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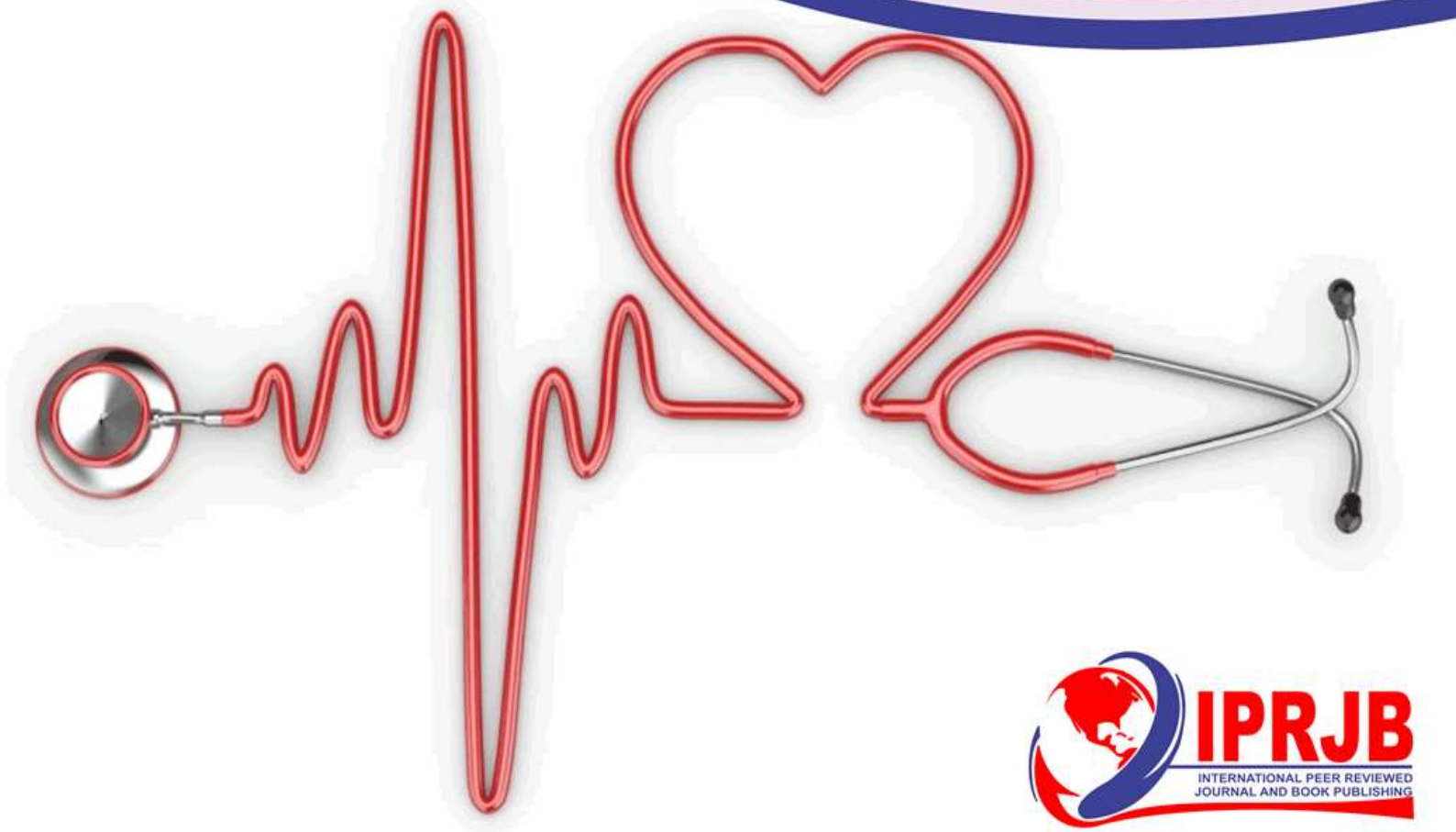

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Correlates of HIV Infection among Men who have Sex with Men in Mvita Sub-County, Mombasa County, Kenya

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Abstract

Purpose: The broad objective of the study was to determine the correlates of HIV infection among men who have sex with men in Mvita sub-county, Mombasa County, by December 2020.

Methodology: Descriptive cross-sectional study design using quantitative methods was used to collect data from a study population which included 121 HIV positive and 119 HIV negative MSM. The respondent-driven sampling (RDS) was used to obtain the sample of respondents while chi-square and multivariable logistic regression were used to identify the variables which were associated with HIV infection. Data generated from the questionnaires was collected, cleaned, coded and analyzed using STATA software Version 17. Level of significance was fixed at p=0.05, with a 95% confidence interval.

Findings: Majority of the MSM (51%) were between 19-29 years, were single (71%), were christian (60%) had attained primary education (45%), were working (63%), 55% had an income of less than Ksh. 5000 but only 38% were married to a female. Majority (91%) of HIV negative MSM accessed PEP/PrEP and only 70% used PEP/PrEP for HIV prevention. However, majority (60%) of HIV positive MSM had anal sex with multiple casual male partners, 49% sometimes had condomless insertive anal sex while 49% had condomless receptive anal sex. HIV positive MSM also had anal sex more than once while high on alcohol (41%), always used drugs before engaging in anal sex (33%) and were non-adherent to ARVs, PrEP/PEP due to lack of transport (66%), alcohol use (24%), and drug use (15%), among other factors.

Unique Contribution to Theory, Practice and Policy: From the study findings, the Government/NGO must address the MSM issues for instance, by increasing the number of HIV programmes targeting MSM, adequately funding them and actively engaging the MSM in running the them. Also, by sensitizing the communities, human right groups, religious leaders, politicians and other stake holders on matters pertaining MSM and lobbying for the review of the laws that criminalizes same sex relationship.

Keywords: *HIV Risk, MSM, Mvita Sub-County, Mombasa, Kenya*

INTRODUCTION

Approximately 38.4 million people were living with HIV, up from 33 million in 2010 and the number of those accessing lifesaving antiretroviral therapy (ART) also increased from 7.5 million in 2010 to 28.7 million in 2021 (UNAIDS, 2021). In addition, about 1.5 million people were infected with HIV and about 650,000 people had died of AIDS related diseases in 2021 (UNAIDS, 2021). Many countries became committed to '95-95-95' treatment goals and have provided a series of fast tract targets (UNAIDS, 2019). According to WHO (2020), the number of newly infected people being tested for HIV and commenced on ARVs have reduced due to emergence of COVID-19 pandemic which disrupted the HIV services, but by the end of 2020 the numbers had started gradually raising again. The risk of contracting HIV was 28 times higher in men who have sex with men (MSM) than in the general population in 2018, indicating that the prevention strategies have not succeeded (UNAIDS, 2019).

Same sex relationship is illegal in many countries and in 13 of them, for instance Iran, Saudi Arabia, Sudan, and parts of Nigeria, was punishable by death penalty (ILGA, 2020). Thus, majority of MSM were forced to go underground, for fear of either revelation of their sexual orientation or because of negative reaction by healthcare providers, hence preventing them from accessing HIV services, thereby risking the elevation of HIV (Lyons, 2020). MSM living in low- and middle-income countries have the lowest uptake of ARV, especially in the countries which experienced social stigma (Shangani *et al*., 2017) and dwindling global funds has worsened the situation (UNAIDS, 2020). However, accurate data was seldom available since it was difficult to collect quality data in this hidden population (UNAIDS, 2018). Majority of MSM had multiple sex partners and the risk of engaging in high-risk sexual behaviour, for instance unprotected sex, was increased when alcohol and drugs were used (UNAIDS, 2018).

According to UNAIDS (2018), African countries such Burkina Faso, Côte d'Ivoire, Eswatini and Lesotho, 10% to 40% of HIV positive MSM delayed or avoided all together accessing health services including HIV prevention due to fear of being stigmatized by the healthcare providers. Tanzania, for instance, initiated a crackdown on MSM by forceful anal examination of men who were suspected to be MSM and banned the provision of condoms and lubricants to lesbian, gay, bisexual, and transgender (LGBT) in the health clinics (ILGA, 2020). Kenya was ranked 3rd in terms of HIV prevalence in the world with approximately 1.6 million people living with HIV by 2018 (UNAIDS, 2019). The main mode of transmission was heterosexual, but Kenya has both generalized and concentrated epidemic affecting key populations (KAIS, 2012).

The HIV prevalence among MSM was 18.9%, (NASCOP, 2019) while that of general population was 3.1 in 2018 (NASCOP, 2019), however, most of the resources were still being allocated to the heterosexual epidemic (Kenya AIDS Report, 2014). According to the NASCOP/MOH (2013), former Coast Province had the second highest number of MSM in Kenya estimated to be 1686 and Mvita, a sub-county in the Mombasa County, had the highest number of MSM estimated to be 341 and hence selected for the study.

Problem Statement

In Kenya HIV prevalence among MSM was 18.9%, (NASCOP, 2019) approximately 6 times that of the general population which stood at 3.1 in 2018 (NASCOP, 2019), however most of the resources were still being allocated to the heterosexual epidemic (Kenya AIDS report, 2014). Same sex relationship in Kenya is outlawed, and punitive laws have been instituted

resulting in the group going underground hence unable to access the healthcare including HIV services (UNAIDS, 2019). Stigma and discrimination have also made some of the MSM to maintain heterosexual relationships to conceal their identity (Veronese *et al.*, 2019). Majority of MSM had multiple sex partners and yet even those engaging in casual anal sex reported inconsistent use of condom. Non-condom uses during anal sex carried a higher risk of HIV transmission than vaginal sex (Eluwa, *et al.*, 2019).

According to a study conducted in Nairobi in 2021 by Mwaniki, *et al.* (2023), unprotected receptive anal sex contributed to a high prevalence of HIV 1 hence the need of HIV interventions that targets MSM. Increased sexual risk behaviour and acquisition of HIV was also associated with alcohol and drugs use among MSM, according to a study done by Mor *et al.*, (2019). A study conducted by Mannava, *et al.* (2013), in Mombasa indicated that MSM were also having sex with women hence increasing the risk of HIV among the heterosexuals. However, accurate data was seldom available since it is difficult to collect quality data in this hidden population (UNAIDS, 2018). For Kenya to achieve the UNAIDS set targets of '95-95-95' and eliminate HIV by 2030, interventions targeting the MSM who were the major drivers of HIV must be increased. Mvita sub-county was chosen since it had the highest number of the MSM (341) in the former coast province (NASCOP/MOH, 2013). This study aim was to determine the correlates of HIV infection among men who have sex with men in Mvita sub-county, Mombasa County, Kenya.

Specific Objective

To determine the correlates of HIV infection among men who have sex with men in Mvita, sub-county, Mombasa County

Research Question

i. What is the knowledge of HIV among men who have sex with men in Mvita sub-county, Mombasa County?
ii. What at individual level are correlates of HIV infection among men who have sex with men in Mvita sub-county, Mombasa County?
iii. What are the health systems correlates of HIV infection among men who have sex with men in Mvita sub-county, Mombasa County?
iv. What is HIV treatment outcome for men who have sex with men diagnosed with HIV in Mvita sub-county, Mombasa County?

Conceptual Framework

The conceptual framework (figure 1.1) demonstrates the relationship between dependent and independent variables. In this study, the dependent variable was reduction in HIV while the independent variables were knowledge of HIV, individual level correlates of HIV, health systems correlate of HIV infection, and HIV treatment outcomes among men who have sex with men.

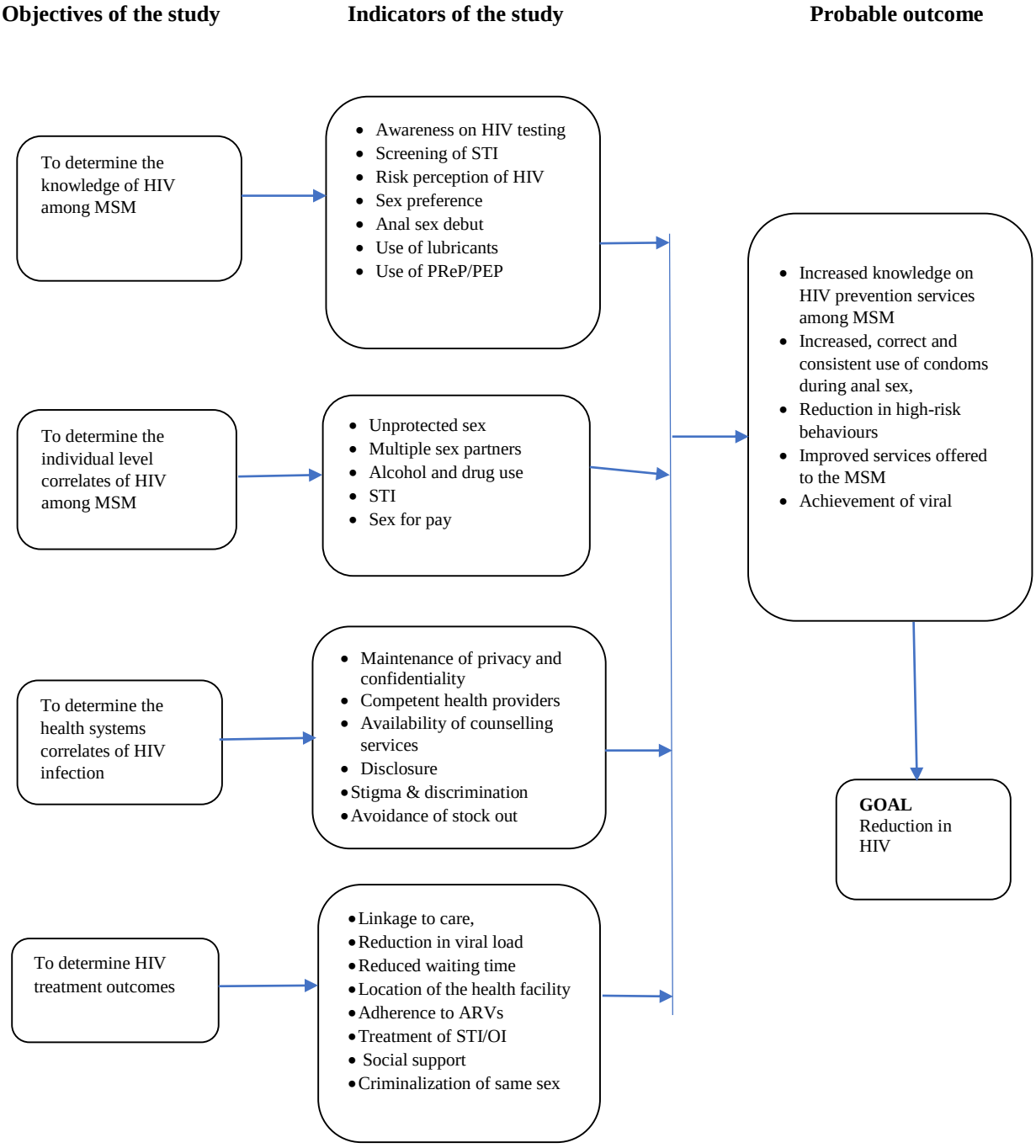

Figure 1: Conceptual Framework of the Study (Source: Researcher (2020)

LITERATURE REVIEW

Globally HIV transmission among men who have sex is 28 times higher than the general population (UNAIDS, 2018). Several factors such as biological, legal and social factors put the MSM at a higher risk of HIV (UNAIDS, 2018). Kenya criminalizes the same sex relationship and it attracts 14 years in prison. A study by Januraga *et al.* (2018), conducted in Indonesia, showed that sites that offered testing and ARVs to the respondents had higher enrollment than those who offered testing alone. Another study conducted by Ouedraogo *et al.* (2019) among men who have sex with men (MSM) in Burkina Faso indicated that, 72.8% MSM in Ouagadougou and 67.9% Bobo-Dioulasso, MSM believed that the risk of contracting HIV was the same both for insertive and receptive anal sex. However, older MSM in a study conducted in Nigeria by Eluwa *et al*. (2019), were more predisposed to HIV perhaps due to many years of engaging in high-risk behaviours. Mbita *et al.* (2022) reported in a study conducted in Tanzania that being uncircumcised, having sexually transmitted infection symptoms and alcohol use before sex was associated with being HIV. In Kenya, Shangani *et al.* (2017), reported in her study conducted in western Kenya, that the MSM issues could be addressed effectively by developing HIV testing services for MSM, addressing stigma and training healthcare workers on MSM issues. According to a study by Valente *et al.* (2020) conducted in Mombasa, MSM reported condom use, however, condom was not used when extra money was paid for condomless sex, perception of low risk of HIV/STI of some client and when condom was perceived to reduce sexual pleasure.

A study with similar findings was conducted by Shen *et al.* (2022), on 'why MSM practice condomless sex' indicated decreased pleasure on condom use, mistrust among partners when condom is in use, limited knowledge on HIV and STI resulted in non-use of condom. According to a study by Fernandez-Rollan *et al.* (2019), conducted in Santiago de Chile among MSM, increased drug use resulted in MSM having condomless anal sex with casual partners and also having multiple sex partners. In another study conducted by He *et al.* (2018) in Guangzhou, China among MSM indicated that in the past six months more than half of the respondents (56.2%) had anal sex with multiple male partners, and 49.8% had anal sex with non-regular partner. Slightly less than half (49.5%) engaged in sex with a casual male partner while 3.7% engaged in sex for pay with a male partner (He *et al.*, 2018). Respondents who exchanged money and other materials to maintain the relationship had significantly more unprotected anal sex with regular and non-regular sex partners in the past six month while the respondents who felt that their relationship was steady were more likely to engage in unprotected anal sex with regular partners (He *et al.*, 2018). Higher risk of HIV among MSM, was associated with casual partners who were recruited from the internet, use of methamphetamine and presence of STI (Piyaraj *et al.*, 2018). A study by Graham *et al.* (2022), conducted in Kisumu, Kenya indicated, challenges in adherence to PrEP were for instance lack of friendly non stigmatizing MSM clinics, however, self-report of adherence by MSM was high.

A study by Klassen et al (2019), on condom use among HIV negative gay men, many gays wanted to experience more pleasure during anal sex, hence had condomless sex, however, they reported use of other HIV prevention measures such PrEP and PEP. According to a study conducted by Sandfort *et al*. (2017) in Africa, alcohol and drug use were not only associated with HIV infection but also violence and material support or gains. In another study by Wang *et al.* (2022), conducted in China among drug and alcohol users MSM, showed alcohol and

drug abuse by MSM was associated with HIV infection. A study with similar results was conducted by Ogbuagu *et al*. (2019), in USA on alcohol and drug use among MSM on PrEP showed, MSM were predisposed to HIV due to increase use of alcohol and drugs and engaging in risky sexual behaviours. A study conducted in USA on adherence of ART among MSM living with HIV indicated, fewer interventions have been put in place to sustain the adherence of ART among black MSM and there was limited data on causes of poor adherence (Quinn & Voisin, 2020). According to a study conducted by Graham *et al*. (2018) in Kenya among gay, bisexual, and other men who have sex with men (GBMSM) on adherence to ART, indicated that information, motivation and behavioual skills apparently were relevant to HIV care while stigma and discrimination appeared to affect all the GBMSM. Important facilitators in adherent to ART and eventually disclosure of GBMSM, were trusted providers, supportive family and friends, being a member of LGBT among others (Graham *et al*., 2022). A study conducted by Shangani *et al.* (2018) in western Kenya indicated that the health care providers did not have necessary competencies to handle MSM issues and MSM felt stigmatized when they attended the health facilities for care.

A study by Matovu *et al.* (2019) on healthcare providers attitude, experience and perception towards the MSM and female sex workers in Uganda, in the provision of the HIV and testing services showed that majority of the workers had provided service to the female sex workers but not to MSM and they were comfortable providing the service to the female sex workers (FSW). Many of the healthcare providers were willing to provide the service to the MSM because of call of duty, however some were uncomfortable in providing the service to the MSM because they felt it was culturally unacceptable (Matovu *et al.*, 2019). Majority also felt that they did not have the necessary skills to handle the MSM issues. The healthcare workers were also in agreement that the criminal laws would affect MSM and constrain then from accessing HIV services more than the FSW (Matovu *et al.*, 2019). According to a study by Dibble et al. (2022) in Senegal on Stigma and healthcare access indicated that MSM were able to access healthcare services, but were unable to disclose their sexual orientation to the healthcare worker hence could not access HIV prevention services. In another study by Gyamerah, *et al.* (2020) conducted in Ghana on stigma and discrimination among MSM, indicated that MSM were unlikely to take the HIV test if they experienced discrimination and sexual violence. Indeed, some of the MSM experienced various forms of stigma and discrimination ranging from verbal, physical and sexual violence (Gyamerah, *et al.*, 2020). A study by Leyva-Moral *et al.* (2019) conducted in Northern Peru on adherence of ART among MSM indicated, taking treatment break, presence of diseases like tuberculosis, and side effects of ART were associated with non-adherence to ART. In another study done by Pina *et al.* (2018), among the MSM and transgender women showed that the common reason for non-adherence were late refills of ARVs, lack of funds, travelling and not carrying their drugs with them, alcohol use and feeling better after using the ARVs (Pina *et al.*, 2018).

Summary

Most of the MSM preferred condomless anal sex even with casual partner especially when incentive such gift, money was offered in exchange. Others preferred unprotected anal sex because of the pleasure they experienced during sex. Use of alcohol and drugs propagated unprotected anal sex, high-risk sexual behaviours and non-adherence to PrEP/PEP and ARVs.

MSM engaged in unprotected anal sex with their regular and paying male customers while high on drugs and alcohol. MSM also had multiple sex partners, thus increasing the risk of HIV.

Stigma, discrimination and criminalization of same sex relationships among other factors have prevented MSM from accessing HIV services and if they did, declined to disclose their HIV positive status. Healthcare providers attitude and lack of relevant skills in handling the MSM issues deterred many MSM from accessing the HIV services. Late screening for HIV, linkage to care and adherence to ARVs were some of the reasons that have resulted in poor treatment outcome.

Research Gap

Despite high prevalence of HIV among the MSM, there is limited data and more often the MSM are counted as part of the general population. Some of the gaps identified in the research were;

1. Alcohol and drug use
2. Condomless anal sex and multiple sex partners
3. Non-adherence to PrEP/PEP/ARVS
4. Limited knowledge on MSM issues and MSM phobia among health care workers
5. Stigma and discrimination and criminalization of same sex relationships

METHODOLOGY

Study Design

Descriptive cross-sectional study design using quantitative method was used in the study.

Study Population

The study was conducted in Mvita sub-county in Mombasa County, Kenya. The target population was MSM living in the five (5) wards of Mvita sub-county. The sampled data included 240 respondents; 121 HIV positive MSM and 119 HIV negative MSM. The study began in November 2020 for two months at Ganjoni Clinic. Since data was collected during COVID 19 pandemic, all COVID 19 protocols were followed. The eligibility criteria for participation in the study was, being a biological male-sex assigned at birth, be 18 years and above, having an identity card, having a comprehensive care clinic card (CCC), having a phone, having had sex with at least one male partner in the last 3 months, be a resident in Mvita sub-county, planning to reside in Mvita for the next 6 months and willing to give informed consent. The study excluded the respondents who declined to give consent, were frail and noticeably unwell or were under the influence of alcohol or drugs at the time of study.

The respondent-driven sampling (RDS), a semi-probabilistic method was used to obtain the required sample in the hard-to-reach populations, such as men who have sex with men, in the absence of sampling frame. The “seeds” from the five (5) wards in Mvita sub-county were selected by convenient sampling. The “seeds” were given three (3) coupons and were encouraged to recruit the eligible respondents randomly from their social networks. The “seeds” were then allowed to recruit three (3) new respondents to ensure that the sampling continues even if some “seeds” did not recruit. Limiting the number of coupons to three (3) reduced recruitment bias and oversampling of the similar characteristics. The first recruitment by the ‘seeds’ formed the 0^{th} wave while the recruits of the ‘seeds’ who gave consent to participate in the study, were given three (3) coupons each and their recruits formed the 1^{st} wave. The recruitment and formation of waves continued until a desired sample size of 240 respondents was achieved.

Data Collection

Quantitative data which was collected by using semi-structured, self-developed questionnaires which were in English and Swahili. Filling of the questionnaire took approximately 45 minutes. The questionnaires were pretested on the MSM who resided in Kisauni at HIV & AIDS People Alliance of Kenya (HAPA-Kenya), who did not participate in the study before the actual data collection, to ensure the validity and reliability of the data. The results were used to review the tool and the information collected was used in determining the feasibility of the study.

Data Analysis

Data generated from the questionnaires was coded and analyzed using STATA software Version 17. Descriptive statistics was used to analyze the quantitative data while chi-square test and multivariable logistic regression were used to identify the variables which were associated with HIV. Level of significance was fixed at p=0.05, with a 95% confidence interval.

Ethical Considerations

The approval to conduct the research study was granted by Ethical Review Committee (ERC) of Pwani University and National Commission for Science, Technology & Innovation (NACOSTI). Participation in the study was voluntary and informed consent was in writing. The participants were allowed to leave at any stage during the study without being penalized. To maintain confidentiality and privacy, unique identification numbers and passwords were used to protect all electronic data.

RESULTS

Socio-demographic Characteristics of MSM

The study recruited a total of 240 MSM, of whom 121 (50.4%) reported to be HIV positive and presented comprehensive care clinic (CCC) cards, while 119 (49.6%) identified themselves as HIV negative which was further confirmed by the MSM research assistants. A total of 240 questionnaires were administered by the researcher for about two months, and all were returned. Majority of the study participants (51%) were aged between 19-29 years, were single (71%), had attained primary education (45%) and 55% had an income of less than 5000ksh. as indicated in Table 1.

Table 1: Socio-demographic Characteristics of MSM

Variables	No. of participants (%) (N=240)	HIV status	
		Positive (N=121)	Negative (N=119)
Age in years			
<18	16 (7.0)	8 (6.6)	8 (7.0)
19 to 29	123 (51)	61 (50)	62 (52)
30 to 40	84 (35)	41 (34)	43 (36)
41 to 51	15 (6.3)	9 (7.4)	6 (5.0)
≥52	2 (0.7)	2(2.0)	0
Relationship status			
Single	170 (71)	87 (72)	83 (70)
Married	56 (23)	29 (24)	27 (23)
Cohabiting/casual	14 (5.8)	5 (4.1)	9 (7.6)
Religion			
Christian	144 (60)	73 (60)	71 (60)
Muslim	83 (35)	38 (31)	45 (38)
Others	13 (5.4)	10 (8.3)	3 (2.5)
Level of education			
No education	5 (2.1)	2 (1.7)	3 (2.5)
Primary	107 (45)	60 (50)	47 (40)
Secondary	86 (36)	39 (32)	47 (40)
College	42 (18)	20 (16)	22 (19)
Occupation			
Student	28 (12)	15 (12)	13 (11)
Working	150 (63)	73 (60)	77 (65)
Not working	62 (26)	33 (27)	29 (24)
Current residence			
Tudor	46 (19)	19 (16)	27 (23)
Tononoka	50 (21)	25 (21)	25 (21)
Makadara	44 (18)	17 (14)	27 (23)
Ganjoni	39 (16)	27 (22)	12 (10)
Majengo	61 (25)	33 (27)	28 (24)
Married to a female			
No	149 (62)	74 (61)	75 (63)
Yes	91 (38)	47 (39)	44 (37)
Income per month (Ksh)			
<5000	131 (55)	76 (63)	55 (46)
5000 to 10000	79 (33)	37 (31)	42 (35)
10000 to 20000	24 (10)	6 (5.0)	18 (15)
20000 to 30000	6 (2.5)	2 (1.7)	4 (3.4)
In past 6 months, no money for[$]			
Rent	191 (80)	108 (89)	83 (70)
Food	100 (42)	64 (53)	36 (30)
Others	235 (98)	117 (97)	118 (99)
$each row reports separate response, all result are N (%),			

Knowledge on HIV/AIDS Prevention Services among MSM

Majority of HIV negative MSM (88%) as compared to HIV positive (75%) reported they will take the HIV test to know their HIV status (p=0.009). However, many HIV positive MSM (41%) would decline to take the test because there was no known cure (p=0.01). HIV negative MSM screened for HIV more than once (Chi-square=140, P<0.001) and reported that the HIV services were offered free of charge (p=0.03). Majority of HIV negative MSM (71%) also reported that a healthy-looking person can be living with HIV (p=0.006) and condom use could reduce HIV transmission (p=0.008) as compared to HIV positive MSM. Many HIV negative MSM used KY gel (80%) and saliva (40%) as lubricant during anal sex (p=0.02) (p<0.001) respectively as compared to HIV positive MSM. Majority of HIV negative MSM accessed PEP/PrEP (p<0.001) and used PEP/PrEP (p<0.001) for HIV prevention. However, HIV positive MSM reported that, communal use of sex toys would increase the risk of HIV (p=0.01) and majority reported to have attended training on HIV/AIDS prevention among MSM (p=0.02) as shown in Table 2.

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Table 2: Knowledge on HIV/AIDS Prevention Services among MSM

	All participant (N=240)	HIV status			
		Positive (N=121)	Negative (N=119)	Chi-square value	P-value
Motivated you to take HIV test[$]					
Know HIV status	196 (82)	91 (75)	105 (88)	6.80	0.009
Poor health	177 (74)	74 (61)	103 (87)	19.9	<0.001
Had unprotected sex	95 (40)	45 (37)	50 (42)	0.58	0.45
Coerced by Health workers	20 (8.3)	9 (7.4)	11 (9.2)	0.26	0.61
Why decline a HIV test[$]					
HIV has no cure	79 (33)	49 (41)	30 (25)	6.35	0.01
Fear of positive results	129 (54)	67 (55)	62 (52)	0.26	0.61
Stigma attached to HIV	164 (68)	84 (69)	80 (67)	0.13	0.72
Frequency of HIV screening in last year					
Once	53 (22)	23 (19)	30 (25)	140	<0.001
More than once	94 (39)	9 (7.4)	85 (71)		
Never	24 (10)	22 (18)	2 (1.7)		
No response	69 (29)	67 (55)	2 (1.7)		
Frequency of STIs screening in last year					
Once	109 (45)	54 (45)	55 (46)	0.06	0.97
More than once	74 (31)	38 (31)	36 (30)		
Never	57 (24)	29 (24)	28 (24)		
HIV services offered free of charge					
Yes	189 (79)	87 (72)	102 (86)	6.89	0.03
No	13 (5.4)	9 (7.4)	4 (3.4)		
Don't know	38 (16)	25 (21)	13 (11)		
How is HIV transmitted[$]					
Unprotected sex	226 (94)	111 (92)	115 (97)	2.63	0.11
Sharing utensils	33 (14)	23 (19)	10 (8.4)	5.69	0.02
Insect bites	22 (9.2)	17 (14)	5 (4.2)	6.99	0.008
Sharing of needles and syringes	130 (54)	74 (61)	56 (47)	4.80	0.03
Sex preference					
Insertive	58 (24)	28 (23)	30 (25)	0.84	0.66
Receptive	60 (25)	28 (23)	32 (27)		
Both	122 (51)	65 (54)	57 (48)		
Which group of MSM is likely to contact HIV					
Insertive	26 (11)	16 (13)	10 (8.4)	1.45	0.48
Receptive	91 (38)	45 (37)	46 (39)		
Both	123 (51)	60 (50)	63 (53)		
Can being faithful to uninfected partner reduce risk of HIV transmission					
Yes	180 (75)	87 (72)	93 (78)	3.45	0.18
No	28 (12)	13 (11)	15 (13)		
Don't know	32 (13)	21 (17)	11 (9.2)		
Can health-looking person be living with HIV					
Yes	164 (68)	79 (65)	85 (71)	10.1	0.006
No	46 (19)	19 (16)	27 (23)		
Don't know	30 (13)	23 (19)	7 (5.9)		
Can condom use reduce transmission of HIV					
Yes	216 (90)	103 (85)	113 (95)	9.54	0.008
No	5 (2.1)	2 (1.7)	3 (2.5)		
Don't know	19 (7.9)	16 (13)	3 (2.5)		
Ever used lubricant during anal sex					
Yes	230 (96)	115 (95)	115 (97)	0.38	0.54
No	10 (4.2)	6 (5.0)	4 (3.4)		
Type of lubricant (N=230)[$]					
KY gel	168 (73)	76 (66)	92 (80)	5.65	0.02
Saliva	63 (27)	17 (15)	46 (40)	18.4	<0.001
Vaseline	96 (42)	53 (46)	43 (37)	1.79	0.18
Cooking oil	46 (20)	25 (22)	21 (18)	0.43	0.51
Water	23 (10)	12 (10)	11 (9.6)	0.05	0.83
All above	11 (4.8)	11 (9.6)	0	11.6	0.001
Ability to access PEP/PrEP					
Yes	197 (82)	89 (74)	108 (91)	15.4	<0.001
No	36 (15)	29 (24)	7 (5.9)		
Don't know	7 (2.9)	3 (2.5)	4 (3.4)		
Ever used PEP/PrEP for HIV prevention					
Yes	128 (53)	45 (37)	83 (70)	25.6	<0.001
No	109 (45)	74 (61)	35 (29)		
Don't know	3 (1.4)	2 (1.7)	1 (0.8)		
Can circumcision reduce HIV transmission					
Yes	134 (56)	72 (60)	62 (52)	4.95	0.08
No	56 (23)	21 (17)	35 (29)		
Don't know	50 (21)	28 (23)	22 (18)		
Can ARVs boost immunity					
Yes	202 (84)	108 (89)	94 (79)	5.19	0.08
No	4 (1.7)	2 (1.7)	2 (1.7)		
Don't know	34 (14)	11 (9.1)	23 (19)		
Can communal use sex toys increase risk of contracting HIV					
Yes	105 (44)	61 (50)	44 (37)	8.85	0.01
No	81 (34)	30 (25)	51 (43)		
Don't know	54 (23)	30 (25)	24 (20)		
Ever attended training on HIV/AIDs prevention among MSM					
Yes	131 (55)	76 (63)	55 (46)	8.23	0.02
No	97 (40)	38 (31)	59 (50)		
Cannot remember	12 (5.0)	7 (5.8)	5 (4.2)		

$each row reports separate response, All results are N (%), P-values from a two-tailed chi-square test of association

Individual Behaviour of MSM

This section includes subheadings on individual level of experience and on alcohol and drug abuse among MSM.

Individual Level Experiences among MSM

Majority of HIV positive MSM (52%) reported they engaged in anal sex with a man because of peer pressure (p=0.05) and paid another man to have anal sex (p=0.02). Many HIV positive MSM also reported to have had anal sex with more than one male casual partner (p=0.003), sometimes had condomless insertive anal sex (p=0.03) and condomless receptive anal sex (p=0.02) with a casual male partner. Also had condom break more than once during anal sex (p=0.03) as compared to HIV negative MSM as indicated in Table 3.

Table 3: Individual Level Experiences among MSM

Variables	No. of participants (%) (N=240)	HIV status			
		Positive (N=121)	Negative (N=119)	Chi-square value	P-value
Anal sex debut					
< 18 years	122 (51)	69 (57)	53 (45)	3.75	0.15
19 to 29 years	107 (45)	47 (39)	60 (50)		
30 to 40 years	11 (4.6)	5 (4.1)	6 (5.0)		
Engagement in anal sex due to$					
Peer pressure	110 (46)	63 (52)	47 (40)	3.82	0.05
Money	152 (63)	75 (62)	77 (65)	0.19	0.66
Curiosity	79 (33)	38 (31)	41 (34)	0.25	0.62
Raped	15 (6.3)	7 (5.8)	8 (6.7)	0.09	0.76
Gifts given in exchange of sex$					
Money	209 (87)	105 (87)	104 (87)	0.02	0.89
Drugs	56 (23)	34 (28)	22 (18)	3.10	0.08
Food	73 (30)	41 (34)	32 (27)	1.39	0.24
Accommodation	57 (24)	30 (25)	27 (23)	0.15	0.70
Paid a man to have anal sex					
No	109 (46)	49 (41)	60 (50)	8.42	0.02
Yes	125 (52)	71 (59)	54 (45)		
Declined to answer	5 (2.1)	0	5 (4.2)		
Had anal sex after being drugged/alcohol					
No	94 (39)	51 (42)	43 (36)	1.28	0.53
Yes	138 (58)	67 (55)	71 (60)		
Declined to answer	8 (3.3)	3 (2.5)	5 (4.2)		
Anal sex with regular male partner					
One partner	89 (37)	43 (36)	46 (39)	0.25	0.88
More than one partner	147 (61)	76 (63)	71 (60)		
No regular partner	4 (1.7)	2 (1.7)	2 (1.7)		
Anal sex with casual male partner					
One partner	72 (30)	43 (36)	29 (24)	12.0	0.003
More than one partner	140 (58)	72 (60)	68 (57)		
No casual partner	28 (12)	6 (5.0)	22 (18)		
Group sex with male sex partners					
1 to 2 partners	84 (35)	46 (38)	38 (32)	1.89	0.39
More than 2 partners	77 (32)	40 (33)	37 (31)		
Never	79 (33)	35 (29)	44 (37)		
Condomless insertive sex with a regular male partner					
Sometimes	71 (29)	31 (26)	40 (34)	4.34	0.11
Always	88 (37)	52 (43)	36 (30)		
Never	81 (34)	38 (31)	43 (36)		
Condomless receptive sex with a regular male partner					
Sometimes	90 (38)	43 (36)	47 (40)	3.56	0.17
Always	78 (32)	46 (38)	32 (27)		
Never	72 (30)	32 (26)	40 (34)		
Condomless insertive sex with a casual male partner					
Sometimes	99 (41)	59 (49)	40 (34)	7.39	0.03
Always	19 (7.9)	11 (9.1)	8 (6.7)		
Never	122 (51)	51 (42)	71 (60)		
Condomless receptive sex with a casual male partner					
Sometimes	100 (42)	59 (49)	41 (34)	8.42	0.02
Always	15 (6.3)	10 (8.3)	5 (4.2)		
Never	125 (52)	52 (43)	73 (61)		
Condomless virginal sex					
Sometimes	87 (36)	45 (37)	42 (35)	3.56	0.17
Always	42 (18)	26 (21)	16 (13)		
Never	111 (46)	50 (41)	61 (51)		
Condom break					
Once	99 (41)	45 (37)	54 (45)	6.96	0.03
More than once	108 (45)	64 (53)	44 (37)		
Never	33 (14)	12 (9.9)	21 (18)		
Experience after anal sex $					
Anal bleeding	98 (41)	56 (46)	42 (35)	3.00	0.08
Sore penis/anus	192 (80)	93 (77)	99 (83)	1.50	0.22
Anal warts	20 (8.3)	14 (12)	6 (5.0)	3.35	0.07
Urethral discharge	50 (21)	24 (20)	26 (22)	0.15	0.70

$each row reports separate response, all results are N (%), P-values from chi-square test.

Individual Alcohol/Drug Abuse among the MSM

Majority of HIV negative MSM (49%) reported to have had anal sex while high on alcohol more than once (p=0.003). However, more HIV positive MSM (26%) reported to have always drunk alcohol to enhance sex performance (p=0.01) and always used drugs before engaging in anal sex (p=0.05). Many HIV negative began using drugs because of being influenced by adults (p=0.03) and due to curiosity (p=0.001) as compared to HIV positive MSM, however more HIV positive MSM abused cocaine (p=0.005) while more HIV negative MSM abused other

drugs (p=0.008) in the last 6 months. HIV positive MSM reported to have used non-prescription injectable drugs at least 4 times in a week (p=0.005) and always used drugs to enhance sex performance (p=0.02) as indicated in Table 4.

Table 4: Individual Alcohol/Drug Abuse among the MSM

Variables	No. of participants (%) (N=240)	HIV status			
		Positive (N=121)	Negative (N=119)	Chi-square value	P-value
Alcohol debut					
< 18 years	77 (32)	34 (28)	43 (36)	4.96	0.18
19 to 29 years	111 (46)	55 (45)	56 (47)		
30 to 51 years	9 (3.8)	7 (5.8)	0		
Never	43 (18)	25 (21)	18 (15)		
Reasons for drinking alcohol $					
Peer pressure	123 (51)	55 (45)	68 (57)	3.28	0.07
Influenced by adults	94 (39)	41 (34)	53 (45)	2.86	0.09
Curiosity	51 (21)	22 (18)	29 (24)	1.37	0.24
Never	47 (20)	28 (23)	19 (16)	1.96	0.16
Anal sex while high on alcohol					
Once	55 (23)	21 (17)	34 (29)	13.9	0.003
More than once	108 (45)	50 (41)	58 (49)		
Always	25 (10)	20 (17)	5 (4.2)		
Never	52 (22)	30 (25)	22 (18)		
Drunk alcohol to enhance sex performance					
Once	35 (15)	19 (16)	16 (13)	10.6	0.01
Sometimes	97 (40)	38 (31)	59 (50)		
Always	46 (19)	31 (26)	15 (13)		
Never	62 (26)	33 (27)	29 (24)		
Alcohol intake					
1 to 2 bottles daily	55 (23)	31 (26)	24 (20)	2.52	0.47
More than 2 bottles	92 (38)	41 (34)	51 (43)		
Occasionally	48 (20)	24 (20)	24 (20)		
Never	45 (19)	25 (21)	20 (17)		
Drug use before anal sex					
Once	40 (17)	18 (15)	22 (18)	7.87	0.05
Sometimes	90 (37)	38 (31)	52 (44)		
Always	62 (26)	40 (33)	22 (18)		
Never	48 (20)	25 (21)	23 (19)		
Reason for abusing drugs$					
Peer pressure	125 (52)	62 (51)	63 (53)	0.07	0.79
Influenced by adults	51 (21)	19 (16)	32 (27)	4.49	0.03
Curiosity	77 (32)	27 (22)	50 (42)	10.7	0.001
Never	49 (20)	28 (23)	21 (18)	1.11	0.29
Drugs used in the last 6 months$					
Marijuana	117 (49)	63 (52)	54 (45)	1.07	0.30
Cocaine	31 (13)	23 (19)	8 (6.7)	8.05	0.005
Club drugs	31 (13)	20 (17)	11 (9.2)	2.83	0.09
Viagra	14 (5.8)	8 (6.6)	6 (5.0)	0.27	0.60
Prescription drugs	10 (4.2)	5 (4.1)	5 (4.2)	0.07	0.97
Methamphetamine	4 (1.7)	3 (2.5)	1 (0.8)	0.98	0.32
Muguka	180 (75)	93 (77)	87 (73)	0.45	0.50
Miraa	145 (60)	72 (60)	73 (61)	0.09	0.77
Others	19 (7.9)	4 (3.3)	15 (13)	7.11	0.008
Never	47 (20)	24 (20)	23 (19)	0.09	0.92
Injecting with non-prescribed drugs					
Daily	14 (5.8)	12 (9.9)	2 (1.7)	14.8	0.005
1 to 4 times in a week	25 (10)	14 (12)	11 (9.2)		
Often	3 (1.3)	2 (1.7)	1 (0.8)		
Decline to answer	92 (38)	52 (43)	40 (34)		
Never	106 (44)	41 (34)	65 (55)		
Drug use to enhance sex performance					
Once	21 (8.8)	11 (9.1)	10 (8.4)	9.45	0.02
Sometimes	91 (38)	39 (32)	52 (44)		
Always	65 (27)	43 (36)	22 (18)		
Never	63 (26)	28 (23)	35 (29)		
$each row reports separate response, all results are N (%), P-values are from chi-square test.					

Health Systems Features Reported by MSM

Majority of HIV negative MSM (69%) reported that private hospital/clinics offered better care to MSM (p=0.001), however, HIV positive MSM reported that the clinics operating hours were flexible (p=0.004). The HIV positive MSM acknowledged being given information on ARV/PEP/PrEP (p=0.001) and on disclosure of HIV (p=0.001) by the health care providers. HIV positive MSM (85%) reported that MSM with HIV/AIDS had the right to access quality healthcare (p=0.02) and had received assistance from the Government/NGO offering HIV/AIDS services (p=0.04). However, HIV positive MSM were sent away due to lack of ARV (p=0.001) while the HIV negative MSM had been sent away due to lack of HIV testing kits (p=0.005) and PEP/PrEP (p=0.001) as shown in Table 5.

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www.iprjb.org

Table 5: Health Systems Features Reported by MSM

Variables	No. of participants (%) (N=240)	HIV status			
		Positive (N=121)	Negative (N=119)	Chi-square value	P-value
Preferred hospital for MSM					
Public hospital	151 (63)	75 (62)	76 (64)	0.09	0.76
Private hospital/clinics	89 (37)	46 (38)	43 (36)		
Facility that offers better care					
Public hospital	101 (42)	64 (53)	37 (31)		
Private hospital/clinics	139 (58)	57 (47)	82 (69)	11.7	0.001
Feel uneasy seeking health services					
No	43 (18)	28 (23)	15 (13)		
Yes	173 (72)	81 (67)	92 (77)	4.61	0.10
Don't know	24 (10)	12 (9.9)	12 (10)		
Competencies of healthcare workers					
No	67 (28)	27 (22)	40 (34)		
Yes	144 (60)	79 (65)	65 (55)	3.90	0.14
Don't know	29 (12)	15 (12)	14 (12)		
Friendly healthcare workers					
No	81 (34)	33 (27)	48 (40)		
Yes	129 (54)	73 (60)	56 (47)	5.01	0.08
Don't know	30 (12)	15 (12)	15 (13)		
Time taken to reach healthcare facility					
Minutes	79 (33)	39 (32)	40 (34)	0.05	0.82
Hours	161 (67)	82 (68)	79 (66)		
Flexible operating hours					
No	77 (32)	28 (23)	49 (41)		
Yes	117 (49)	62 (52)	55 (46)	11.1	0.004
Don't know	45 (19)	30 (25)	15 (13)		
Denied HIV services					
No	172 (72)	79 (65)	93 (78)		
Yes	60 (25)	37 (31)	23 (19)	4.89	0.09
Don't know	8 (3.3)	5 (4.1)	3 (2.5)		
Pre- and Post-HIV counselling done					
No	21 (8.8)	8 (6.6)	13 (11)		
Yes	211 (88)	109 (90)	102 (86)	1.41	0.50
Declined to answer	8 (3.3)	4 (3.3)	4 (3.4)		
Given information on how to disclose HIV status					
No	49 (20)	30 (25)	19 (16)		
Yes	115 (48)	79 (65)	36 (30)	54.1	0.001
Declined to answer	76 (32)	12 (9.9)	64 (54)		
Given information on ARVs/PEP/PrEP					
No	9 (3.0)	3 (2.5)	6 (5.0)		
Yes	174 (73)	116 (96)	58 (49)	69.6	0.001
Declined to answer	57 (24)	2 (1.7)	55 (46)		
Maintenance of confidentiality					
No	77 (32)	31 (26)	46 (39)		
Yes	119 (50)	68 (56)	51 (43)	5.33	0.07
Don't know	44 (18)	22 (18)	22 (18)		
MSM right for quality healthcare					
No	7 (3.0)	0	7 (5.9)		
Yes	202 (84)	103 (85)	99 (83)	7.87	0.02
Don't know	31 (13)	18 (15)	13 (11)		
Received assistance from government/NGO					
No	132 (55)	57 (47)	75 (63)		
Yes	102 (43)	60 (50)	42 (35)	6.28	0.04
Declined to answer	6 (2.5)	4 (3.3)	2 (1.7)		
Lack of HIV commodities$					
HIV testing kits	47 (20)	15 (12)	32 (27)	8.00	0.005
ARVs	33 (14)	33 (27)	0	37.6	0.001
PEP/PrEP	16 (6.7)	0	16 (13)	17.4	0.001
$each row reports separate response, all results are N (%), P-values from chi-square test.					
Maintenance of confidentiality					
No	77 (32)	31 (26)	46 (39)		
Yes	119 (50)	68 (56)	51 (43)	5.33	0.07
Don't know	44 (18)	22 (18)	22 (18)		
MSM right for quality healthcare					
No	7 (3.0)	0	7 (5.9)		
Yes	202 (84)	103 (85)	99 (83)	7.87	0.02
Don't know	31 (13)	18 (15)	13 (11)		
Received assistance from government/NGO					
No	132 (55)	57 (47)	75 (63)		
Yes	102 (43)	60 (50)	42 (35)	6.28	0.04
Declined to answer	6 (2.5)	4 (3.3)	2 (1.7)		
Lack of HIV commodities$					
HIV testing kits	47 (20)	15 (12)	32 (27)	8.00	0.005
ARVs	33 (14)	33 (27)	0	37.6	0.001
PEP/PrEP	16 (6.7)	0	16 (13)	17.4	0.001
$each row reports separate response, all results are N (%), P-values from chi-square test.					

HIV treatment outcomes reported by MSM

Many HIV positive MSM reported laws that criminalizes same sex relationships could prevent MSM from accessing HIV services (p=0.02). HIV positive MSM also reported that screening and treatment of STI, and other opportunistic infections were more accessible as compared to HIV negative MSM, 64% Vs 49%, p<0.001. More HIV positive MSM reported to have joined MSM support groups than HIV negative MSM, 68% Vs 50%, p=0.004. Many HIV positive MSM had been sick/admitted in the hospital in the past one year than HIV negative MSM, p=0.001 and missed ARVs/PEP/PrEP once in a week (p<0.001) as indicated in Table 6.

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www.iprjb.org

Table 6. HIV treatment outcomes reported by MSM

Variables	No. of participants (%) (N=240)	HIV status			
		Positive (N=121)	Negative (N=119)	Chi-square value	P-value
Aware of laws that criminalize same sex					
No	42 ((18)	19 (16)	23 (19)	0.62	0.74
Yes	184 (77)	95 (79)	89 (75)		
Don't know	13 (5.4)	7 (5.8)	6 (5.1)		
These laws can prevent MSM access HIV services					
No	72 (30)	27 (22)	45 (38)	7.45	0.02
Yes	112 (47)	65 (54)	47 (40)		
Don't know	56 (23)	29 (24)	27 (23)		
Given HIV preventive information by healthcare providers					
No	34 ((14)	10 (8.3)	24 (20)	20.1	<0.001
Yes	175 (73)	85 (70)	90 (76)		
Declined to answer	31 (13)	26 (21)	5 (4.2)		
Time taken to be served					
Less than 30 min	97 (40)	41 (34)	56 (47)	6.33	0.09
One hour	110 (46)	59 (49)	51 (43)		
Two hours	24 (10)	14 (12)	10 (8.4)		
More than two hours	9 (3.8)	7 (5.8)	2 (1.7)		
Access to screening and treatment of STI					
No	73 (30)	19 (16)	54 (45)	29.1	<0.001
Yes	136 (57)	78 (64)	58 (49)		
Declined to answer	31 (13)	24 (20)	7 (5.9)		
Feeling uneasy being attended by someone known to you					
No	151 (63)	65 (54)	86 (72)	9.33	0.009
Yes	75 (31)	46 (38)	29 (24)		
Declined to answer	14 (5.8)	10 (8.3)	4 (3.4)		
Service offered after HIV testing					
Linked you with Facility for ARVs	113 (47)	112 (93)	1 (0.8)	202	<0.001
Linked you with Facility for PEP/PrEP	87 (36)	1 (0.8)	86 (72)	132	<0.001
Declined to answer	1 (0.4)	1 (0.8)	0	0.99	0.32
Miss ARVs/PEP/PrEP due to lack of food in the last one month					
No	60 (25)	44 (36)	16 (13)	94.1	<0.001
Yes	105 (44)	74 (61)	31 (26)		
Declined to answer	75 (31)	3 (2.5)	72 (61)		
Have someone to remind me to take ARVs/PEP/PrEP					
No	100 (42)	63 (52)	37 (31)	93.9	<0.001
Yes	61 (25)	52 (43)	9 (7.6)		
Decline to answer	79 (33)	6 (5.0)	73 (61)		
Joined MSM support group					
No	99 (41)	39 (32)	60 (50)	8.19	0.004
Yes	141 (59)	82 (68)	59 (50)		
MSM should disclosure HIV positive status					
No	86 (36)	26 (21)	60 (50)	24.8	<0.001
Yes	102 (43)	68 (56)	34 (29)		
Don't know	52 (22)	27 (22)	25 (21)		
Know HIV status of the most recent male partner					
No	143 (60)	69 (57)	74 (62)	0.78	0.68
Yes	79 (33)	43 (35)	36 (30)		
Don't know	18 (7.5)	9 (7.4)	9 (7.6)		
Health improved with ARVs/PEP/PrEP					
No	21 (8.8)	2 (1.7)	19 (16)	80.1	<0.001
Yes	152 (63)	110 (91)	42 (35)		
Declined to answer	67 (28)	9 (7.4)	58 (49)		
Feeling sick after being commenced on ARVs/PEP/PrEP					
No	95 (40)	48 (40)	47 (40)	26.1	<0.001
Yes	101 (42)	65 (54)	36 (30)		
Declined to answer	44 (18)	8 (6.6)	36 (30)		
Non-adherent to ARVs/PEP/PrEP$					
Missing refill date	62 (26)	52 (43)	10 (8.4)	37.4	<0.001
Lack of transport	108 (45)	80 (66)	28 (24)	44.0	<0.001
Feeling better	29 (12)	25 (21)	4 (3.4)	16.9	<0.001
Alcohol consumption	37 (15)	29 (24)	8 (6.7)	13.7	<0.001
Drug consumption	26 (11)	18 (15)	8 (6.7)	4.13	0.04
No answer	77 (32)	2 (1.7)	75 (63)	10.4	<0.001
Being sick/admitted in the hospital in the past one year					
Once	84 (35)	47 (39)	37 (31)	18.0	0.001
More than once	52 (22)	27 (22)	25 (21)		
Often	7 (2.9)	3 (2.5)	4 (3.4)		
Cannot remember	81 (34)	44 (36)	37 (31)		
No answer	16 (6.7)	0	16 (13)		
Missed ARV/PEP/PrEP					
Once in a week	84 (35)	66 (55)	18 (15)	68.3	<0.001
Twice in a week	32 (13)	21 (18)	11 (9.2)		
Thrice in a week	22 (9.2)	6 (5.0)	16 (13)		
More than thrice in a week	5 (2.1)	5 (4.2)	0		
No answer	96 (40)	22 (18)	74 (62)		

$each row reports separate response, all result are N (%), P-values from a two-tailed chi-square test of association.

In the multivariable model, the two variables on knowledge of HIV/AIDS prevention associated with HIV infection among MSM were; HIV services were free (aRR 0.76; 95%CI 0.64–0.89) and a healthy person could be HIV (aRR 1.21; 95%CI 1.05–1.41). Among individual alcohol/drug abuse variables, those who do not drink alcohol (aRR 1.18 (95%CI 1.06–1.31)) and those who injects drugs 1 to 4 times a week (aRR 1.26; 95%CI 1.04–1.53) were associated with HIV. The only health systems feature that were associated with HIV were `do not know' responses including; do not know if healthcare workers were friendly to MSM (aRR 0.81; 95%CI 0.75–0.87), do not know if had been denied HIV services (aRR 0.78 (95%CI 0.66–0.92) and declining to answer whether information on ARVs/PEP/PrEP was provided (aRR 0.15; 95%CI 0.06–0.36). HIV treatment outcomes variables associated with HIV were; not knowing whether there were laws that criminalize same sex relationships, offering HIV services after HIV testing, reporting that MSM health improved with ARVs/PEP/PrEP, not remembering being sick/admitted to hospital in the past year and reporting missing to take ARV/PEP/PrEP more than thrice a week.

DISCUSSION

The study found out that majority of the participants were youthful, single and were neither christian nor muslim. Being neither Christian nor Muslim and being elderly had a higher risk of contracting HIV among MSM. According to the study conducted by Drumhiller *et al.* (2018), among Latino MSM, religion and spirituality, influenced the MSM in decision making, hence they could choose to abandon the unacceptable behaviour such as promiscuity and drugs. A study conducted by Eluwa *et al.* (2019) in Nigeria showed that older MSM were at risk of contracting HIV and similar results were found in this study. The study found the majority of MSM were young, but the elderly MSM were more susceptible to HIV perhaps because they were unlikely to have sex partners hence difficult to negotiate for safer sex once they get a partner. The elderly MSM were also likely to have female spouses hence could transmit the virus to the general population. Thus, the HIV test should not only be offered to young MSM but also to the elderly MSM since they could be sexually active and hence at risk of HIV.

It was noted from the study that majority of HIV negative MSM as compared to HIV positive MSM took the HIV test because they wanted to know their HIV status and due to poor health.

A study by Marano *et al.* (2018), conducted in USA on HIV testing, linkage to HIV medical care among black MSM, indicated that screening of the MSM who were at risk of contracting HIV was important in lowering the risk of HIV transmission. More HIV negative MSM than HIV positive MSM also reported condom use would reduce HIV transmission, hence less likely to transmit HIV. However, according to the study on 'Perceptions and use of condoms among HIV negative gay men in Vancouver, Canada' by Klassen *et al.* (2019), majority of MSM preferred barebacking or intentional condomless anal sex, due to erotic pleasure, intimacy, trust and increased use of PrEP/PEP. Majority of the HIV positive MSM as compared to HIV negative MSM attended training on HIV/AIDS among MSM but despite the knowledge, fewer used lubricant during anal sex and fewer still reported to have ever used PEP/PrEP for HIV prevention. These findings were consistent with a study conducted by Hernandez *et al.* (2017) on 'Risk factors associated with HIV among MSM in Ecuador' which indicated high prevalence rate of HIV in the group despite the knowledge on HIV/AIDS. The study found out that the majority of HIV negative MSM were able to maintain negative status by taking PEP/PrEP and using lubricant during anal sex.

Men who have sex with men engaged in anal sex due to peer pressure contrary to the study conducted in Mozambique titled 'Identifying a hidden population at high risk for HIV & AIDS' by Nalá *et al.* (2015), which indicated that money, goods, and other incentives were motivators to engage in anal sex. More HIV positive MSM than HIV negative MSM paid another man to have sex with and had anal sex with more than one casual male partner. According to the study on 'Transactional sex among MSM in West Africa' by Kounta *et al.* (2019), MSM who received money and/or gifts in exchange of anal sex were highly exposed to HIV than those who did not receive and had socio-economic difficulties. In another study conducted in Mombasa by Valente *et al.* (2020), MSM reported condom use, however, condom was not used when extra money was paid for condomless sex, perception of low risk of HIV/STI of some client and when increase sexual pleasure was desirable.

In the study, majority of HIV positive MSM had anal sex with multiple casual partners and sometimes had condomless insertive or receptive anal sex with casual partners as compared to HIV negative MSM which was positively associated with being HIV. In consistent with the study, was a study conducted by Fernandez-Rollan *et al.* (2019), in Santiago de Chile, which indicated increased drug use resulted in MSM having condomless anal sex with casual partners and also having multiple sex partners. This study also indicated that majority of HIV positive MSM always had anal sex while high on alcohol and drugs to enhance sex performance. According to a study by Wang *et al.* (2022), conducted in China among drug and alcohol users MSM, showed alcohol and drug abuse by MSM was associated with HIV infection. More HIV positive MSM disclosed their HIV status as compared to HIV negative MSM. In consistent with the study, was a study conducted by Chen *et al.* (2018), on 'Factors associated with disclosing men who have sex with men (MSM) sexual behaviours and HIV-positive status in China', which also indicated that MSM who were HIV positive were more likely to disclose their HIV status and behaviour to close friends, family members, other MSM who were also HIV positive. This study took place during Covid 19, and due to partial lockdown in the country and lockdown in the world, there was less movement of people and less resources thus making it difficult for MSM to negotiate for safer sex when they found a client. Drugs and alcohol use propagated condomless sex and multiple sex partners and thus increasing the risk of HIV.

In the study, majority of HIV positive MSM, reported that the healthcare providers offered the MSM with the HIV services such as disclosure of the HIV, information on PEP/PrEP/ARVs since it was their right to have quality healthcare which was positively associated with being HIV. Similar findings were found in a study conducted by Kapanda *et al.* (2019) on 'Healthcare providers' attitudes towards care for MSM in Malawi.', which indicated that the healthcare providers were willing to offer the MSM with the HIV related services and were cognizant of the fact that it was their right to access quality healthy service. Contrary to the study, on 'Health providers' experiences, perceptions, and readiness to provide HIV services to men who have sex with men and female sex workers in Uganda' by Matovu *et al.* (2019), many of the healthcare providers were willing to provide the service to the MSM because of call of duty, however some were uncomfortable in providing the service to the MSM because they felt it was culturally unacceptable and did not have the necessary competencies to handle the MSM issues.

A study by Marano *et al.* (2018) on 'HIV testing, linkage to HIV medical care, and interviews for partner services among black men who have sex with men southern U.S', indicated that, by screening HIV infected persons who were not aware of their HIV status, linking them to

medical care for antiretroviral and by reducing gaps within the health systems was key in national prevention of HIV and these results were consistent with the study. Majority of HIV positive MSM received more assistance from government/NGO dealing with HIV/AIDS than their HIV negative counterparts. A study on 'Is contact between MSM and non-governmental organizations providing harm reduction associated with improved HIV outcomes?' by Trickey *et al*. (2020) indicated that, MSM who were targeted by NGO had better treatment outcome contrarily to the study. The study found more HIV prevention strategies were being directed to HIV positive MSM as compared to the HIV negative MSM. This may give the HIV negative MSM a sense of being safe and in future contract and transmit HIV. Lack of HIV commodities for instance, ARVs may lead MSM who test HIV positive developing life-threatening opportunistic infection, and those already on ARVs, develop resistance due to non-adherence while those who were HIV negative seroconvert.

In the study, majority of MSM especially those who were HIV positive reported that the law that criminalizes same sex relationships could prevent them from accessing the HIV services which was positively associated with being HIV. Similar results were found in a study conducted by Zhang, *et al.* (2018) on 'Antiretroviral drug use and HIV drug resistance among MSM and transgender women in sub-Saharan Africa', which indicated that the impact on ARV scale has not been felt among MSM due to criminalization of same sex relationship among other factors. Majority of HIV positive MSM in the study as compared to MSM who were HIV negative, reported that they had someone to remind them about ARV/PEP/PrEP and had joined MSM support group. In consistent with the study, was a study by Bilardi *et al.* (2019), on 'The role of stigma in the acceptance and disclosure of HIV among recently diagnosed men who have sex with men in Australia' which indicated that the MSM who disclosed HIV status, were in strong social support network or knew someone living with HIV were able to cope better with the disease than those with fewer support networks. In the study, majority of HIV positive MSM missed HIV prevention drugs due lack to of food, late refills of drugs, feeling sick after being commenced on treatment, lack of transport, alcohol, and drug consumption.

Similar findings were found in a study conducted by Pina *et al.* (2018) on 'Antiretroviral treatment uptake and adherence among MSM and transgender women with HIV in Mumbai, India' which indicated, that the common reason for non-adherence were late refills of ARVs, lack of funds, travelling and not carrying drugs with them, alcohol use and feeling better after using the ARV.

According to the study, the HIV positive MSM were at higher risk of transmitting and being re-infected with the HIV because fewer screened for STI and other opportunistic infection, had multiple partners and engaged in condomless anal sex despite training. Due to stigma and discrimination, the HIV positive MSM attended clinics which were far from where they resided, hence when Covid 19 emerged, economic hardship followed due to lockdown, retrenchment and closing of hot spots, many MSM could not adhere to refill dates since they did not have money for transport. Some MSM also relocated to rural areas hence it became difficult to trace them when they were lost to follow up. During lockdown, missing ARV and other HIV prevention drugs was aggravated by lack of food, use of cheap alcohol, drugs (*muguka*) and lack of support from the MSM groups. Thus, if issues affecting MSM are not addressed, including availability of HIV commodities, the gains made in reduction of HIV prevalence in general population might not be sustained.

On limitation and strength of the study, there was inadequate data on MSM since this is a hidden population. MSM may not have fully disclosed some of the behaviours that make them more susceptible to HIV. Even though the study was confined in Mvita sub-county, it was possible to have recruited non Mvita resident since MSM preferred registering for HIV services in the centres far from where they resided due to stigma. This is the first study in Mvita sub-county and it presents unique data which compares the difference between the HIV positive MSM and HIV negative MSM. Thus, measures will be instituted so that MSM who are HIV negative can maintain their status while the HIV positive MSM can achieve undetectable viral load, thus reducing the transmission and acquisition of HIV among MSM and in general population. Further Research in other counties in the country using a larger sample size to determine whether the MSM in those counties will experience the same or different issues from those of MSM residing in Mvita sub-county is recommended.

Conclusions

Fewer HIV positive MSM reported having accessed and used PEP/PrEP but engaged in risky sexual behaviours as compared to HIV negative MSM such as having condomless anal sex with multiple casual partners despite training. Many HIV positive MSM declined to take HIV test since there was no known cure and more HIV positive MSM than HIV negative MSM used alcohol and drugs to enhance sex performance. Majority of HIV positive MSM as compared to HIV negative MSM received assistance from Government/NGO, however, MSM reported stock out of HIV commodities such as HIV testing kits, ARVs, and PrEP/PEP. HIV positive MSM reported that the law that criminalizes same sex relationships would prevent them from accessing HIV prevention services and more HIV positive MSM were non-adherent to ARV/ PrEP/PEP due to lack of transport, food, alcohol, and drug use.

Recommendation

The study recommends, training of all MSM on HIV/AIDS and training of trainers (TOT) who will continue mentoring the MSM. Couple counseling should be encouraged so that majority of MSM can take HIV test. To effectively intervene in the use alcohol and drug abuse among MSM, a well-funded program to sensitize and treat those who are already affected should be commenced and all MSM should receive assistance from the Government/NGO not just the HIV positive MSM. The Government/NGO should increase funding in HIV services offered to MSM to ensure there are no stock out of HIV commodities and increase the number of HIV programmes targeting MSM, funding them and actively engaging the MSM in running them. Sensitization and involvement of the communities, human right groups, religious leaders, politicians and other stake holders on MSM issues and lobbying the relevant bodies so that laws that criminalizes same sex relationship can be reviewed.

REFERENCES

Bilardi, J.E., Hulme-Chambers, A., Chen, M. Y., Fairley, C.K., Huffam, S. E & Tomnay, J.E. (2019). *The role of stigma in the acceptance and disclosure of HIV among recently diagnosed men who have sex with men in Australia*: A qualitative study.

Chen, L., Lian, D., & Wang, B. (2018). *Factors associated with disclosing men who have sex with men (MSM) sexual behaviors and HIV-positive status: A study based on a social network analysis in Nanjing, China*. PloS one, 13(4), e0196116. https://doi.org/10.1371/journal.pone.0196116.

Dibble, K.E., Baral, S.D., Beymer, M.R., Stahlman, S., Lyons, C.E., Olawore, O., Ndour, C., Turpin Nunez, G., Toure-Kane, C., Leye, D. N., Diouf, D., Drame, F.M., Mboup, S., & Murray, S.M. (2022). *Stigma and healthcare access among men who have sex with men and transgender women who have sex with men in Senegal.*

doi:10.1177/0956462418802927

Drumhiller, K., Nanín, J.E., Gaul, Z., & Sutton, M.Y. (2018). *The Influence of Religion and Spirituality on HIV Prevention Among Black and Latino Men Who Have Sex with Men*. New York City. J Relig Health.;57(5):1931-1947. doi: 10.1007/s10943-018-0626-y. PMID: 29696488.

Eluwa, G.I., Adebajo, S.B., … Eluwa, T. (2019). *Rising HIV prevalence among men who have sex with men in Nigeria: a trend analysis.* BMC Public Health 19, 1201.

Fernandez-Rollan, L., Stuardo, A. V., & Strömdahl. S. (2019). *Correlates of condomless anal intercourse among men who have sex with men in Santiago de Chile*. International Journal of STD & AIDS. 2019;30(3):231-240.

Graham, S.M., Okall, D.O.,… Mehta, S.D. (2022). *Challenges with PrEP Uptake and Adherence Among Gay, Bisexual, and Other Men Who Have Sex with Men in Kisumu, Kenya.* AIDS Behav (2022). https://doi.org/10.1007/s10461-022-03860-w

Gyamerah, A.O., Taylor, K.D., Atuahene, K., Anarfi, J.K., Fletcher, M., Raymond, H.F., McFarland, W., & Dodoo, F.N. (2020). *Stigma, discrimination, violence, and HIV testing among men who have sex with men in four major cities in Ghana.* AIDS Care. 2020 Aug;32(8):1036-1044. doi: 10.1080/09540121.2020.1757020. Epub 2020 May 4. PMID: 32362131; PMCID: PMC7368816.

He, J., Xu,H.F., Cheng, W. B., Zhang, S. J., Gu, J., Hao, Y. T., Hao, C. (2018). *Intimate relationship characteristics as determinants of HIV risk among men who have sex with regular male sex partners: a cross-sectional study in Guangzhou, China.* BMC Infect Dis. 18(1):150. doi: 10.1186/s12879-018-3044-6.

Hernandez, I., Reina-Ortiz, M., Johnson, A., Rosas, C., Sharma, V., Teran, S., Naik, E., Salihu, H.M., Teran, E., Izurieta, R. (2017). *Risk Factors Associated with HIV Among Men Who Have Sex with Men (MSM) in Ecuador.* Am J Mens Health. 2017 Sep;11(5):1331-1341. doi: 10.1177/1557988316646757. PMID: 27161984; PMCID: PMC5675193. http://www.health.go.ke/wp-content/uploads/2020/02/KENPHIA-2018-PREL-REP-2020-HR3-final

https://doi.org/10.1186/s12889-018-6351-3.

https://doi.org/10.1186/s12889-019-7540-4.

https://doi.org/10.1186/s12981-019-0238-y

https://doi.org/10.1371/journal.pone.0224616

ILGA World: Mendos, R. L., Botha, K., Lelis, C. R., de la Peña, L. E., Savelev, I., & Tan, D. (2020). *State-Sponsored Homophobia 2020: Global Legislation Overview Update*. Geneva: Switzerland.

Januraga, P.P., Reekie J., Mulyani, T., Lestari, B.W.,… Kaldor, J.M. (2017) '*The cascade of HIV care among key populations in Indonesia: a prospective cohort study*', The Lancet HIV, Volume 5, Issue 10, p.e560-568.

KAIS (2012). *Preliminary report on HIV/AIDs in Kenya. Kenya AIDs Indicator Survey: Ministry of Health*. Nairobi: Kenya.

Kapanda, L., Jumbe, V., Izugbara, C,, Muula, A,S. (2019). *Healthcare providers' attitudes towards care for men who have sex with men (MSM) in Malawi.* BMC Health Serv Res. 2019 May 17;19(1):316. doi: 10.1186/s12913-019-4104-3. PMID: 31101107; PMCID: PMC6525370.

Kenya AIDS Response Progress Report (2014). *Progress towards Zero.* Nairobi: Kenya.

Klassen, B.J., Fulcher, K., Chown, S.A.,… Lachowsky, J. N. (2019). *"Condoms are … like public transit. It's something you want everyone else to take*": Perceptions and use of condoms among HIV negative gay men in Vancouver, Canada in the era of biomedical and seroadaptive prevention. BMC Public Health 19, 120. https://doi.org/10.1186/s12889-019-6452-7.

Kounta, H. C., Sagaon-Teyssier, L., Coulaud, P.J.,… Spire, B. (2019). *Transactional sex among men who have sex with men participating in the CohMSM prospective cohort study in West Africa.* https://doi.org/10.1371/journal.pone.0217115.

Leyva-Moral, J.M., Loayza-Enriquez, B.K.,… Palmieri, P.A. (2019). *Adherence to antiretroviral therapy and the associated factors among people living with HIV/AIDS in Northern Peru: a cross-sectional study.* AIDS Res Ther 16, 22 (2019).

Lyons, C. (2020). *Utilizing individual level data to assess the relationship between Prevalent HIV infection and punitive same sex policies and legal barriers across 10 countries in Sub-Saharan Africa.* 23rd International AIDS Conference, oral abstract OAF0403.

Mannava, P., Geibel, S., King'ola, N., Temmerman,M., Luchters, S. (2013). *Male Sex Workers Who Sell Sex to Men Also Engage in Anal Intercourse with Women: Evidence from Mombasa, Kenya.* Published: January 2, 2013. https://doi.org/10.1371/journal.pone.0052547

Marano, M., Stein, R., Song, W., Patel, D., Taylor-Aidoo, N., Xu, S., & Scales, L. (2018). *HIV Testing, Linkage to HIV Medical Care, and Interviews for Partner Services Among Black Men Who Have Sex with Men - Non-Health Care Facilities, 20 Southern U.S. Jurisdictions, 2016.* MMWR Morb Mortal Wkly Rep.67(28):778-781. doi: 10.15585/mmwr.mm6728a3.

Matovu, J.K.B., Musinguzi, G., Kiguli, J., Nuwaha, F., Mujisha, G., Musinguzi, J., Arinaitwe, J., & Wanyenze, R.K. (2019). *Health providers' experiences, perceptions and readiness to provide HIV services to men who have sex with men and female sex workers in Uganda - a qualitative study.*

Mbita, G., Komba, A.N.,… Casalini, C. (2022). *Predictors of HIV Among 1 Million Clients in High-Risk Male Populations in Tanzania. AIDS Behav* 26, 3185–3198 (2022). https://doi.org/10.1007/s10461-022-03667-9

Miltz, A.R., Lampe, F.C.,… Bacchus, L.J. (2019). *Intimate partner violence, depression, and sexual behaviour among gay, bisexual and other men who have sex with men in the PROUD trial*. BMC Public Health 19**,** 431. https://doi.org/10.1186/s12889-019-6757-6.

MOH/NACC (2016) *'Kenya AIDS Response Progress Report 2016'.* Nairobi: Kenya.

Mor, Z., Turner, D., Livnat, Y., & Levy, I. (2019). *Recreational drug and excessive alcohol use among HIV-infected men who have sex with men in Central Israel*. BMC Public.

Mwaniki, S.W., Kaberia, P.M.,… Mugo, P.M. (2023). *HIV prevalence and associated risk factors among young tertiary student men who have sex with men (MSM) in Nairobi, Kenya:* a respondent-driven sampling survey. AIDS Res Ther 20, 7 (2023). https://doi.org/10.1186/s12981-023-00502-6.

Nalá R, Cummings B, Horth R,… Lane, T. (2015). *Men who have sex with men in Mozambique: identifying a hidden population at high-risk for HIV. AIDS and Behavior.* 19(2):393-404. DOI: 10.1007/s10461-014-0895-8. PMID: 25234252; PMCID: PMC4341016.

NASCOP (2020). *Preliminary KENPHIA 2018 Report*. Nairobi: Kenya.

NASCOP. Preliminary KENPHIA 2018 Report. Nairobi: NASCOP; 2019. [cited 2020 Mar 25]. Available from:

NASCOP/MOH (2013). *Geographic Mapping of Most at Risk Populations for HIV (MARPs) in Kenya, June 2012.* Nairobi: Kenya.

Ogbuagu, O., Marshall, B.D.L., Tiberio, P., Ogunbajo, A., Barakat, L., Montgomery, M., Almonte, A., Wray, T., Williams, E.C., Edelman, E.J., & Chan, P.A. (2019). *Prevalence and Correlates of Unhealthy Alcohol and Drug Use Among Men Who Have Sex with Men Prescribed HIV Pre-exposure Prophylaxis in Real-World Clinical Settings.* AIDS Behav. (1):190-200. doi: 10.1007/s10461-018-2260-9. PMID: 30145707; PMCID: PMC7020905

Ouedraogo, H. G., Ky-Zerbo, O., Grosso, A., Goodman, S., Samadoulougou, B. C., Piña, C., Dange, A., Rawat, S., Jadhav, U., Arnsten, J. H., Chhabra, R., & Patel, V. V. (2018). *Antiretroviral Treatment Uptake and Adherence Among Men Who Have Sex with Men and Transgender Women with HIV in Mumbai, India*: A Cross-Sectional Study. The Journal of the Association of Nurses in AIDS Care: JANAC, *29*(2), 310–316. doi: 10.1016/j.jana.2017.10.001.

Piyaraj, P., van Griensven, F., Holtz, T. H., Mock, P. A., Varangrat, A., Wimonsate, W., Thienkrua, W., Tongtoyai, J., McNamara, A., Chonwattana, W., & Nelson, K.E. (2018). *The finding of casual sex partners on the internet, methamphetamine use for sexual pleasure, and incidence of HIV infection among men who have sex with men in Bangkok, Thailand*: an observational cohort study. Lancet HIV. Jul;5(7):e379-e389. doi: 10.1016/S2352-3018(18)30065-1. Epub 2018 Jun 1. Erratum in: Lancet HIV. 2018 Jul;5(7):e340. PMID: 29861202; PMCID: PMC6452023.

Quinn K.G., & Voisin, D.R. (2020). *ART Adherence Among Men Who Have Sex with Men Living with HIV: Key Challenges and Opportunities.* Curr HIV/AIDS Rep. 2020 Aug;17(4):290-300. doi: 10.1007/s11904-020-00510-5. PMID: 32557117; PMCID: PMC7363570. Study among black MSM in USA

SAGE Open Med. 2022 May 1;10:20503121211069276. doi: 10.1177/20503121211069276. PMID: 35517371; PMCID: PMC9066634.

Sandfort, T., Knox, J. R., Alcala, C., El-Bassel, N., Kuo, I., & Smith, L. R. (2017). *Substance Use and HIV Risk Among Men Who Have Sex with Men in Africa: A Systematic Review*. Journal of acquired immune deficiency syndromes (1999), 76(2), e34–e46. doi:10.1097/QAI.0000000000001462.

Shangani, S., Escudero, D., Kirwa, K., Harrison, A., Marshall, B., & Operario, D. (2017*). Effectiveness of peer-led interventions to increase HIV testing among men who have sex with men: a systematic review and meta-analysis.* AIDS Care. 2017 Aug;29(8):1003-1013. doi: 10.1080/09540121.2017.1282105. Epub 2017 Feb 2. PMID: 28150501; PMCID: PMC5570465.

Shangani, S., Naanyu, V., Operario, D., & Genberg, B. (2018). *Stigma and Healthcare-Seeking Practices of Men Who Have Sex with Men in Western Kenya: A Mixed-Methods Approach for Scale Validation.* AIDS Patient Care STDS. 2018 Nov;32(11):477-486. doi: 10.1089/apc.2018.0101. PMID: 30398953; PMCID: PMC6247373.

Shen, Y., Zhang, C.,… Valimaki, M.A. (2022). *Why do men who have sex with men practice condomless sex?* A systematic review and meta-synthesis. *BMC Infect Dis* **22**, 850 (2022). https://doi.org/10.1186/s12879-022-07843-z

Tarnagda, G., … Kouanda, S. (2019). *Human immunodeficiency virus (HIV) among men who have sex with men: results of the first integrated biological and behavioral survey in Burkina Faso, West Africa*. BMC public health, 19(1), 5. doi:10.1186/s12889-018-6361-1.

Trickey, A., Stone, J., Semchuk,N., Saliuk, T., Sazonova, Y., Varetska, O., Lim, A. G.,Walker, J. G., Vickerman, P. (2020). *Is contact between men who have sex with men and non-governmental organizations providing harm reduction associated with improved HIV outcomes?* https://doi.org/10.1111/hiv.13010.

UNAID. (2019). *Global HIV/AIDS overview*. Geneva: Switzerland.

UNAID. (2021). *Global HIV/AIDS overview*. Geneva: Switzerland

UNAIDS (2020). *Global AIDS update 2020. Seizing the moment: tackling entrenched inequalities to end epidemics.* Geneva: Switzerland.

UNAIDS. (2017). *'Ending AIDS: Progress towards the 90-90-90 targets'*. Geneva: Switzerland.

UNAIDS. (2018). '*Global Partnership for Action to Eliminate All Forms of HIV-Related Stigma and Discrimination',* p.1 [pdf]

Valente, P.K., Mantell, J.E., Masvawure, T.B., Tocco, J.U., Restar, A.J., Gichangi, P., Chabeda, S.V., Lafort, Y., & Sandfort, T.G. (2020). *"I Couldn't Afford to Resist": Condom Negotiations Between Male Sex Workers and Male Clients in Mombasa, Kenya.* AIDS Behav. 2020 Mar;24(3):925-937. doi: 10.1007/s10461-019-02598-2. PMID: 31321637; PMCID: PMC6980499.

Veronese, V., Clouse, E.,… Wirtz, A.L. (2019). *"We are not gays… don't tell me those things": engaging 'hidden' men who have sex with men and transgender women in HIV prevention in Myanmar*. BMC Public Health 19, 63.

Wang, J., Zhao, P.,… Xu, W. (2022). *Sexual uses of drug and alcohol among men who have sex with men in China: implications for HIV prevention*. BMC Infect Dis 22, 895 (2022). https://doi.org/10.1186/s12879-022-07880-8

Zhang, Y., Fogel, J. M., Guo, X., Clarke, W., Breaud, A., Cummings, V., … Eshleman, S. H. (2018). *Antiretroviral drug use and HIV drug resistance among MSM and transgender women in sub-Saharan Africa.* AIDS (London, England), 32(10), 1301–1306. doi:10.1097/QAD.0000000000001839.