FACTORS ASSOCIATED WITH THE PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN WHO HAVE SEX WITH MEN IN KISUMU COUNTY, KENYA

BY

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A Thesis Submitted in Partial Fulfillment of the Requirements for The Award of the Degree of Master of Public Health (Epidemiology and Disease Control) of Jaramogi Oginga Odinga University of Science and Technology

DECLARATION

I declare that no one has presented this thesis for the award of any certificate by any University.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral therapy
CDC	Centers for Disease Control and Prevention
CHW	Community health worker
CT	Chlamydia trachomatis
FSW	Female Sex worker
HIV	Human Immune Deficiency virus
HTS	HIV testing services
IPV	Intimate partner violence
M&E	Monitoring and evaluation
MOH	Ministry of health
MSM	Men who have sex with Men
NACC	National AIDS Control Council
NGO	Non-governmental organization
NG	Neisseria gonorrhea
PLHIV	People living with HIV
PWID	People Who Inject Drugs
STI	Sexually Transmitted Infections
WHO	World Health Organization
KIPE	Kisumu Initiative for Positive Empowerment

DEFINITION OF TERMS

Key populations: People who are at an elevated risk of acquiring or transmitting HIV due to their behavioral characteristics.

Female Sex Workers (FSW)-Females who receive money or goods in exchange for consensual sexual services.

Men who have sex with men (MSM)-Men who engage in sexual intercourse with fellow men. In different contexts MSMs may identify as ‘gays’, ‘homosexual’, ‘bisexual’, ‘pansexual’. ‘kuchu’, ‘shoga. They could be in strict man-man relationship, or even man-woman relationship, but still having sexual affair with other men.

Insertive (top)-play the male role

Receptive (bottom)-play the female role

Versatile-play both male and female roles

ABSTRACT

Sexually transmitted infections (STIs) are major concerns to public health as they continue to be a great burden to individuals in developing countries. They mostly affect key populations, including men who have sex with men (MSM), partly attributable to their poor health seeking behavior yet little attention has been given to them. Understanding the factors driving the prevalence in key population is crucial for prevention. This study investigated the prevalence of sexually transmitted infections and associated risk factors among men who have sex with men in Kisumu, Kenya. This analytical cross sectional study used data collected between January and December 2021 from 737 MSM enrolled at the Anza Mapema drop-in center, a dedicated clinic in Kisumu, providing prevention interventions for MSM. It involved abstraction of data from medical records of the 737 MSMs. Quantitative data was summarized using descriptive statistics, statistical differences between categorical variables assessed using the Chi-square test, and the factors associated with STI prevalence identified using logistic regression model. All analysis was done using SPSS version 23. Majority (450, 61.1%) of the MSM were aged 18-25 years and 83(11.5%) had a positive HIV status. Over half (404, 54.8%) of them preferred receptive/ bottom method of sexual intercourse, 154 (20.9%) preferred insertion/top, while 166(22.5%) preferred both methods. In this study, twenty percent 151(20.5%) of MSM had STI symptoms. Painful micturition (dysuria) (91,12.57%) urethral discharge (36, 4.97%) and genital sores (27, 3.73%) were the common STI symptoms. Secondary education level (adjusted odds ratio (AOR) = 0.48, 95% confidence interval: 0.3–0.755, P = 0.001), positive HIV status(adjusted odds ratio (AOR) = 1.95, 95% confidence interval: 1.16–3.29, P = 0.011), receptive sex(adjusted odds ratio (AOR) = 0.51, 95% confidence interval: 0.322–0.810, P = 0.004), lack of condom use(adjusted odds ratio (AOR) = 0.55, 95% confidence interval : 0.358–0.864, P = 0.009), and experience of a condom break(adjusted odds ratio (AOR) = 1.68, 95% confidence interval : 1.115–2.548, P = 0.013) were the significant factors associated with STI symptoms among the MSM in Kisumu Kenya. In Kisumu, Kenya, 20% of MSM have STI and their high prevalence is linked to positive HIV status, secondary education level, and lack of condom use. Preventive measures such as regular screening, health education, and condom provision and treatment are necessary.

CHAPTER ONE: INTRODUCTION

1.1 Background

Globally, Human immunodeficiency virus (HIV), sexually transmitted infections (STI) and viral hepatitis continue to be a major public health challenge as they cause 1.2 million cases of cancer and 2.3 million deaths each year. Further, and by each day, greater than 1 million people get sexually transmitted infections, while 4.5 million people get HIV, hepatitis B and hepatitis C infections each year (WHO, 2021). The prevalence is worsened in key populations such as men who have sex with men (MSMs), who, as a result of specific higher-risk behaviors, have elevated risk of acquiring or transmission of STIs (Quilter *et al.*, 2019; Wahome *et al.*, 2020; Walker, 2019). Similarly, a consistently high prevalence of STIs among MSM has been shown in a study (Philibert *et al.*, 2014) which found that, 16% of asymptomatic MSM were carriers of rectal chlamydia, gonorrhea, or mycoplasma genitalium. Further, (Yang *et al.*, 2018) reported high rates of gonorrhea, chlamydia prevalence among MSM in Guangzhou China. Additionally,(Zhang *et al.*, 2017) also found heavy burden of HIV, STIs, and hepatitis B among MSM in Kunming China, with older individuals and those with lower education levels being at higher risks In Kunming, China. In particular, the incidence of syphilis, gonorrhea, trichomonas and chlamydia amounts to new infections of about one million daily (Walker, 2019).

In Kenya, a most recent study has shown a disturbingly high prevalence of five curable STIs, that is chlamydia, syphilis, gonorrhea, *Mycoplasma genitalium* and trichomonas infection, among tertiary student MSM in Nairobi, Kenya. In this study, chlamydia, gonorrhea, latent syphilis, *Mycoplasma genitalium* infection, and trichomonas prevalence were 58.8%, 51.0%, 11.3%, 6.0%, 1.5% and 0.7%, respectively (Mwaniki *et al.*, 2023). Similar to these findings, *Chlamydia trachomatis* was the most prevalent STI from a study conducted in South Africa. Further, (Mashingaidze *et al.*, 2023) showed *Chlamydia trachomatis* and *Neisseria gonorrhoeae* to be most prevalent in MSM compared to non-MSM males (7.5% vs 1.2%). In tandem with these findings, a laboratory-based study in Kisumu, Kenya, showed prevalence of anorectal *Neisseria gonorrhea/ Chlamydia trachomatis* infection among MSM at 5.2% (n=36), of which 58.3% (n=21) were

detected among men without symptoms (Quilter *et al.*, 2019). In a separate study, (Otieno *et al.*, 2020) showed an increased incidence of urethral chlamydial and gonococcal infection, with a reduced incidence of rectal chlamydial and gonococcal infection, despite MSMs being tested and treated repeatedly, clearly bringing out the need for combination prevention interventions to reduce the burden of chlamydial and gonococcal infections in this population.

Despite documentation of the rising prevalence of sexually transmitted infections among men who have sex with men (Eluwa *et al.*, 2019), little attention has been given to the STIs among MSM. This has been disadvantaged by non-existent, or if available, poorly functioning national microbiological surveillance programs, that may give reliable data on prevalence of individual sexually transmitted infections. Further, this has been eroded by factors such as stigma among the MSM, which negatively leads to poor health seeking behavior as the MSM fear being known by the general population, yet little attention has been given to this key population.

A Range of factors have been identified as significant contributors to the prevalence of STIs among MSM. These include biological, behavioral, legal, and sociocultural factors, which put MSMs at higher risk of STIs acquisition and or transmission, compared with the general population (Micheni *et al.*, 2015). This ranges from stigma and capacity gaps among healthcare workers hence a resultant mistrust by MSM (Shangani *et al.*, 2018). Previous studies have demonstrated disproportionate burden of symptoms of depression and psychosocial conditions including alcohol and substance abuse and also sexual and physical abuse (Kunzweiler *et al.*, 2018; Secor *et al.*, 2015), as factors that preludes poor health seeking behaviors hence an increase in STIs among MSM (Gichuru *et al.*, 2018). Further, group sex participation has been linked to higher prevalence of gonorrhea (Yang *et al.*, 2018) **.** Other biological factors such as age between 18–24 years, HIV positive sero-status and unprotected anal sex have been shown as contributory factors associated with laboratory confirmed anorectal *Neisseria gonorrhea/Chlamydia trachomatis* infection in men without STI symptoms (Quilter *et al.*, 2019). Most countries have significantly made progress in recognizing the rights of

Lesbians Gays Bisexual Transgender Intersects and Queue (LGBTIQ) people, where as in other countries, homophobia and punitive laws create additional barriers for men who have sex with men when accessing health care services. As an example, in Kenya, being an MSM is not only criminalized, but also regarded as ungodly and uncultured, with 85% of Kenyans being Christians (KNBS, 2019) These studies underscore the need for targeted prevention efforts and regular STI screening for MSM.

Despite the growing evidence of the structural and individual drivers of vulnerability in this key population, there is relatively little guidance for programs specifically designed to their needs. In Kenya, the guidelines on care of HIV and STIs provides little guidance on care, specifically directed towards MSM compared with other key populations such as female sexual workers (NASCOP, 2014). Indeed more attention is being devoted to other key populations such as FSWs, while neglecting MSM yet they face different risks in exposure and acquisition of STI. As such. this study aimed to determine the prevalence of STIs and associated risk factors among MSM in Kisumu Kenya, with a view to inform targeted interventions to address these risk factors and ultimately reduce the STI burden among the MSM.

1.2 Problem Statement

Compared to other at risk population's e.g. female sex workers, MSM face higher risks in exposure and acquisition of STI due to anal intercourse. Despite this, there is no specific guideline (NASCOP); tailored towards management of STIs related to the MSM population hence high STI related morbidity. Over time, much is borrowed from the female sex workers and general guideline to program for MSMs. Further, high stigma among MSM since the behavior is considered immoral in Kenya has been attributed to poor health seeking behavior. Several studies have been conducted among FSW both young and older, which has shaped programming for this cohort. Targeted interventions need to be applied to MSM to shape their management with regards to sexually transmitted infections. This survey thus endeavored establish the prevalence and factors associated with reportable STI among MSM in Kisumu Kenya.

1.2 Objectives

1.2.1 Main Objective

To investigate the factors associated with the prevalence of STIs among MSM in Kisumu County.

1.3.2 Specific Objectives

1. To determine the prevalence of STI among MSM in Kisumu County
2. To determine the risk factors associated with the prevalence of STIs in Kisumu County.

1.4 Research Questions

1. What is the prevalence of STIs among MSM in Kisumu County?
2. What are the risk factors associated with the prevalence of STIs among MSMs in Kisumu County?

1.5 Justification

While MSM who engage in anal intercourse without a condom are at an elevated risk of acquiring STI, reliable epidemiological data on the prevalence and incidence of STIs among sexual minorities such as MSM are not easy to find, with some countries including information on the most likely route of transmission. Calculating incidence rates for STIs among MSM from such population-based data may depend only on cases reported for the numerator and denominator estimates, which is unknown (that is the summation of MSM who are at risk of acquiring STIs) (Werner *et al.*, 2018). In Sub Saharan Africa, where being an MSM is a taboo, it is even a tall order getting such data from mainstream ministry of health facilities. A Center for Disease Control study on sexually transmitted infections in MSM, 2017, noted that the incidence of many STIs in bisexuals, gay, and other MSMs, collectively referred to as MSM– including antimicrobial-resistant gonorrhea and syphilis is elevated as compared to that reported in women and men who have sex with women only (MSW). However, in Kenya, little is known about sexually transmitted infection among MSM and the associated risk factors are yet to be well characterized.

1.6 Significance

It is anticipated that this research provides valuable data on factors associated with the prevalence of Sexually Transmitted Infections among MSM in Kisumu Kenya, which can be used in policy making in the Ministry of Health to improve the management of MSM. Importantly, the most common factors related specifically to MSM in Kisumu Kenya, and how they influence STI prevalence in this population. This is being done with a view to develop specific interventions to address the STIs among different categories of MSM in Kisumu Kenya. The study generates evidence that will inform feasibility expected outputs and acceptability, necessary to guide PEPFAR Programming for increased access to and scale up of combination prevention interventions adapted for younger and older MSM in Kenya and beyond. The study contributes knowledge to different academic disciplines on prevalence, factors associated with and STI management tailored to MSM thus promoting their health. Further, the barriers that affect proper management of different age bands thus helping in designing the services that are age specific for different MSM. This study also aimed to assess best practices following the Kenyan NASCOP guidelines and inform policies on programming for MSMs.

1.7 Scope of Study

The study's central point was on factors surrounding the prevalence of sexually transmitted infections among men who have sex with men in Kenya. Other researchers have gone versatile, but I decided to do the study and find out what MSM are going through in the society mainly in Kisumu County. This study-involved review of participant's recent files who had been offered services at Anza Mapema drop-in service center.

1.8 Limitations

The limitation of this study is not doing laboratory investigations, as presentation of reportable STIs could mimic any other non STI infection

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Men who have sex with men are persons who engage sexual intercourse with fellow men. In different context they may identify as 'gays', 'homosexual', 'bisexual', 'pansexual', 'kuchu', 'shoga', etc. They could be in strict man-man relationship, or even man-woman relationship, but still having sexual affair with other men. They consist a wide group in terms of behaviors, health care needs and how they identify themselves. The term "MSM" is clinically often used to refer to sexual behavior alone, in spite of sexual orientation. MSMs are at an elevated probability of acquiring HIV compared with the general population due to various factors like biological and sociocultural factors (Micheni *et al.*, 2015).

Prior studies have demonstrated disproportionate burden of depressive clinical presentations and psychosocial conditions including physical and sexual abuse as well as alcohol and substance abuse (Kunzweiler *et al.*, 2018; Secor *et al.*, 2015). However little guidance has been given to interventions aimed at reducing the STI burden among the MSM. This has been eroded by various factors such as stigma which lead to poor health seeking behavior in this key population, hence attention should be directed towards reduction of the drivers of STI prevalence among MSM. The study explores prevalence of sexually transmitted infections and associated factors among MSM.

2.2. Prevalence of sexually transmitted infections among men who have sex with men

According to most literature, the prevalence of infections transmitted sexually has been on the rise over the years more so among key populations such as men who have sex with men. A previous systematic review showed the global prevalence of syphilis among MSM was 75% from 2000 to 2020, ranging from 1% in Australia and New Zealand to 10% in Latin America and the Caribbean (Tsuboi *et al.*, 2021)**.** Likewise, an observational study in India on MSM attending an STI clinic in Chennai showed higher prevalence of STIs (27.6%) among the MSM (Safren *et al.*, 2021). It has also been noted that the incidence of sexually transmitted diseases among men having sex with men has markedly increased over the last decade. Further the observation made was that in

men having sex with men, the incidences were higher than what was reported in women or men sex workers. In particular, genital ulcer disease (GUD) has been observed as highly associated with men having sex with men, a finding which is further heightened by co-infection with herpes simplex virus-1, a known propagator of genital ulcers disease especially in men having sex with men (Kularatne *et al.*, 2018).

As noted previously, a consistently high prevalence of STIs among MSM has been shown in a study by (Philibert *et al.*, 2014) which found that, 16% of asymptomatic MSM were carriers of rectal chlamydia, gonorrhea, or mycoplasma genitalium. Further, an earlier research finding by Zhang (Zhang *et al.*, 2017), also found heavy burden of HIV, STIs, and hepatitis B among MSM in Kunming China, with older individuals and those with lower education levels being at higher risk, in Kunming, China. In particular, the incidence of syphilis, gonorrhea, trichomonas and chlamydia amounts to new infections of about one million daily (Walker, 2019). This has also been noted in Asia Pacific region where HIV, Syphilis, and their co-infection are quite prevalent among the MSM (Mahmud *et al.*, 2023)

In Kenya, a most recent study has shown a disturbingly high prevalence of five curable STIs, that is chlamydia, syphilis, gonorrhea, *Mycoplasma genitalium* and trichomonas infection, among tertiary student MSM in Nairobi, Kenya. In this study, chlamydia, gonorrhea, latent syphilis, *Mycoplasma genitalium* infection, and trichomonas prevalence were 58.8%, 51.0%, 11.3%, 6.0%, 1.5% and 0.7%, respectively (Mwaniki *et al.*, 2023). Similar to these findings, *Chlamydia trachomatis* was the most prevalent STI from a study conducted in South Africa. Further, (Mashingaidze *et al.*, 2023) showed *Chlamydia trachomatis* and *Neisseria gonorrhoeae* to be most prevalent in MSM compared to non-MSM males (7.5% vs 1.2%). In tandem with these findings, a laboratory-based study in Kisumu, Kenya, showed prevalence of anorectal *Neisseria gonorrhea/ Chlamydia trachomatis* infection among MSM at 5.2% (n=36), of which 58.3% (n=21) were detected among men without symptoms (Quilter *et al.*, 2019). In a separate study, (Otieno *et al.*, 2020) showed an increased incidence of urethral chlamydial and gonococcal infection, with a reduced incidence of rectal chlamydial and gonococcal

infection, despite MSMs being tested and treated repeatedly, clearly bringing out the need for combination prevention interventions to reduce the burden of chlamydial and gonococcal infections in this population.

Symptoms associated with STIs include urethral discharge, dysuria, increased urinary frequency, pruritis and irritation during micturition. Men having sex with men frequently suffer from urethritis especially due to the higher chances of exposure to urogenital pathogens associated with anal sex. A study showed that up to 39% of men having sex with men individuals stand at high risk of having urethritis. Further, the study showed that Gonorrhea and Chlamydia frequently cause urethritis in MSMs (Vigneswaran *et al.*, 2016). Another theory explaining the rationale behind the high prevalence of men having sex with men urethritis is the differences in anal vs. vaginal flora which hence facilitate differential development of pathogens (Patton *et al.*, 2014). A recent study on STI prevalence among MSM in Nairobi, Kenya, has identified disturbingly high prevalence showing urgent need for combination prevention interventions for this population (Mwaniki *et al.*, 2023)

2.3 Factors associated with STIs among MSM

A range of factors have been identified as drivers of STIs prevalence among the MSM. Group sex participation has been linked to a higher prevalence of gonorrhea (Rice *et al.*, 2016). Inconsistent condom use during sex has been associated with a higher likelihood of STI diagnosis. Another study also noted that, unprotected receptive anal intercourse, increased number of sexual partners, and unprotected sex work are factors associated with STI incidence among MSM in Lima Peru (Castillo *et al.*, 2015). In addition, another finding showed that having more than eight sexual partners is a risk factor for STI among MSM (Zeggagh *et al.*, 2022)**.** Inconsistent condom use and having a regular sex partner are risk factors associated with STI prevalence among tertiary students MSMs in Nairobi Kenya (Mwaniki *et al.*, 2023) . Likewise, (Werner *et al.*, 2018) has pointed out high incidence rates of STIs among MSM who engage in higher-risk sexual behaviors such as condom less sex with casual partners. Further, HIV prevalence among MSM is five times higher compared with men in the general population in Dodoma (Mmbaga *et al.*, 2017)

Further, evidence suggests that high levels of condom less anal intercourse are associated with high risk of HIV infection and transmission (Li *et al.*, 2017) and highlights the need for enhancing preventive measures to reduce HIV transmission.

With public health messaging, MSMs are encouraged to do annual testing of STIs, and most frequent depending on sexual and health seeking behaviors (Doshi *et al.*, 2020). Despite the elevated risks of a range sexual behaviors that MSMs engage in, it has been stablished that many MSM forfeit regular STI testing (Patton et al., 2014). In a study to understand factors associated with testing of STIs among a non-clinic-based, but rather a population of men accessing an Internet-based social and sexual networking site, MSM who in the past two years had been significantly diagnosed of an STI, had used a condom some of the time or not used at all, during either insertive or receptive anal sex. In regards to testing for infections transmitted sexually, men who did not use condoms during bottom/receptive anal sex were more likely to have had a test for infections transmitted sexually within the past year, but for gay man with history of STI was less likely to have been tested (Knight & Jarrett, 2015). In contrast with women having sex with women, clinicians are encouraged to refer the women to community resources that are culturally sensitive community, and legal advisors in aid of medical decision making (Knight & Jarrett, 2017).

The Center for Disease Control and prevention recommends that MSM be screened for Gonorrhea and chlamydia since they are the most reported STIs among MSMs. In a study to access extra genital gonorrhea and chlamydia, patient level data from 42 clinics in the United States. From the sample tested, 11.1% were positive for urogenital gonorrhea, 8.4% tested positive for urogenital chlamydia where as 14.1% were positive for rectal chlamydia. More than 70% of extra genital gonorrhea infections and 85% of chlamydial infections being associated with negative urethral tests at the same visit and were not detectable through urethral screening alone (Patton *et al.*, 2014). A study on STI and behavioral change in relation to PrEP revealed that the incidence of urethral Neisseria gonorrhea and chlamydia trachomatis remained elevated, with no PrEP related behavior change among MSM at Anza Mapema. It was however noted that many sexual partners,

sex without condom and sex for money or other favors reduced over time (Mehta *et al.*, 2021).

Currently, a few studies focus on demographic, socio-economic and sexual relator factors associated with STIs among MSM, despite the regard of MSM as a high-risk behavioral group for STI infection, more so for anal intercourse. A study conducted on risk factors associated with infections that are transmitted sexually among HIV infected MSMs revealed that the prevalence rate of these infections among HIV-infected MSM was high. It also was established that MSMs that were young and infected with HIV were associated with a significant reduced STI-HIV co-infection risk. This was probably because; first, the young MSMs that were HIV-1 infected would highly protect themselves by use of protective measures upon receipt of any information that suggested its potential as a useful intervention. Secondly, in comparison with the older MSMs, the immune systems of younger MSMs were stronger. The difference in the immune system level could be the probable reason for different susceptibility to STI among HIV-infected MSM (Garofalo *et al.*, 2016). Biologically, one of the key reasons for high vulnerability to STIs and HIV among MSM is attributed to anal sex. Unprotected anal sex has an increased risk of transmission compared to vaginal sex. This is attributed to the thin walls of the anus which tear more easily, creating a portal of entry for HIV into the bloodstream (Ngetsa *et al.*, 2019). Just like heterosexuals, MSM tend to have multiple sexual partners and most of them engaging in this kind of casual sex do not use condoms consistently while not all MSM are aware of their HIV status. Similarly, low knowledge level regarding STIs has been highlighted among men who have sex with men in Nairobi, Kenya (Nyasani *et al.*, 2023)

In view of all that has been mentioned so far, there is evidence of continued prevalence of STIs among men having sex with men. Collectively, the drivers of STIs among MSM include inconsistent condom use, multiple sexual partners, low knowledge on STI, anal sexual intercourse. Taken together, these studies outline a critical need to address these drivers of STI among this key population with a focus on reducing the disease burden.

2.4 Theoretical Framework

This study was premised on health belief model which proposes that people will highly take preventive action on perception of the seriousness of the threat of a health risk, on feeling that they are personally vulnerable to, and if there are fewer costs than benefits of engaging in it. In this study, demographic factors, social factors, economic factors, and sexual behavior are factors that may independently or in concert associate to acquisition of STIs.

2.5 Conceptual Framework

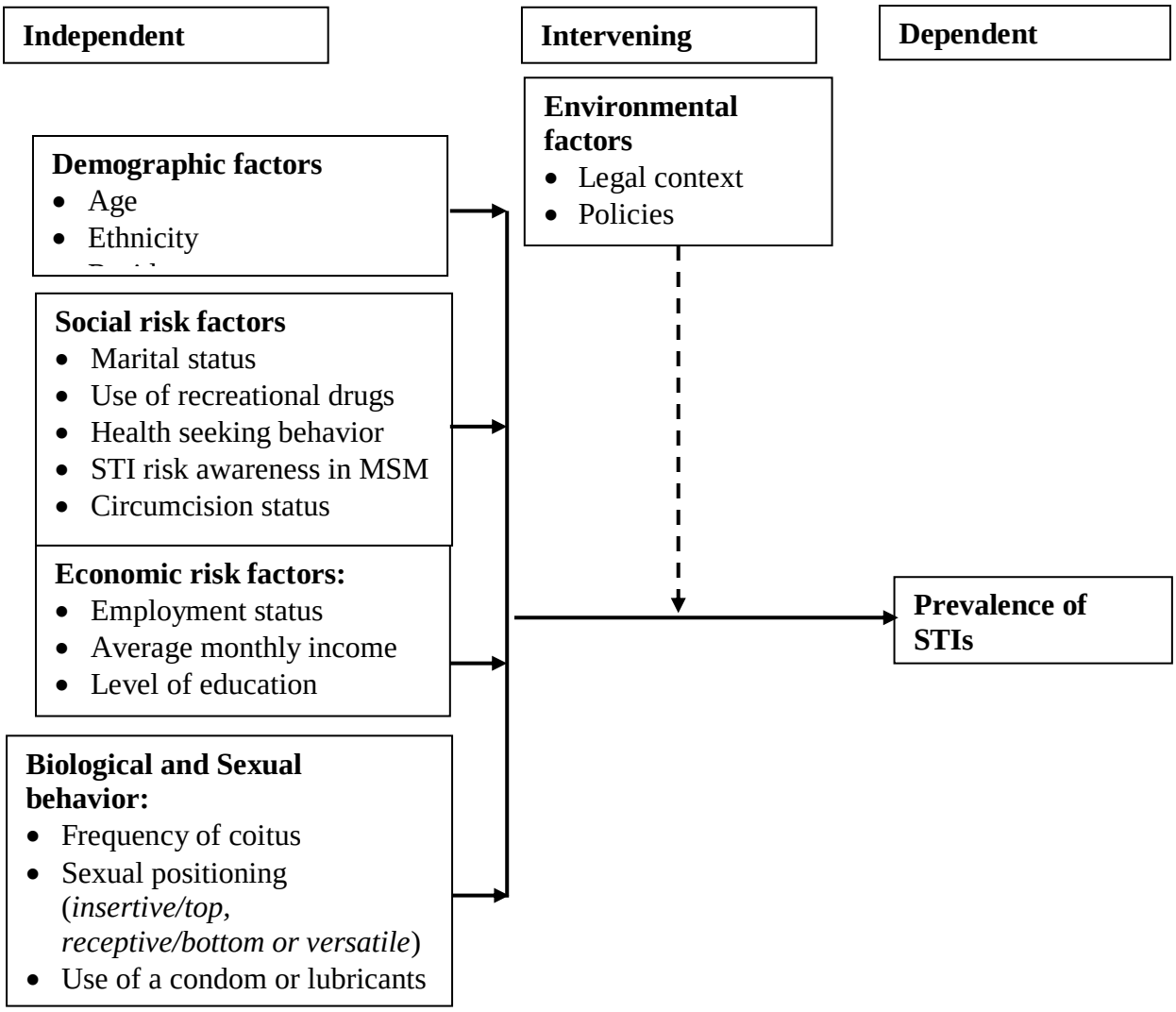

Figure 2.1 *Conceptual Framework* **(source: Author)**

Demographic factors, social factors, economic factors, and sexual behavior factors may independently or in concert associate to acquisition of STIs, with the potential of other intervening factors affecting the overall outcome.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter contextualizes the methodology used in the entire study. It looks at the study area, study design, target and study populations, sampling techniques, sample size determination, validity and reliability of research instruments, ethical and logistical considerations, study limitations and delimitations, data collection and analysis methods.

3.2 Study Design

This analytical cross-sectional study used data collected between January and December 2021 from 737 MSM enrolled at the Anza Mapema drop-in center, a dedicated clinic in Kisumu implementing prevention interventions of MSM, to provide information relating to STI prevalence and the associated factors among MSM. It involved abstraction of syndromic and etiological data from Anza Mapema drop in center. This is so because the Anza Mapema is involved in combination prevention interventions, care and treatment of the MSMs.

3.3 Study Area

The study took place at Anza Mapema drop in centre in Kisumu Central sub county Kisumu, Kenya. Kisumu County has an HIV prevalence of 17.5%, the second highest in Kenya (Kenphia, 2020). Participants were recruited at the Anza Mapema drop-in centre, formerly Kisumu Initiative for Positive Empowerment (KIPE), a non-governmental organization medical clinic, which is recognized as a safe space for men having sex with men. The clinic is involved in youth friendly services, infection prevention and control to mitigate HIV infection in the work place, HIV treatment and care, HIV reduction services in priority populations, HIV risk reduction for key populations, condom distribution, and STI prevention. Unlike other DICes within Kisumu that does syndromic management of STIs, Anza Mapema does both microbiological STI tests for MSM amidst other many research studies.

3.4 Study Population

The study population were 737 MSMs, aged 18 years and above, enrolled at the Anza Mapema drop in Center in Kisumu. According to the 2019 National Census, the county has a population of 1,155,574, which an approximate of 371,000 inhabitants in Kisumu city. The city has an estimated key population of 2492 MSMs according to the latest size estimation by NASCOP. Participants were the MSM who reported to have had anal intercourse with the male partners within the past 6 month, with documented records the Anza Mapema clinic.

3.5 Sample Size Determination

To achieve study objectives, the entire population of 737 MSM at the Anza Mapema clinic who met the inclusion criteria were used in the study.

3.6 Sampling Techniques

Non-randomized consecutive sampling was employed where all clients' records of MSM were enrolled. In this case, client's level files were accessed for abstraction, from the latest clients seen retrospectively. This was done at the Anza Mapema drop-in center, formerly Kisumu Initiative for Positive Empowerment (KIPE), which is recognized as a haven for men having sex with men.

3.7 Inclusion and Exclusion Criteria

3.7.1 Inclusion Criteria

Inclusion criteria to the study were: MSM who were offered services within the year 2021, having been enrolled in Anza Mapema clinic, being MSM from Kisumu County, aged 18 years and above

3.7.2 Exclusion Criteria

MSM who were offered services earlier than 2021 were excluded from the study. Those MSM with incomplete information from the patient level files, and those who were not residents of Kisumu County.

3.8 Data Collection and Analysis

3.8.1 Data Collection

Data was collected using a semi structured questionnaire and information from the records of MSM in Anza Mapema Clinic was abstracted using a data abstraction form. The data was thereafter transferred to Microsoft Excel 2020 for cleansing, then coded and exported to Statistical Package for Social Sciences (SPSS version 23.0) for descriptive and inferential analysis. For quality assurance, the data collection sheets were reviewed by personnel with proper experience in interacting with MSM to ensure the variables are within context. Further, several rounds of review and critical appraisal was done by supervisors to ensure it is well proofed and captures all elements of the study. The data collection sheets were scanned and stored in designated folders with password access before shredding the hard copies.

3.8.2 Data Analysis

Descriptive statistics were used to summarize the socio-demographic characteristics of the respondents in form of frequencies and percentages. The prevalence of STI was estimated as the proportion of participants with positive symptomatology. The Pearson Chi-square test was used to examine differences between categorical variables and STI symptoms. The proportional burden of STI symptoms was categorized as anal and rectal STIs. Logistic regression model was used to compare and identify any significant associations between the variables and STI prevalence. To address potential confounders, the variables with a $p< 0.05$ were subjected to multivariate analysis. A 95% confidence interval was used and variables with a p-value of <0.05 considered statistically significant.

3.9 Ethical Considerations

Study approval was obtained from the Board of Postgraduate Studies, Jaramogi Oginga Odinga University of Science and Technology, followed by research ethics clearance from Research and Ethical Committee Jaramogi Oginga Odinga Teaching and Referral Hospital, followed by a research permit from the NACOSTI. The identities of the patient records were preserved through use of anonymized data. To enhance privacy and confidentiality research assistants sign non-disclosure contracts and were trained appropriately on key aspects of data collection.

CHAPTER FOUR: RESULTS

4.1: Participant Characteristics and STI Symptomatology

A total of 737 MSM were involved in the study, of which, 151(20.5%) had STI symptoms. Majority (450, 61.1%) were aged 18-25 years and 83(11.5%) had a positive HIV status. Over half (404, 54.8%) of respondents preferred receptive/bottom (being penetrated) anal sexual intercourse, 154 (20.9%) preferred inserting/top(penetrating), and 166(22.5%) preferred both (versatile) methods. The study found that over twenty percent, (155, 21%) of respondents did not use condom during sexual intercourse and 403(54.7%) sometimes experienced a condom break. About 292(26.1%) of respondents sometimes had sex for money. The STI symptoms was more common among the MSM with a positive HIV status (30, 36.1%) compared to those with HIV negative status (121,18.9%). There were significant differences in education level, ease of getting lubricants, financial, HIV status of respondents, and STI symptoms ($P<0.05$). This is summarized in Table 4.1

Table 4.1: *Characteristics of MSM by STI symptomatology in Kisumu Kenya*

Variable	Total Number (%)	Number with STI Symptoms (%)	$\chi 2$	P-value
Total	737(100)	151(20.5)		
Age Category(years)				
18-25	450(61.1)	91(20.2)	1.867	0.6
26-35	226(30.7)	45(19.9)		
36-45	58(7.9)	15(25.9)		
46+	3(0.4)	0		
Sex at birth				
Male	729(98.9)	149(20.4)	0.54	0.764
Female	7(0.9)	2(28.6)		
Don't know	1(0.1)	0		
Education level				
Never/ primary	159(21.6)	51(32.1)	16.829	**0.0001**
Secondary	402(54.5)	68(16.9)		
Post-Secondary	176(23.9)	32(18.2)		
Religion				
Protestant	154(20.9)	32(20.8)	6.132	0.19
Catholic	365(49.5)	84(23)		
Muslim	87(11.8)	10(11.5)		
No religion	47(6.4)	10(21.3)		
Other	84(11.4)	15(17.9)		
Circumcised				
No	144(19.5)	36(25)	2.236	0.135
Yes	593(80.5)	115(19.4)		
Financial Status				
Uncertain	403(54.7)	86(21.3)	10.047	**0.018**
Very uncertain	129(17.5)	36(27.9)		
Secure	174(23.6)	26(14.9)		
Very Secure	31(4.2)	3(9.7)		
HIV Status				
Negative	641(88.5)	121(18.9)	13.275	**0.0001**
Positive	83(11.5)	30(36.1)		
Type of Male partner				
Regular	292(39.6)	63(21.6)	2.529	0.282
Casual	234(31.8)	40(17.1)		
Paid/paying	211(28.6)	48(22.7)		
Partner Sex preference				
Inserting/top	154(20.9)	43(27.9)	14.297	**0.003**

Receiving/bottom	404(54.8)	67(16.6)		
Both	166(22.5)	35(21.1)		
Refuse to answer	13(1.8)	6(4)		
Condom Use				
Never	155(21)	46(29.7%)	10.173	**0.001**
Uses condom	582(79)	105(18%)		
Experienced condom break				
Never	292(39.6)	48(16.4)		0.057
Sometimes	403(54.7)	92(22.8)		
Always	37(5)	11(29.7)		
Don't know	5(0.7)	0		
Had sex for money				
Never	267(36.2)	45(16.9)	4.275	0.37
Sometimes	192(26.1)	40(20.8)		
Almost always	49(6.6)	13(26.5)		
Rarely	178(24.2)	41(23)		
Often	51(6.9)	12(23.5)		

About forty percent (268, 36.4%) of MSM were living with male partner, 80(10.7%) were currently married to female, 131(17.8%) had their own children and over half (420, 57%) of them were providing financial support to their families (Table 4.2).

Table 4.2: *Marital Characteristics of the Participants*

Variable	No (%)	Yes (%)	Total
Currently married to female	123(16.7)	80(10.7)	737
Living with male partner	469(63.6)	268(36.4)	737
Have your own children	606(82.2)	131(17.8)	737
Provide financial support	317(43)	420(57)	737

Age of respondents at sexual debut

Over half (379, 52.4%) of MSM had a first sexual intercourse with male partners at 18-25 years while over sixty percent (322, 61.1%) had a first sexual intercourse with female partners at 10-17 years. (Figure 4.1)

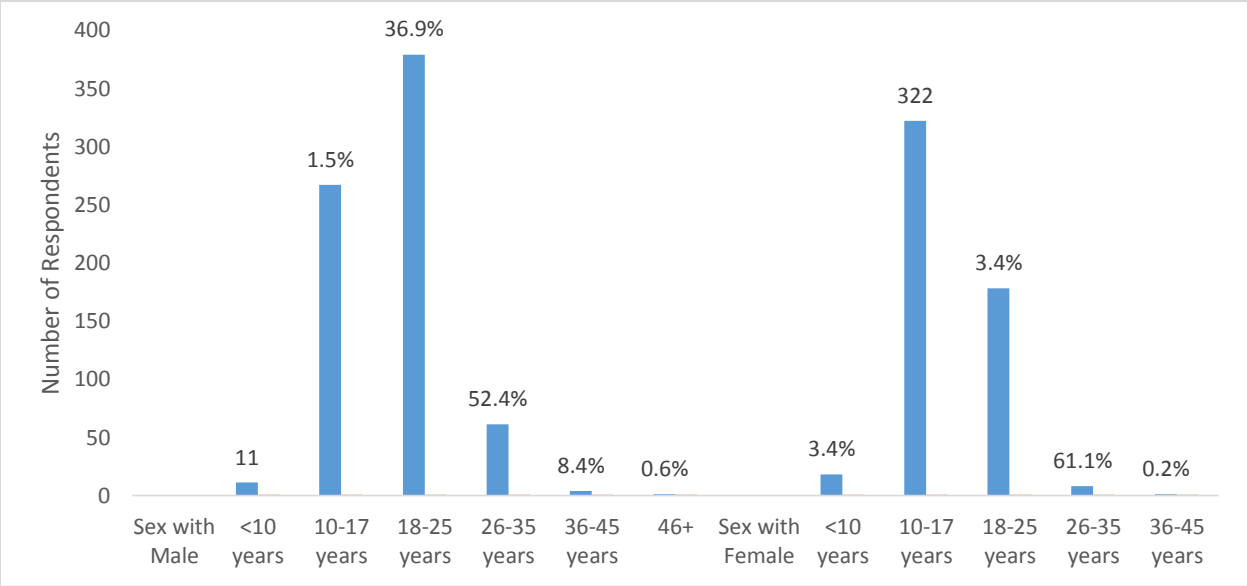

Figure 4.1: *Age of Respondents at Sexual Debut*

About half (352, 48.6%) of MSM had 0-1 partner, 344(47.4%) had 2-5 partners while 26 (4%) had more than 5 sexual partners. (Figure 4.2)

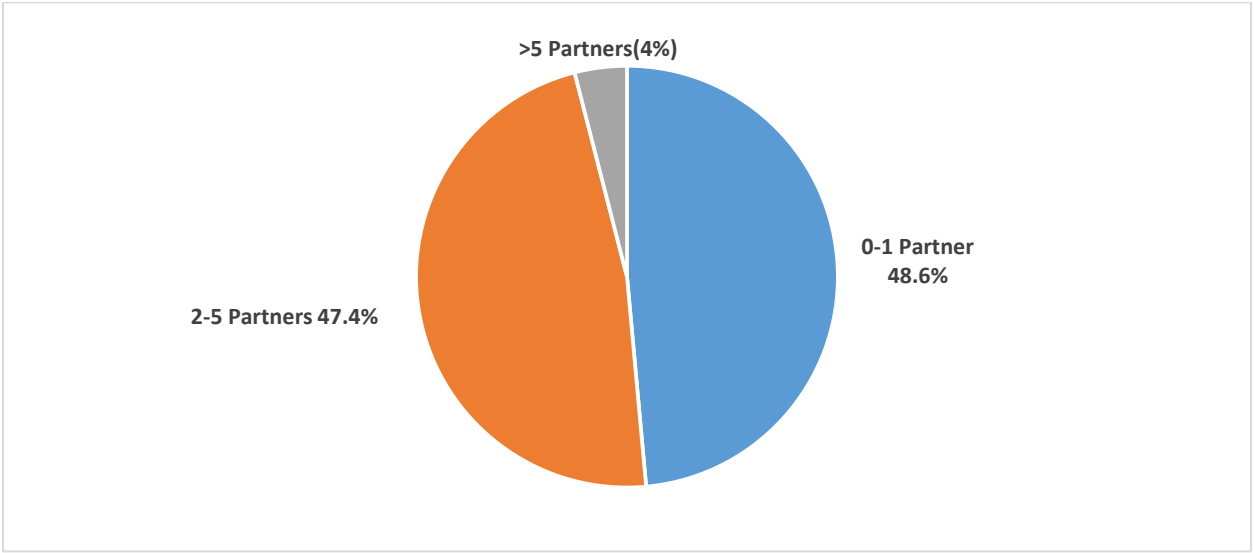

Figure 4.2: *Number of Male Sexual Partners*

Nearly forty percent (258, 35%) of MSM had a first male sexual intercourse with a fellow student, followed by friend or social acquaintance (176, 23.9%), neighbor (89,12.1%) and prison inmate (67, 9.1%). Others had the first male sexual intercourse with a paying client, a stranger, relative, a tourist and a teacher. (Table 4.3)

Table 4.3: *First Male Sexual Partner*

Partner	Frequency	%
Co-worker	20	2.70
Employer	6	0.80
Fellow student	258	35
Foreigner or tourist	21	2.80
Friend or social acquaintance	176	23.90
Guardian	2	0.30
Neighbor	89	12.1
Other	6	0.80
Paying client	48	6.50
Prison inmate	67	9.10
Relative	16	2.20
Stranger/unknown person	17	2.30
Teacher	11	1.50

4.2 Prevalence of STI Symptoms during the last 3 months

Painful micturition (dysuria) 91(12.57%), urethral discharge 36(4.97%) and genital sores 27(3.73%) were the more common STI symptoms reported by MSM. The least experienced STI symptoms were genital ulcer, genital warts, balanitis, and perianal ulcer. (Table 4.4)

Table 4.4: *Proportion of STI Symptoms during the last 3 months*

	Experienced Symptom	
Symptom	**Yes (%)**	**No (%)**
Anal STI symptoms		
Perianal sores	16(2.21)	708(99.79)
Perianal growth	18(2.49)	706(97.51)
Perianal ulcer	2(0.28)	722(99.72)
Perianal warts	8(1.10)	716(98.9)
Genital STI symptoms		
Urethral discharge	36(4.97)	688(95.03)
Genital sores	27(3.73)	697(96.27)
Painful micturition(dysuria)	91(12.57)	633(87.43)
Testicular pain/swelling	38(5.25)	686(94.75)
Genital ulcer	3(0.41)	721(99.59)
Genital warts	3(0.41)	721(99.59)
Balanitis	4(0.55)	720(99.45)

4.2.2 Relationship between Lubricants Use and STI symptoms

A greater number of STI positive symptoms 66(25.8%) was reported among MSM who stated that it was not easy to get lubricants compared to those who stated that it was somewhat easy or very easy to get lubricants. There were no significant differences in the cost, and application of lubricants and STI symptoms. (Table 4.5)

Table 4.5: *Cost of Lubricants and STI Symptoms*

Variable	Total Number (%)	Number STI Positive (%)	$\chi 2$	P-value
Apply lubricants				
No	152(20.7)	33(21.7)	0.168	0.682
Yes	584(79.3)	118(20.2)		
Ease of getting lubricants				
Somewhat easy	209(28.4)	41(19.6)	8.713	**0.033**
Very easy	266(36.1)	42(15.8)		
Not easy	256(34.7)	66(25.8)		
Don't know	6(0.8)	2(33.3)		
Cost of lubricants				
Some-what affordable	286(38.8)	61(21.3)	8.118	0.087
Not affordable	137(18.6)	36(26.3)		
Very affordable	149(20.2)	21(14.1)		
Not Sure	153(20.8)	29(19)		
Don't know	12(1.6)	4(33.3)		

4.2.3 Type of Lubricants used by MSM in Kisumu Kenya

Majority of MSM (321,43.6%) were using KY Jelly, Assegai, Glide, smugel, Sure Lube or other water-based product, followed by Vaseline or other petroleum jelly during sexual intercourse (Table 4.6).

Table 4.6: *Types of lubricants used by men having sex with men*

Lubricant	Frequency	%
KY jelly, assegai, glide, smugel, sure lube or other water-based product	321	43.60
Vaseline or other petroleum jelly	195	26.50
Baby lotion or body lotion	24	3.30
Vegetable oil or food oils	10	1.40
Soap	7	0.90
Saliva	16	2.20
Others	11	1.50
Total	**584**	**100**

4.2.4 Barriers to Condom Use

The MSM who stated they never use condoms were asked their reasons for lack of condom use. Trust in/ knowledge of partners (80, 40%) and unavailability of condom (52, 26%) were some of the factors mentioned as contributing to lack of condom use (Table 4.7).

Table 4.7: *Reasons for lack of Condom Use*

Variables	Frequency	%
Condom was not available	52	26
Condom was not available/ influence of alcohol	7	4
I refused	20	10
I trust / know my own partner	80	40
Influence of alcohol	21	11
Other	12	6
Partner refused	7	3

4.3: Factors Associated with STI Symptoms among MSM in Kisumu Kenya

In univariate Logistic regression model, secondary and post-secondary education level, positive HIV status, partner preference, lack of condom use, and experience of a condom break were the risk factors associated with the STI symptoms. However, multivariate logistic regression analysis, after adjusting for potential confounders, secondary

education level (adjusted odds ratio (AOR) = 0.48, 95% confidence interval (CI): 0.3–0.755, P = 0.001), positive HIV status(adjusted odds ratio (AOR) = 1.95, 95% confidence interval (CI): 1.16–3.29, P = 0.011), receptive sex(adjusted odds ratio (AOR) = 0.51, 95% confidence interval (CI): 0.322–0.810, P = 0.004), lack of condom use(adjusted odds ratio (AOR) = 0.55, 95% confidence interval (CI): 0.358–0.864, P = 0.009), and experience of a condom break(adjusted odds ratio (AOR) = 1.68, 95% confidence interval (CI): 1.115–2.548, P = 0.013) were the independent predictors of STI symptoms among MSM in Kisumu Kenya. (Table 4.8)

Table 4.8: *Factors Associated with STI Symptomatology among MSM in Kisumu Kenya*

Variable	**Unadjusted odds ratio (95% CI)**	**P-value**	**Adjusted odds ratio (95% CI)**	**P-value**
Education level				
Never/primary	Ref		Ref	
Secondary	0.431(0.282-0.658)	**0.0001**	0.48(0.305-0.755)	**0.001**
Post-Secondary	0.470(0.283-0.781)	**0.004**	0.60(0.349-1.039)	0.068
HIV Status				
Negative	Ref		Ref	
Positive	0.243(1.49-3.968)	**0.0001**	1.95(1.166-3.290)	**0.011**
Partner Preference				
Inserting	Ref		Ref	
Receiving	0.513(0.330-0.876)	**0.003**	0.51(0.322-0.810)	**0.004**
Both	0.68 (0.412-1.151)	0.156	0.69(0.404-1.190)	0.184
Refuse to answer	2.21(0.703-6.958)	0.174	2.46(0.701-8.672)	0.159
Ever used Condom				
Never	Ref		Ref	
Uses condom	0.521(0.348-0.781)	**0.002**	0.55(0.358-0.864)	**0.009**
Experience Condom break				
Never	Ref		Ref	
Sometimes	1.50(1.021-2.214)	**0.039**	1.68(1.115-2.548)	**0.013**
Always	2.15(0.995-4.644)	0.051	1.64(0.724-3.743)	0.234
Don't know	1(empty)		1(empty)	

CHAPTER FIVE: DISCUSSION

The study was carried out to determine the prevalence of sexually transmitted infections and associated factors among men having sex with men in Kisumu Kenya. The study found that about twenty percent (20.5%) of the respondents had STI symptoms. However, the findings of the current study do not support a most recent research. An observational study in India on MSM attending an STI clinic in Chennai showed higher prevalence of STIs (27.6%) among the MSM (Safren *et al.*, 2021). Compared to this study In Kenya, a disturbingly higher prevalence of five curable STIs: chlamydia (58.8%), gonorrhea (51%), syphilis (11.3%), trichomonas (6.0%) and *Mycoplasma genitalium* (1.5%) infection, among tertiary student MSM in Nairobi, Kenya (Mwaniki et al., 2023). The observed differences could be linked to difference in study populations, from the one used in our study. In the current study, the most common STI symptoms reported were painful micturition/ dysuria, urethral discharge, and genital sores, whereas the least experienced STI symptoms were genital ulcer, genital warts, balanitis, and perianal ulcer. A previous study has shown men having sex with men to be at an increased risk of genital ulcer disease, (Kularatne *et al.*, 2018) which is worsened by Herpes simplex virus-1 co-infection. Another study by (Vigneswaran *et al.*, 2016) also found that nearly 40% of men who have sex with men to be at a higher risk of having urethritis, which also confirms our finding. Gonorrhea and chlamydia have been shown as the most common causes of urethritis in MSMs. Similarly, a study by (Garofalo *et al.*, 2016) revealed a higher prevalence of STIs among MSM.

In this study, HIV positive MSM compared to those who are HIV negative experienced more STI symptoms. This is confirmed by a similar finding by (Mwaniki *et al.*, 2023) who showed HIV co-infection by at least one of the five STIs (gonorrhea, Chlamydia, *Mycoplasma genitalium*, trichomonas and latent syphilis). Further, an increasing HIV prevalence and its correlates has been reported among MSM (Eluwa *et al.*, 2019). To add to that, compared with the general population, MSM have been shown to be at more risk of HIV (Micheni *et al.*, 2015) due to predisposing biological factors such as anal sex. In this study, majority of MSM were a younger population aged 18-25 years similar to a finding by (Mashingaidze *et al.*, 2023). About thirty percent of respondents sometimes had sex for money. In addition, another finding has shown that being HIV positive,

having two or more sexual partners, depending on partner financially, (Le Roux *et al.*, 2023). Sexual exchange for money has been shown to be a contributing factor in spread of STIs mainly among female sex workers. In this study, those with a very uncertain financial status had more STI symptoms compared to those with very secure financial status. This could mean that the financially disadvantaged men were having more sexual intercourse in exchange for money which exposed them more at risk of acquiring the STIs. Indeed, financial status was a significant predictor of STI symptoms in this study.

The present study identified a range of factors as significant drivers of STI prevalence among the MSM. These were; secondary education level, positive HIV status, receptive sexual intercourse, lack of condom use, and experiencing a condom break. Those who reached primary school or never attended school experienced more STI symptoms compared to those who reached secondary and post-secondary education. Advanced education level may have provided more knowledge on practicing safe sex hence reduction in the number of STI symptoms. A prior study has shown age between 18–24 years, HIV positive sero-status and unprotected anal sex to be contributory factors associated with anorectal Neisseria gonorrhea/ Chlamydia trachomatis infection in men (Quilter *et al.*, 2019). The study revealed that nearly half of the respondents had 2 to 5 sexual partners. A prior study has shown that having more than eight sexual partners is a risk factor for STI among MSM (Zeggagh *et al.*, 2022).

Over half (54.8%) of men preferred receptive/bottom intercourse, about twenty percent (20.9%) preferred insertion/top method, and twenty-two percent (22.5%) preferred both methods. To the best of our knowledge, this is one of the few studies to have documented sexual preference of MSM. More STI symptoms were experienced by inserting/ top partners compared to other methods (bottom and both). Contrary to our finding, another study has showed that performing and receiving rimming or receiving anal sex are risk factors for STI among MSM (Le Roux *et al.*, 2023). These differences could be explained by behavioral factors such as frequency of condom use, and health seeking behavior among the study populations. Another study also noted that, unprotected receptive anal intercourse, increased number of sexual partners, and unprotected sex work are factors associated with STI incidence among MSM in Lima Peru (Castillo *et al.*, 2015). Anal sex

without protection carries a higher risk of transmission than vaginal sex due to the thin walls of the anus that are easily torn during sexual intercourse, creating a portal of entry for HIV and other pathogens into the bloodstream (Ngetsa *et al.*, 2019).

The overall proportion of respondents using condom during sexual intercourse was seventy-nine percent (79%) and over half (54.7%) acknowledged sometimes experiencing a condom break. As expected, those mostly using condom protection during sexual intercourse experienced less STI symptoms compared to those who do not use condoms. Compared to those who never experienced a condom break, STI symptoms was more common among those who sometimes and always experienced a condom break. In addition, evidence suggests that High levels of condom less anal intercourse are associated with high risk of HIV infection and transmission (Li *et al.*, 2017) Unavailability of condoms, influence of alcohol, trust, and refusal by sexual partners were mentioned by the participants as some of the reasons for not preferring condom use during sexual intercourse. This is a discouraging finding pointing towards a gap in implementation of interventions to reduce STIs among MSM.

Inadequate supply of protective measures against STIs such as lubricants and condoms were reported in this study. More STI symptoms were reported by those who stated it was not easy to get lubricants compared to those who stated that it was somewhat easy or very to get lubricants. Lubricants play a role in reducing friction during intercourse hence it may contribute to reduction in STI symptoms. The most used lubricants by MSM in this study were KY gel, smugel, glide, sure lube and Vaseline petroleum jelly. Men who reported not using condom were at more risk of STIs 46(29.7%) compared to those who use condom 105(18%). A study has documented that only 55.4% of MSM self-reported that they used condoms throughout the process of the last homosexual behavior (Ye et al., 2022). Inconsistent condom use during sex is associated with a higher likelihood of STI. Condoms remain the leading tool for STI prevention hence should always be made available and affordable to the MSM and the general population. Further, healthcare workers need to provide more condom awareness and education with a view to promote use among MSM. Importantly, MSM need to be made aware of proper condom use to prevent breakages experienced during intercourse.

The identification of sexually transmitted infections in resource constrained regions is mainly based on symptoms due to poor microbiological laboratory infrastructure. As a result, there is little data on the prevalence of individual sexually transmitted infections. Despite this, some studies have attempted to address this gap. A study in Kisumu Kenya by Quilter et al using a laboratory based investigation has showed prevalence of anorectal Neisseria gonorrhea/ chlamydia trachomatis infection among men who have sex with men at 5.2% (n=36) (Quilter et al., 2019). To add to that, a high incidence of asymptomatic urethral and lower incidence of rectal chlamydial and gonococcal infections has been reported among MSM, despite improved screening and treatment, highlighting the need for preventive strategies to reduce the disease burden among this key population. (Otieno *et al.*, 2020).

This study had strengths and limitations. One of the limitations was that it relied on observed and reported symptoms without doing laboratory investigations. This could have made comparison with other studies that used laboratory confirmed data difficult. However, the observed signs and symptoms of STIs such as penile discharge are used as an indicator of STIs as laboratory confirmed STIs in poorly resource disadvantaged settings. One of the strengths was that the study used a larger sample size hence giving a more representative sample. Another strength was that this was one of the first studies to report sexual method of preference among MSMs.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

This study found a substantial high prevalence of STIs among MSM in Kisumu Kenya, that was associated with positive HIV status, receptive intercourse, lack of condom and experiencing condom breaks during sexual intercourse.

6.2 Recommendations

1. MOH needs to assess effectives of various STI preventive methods such as condom use, lubricants use, health education to address the significant prevalence and burden of STIs among men having sex with men.
2. Men having sex with men should be regularly screened for STIs by healthcare providers at every visit to reduce the disease burden.
3. Further research by MOH and other stakeholders on laboratory confirmed STIs among men who have sex with men is recommended to get an evidence-based data on prevalence of STIs in Kisumu Kenya.

6.3 Suggestion for Future Research

A larger explorative study on factors that put insertive partners to be more susceptible to STIs .

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APPENDICES

APPENDIX I: BPS APPROVAL

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

BOARD OF POSTGRADUATE STUDIES

Office of the Director

Tel. 057-2501804
Email: bps@jooust.ac.ke

P.O. BOX 210 - 40601
BONDO

Our Ref HI 52/4168/2019

Date 15 th December 2021

TO WHOM IT MAY CONCERN

RE: GEORGE JOSEPH NGE'TY- H152/4168/2019

The above person is a bonafide postgraduate student of Jaramogi Oginga Odinga University of Science and Technology in the School of Public Health pursuing Master of Science in Epidemiology and Biostatistics. He has been authorized by the University to undertake research on the topic: "Factors Associated with the Prevalence of Sexually transmitted Infection among Men who have Sex with Men in Kisunau County"
Any assistance accorded he shall be appreciated.

for. Prof. Dennis Ochuo

DIRECTOR BOARD OF POST GRADUATE STUDIES
DATE
P. O. BOX 210 - 40601 BONDO

Thank you.

DIRECTOR, BOARD OF POSTGRADUATE STUDIES

APPENDIX II: JOOTRH APPROVAL

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF HEALTH

Telephone: 057-2020801/2020803/2020321
Fax: 057-2024337
E-mail: medsuptnpqh@yahoo.com

JARAMOGI OGINGA ODINGA
TEACHING & REFERRAL
HOSPITAL
P.O. BOX 849
KISUMU

ceo@iaramoqireferral.qo.ke
Website: www.iaramoqireferral.qo.ke
When replying please quote

Ref. No. IERC/JOOTRH/571/21

25th March, 2022

RE: APPROVAL: STUDY TITLE
FACTORS ASSOCIATED WITH THE PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN WHO HAVE SEX WITH MEN IN KISUMU COUNTY.

REF: IERC/JOOTRH/571/21

To: George Joseph Ng'ety

Dear George,

RE: STUDY TITLE

This is to inform you that JOOTRH IERC has reviewed and approved your above research proposal. Your application approval number is IERC/JOOTRH/571/21. The approval period is 25th March, 2022 to 25th March, 2023.

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 JOOTRH IERC.

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 JOOTRH

viii.

IERC 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 JOOTRH IERC 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 JOOTRH IERC.

In case the study site is JOOTRH, kindly report to Chief Executive Officer before commencement of data collection.

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.keand also obtain other clearances needed.

Yours sincerely,

ANTONY AYORA

SECRETARY – ISERC
JOOTRH - KISUMU

JOOTRH ETHICS & REVIEW COMMITTEE
P. O. Box 849 - 40100
KISUMU

APPENDIX III: NACOSTI RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No:50968

Date of 0 /April202

RESEARCH LICENSE

This is to Certify that Mr.. George Otembo Ng'etv of Jaramogi Oginga Odinga University of Scienc licensed to conduct research in Kisumu on the topic: FACTORS ASSOCIATED WITH THE PREVALE TRANSMITTED INFECTIONS AMONG MEN WHO HAVE SEX WITH MEN IN KISUMU COUNTY for th 0 /April202

License NACOSTI/P/22/167

50968

Applicant Identification

Director
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR

NOTE: This is a computer generated License. To verify the authenti
Scan the QR Code using QR scanner

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
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APPENDIX V: QUESTIONNAIRE

Title of the study

Factors associated with the prevalence of STIs among MSMs in Kisumu County, Kenya

Institution

Jaramogi Oginga Odinga University of Science and Technology

Principal investigator

Name: George Ng'ety

College: Jaramogi Oginga Odinga University of Science and Technology.

University Registration No: H152/4168/2019

Background information about the respondent

Tick the most appropriate response inside the square provided

Background Characteristics			
1. Q	What is your date of birth?	_ _ / _ _ / _ _ _ _ dd mm yyyy 98 Don't know 99 No answer	
2. Q	How do you now identify your gender?	1 Male 2 Female 3 Other (specify) _____ 98 Don't know	
3. Q	What is the highest level that you completed in school?	**None** 00 No education **Primary** 01 Standard 1 02 Standard 2 03 Standard 3 04 Standard 4 05 Standard 5 06 Standard 6 07 Standard 7 08 Standard 8 **Secondary** 09 Form 1 10 Form 2 11 Form 3 12 Form 4 **A Level** 13 Form 5 14 Form 6 **College** 15 Incomplete 16 Completed **University** 17 Incomplete 18 Completed **Other** 19 Other (specify) _____	

4. Q	Are you *currently* a student enrolled in school or an academic institution	1 Yes 2 No
5.	What is your religion?	1 Muslim 2 Catholic 3 Protestant 4 Hindu 5 No religion 6 Other (specify) _____ ___
Marriage, Family, Work		
Now I would like to ask you some questions about relationships you may have had with women. I am interested in your relationships with women who are biologically female at birth.		
6.	Have you ever been married to a female?	1 Yes 2 No
7.	Are you *currently* living with a female wife or female sexual partner?	1 Yes 2 No 9 No response
8.	Are you *currently* living with a male sexual partner?	1 Yes 2 No 9 No response
9.	Are you providing financial support to anyone—including family, children, and sexual partners—at this time?	1 Yes 2 No **→SKIP TO Q211**
10.	How many of these people are you supporting?	[____|____] (number of people)
11.	What is the **main** occupation or activity through which you earn income? **ONLY ONE ANSWER**	00 None 01 Sex work 02 Hawker, street vendor,casual laborer,etc 03 Beach operator, fisherman 04 Mechanic, factory worker, laborer 05 Professional/teacher/ banker/accountant 06 Businessman 07 Hairdresser 08 Waiter/bar manager/hotel, etc. 09 Musician/dancer/performer, etc. 10 Bicycle or motorbike operator 11 Taxi or tuk tuk driver 12 Matatu driver/tout 13 Watchman 14 Other (specify) _____
12. Q	In the last 3 months, how often did you run out of money for your basic needs?	1 Never 2 Rarely 3 Sometimes 4 Often 5 Almost always 6 Refuse to answer

13. Q	In the last 3 months, how often have you had to borrow money from a friend or relative to survive financially?	1 Never 2 Rarely 3 Sometimes 4 Often 5 Almost always 6 Refuse to answer
14. Q	In the last 3 months, how often have you had sex with someone in order to get money, food or housing?	1 Never 2 Rarely 3 Sometimes 4 Often 5 Almost always 6 Refuse to answer
15. Q	Would you say that financially your future is secure or uncertain?	1 Very uncertain 2 Uncertain 3 Secure 4 Very secure

Sexual identity and sexual history		
16.	At what age did you <u>first</u> have sex with a male partner?	[____|____] (years) 98 Don't know 99 No answer
17.	I do not want you to give me a name, but who was your first male sexual partner? *I want you to tell me how this partner was related to you.* **ONLY ONE ANSWER**	1 Fellow student 2 Neighbor 3 Friend or social acquaintance 4 Relative 5 Prison inmate 6 Stranger/unknown person 7 Paying client 8 Teacher 9 Foreigner or tourist 10 Employer 11 Co-worker 12 Guardian 13 Other (specify) _____
18.	Have you ever been forced or coerced to have sex with a male?	1 Yes 2 No →**SKIP TO 24** 9 No response
19.	*I want you to tell me how this person who coerced you into sex was related to you.* **ONLY ONE ANSWER** **DO NOT READ ANSWERS**	1 Fellow student 2 Neighbor 3 Friend or social acquaintance 4 Relative 5 Prison inmate 6 Stranger/unknown person 7 Paying client 8 Teacher 9 Foreigner or tourist 10 Employer 11 Co-worker 12 Guardian 13 Other (specify) _____
20.	How many different men have you had sex with in your lifetime?	[____|____]____] (partners) 98 Don't know 99 No answer
21.	How many different men did you have sex with in the past 3 months?	[____|____]____] (partners) 98 Don't know 99 No answer
22.	How many different men are you currently having sex with?	[____|____] ____] (partners) 98 Don't know 99 No answer
23.	Out of your male partners in the past 3 months, how many were regular, casual, or paid/paying?	a [____|____]____] (regular partners) b [____|____]____] (casual partners) c [____|____]____] (paid/paying partners)
24.	The last time you had sex with a man, did you use a condom?	1 Yes →**SKIP TO Q33** 2 No 3 Don't know 4 Refuse to answer

25.	Why did you not use a condom? **MORE THAN ONE ANSWER IS POSSIBLE.**	**YES** **NO** a. Partner refused 1 2 b. I refused 1 2 c. I trust/know my partner 1 2 d. Condom was not available 1 2 e. Under influence of alcohol or drugs 1 2 f. Afraid of violence/threat from partner 1 2 g. Other (specify) 1 2 _____
26.	The last time you had sex with a man, did you apply a lubricant to your penis and/or rectum?	1 Yes 2 No 3 Don't know 4 Refuse to answer
27.	What kind of lubricant did you use?	1 Vaseline or other petroleum jelly product 2 KY Jelly, Assegai, Glide, smugel, Sure Lube or other water-based product 3 Saliva 4 Baby lotion or body lotion 5 Soap 6 Vegetable or food oils 7 Other (specify) _____
28.	The last time you had sex with a man, did you put his penis in your mouth?	1 Yes 2 No 3 Don't know 4 Refuse to answer
29.	The last time you had sex with a man, did you put your mouth or tongue on his rectum?	1 Yes 2 No 3 Don't know 4 Refuse to answer
30.	The last time you had sex with a man, did you put your penis in his mouth?	1 Yes 2 No 3 Don't know 4 Refuse to answer
31.	The last time you had sex with a man, did he put his mouth or tongue on your rectum?	1 Yes 2 No 3 Don't know 4 Refuse to answer
32.	Are you **usually** the inserting or receiving partner when you have <u>anal</u> sex with a **male partner**?	1 Inserting partner 2 Receiving partner 3 Both 9 No response
33.	Do you **prefer** to be the inserting or the receiving partner when you have <u>anal</u> sex with a **male partner**?	1 Inserting partner 2 Receiving partner 3 Both 9 No response

Sexually Transmitted Infections (STIs) Knowledge and Treatment		
34.	Have you received treatment for any STI symptom in last 3 months?	1 Yes 2 No →**SKIP TO 52**
35.	From where did you seek advice or treatment the last time you had an STI symptom? **MORE THAN ONE ANSWER IS POSSIBLE.**	**YES** **NO** a. Government clinic or hospital (specify)_____ 1 2 b. Private clinic or hospital (specify) _____ 1 2 c. Clinic associated with this study 1 2 d. Private pharmacy (specify) _____ 1 2 e. Traditional healer (specify) _____ 1 2 f. Medicine from home/shops g. Other (specify) _____ 1 2 h. Don't know 1 2
36.	The last time you received treatment for any symptom; did you reveal to the health care provider that you have sex with other men?	1 Yes →**SKIP TO 54** 2 No 8 Don't know →**SKIP TO 54**
37.	Why did you not tell the health care provider that you have sex with other men? **MORE THAN ONE ANSWER IS POSSIBLE.**	**YES** **NO** a. Afraid provider would discriminate/not give treatment 1 2 b. Afraid provider would tell police/legal authorities 1 2 c. Did not feel it was necessary to discuss 1 2 d. Afraid provider would not keep my information confidential 1 2 e. Little or no contact/interaction with counselor or provider 1 2 f. Other (specify) _____ 1 2 g. Don't know 1 2
38.	Did you feel that the counsellor or health care provider reacted to you in a negative or discriminatory way?	1 Yes 2 No 8 Don't know
39.	Overall, were you *very satisfied, somewhat satisfied, or not satisfied* with how the health provider treated you during this last visit?	1 Very satisfied 2 Somewhat satisfied 3 Not satisfied 8 Don't know

Stigma, discrimination, and violence

40. In the past 3 months, how many times have you been refused the following kinds of services because someone believed you have sex with other men?

READ OUT ANSWERS.

	None	Times	DK	RE
a. Health Care / klinic / kar thieth	00	[__|__]	97	98
b. Employment / kazi / tich	00	[__|__]	97	98
c. Education / elimu / somo	00	[__|__]	97	98
d. Church/religious service / kanise / kanisani	00	[__|__]	97	98
e. Restaurant/bar service, / hotelini / kuonde butho	00	[__|__]	97	98
f. Housing / nyumba / ot	00	[__|__]	97	98
g. Police assistance / usaidizi wa polici / kony mar Police	00	[__|__]	97	98

Substance use: Alcohol and drugs

41. How often do you have a drink containing alcohol?

0	Never →**SKIP TO Q1301**
1	Monthly or less
2	Two to four times a month
3	Two to three times per week
4	Four or more times a week

42. How many drinks containing alcohol do you have on a typical day when you are drinking?

0	1 to 2
1	3 to 4
2	5 to 6
3	7 to 9
4	10 or more

43. How often do you have six or more drinks on one occasion?

0	Never
1	Monthly or less
2	Two to four times a month
3	Two to three times per week
4	Four or more times a week

44. Have you or someone else been injured as a result of your drinking?

0	No
2	Yes, but not in the last year
4	Yes, during the last year

45. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

0	No
2	Yes, but not in the last year
4	Yes, during the last year

46. In the past year, have you used drugs other than those required for medical reasons?

1	Yes
2	No

47. Some people have tried injecting drugs using a syringe or needle. Have you injected drugs in the last 12 months?

1	Yes
2	No →**SKIP TO Q1305**
8	Don't know →**SKIP TO Q1305**
9	No response →**SKIP TO Q1305**

48. Have you shared a syringe or needle with anyone else when injecting drugs in the last 12 months?

1	Yes
2	No
8	Don't know
9	No response

49. In the past year, have you had medical problems as a result of your drug use (e.g. memory loss, hepatitis, convulsions, bleeding, STI etc…)?

1	Yes
2	No

Mental health

50. In the last 4 weeks, have you had an anxiety attack — suddenly feeling fear or panic?

1	Yes
2	No →

51.	Over the last two weeks, how often have you experienced little interest or pleasure in doing things?	1 2 3 4	Not at all Several days More than half the days Nearly every day
52.	Over the last two weeks, how often have thought that you would be better off dead or of hurting yourself in some way?	1 2 3 4	Not at all Several days More than half the days Nearly every day
Sexual health			
53.	Are you circumcised?	1 2	Yes No
54.	Last time you had sex, did your penis feel sore?	1 2 3 4	Yes No Don't know Refuse to answer
55.	Last time you had anal sex, did your rectum feel sore?	1 2 3 4	Yes No Don't know Refuse to answer
56.	Last time you had anal sex; did you have bleeding from your rectum after sex?	1 2 3 4	Yes No Don't know Refuse to answer