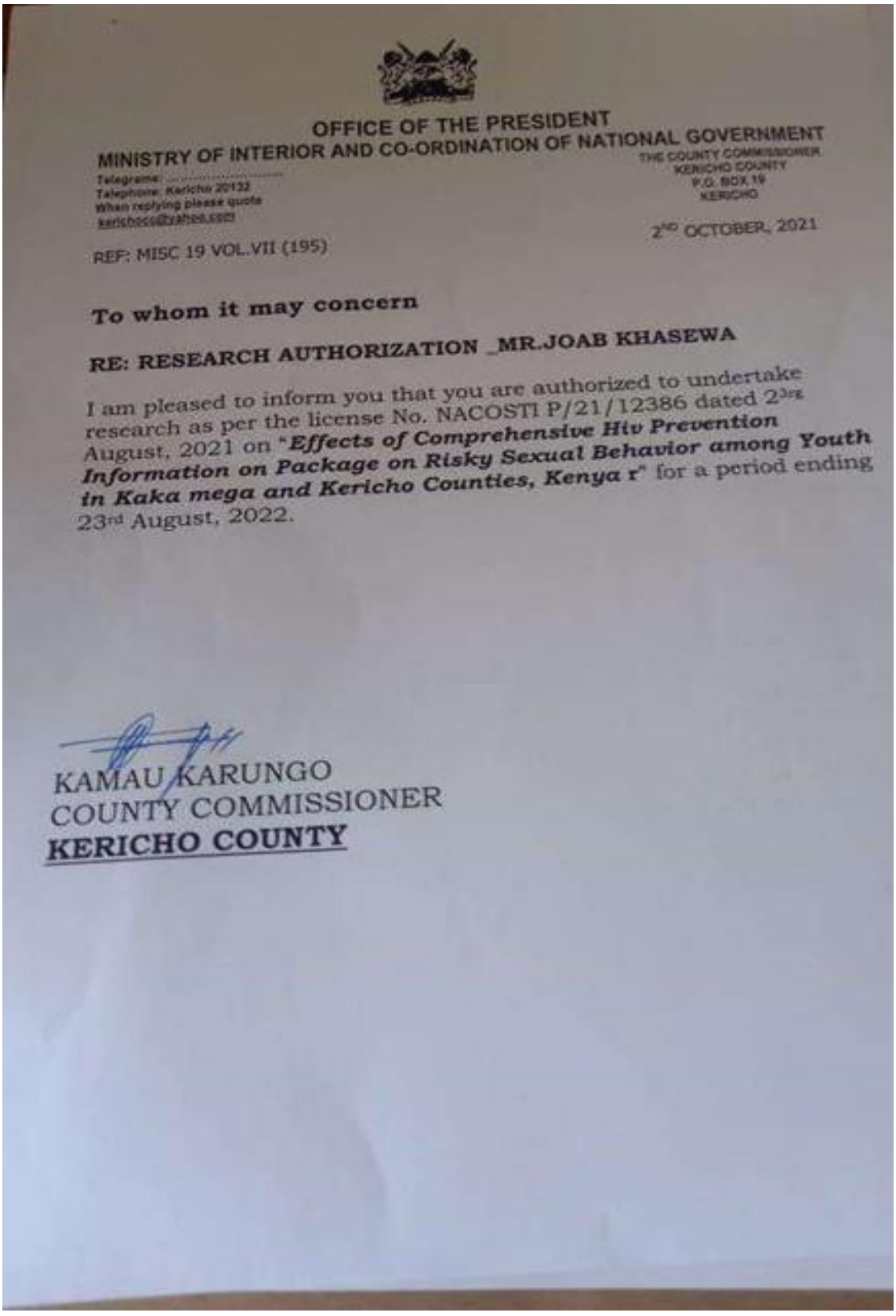
Mr. Joab Khasewa
P.O Box 43844 – 00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your authorization vide letter **Ref: No. NACOSTI/P/21/12386** dated 23rd August, 2021 by **NACOSTI** to undertake research on "***Effect of comprehensive HIV prevention information package on risky sexual behaviour among youth in Kakamega County***" for the period ending 23rd August, 2022. I am pleased to inform you that you have been authorized to carry out the research on the same in this county.

COUNTY COMMISSIONER
KAKAMEGA COUNTY

EREDI C.M
FOR: COUNTY COMMISSIONER
KAKAMEGA COUNTY



OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams: .....
Telephone: Kericho 20132
When replying please quote
kerichocc@yahoo.com

THE COUNTY COMMISSIONER
KERICHO COUNTY
P.O. BOX 19
KERICHO

REF: MISC 19 VOL.VII (195)

2ND OCTOBER, 2021

To whom it may concern

RE: RESEARCH AUTHORIZATION _MR.JOAB KHASEWA

I am pleased to inform you that you are authorized to undertake research as per the license No. NACOSTI P/21/12386 dated 23rd August, 2021 on "***Effects of Comprehensive Hiv Prevention Information on Package on Risky Sexual Behavior among Youth in Kaka mega and Kericho Counties, Kenya r***" for a period ending 23rd August, 2022.

KAMAU KARUNGO
COUNTY COMMISSIONER
KERICHO COUNTY

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF KAKAMEGA
MINISTRY OF HEALTH SERVICES

Telephone: 056-31850/1852/31853
Email: health@kakamega.go.ke
Website: www.kakamega.go.ke

COUNTY DIRECTOR OF HEALTH SERVICES
P.O. BOX 359- 50100
KAKAMEGA

Date: 14th Jan, 2022

Dear Joab,
RE: RESEARCH AUTHORIZATION.

Reference is made to the Research License from National Commission for Science, Technology and Innovation Ref. No NACOSTI/P/21/12386 dated 23rd August, 2021.

Permission is hereby granted to carry out the research on **"Effect of Comprehensive HIV Prevention information package on Risky sexual behaviour among youth in Kakamega and Kericho, Counties, Kenya"** for a period ending 23 August, 2022.

Yours sincerely,

William Olaka
County Director, Public Health

COUNTY DIRECTOR PUBLIC HEALTH
P. O. Box 359-50100,
KAKAMEGA
14 JAN 2022
Sign.....
DEPT. OF HEALTH SERVICES

COUNTY GOVERNMENT OF KERICHO
DEPARTMENT OF HEALTH SERVICES

Kericho County Hospital Grounds,
Administration Block, 2nd Floor.

Hospital Road
P.O. Box 112 - 20200
KERICHO

Ref: P/21/12386

Date: 24/01/2022

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION:
JOAB KHASEWA; P/21/12386.

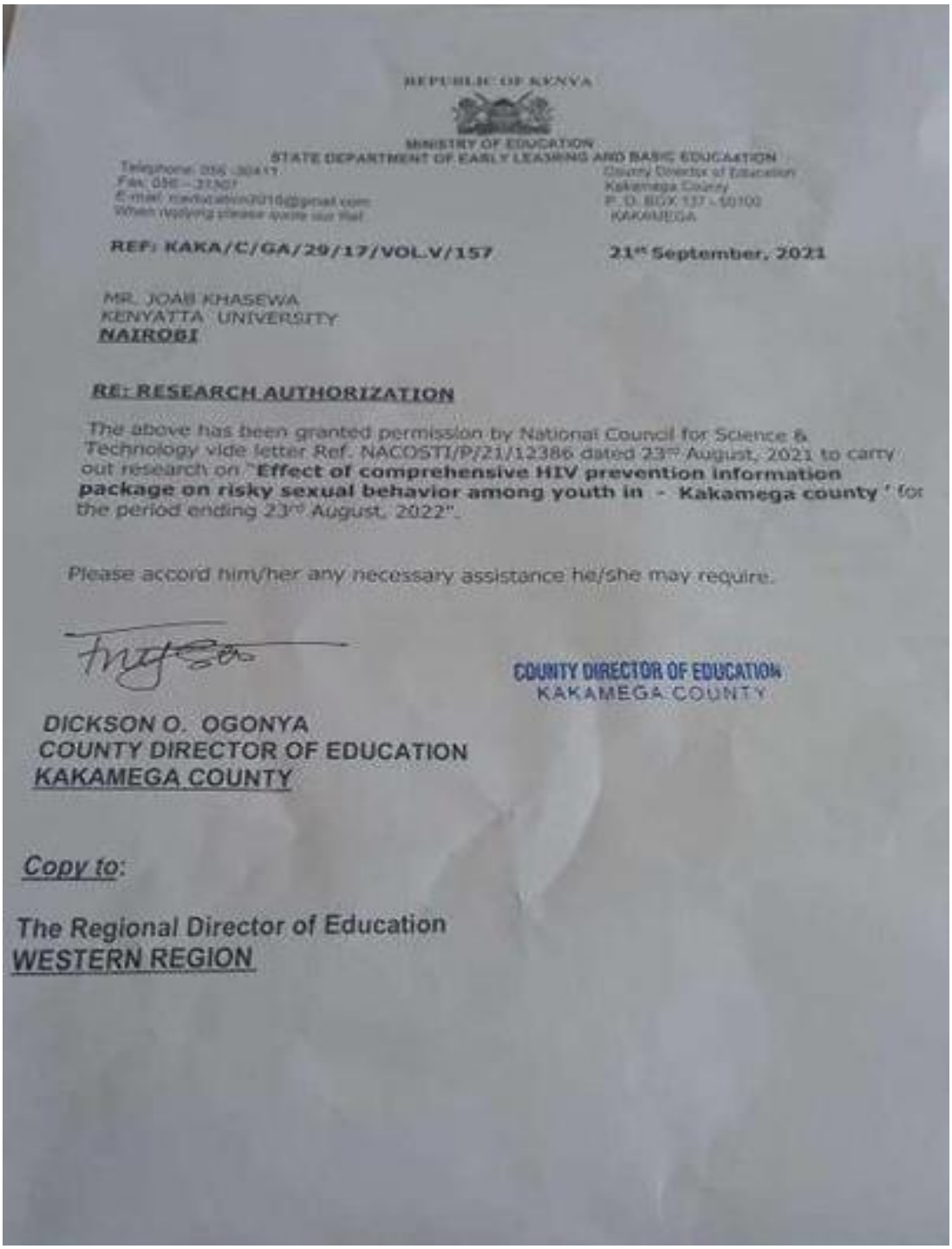
This is to confirm that the above named has been authorized by the County Government of Kericho; Department of Health Services and National Commission for science, Technology and Innovation to carry out research in various Counties and Kericho County is among the Counties on the topic **"effect of comprehensive HIV prevention information package on risky sexual behavior among youth in Kericho County"** for the period ending 23rd August 2022.

Kindly accord them the necessary assistance.

Thanks.

MINISTRY OF HEALTH
COUNTY HEALTH DIRECTOR
21 APR 2022
KERICHO COUNTY
P.O. Box 112-20200 KERICHO
Tel: 0722 [illegible]

Dr. Betty Langat; **HSC**
County Director of Health
KERICHO COUNTY.



REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Telephone: 056 -30417
Fax: 056 – 21307
E-mail: cdekakamega2016@gmail.com
When replying please quote our Ref

County Director of Education
Kakamega County
P. O. BOX 137 - 50100
KAKAMEGA

REF: KAKA/C/GA/29/17/VOL.V/157 **21st September, 2021**

MR. JOAB KHASEWA
KENYATTA UNIVERSITY
NAIROBI

RE: RESEARCH AUTHORIZATION

The above has been granted permission by National Council for Science & Technology vide letter Ref. NACOSTI/P/21/12386 dated 23rd August, 2021 to carry out research on "**Effect of comprehensive HIV prevention information package on risky sexual behavior among youth in - Kakamega county** " for the period ending 23rd August, 2022".

Please accord him/her any necessary assistance he/she may require.

COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

DICKSON O. OGONYA
COUNTY DIRECTOR OF EDUCATION
KAKAMEGA COUNTY

Copy to:

The Regional Director of Education
WESTERN REGION

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

Email:cdekerichocounty@gmail.com
When Replying Please Quote:

County Education Office
P.O BOX 149
KERICHO

Ref: KER/C/ED/GC/2/VOL.II/408

02/11/ 2021

TO WHOM IT MAY CONCERN.

RE: RESEARCH AUTHORIZATION: MR. JOAB KHASEWA LICENCE NO.NACOSTI/P/21/12384.

I refer to the Director General NACOSTI Letter Ref: No. 953347 dated 23th August 2021 granting the above student authority to proceed for field work. His area of study is titled: **"EFFECT OF COMPREHENSIVE HIV PREVENTION INFORMATION PACKAGE ON RISKY SEXUAL BEHAVIOR AMONG YOUTH IN KAKAMEGA AND KERICHO CONTIES KENYA."** for the period ending 23/08/2022

This is to request your office to accord him the necessary support during the data collection process.

Thank you.

COUNTY DIRECTOR OF EDUCATION P.O. Box 149-20110 KERICHO

02 NOV 2021

ROSE K SAGARA
COUNTY DIRECTOR OF EDUCATION
KERICHO

SGS

REPUBLIC OF KENYA
COUNTY GOVERNMENT OF KAKAMEGA

DEPARTMENT OF EDUCATION, SCIENCE AND TECHNOLOGY

Telephone:0736075087Email:
moest@kakamega.go.ke
Website: www.kakamega.go.ke

Director, TVET
Education, Science & Tech.
P.O. Box 36 – 50100

Mr. Joab Khasewa
P.O. BOX 43844-00100
NAIROBI

DATE: 19th December, 2021

RE: PERMISSION TO CARRY OUT RESEARCH

The National Council for Science & Technology (NACOST) has authorized Mr. Joab Khasewa to carry out research on: ***Effect of comprehensive HIV prevention information package on risky sexual behavior among youth*** in Kakamega and Kericho Counties in Kenya. The NACOST license No. NACOSTI/P/21/1238 gives authority up to 23rd August, 2022. The directorate of Technical Vocational Education and Training (TVET), Kakamega County gives permission to Mr. Joab Khasewa to collect data from the County Polytechnics (Vocational Training Centres) for the period stated in the License.

DIRECTOR
TECHNICAL & VOCATIONAL TRAINING DEPARTMENT
OF EDUCATION SCIENCE & TECHNOLOGY
01 FEB 2022
COUNTY GOVERNMENT OF
KAKAMEGA

Dr. CHRISPINUS WAMALWA, PhD
COUNTY DIRECTOR, TVET
DEPARTMENT OF EDUCATION, SCIENCE & TECHNOLOGY

REPUBLIC OF KENYA
MINISTRY OF EDUCATION
STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL TRAINING

Telephone: +254-704089527
E-mail: tvetkericho@gmail.com

Website: www.scienceandtechnology.go.ke

COUNTY DIRECTOR TECHNICAL EDUCATION KERICHO/BOMET/ NAKURU/BARINGO
P.O. BOX 1745
KERICHO

When Replying please quote
REF NO: MOEST/NAKURU/TVET/76

Date: 24st Jan , 2022

Principals of TVET Colleges
Kericho County

SUBJECT: RESEARCH AUTHORIZATION: JOAB KAEMBA KHASEWA

Licence Number**: NACOSTI/P/21/12386**

Refer to the above authorization license for the above named person carrying out a research on: ***Effect of comprehensive HIV prevention information package on risky sexual behavior among the youth in Kakamega and Kericho counties Kenya***, for a period ending 23/08/2022.

This is to request that you may accord him necessary support and cooperation to carry pout the reach in your institution.

Peter K Cheruiyot
COUNTY DIRECTOR – TVET
KERICHO/ BOMET, NAKURU, BARINGO
CC: Dircetor Technical Education

KAKAMEGA COUNTY POLYTECHNIC
P. O. BOX 141 – 50100
E-mail: kakamegapolytechnic@gmail.com
Tel.: 0715571539
KAKAMEGA

DATE:13TH JAN , 2022.

MR. JOAB KHASEWA
NACOST
P. O. BOX 43844-00100
NAIROBI

Dear Sir,

RE: PERMISSION TO CARRY OUT RESEARCH

Following your letter requesting as per the above subject, we would like to inform you that we grant you the same.

We believe that, during this session our youth will learn more and be secured and knowledgeable about HIV prevention and control.

Thank you.

KAKAMEGA COUNTY POLYTECHNIC
Sign.....
P. O. BOX 141 - 50100
KAKAMEGA

Caroline Khamete
Principal

Cc: Director TVET

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
COUNTY GOVERNMENT OF KAKAMEGA
CHEKALINI COUNTY POLYTECHNIC
P. O. Box 18 – 50241 KIPKAREN RIVER

15th January 2022

JOAB KHASEWA

P.O BOX 43844-00100

NAIROBI

DEAR SIR

RE; PERMISSION TO CONDUCT RESEARCH IN OUR INSTITUTION

With the request motioned to carry out research about **"EFFECT OF COMPREHENSIVE HIV PREVENTION INFORMATION PACKAGES ON RISKY SEXUAL BEHAVIOR"** in our institution, we gladly accept it for the benefits of our trainees.

We look forward for a positive change among our youths when they partake the exercise.

All the very best as you plan to come share with us.

Thank you

For

Head of department

Guiding and Counseling

Shem Indatula

CHEKALINI COUNTY POLYTECHNIC
DATE 15/01/22
P. O. Box 18 KIPKAREN

MINISRTY OF EDUCATION SCIENCE & TECHNOLOGY

KABRAS COUNTY POLYTECHNIC

P.O BOX 32 MATETE EMAIL:kabrasvocational@gmail.com TEL: 0720284221

Date: 13th Jan 2022

TO
JOAB KHASEWA
P.O BOX 43844-00100
NAIROBI.

Dear Sir

RE: PERMISSION TO CARRY OUT RESEARCH.

With the request mentioned above to carry out research about "Effect of comprehensive HIV prevention Information packages on risky sexual behavior in our institution we gladly accept it for the benefit of our trainees.

We look forward for a positive change among our youths when they partake the exercise.

Thank you.

Mr. Patrick Tom Eula
PRINCIPAL

ST. PETER'S EMULAKHA VOCATIONAL TRAINING CENTRE
P.O BOX 2110-50100
KAKAMEGA
TEL: 0721872790

12TH JANUARY 2022

OUR REF: SPEVTC/ADM/01/22

YOUR REF:.....

TO

JOAB KHASENWA

P.O BOX 43844 – 00100

NAIROBI.

Dear Sir,

RE: PERMISSION TO CARRY OUT RESEARCH ON EFFECT OF COMPREHENSIVE HIV PREVENTION INFORMATION PACKAGE ON RISKY SEXUAL BEHAVIOUR AMONG YOUTH IN KAKAMEGA COUNTY.

The above subject refers.

We wish to grant you permission to carry on the above mentioned research in our institution.

We look forward for a positive impact to our youth and we do appreciate the exercise

Thank you.

PRINCIPAL
ST. PETERS EMULAKHA VOCATIONAL TRAINING CENTRE
12 JAN 2022
Sign.....
P. O. Box 2110-50100,KAKAMEGA

Fredo Oruko

PRINCIPAL

SIGALAGALA NATIONAL POLYTECHNIC
P.O BOX 2966- 50100 KAKAMEGA Tel: 0726806105 E-mail: sigalagala@yahoo.com Website :sigalagalapolytechnic.ac.ke

10th January 2022

SNP/TC/ADM/05/22

JOAB KHASEWA
P O BOX 43844-00100
NAIROBI

Dear Sir

RE: ACCEPTANCE TO CARRY OUT RESEARCH IN OUR INSTITUTION

This is to inform you that your request to carry out research on: "**Effect of comprehensive HIV prevention information packages on risky sexual behavior**" among youth has been accepted.

We look forward for our students benefiting through the research on HIV prevention.

We wish you well as you plan to come.

Than you.

THE SIGALAGALA NATIONAL POLYTECHN.
P. O. Box 2966- 50100,
10 JAN 2022
TOWN CAMPUS

Yours faithfully

Vivien Olando
HOD. Town Campus

MINISTRY OF EDUCATION
STATE DEPARTMENT OF VOCATIONAL & TECHNICAL TRAINING
NAVAKHOLO TECHNICAL & VOCATIONAL COLLEGE

Competence in skills for employment

P. O. Box 766 – 50100 Kakamega (KENYA), Cell phone :0721589977, Email:navakholotvc@gmail.com

January 26, 2022

To
Mr. Joab Khasewa
P O BOX 34844 – 00100
NAIROBI

Dear Sir,

RE: PERMISSION TO CONDUCT RESEARCH.

Following your request, Navakholo Technical and Vocational Training Institute grants you permission to conduct research on "**Effect of Comprehensive HIV Prevention information package on Risky sexual behaviour among youth in Kakamega and Kericho, Counties, Kenya.**"

We hope the study will benefit our youth in preventing HIV.

PRINCIPAL
Navakholo Technical Vocational College
P.O. Box 766 KAKAMEGA
26 JAN 2022
Sign.....
Tel:0721 589 977
Email:navakholotvc@gmail.com

Yours sincerely

Gilbert Ekhavi
Principal

KERICHO TEACHERS' TRAINING COLLEGE

P. O. Box 10
KERICHO

When replying please quote

Telephone: 0721457785
0522020067
Email-kerichottc@yahoo.com

18th February, 2022.

Dear Joab

RE: PERMISSION TO CONDUCT RESEARCH

Reference is made to the above subject matter.

I am pleased to inform you that permission has been granted for you to conduct the study on "**Effect of Comprehensive HIV Prevention information package on Risky sexual behavior among youth in Kakamega and Kericho, Counties, Kenya.**"

We hope the study will benefit the HIV response among our young people.

Yours sincerely,

KERICHO TEACHERS COLLEGE
P.O. BOX 10, TEL: 052 20067
KERICHO.

Achungo E. P.,
CHIEF PRINCIPAL.

COUNTY GOVERNMENT OF KERICHO

KIPTERE VOCATIONAL TRAINING CENTRE

P.O. BOX 63 – 2013 KIPTERE, TEL; 0724796292 Email: kiptereyouthpoly@yahoo.com

Trains; Building Technology, Fashion Design and Garment Making, Plumbing, Motor Vehicle Technology, Metal Processing Technology, Hair Dressing and Beauty Therapy, Electrical and Electronics Technology, Appropriate Carpentry and Joinery, Information Communication Technology, Foods Processing Technology

OUR REF.....
YOUR REF.....

26TH JANUARY 2022

Dear Sir

REF: PERMISSION TO CARRY OUT RESEARCH:

LICENCE NUMBER: NASCOTI/P/21/12386 AND REF NO: MOEST/NAKURU/TVET/76- dated 24/JAN. 2022

Refer to the above authorization license and letter above to carry out research, I'm pleased to inform that your request has been granted to reach our trainees to carry out research on: **Effect of Comprehensive HIV Prevention information package on Risky sexual behavior among youth in Kakamega and Kericho, Counties, Kenya."**

I wish you all the best in the your study

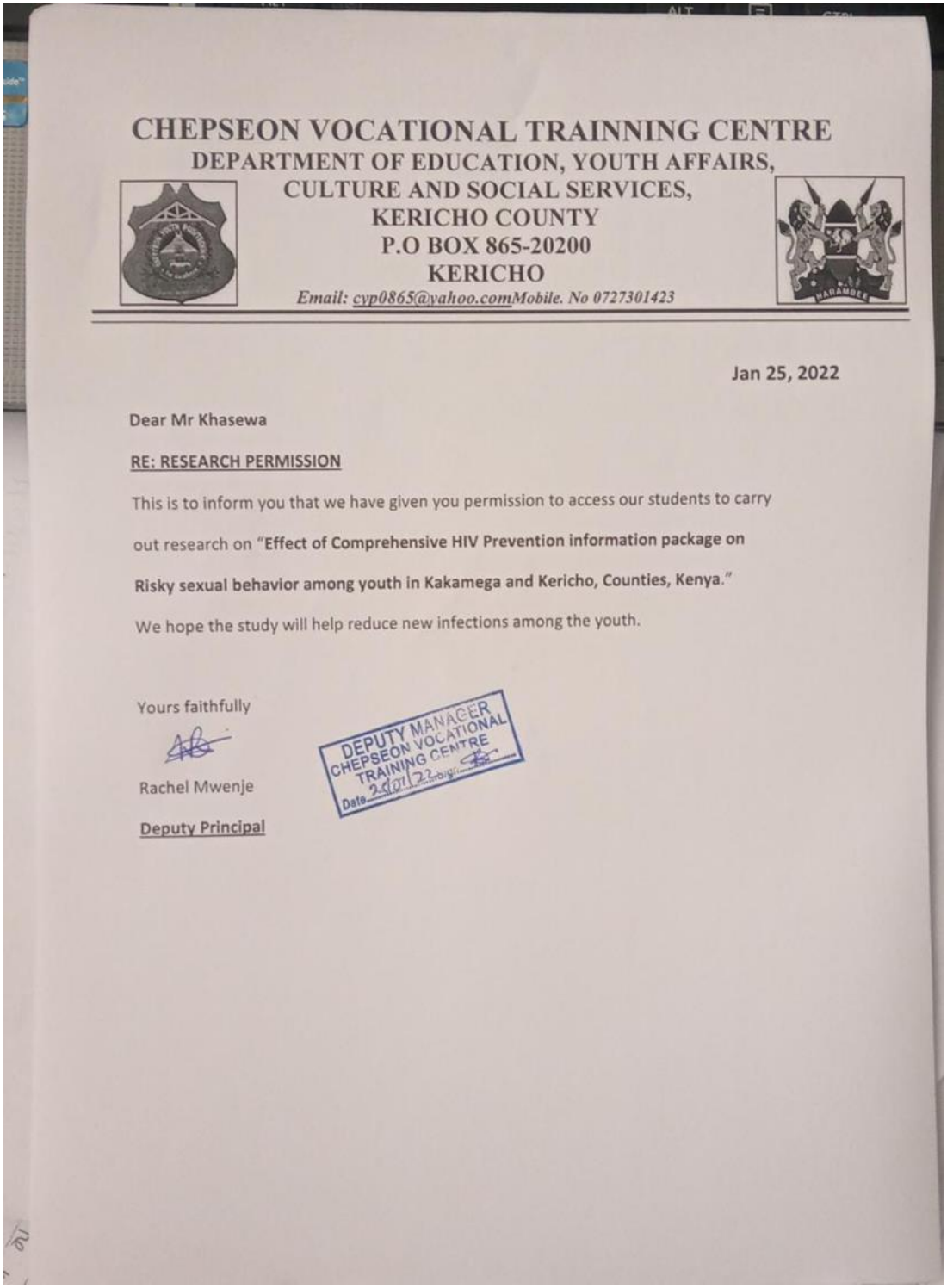
Yours Faithfully

KIPTERE VOCATIONAL TRAINING CENTRE BOX 63-20213 SIGN_____ DATE 26/01/2022.

Richard Yegon
The Manager

VISION: To empower our trainees to be multi-skilled for steady national development

MISSION: To transform our trainees to be technically oriented, shed light and be the most admirable in the society.



CHEPSEON VOCATIONAL TRAINNING CENTRE
DEPARTMENT OF EDUCATION, YOUTH AFFAIRS,
CULTURE AND SOCIAL SERVICES,
KERICHO COUNTY
P.O BOX 865-20200
KERICHO
Email: cyp0865@yahoo.comMobile. No 0727301423

Jan 25, 2022

Dear Mr Khasewa

RE: RESEARCH PERMISSION

This is to inform you that we have given you permission to access our students to carry out research on "**Effect of Comprehensive HIV Prevention information package on Risky sexual behavior among youth in Kakamega and Kericho, Counties, Kenya.**"

We hope the study will help reduce new infections among the youth.

Yours faithfully

Rachel Mwenje

Deputy Principal

DEPUTY MANAGER
CHEPSEON VOCATIONAL
TRAINING CENTRE
Date 25/01/22

MINISTRY OF EDUCATION
STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL TRAINING
KERICHO TOWNSHIP TECHNICAL & VOCATIONAL COLLEGE
P O BOX 828-20200, KERICHO-KENYA Tel: +254713107307
www.kerttvc.ac.ke, Email: keritownshiptechnical@gmail.com
2km off John Kerich – Keongo Rd.
"SKILLS FOR EMPOWERMENT"

Jan 26, 2022

Dear Joab,

RE: RESEARCH STUDY

Following your request on the above subject, I am pleased to inform you that permission has been granted to conduct research on "**Effect of Comprehensive HIV Prevention information package on Risky sexual behavior among youth in Kakamega and Kericho, Counties, Kenya.**"

We wish you all the best during the study.

Yours sincerely

KERICHO TOWNSHIP TECHNICAL TRAINING INSTITUTE
Tel: 0713 107 307
22 JAN 2022
P.O. Box 828-20200, KERICHO

Nancy Tonui

Principal

MINISTRY OF EDUCATION
STATE DEPARTMENT OF TVET
KIMASIAN TECHNICAL AND VOCATIONAL COLLEGE
P.O. BOX 1149- 20200, KERICHO
Email: kimasiantvc@gmail.com, info@kimasiantvc.ac.ke
Mobile 0748186340
Website: www.kimasiantvc.ac.ke

REF: JOAB KAEMBA KHASEWA **DATE: 25TH JANUARY, 2022**

Dear Sir,

RE: RESEARCH AUTHORIZATION.

We acknowledge receipt of your letter dated 24th January, 2022 on the above subject. We are glad to inform you that your request has been granted.

Wishing you all the best.

Regards,

.....

Rosemary A. O. Soi
PRINCIPAL/BOG SECRETARY

Appendix 7: Publications from this thesis

A Journal / African Journal of Health Sciences / Vol. 36 No. 1 (2023) / Articles Journal of Health Sciences

May 19, 2023

DOI: 10.4314/ajhs.v36i1.8

Article Details

Issue

Vol. 36 No. 1 (2023)

Main Article Content

Risky Sexual Behavior and Associated Factors among Youth in Kakamega and Kericho Counties, Kenya

Joab Khasewa[1], Isaac Mwanzo[2] and Alloys Orago[2]

[1]*Department of Community Health and Epidemiology, Kenyatta University P.O. Box 43844-00100, Nairobi, Kenya and*

[2]*Department of Pathology, Kenyatta University P.O. Box 43844-00100, Nairobi, Kenya*

*Corresponding author. Joab Khasewa. Email: jkhasewa@gmail.com

DOI: https://dx.doi.org/10.4314/ajhs.v36i1.8

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eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

Check for updates

(RESEARCH ARTICLE)

Joab Khasewa[1,*],Isaac Mwanzo[1] and Alloys Orago[2]

[1]*Department of Community Health and Epidemiology, Kenyatta University, P.O Box 43844, 00100, Nairobi, Kenya.*

[2]*Department of Pathology, Kenyatta University, P.O Box 43844, 00100 Nairobi, Kenya.*

World Journal of Advanced Research and Reviews, 2023, 19(03), 978–987

Publication history: Received on 08 August 2023; revised on 19 September 2023; accepted on 22 September 2023 Article DOI: https://doi.org/10.30574/wjarr.2023.19.3.1907

Abstract

HIV remains the most significant public health and development challenge in the world. In sub-Saharan Africa, the youth bear the biggest brunt of HIV epidemic. Despite the availability of HIV prevention options, new infections among youth inKenyaonlyreducedby59% between2015 and 2019. Various HIV prevention interventions have been implemented among youth with little or no assessment of their effectiveness in reducing new HIV infections. The objective of the study was to investigate effect of comprehensive HIV prevention information package on the risky sexual behavior among youth in Kakamega and Kericho counties, Kenya. Anon-randomized control trial was conducted with Kakamega as intervention and Kericho as Comparison County. The pretest questionnaire was administered in both intervention and control counties in December 2001. The posttest questionnaire was administered in both intervention and control counties after nine months of providing HIV prevention information package. Quantitative data was analyzed using descriptive and inferential statistics. There was a shift in comprehensive HIV knowledge at the end line compared to the base line ($P<0.05$). Condom use at endline was higher in the intervention county at 78.8% compared to Comparison County at 73.0%.The number of youths who had two or more sexual partners reduced at endline to17.6% from 23.7% in Intervention County. Con current partnerships significantly reduced by gender ($\chi^2$1.507, p=0.003).The findings from the study will inform national rollout of the intervention to contribute to safer sexual behaviors among youth.

Keywords: Comprehensive; Concurrent partnership; Non-randomised; Sexual behavior

Central African Journal of Public Health
2024, Vol. 10, No. 4, pp. 188-195
https://doi.org/10.11648/j.cajph.20241004.14

Research Article

Effect of Comprehensive HIV Prevention Information Package on Syphilis Infection Levels Among Youths inKakamega and Kericho Counties, Kenya

Joab Khasewa1, Isaac Mwanzo1, *, Alloys Orago2

[1]Department of Community Health and Epidemiology, Kenyatta University, Nairobi, Kenya

[2]Department of Medical Microbiology and Parasitology, Kenyatta University, Nairobi, Kenya

Abstract

The world's biggest threat to development and public health is HIV. Youth in sub-Saharan Africa are primarily affected by the HIV epidemic. Despite the availability of HIV prevention options, new infections among youth in Kenya only reduced by 56% between 2015 and 2021. Various HIV prevention interventions have been implemented among youth with little or no assessment of their effectiveness in reducing new HIV infections. The objective of the study was to evaluate the effect comprehensive HIV prevention information package of the package on syphilis infections levels among the youths in Kakamega and Kericho counties, Kenya. A non-randomized control trial was conducted with Kakamega as intervention and Kericho as Comparison County. The pretest questionnaire was administered in both intervention and control counties in December 2001. The posttest questionnaire was administered in both intervention and control counties after nine months of providing HIV prevention information package. Quantitative data was analyzed using descriptive and inferential statistics. Qualitative data was transcribed and analyzed thematically. There was significant increase in knowledge of sexually transmitted infections in intervention county (t= 3.340, P=0.021). There was significant number of youth in Kakamega county who reported unusual sores in genital area at endline (t=2.035, P=0.043). Similarly, more youths sought treatment after experiencing the syphilis symptoms (=1.931, P=0.054) at endline in Kakamega county. There were no significant differences in the number of youths in Kericho county at endline who experienced unusual symptoms, sought treatment and informed their sexual partners (P>0.05). The findings from the study will inform national rollout of the intervention to contribute to safer sexual behaviors among youth.

Keywords

Comprehensive, Non-Randomized, Sexual Behavior, Syphilis Infection

Appendix 8: Abstracts of research presentations for seminars, conferences and workshops

CERTIFICATE OF PARTICIPATION

6th Annual Africa Interdisciplinary Health Conference

presented to

Joab Khasewa

for PARTICIPATING in a 3-day Conference on the theme

Mitigating Pandemics, Climate Change & Chronic Diseases in Africa:

THE ROLE OF INTERDISCIPLINARY COLLABORATION

Venue: Kenyatta University, Nairobi, Kenya

Jerry N utor

.....

.....

Jerry John Nutor, PhD, RN

Secretary

EACCME®
European Accreditation Council for Continuing Medical Education

Certificate

The International Workshop on Adolescence SRHR, & HIV 2024 Nairobi, Kenya, 02/10/2024 - 04/10/2024, organized by Virology Education B.V.
has been accredited

by the European Accreditation Council for Continuing Medical Education (EACCME®) for a maximum of
16.0 European CME credits (ECMEC®S).

Mr. Joab Khasewa
has been awarded 16.0 European CME credits (ECMEC®S) for his/her attendance at this event.

Prof. Vassilios Papalois
President of UEMS

Dr João Grenho
Secretary General of UEMS