



Prevalence and Correlates of Post-Exposure Prophylaxis Uptake among Men Who Have Sex with Men in Kisumu County, Kenya

Wambua P^{1,2*}, Otieno F², Ochieng LL², Akobi W¹ and Awandu SS¹

¹Jaramogi Oginga Odinga University of Science and Technology, Kenya

²Nyanza Reproductive Health Society, Kenya

***Corresponding author:** Patriciah Wambua, Jaramogi Oginga Odinga University of Science and Technology, Bondo and Nyanza Reproductive Health Society, Kisumu, Kenya, Email: patriciahmbithe6@gmail.com

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Abstract

Background: Men who have sex with men (MSM) bear a disproportionate burden of HIV infection. Post-exposure prophylaxis (PEP) is an effective biomedical HIV prevention tool, yet its uptake remains limited among MSM populations. We sought to determine the prevalence and correlates of HIV PEP uptake among MSM in Kisumu County, Kenya.

Methods: A cross-sectional study was conducted among 308 HIV-negative MSM aged 18–29 years, recruited through purposive and snowball sampling. Data were collected using Audio Computer-Assisted Self-Interviews (ACASI) and analyzed using Stata 17. Descriptive statistics, bivariate, and multivariable logistic regressions were used to identify factors associated with PEP uptake.

Results: The prevalence of ever using PEP was 27.9% (n=86). Factors significantly associated with PEP use included knowing someone currently taking PrEP (aOR=4.29; 95% CI: 2.17–8.48) and ever having used PrEP (aOR=9.46; 95% CI: 4.91–18.2). Engaging in transactional sex (receiving cash for sex) was also significantly associated with PEP uptake (OR=2.08; 95% CI: 1.24–3.49). Having sex with a regular partner was associated with lower odds of PEP use (OR=0.57; 95% CI: 0.34–0.93).

Conclusion: Uptake of PEP among MSM in Kisumu is low. Peer influence and prior PrEP use enhance PEP uptake. Programs should focus on MSM with multiple sexual partners and those involved in transactional sex while addressing perceived safety in regular partnerships.

Keywords: Prevalence; Correlates; MSM; PEP Uptake

Abbreviations

AIDS: Acquired Immunodeficiency Syndrome; ART: Antiretroviral Therapy; ARV: Antiretroviral; CDC: Centers for Disease Control and Prevention; DTG: Dolutegravir; ERB: Ethical Review Board; FSW: Female Sex Workers; FTC: Emtricitabine; HIV: Human Immunodeficiency Virus;

JOUST: Jaramogi Oginga Odinga University of Science and Technology; KVP: Key and Vulnerable Population; LGBTQ: Lesbian, Gay, Bisexual, Transgender and Queer; MSM: Men who have Sex with Men; NASCOP: National AIDS and STI's Control Programme; PEP: Post-Exposure Prophylaxis; PLWH: Persons Living With HIV; PPB: Pharmacy and Poisons Board; PREP: Pre-Exposure Prophylaxis; PWID: People Who Inject

Drugs; SSA: Sub-Saharan Africa; STIs: Sexually Transmitted Infections; TB: Tuberculosis; TDF: Tenofovir Disoproxil Fumarate; TGW: Transgender Women.

Introduction

Bisexual men, gay men, among other men who have sex with men (MSM) are a crucial population that is at risk of acquiring Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome HIV/AIDS globally [1]. According to Govender RD, et al. [2], the prevalence of HIV among this group is over 10% in most regions; a proportion that is significantly higher in comparison to the general population. It has also been found that this key population is 27 times more likely to acquire HIV than the general population [3]. The developed countries have witnessed HIV/AIDS burden re-emergence among the MSM [4]. In the low and middle-income nations, the HIV epidemic among MSM has been magnifying [5].

In sub-Saharan Africa, MSM studies have revealed that even with the high HIV prevalence, healthcare services and information on HIV prevention is still low [6]. Due to discrimination, stigma, and social hostility, MSM hardly expose their sexual orientation and this makes it difficult for them to access and utilize the current HIV care and treatment services alongside prevention services [7]. It has been noted that there are some MSM who sexually engage with women, either because they also find women attractive or they want to hide their sexual identity [8]; hence posing a heightened chance of HIV spread not only among MSM but also to the general population. MSM carry a disproportionate burden of HIV in Kenya, with a HIV prevalence of 18.2%, compared to a HIV prevalence of 3.1% among adult Kenyan men (including MSM), and contribute to nearly 15% of new infections each year [9,10] Melon M, et al. found that Kisumu County was estimated as the second highest (1,597) in terms of MSM who elicited online after Kiambu County (3,635) in Kenya. Another study on men who meet their partners in physical hotspots, Kisumu County was the second highest (2,492) after Mombasa (2,855) [11]. Kiambu came third at 1,664.

In the recent years, post-exposure prophylaxis has proved to be a crucial component in the HIV prevention [12]. The prophylaxis is a combination of a four week antiretroviral treatment that is used within 72 hours of exposure to HIV possibly-infected human body fluids [13]. Initially, PEP was used to prevent any occupational HIV exposure. In the recent research hotspots, PEP has been found to be safe and feasible even in non-occupational cases among the exposed populations like MSM [14]. It has also been found that PEP is underused by non-occupational-exposed individuals [15].

According to the Kenya ARV guidelines, PEP is supposed to be taken as soon as possible (less than 72 hours) after a possible exposure. The recommended regimen for persons above 15 years of age are TDF+3TC+DTG.

Awareness and intention to use PEP has been relatively low among MSM. A meta-analysis among high-risk MSM revealed that the rate of PEP uptake was only 5% [16]. Several factors may affect the uptake of PEP among this key population such as homophobia and HIV stigma. Hence, there needs to be more focus regarding the utilization of PEP among MSM to raise its uptake and reduce the HIV incidence. Key and vulnerable population, like men who have sex with men (MSM) have been one of the most vulnerable population to HIV infection [17]. Receptive anal intercourse yields the highest risk of acquiring HIV as compared to receptive vaginal intercourse [18]. In Nairobi Kenya, the ratio of HIV prevalence among young MSM to the general population is 6:1 [19]; hence the need to tailor enough prevention and control interventions among this population. Kisumu county bears a high prevalence of HIV, with a recent study on HIV prevalence and awareness among adults showing a prevalence of 18.5% among the enrolled participants [20]. There is limited information on the uptake of PEP more so among MSM in Kisumu hence the need to investigate more on the uptake of PEP and its associated factors.

MSM create additional transmissions of HIV when they interact with the general population and this magnifies the epidemic. Understanding the factors associated with PEP uptake among the MSM can help in the creation of more effective programs that aim at improving the uptake of PEP and other prevention services. As a result, this could reduce the incidence of HIV among the general population. The study sought to answer these objectives; to determine the prevalence of utilization of HIV post-exposure prophylaxis among MSM in Kisumu County, to examine the socio-demographic factors associated with the uptake of HIV post-exposure prophylaxis among MSM in Kisumu County, and to establish the sexual behaviour characteristics associated with the uptake of HIV post-exposure prophylaxis among MSM in Kisumu County.

Methods

Study Design

Data was collected through a cross-sectional study design where 308 HIV-negative MSM were enrolled from ongoing HIV prevention programmes in Kisumu. These programs focus on HIV care and treatment, prevention, TB screening, gender-based violence screening, STI screening and treatment.

Study Area

The study was conducted at Anza Mapema clinic in Kisumu, which mainly serves MSM and TGW in research, HIV care, and prevention programs. The study area was chosen because it is an urban and a cosmopolitan town, reports a high prevalence rate of HIV, and because it hosts the largest population of the MSM in Nyanza Region.

Study Population

The target population for the study was adult MSM aged 18-29 years living in Kisumu County, who are HIV-negative, self-reported as biologically male, who agree to get tested for HIV and who self-reported having engaged in anal sex with a man or a transwoman in the past three months. The age group was chosen due to its high vulnerability to HIV acquisition compared to the other age groups [21]. The Kenya National AIDS Strategic Framework and Key Populations Guidelines highlighted young MSM aged 15-29 years as key priority group that needs intensified HIV prevention [22].

Sampling Method

Study participants were purposively selected where they were enrolled from ongoing prevention programmes in Kisumu. Snowballing was also used where study participants referred fellow MSM community members to the study for eligibility screening and enrollment. This method was the most optimal way of reaching this hidden population. Other studies have adopted this method to reach similar populations [23].

Data Collection

Structured questionnaires were developed and programmed into Questionnaire Design Studio (QDS Version 3.0). The data was collected using Audio Computer Assisted Self-Interviews (ACASI). This method involves participants listening to the questions using headphones and responding directly. ACASI was preferred due to its nature of handling sensitive topics such as sexual behaviors, drug use, and stigma.

Statistical Analysis

Data cleaning, management, and analysis was done using Stata version 17. The uptake of PEP was estimated using frequencies and percentages. The results were presented in tables. Bivariate and multivariable logistic regression were used to determine the extent of association between the predictor and the outcome variables. Odds ratio (OR) with 95% Confidence intervals (CI) were also computed and p-values < 0.05 taken to be statistically significant. Socio-demographic characteristics involving categorical variables were presented in tables.

Results

This chapter presents the study findings. The results are displayed in tables. It consists of the demographic characteristics of the participants, the sexual behavior characteristics, and the regression analysis. This section provides an in-depth analysis of the various responses to the study questions, as well as a discussion of the implications that the results have.

Demographic Characteristics of the Participants

Table 1 the mean age of participants was 23.4 years. A majority (66.2%) were aged between 18–24 years, while 33.8% were between 25–29 years. Almost all respondents (99.4%) identified their sexual orientation as male, with a very small proportion (0.6%) identifying as transwomen. On education, most participants (62.0%) had attained secondary education. Two-thirds of the respondents (66.2%) were currently enrolled in school, while one-third (33.8%) were not. In terms of residency, the majority (90.9%) had lived in Kisumu for five years or more, 4.6% had stayed for 3–4 years, and 4.2% for 1–2 years. Religious affiliation showed that 69.2% were Christians, 19.5% were Muslims, 8.1% identified with other religions, and 3.2% reported having no religious affiliation. On employment, most respondents (65.6%) were not employed. About 56.8% of participants knew someone who was currently taking Pre-Exposure Prophylaxis (PrEP), while 39.0% reported having ever taken PrEP themselves. Social network use was high, with 70.8% of participants reporting use in the past one month. On relationship history, 12.7% of respondents reported having ever been married to a female partner, 18.2% were currently living with a female partner, and 50.7% reported living with a male partner.

Characteristic	n	%
Age in years		
Mean (sd)	23.4 (2.8)	
18-24	204	66.2
25-29	104	33.8

Sexual orientation		
Male	306	99.4
Transwoman	2	0.6
Education level		
Primary	41	13.3
Secondary	191	62
Tertiary	76	24.7
Currently enrolled in school		
Yes	204	66.2
No	104	33.8
Duration of stay in Kisumu		
1-2 years	13	4.2
3-4 years	14	4.6
≥5 years	280	90.9
Missing	1	0.3
Religion		
Muslim	60	19.5
Christian	213	69.2
None	10	3.2
Other	25	8.1
Employment		
Employed	106	34.4
Not employed	202	65.6
Know anyone taking PrEP	175	56.8
Yes		
Ever taken PrEP	120	39
Yes		
Used Social networks in the past one month		
Yes	218	70.8
Ever married to a female partner		
Yes	39	12.7
Living with female partner		
Yes	56	18.2
Living with male partner		
Yes	156	50.7

Table 1: Demographic Characteristics of the participants.

Sexual Behaviours of the Participants

Table 2 on recent sexual practices, the majority of respondents (77.9%) reported condom use during their last sexual encounter. Over half (55.5%) had sex with a regular partner, while 57.8% reported having sex with a partner

of unknown HIV status. Pertaining to group sex, 18.5% of respondents had participated in group sex in the past three months. When asked on the number of male sexual partners in the past three months, 41.9% had 1-2 partners, 31.5% had 3-4 partners, 24.0% had five or more, and only 2.6% reported no male sexual partners in that period. A high proportion of

respondents reported engaging in receptive anal intercourse with a male partner (83.4%) and insertive anal intercourse (79.6%). More than half of the participants (59.4%) reported

having had sex with a cisgender individual. Additionally, 51.3% of respondents reported having received cash for sex.

Characteristic	n	%
Condom use at last sex		
Yes	240	77.9
Sex with regular partner		
Yes	171	55.5
Sex with someone unknown HIV status		
Yes	178	57.8
Group sex in the past 3 months		
Yes	57	18.5
Male sexual partners in the last 3 months		
None	8	2.6
2-Jan	129	41.9
4-Mar	97	31.5
≥5	74	24
Receptive Anal Intercourse with a male partner		
Yes	257	83.4
Insertive Anal Intercourse		
Yes	245	79.6
Sex with a Cisgender		
Yes	183	59.4
Received cash for sex		
Yes	158	51.3

Table 2: Sexual behaviors of the participants.

Socio-Demographic Characteristics Associated with PEP Use

The findings in Table 3 showed that 86 (27.9%) reported ever using PEP, while 222 (72.1%) had never used it. A significantly higher proportion of PEP users were aged 25-29 years (40.4%) compared to non-users (59.6%) ($p = 0.002$). In bivariate analysis, being in the 25-29 age group was associated with higher odds of PEP use ($OR = 2.46$, 95% $CI: 1.47-4.12$). However, this association was not statistically significant after adjusting for other variables ($aOR = 1.38$, 95% $CI: 0.74-2.58$). Knowing someone who was currently using PrEP was significantly associated with higher odds

of ever using PEP ($OR = 4.29$, 95% $CI: 2.17-8.48$; $p < 0.001$). Participants who had ever taken PrEP were significantly more likely to use PEP ($OR = 10.40$, 95% $CI: 5.51-19.61$; $p < 0.001$). This association remained strong in the multivariate model ($aOR = 9.46$, 95% $CI: 4.91-18.2$). Use of social networks in the past month was associated with higher odds of PEP use in bivariate analysis ($OR = 1.81$, 95% $CI: 1.00-3.27$; $p = 0.046$), though the association was attenuated in the multivariate model ($aOR = 1.61$, 95% $CI: 0.80-3.22$). Living with a female partner was associated with higher odds of PEP use in bivariate analysis ($OR = 1.90$, 95% $CI: 1.04-3.49$; $p = 0.036$), though the association was not significant after adjustment ($aOR = 1.78$, 95% $CI: 0.84-3.75$) [24-30].

Characteristic	Never used PEP, n=222	Ever used PEP, n=86	p-value	OR (95 % CI)	Adjusted OR (95 % CI)
	n (%)	n (%)			
Age in years					
Mean (sd)	23.4 (2.8)		0.002		

18-24	160 (78.4)	44 (21.6)			
25-29	62 (59.6)	42 (40.4)	0.001	2.46 (1.47-4.12)	1.38 (0.74-2.58)
Sexual orientation					
Male	222 (72.5)	84 (27.5)			
Female	0 (0.0)	2 (100.0)	0.077		
Education level					
Primary	30 (73.2)	11 (26.8)			
Secondary	138 (72.3)	53 (27.7)		1.05 (0.49-2.24)	
Tertiary	54 (71.1)	22 (28.9)	0.967	1.11 (0.47-2.60)	
Currently enrolled in college/school					
No	147 (72.1)	57 (27.9)		Ref	
Yes	75 (72.1)	29 (27.9)	0.992	1.00 (0.59-1.69)	
Duration of stay in Kisumu					
2-Jan	10 (76.9)	3 (23.1)		Ref	
4-Mar	10 (71.4)	4 (28.6)		1.33 (0.24-7.56)	
≥5 yrs	201 (71.8)	79 (28.2)	0.907	1.31 (0.35-4.89)	
Missing	1 (100.0)	0 (0.0)			
Religion					
Muslim	43 (71.7)	17 (28.3)		Ref	
Christian	148 (69.5)	65 (30.5)		1.11 (0.59-2.09)	
None	8 (80.0)	2 (20.0)		0.63 (0.12-3.29)	
Other	23 (92.0)	2 (8.0)	0.114	0.22 (0.05-1.04)	
Employment					
Not employed	77 (72.6)	29 (27.4)		Ref	
Employed	145 (71.8)	57 (28.2)	0.895	1.04 (0.62-1.77)	
Know anyone taking PrEP					
No	72 (85.7)	12 (14.3)			
Yes	102 (58.3)	73 (41.7)	<0.001	4.29 (2.17-8.48)	
Missing	48 (98.0)	1 (2.0)		0.13 (0.02-0.99)	
Ever taken PrEP					
No	123 (88.5)	16 (11.5)			
Yes	51 (42.5)	69 (57.5)	<0.001	10.40 (5.51-19.61)	9.46 (4.91-18.2)
Missing	48 (98.0)	1 (2.0)		0.16 (0.02-1.24)	0.16 (0.02-1.27)
Used Social networks in the past one month					
No	72 (80.0)	18 (20.0)			

Yes	150 (68.8)	68 (31.2)	0.046	1.81 (1.00-3.27)	1.61 (0.80-3.22)
Ever married to a female partner					
No	196 (72.9)	73 (27.1)			
Yes	26 (66.7)	13 (33.3)	0.447	1.34 (0.65-2.75)	
Living with female wife/ partner					
No	138 (68.3)	64 (31.7)			
Yes	34 (60.7)	22 (39.3)	0.036	1.90 (1.04-3.49)	1.78 (0.84-3.75)
Living with male partner					
No	113 (74.3)	39 (25.7)			
Yes	109 (69.9)	47 (30.1)	0.382	1.25 (0.76-2.06)	

Table 3: Socio-demographic characteristics associated with PEP use.

Sexual Behaviour Characteristics Associated with PEP Use

Having sex with a regular partner was significantly associated with lower odds of PEP use ($p = 0.025$). Those who reported sex with a regular partner had 43% lower odds of PEP use (OR = 0.57, 95% CI: 0.34-0.93) compared to those who did not, as presented in table 1.4. There was a statistically significant trend ($p = 0.006$) showing that the

more male partners respondents had, the more likely they were to have used PEP: participants with ≥ 5 male partners had the highest odds of PEP use (43.2%; OR = 5.33, 95% CI: 0.62-45.57) compared to those with none. Receiving cash for sex was significantly associated with higher odds of PEP use ($p = 0.019$). Participants who had received cash for sex were twice as likely to use PEP compared to those who had not (OR = 2.08, 95% CI: 1.24-3.49).

Characteristic	Never used PEP, n=83	Ever used PEP, n=217	p-value	OR (95 % CI)
	n (%)	n (%)		
Condom use at last sex				
No	54 (79.4)	14 (20.6)		
Yes	168 (70.0)	72 (30.0)	0.127	1.65 (0.86-3.16)
Sex with regular partner				
No	90 (65.7)	47 (34.3)		
Yes	132 (77.2)	39 (22.8)	0.025	0.57 (0.34-0.93)
Sex with someone unknown HIV status				
No	97 (74.6)	33 (25.4)		
Yes	125 (70.2)	53 (29.8)	0.396	1.24 (0.75-2.07)
Group sex in the past 3 months				
No	186 (74.1)	65 (25.9)		
Yes	36 (63.2)	21 (36.8)	0.096	1.67 (0.91-3.06)
Male sexual partners in the last 3 months				
None	7 (87.5)	1 (12.5)		Ref
2-Jan	101 (78.3)	28 (21.7)		1.94 (0.23-16.44)

4-Mar	72 (74.2)	25 (25.8)		2.43 (0.28-20.74)
≥5	42 (56.8)	32 (43.2)	0.006	5.33 (0.62-45.57)
Receptive Anal Intercourse with a male partner				
No	39 (76.5)	12 (23.5)		
Yes	183 (71.2)	74 (28.8)	0.444	1.31 (0.65-2.65)
Insertive Anal Intercourse				
No	47 (75.8)	15 (24.2)		
Yes	175 (71.4)	70 (28.6)	0.216	1.25 (0.66-2.39)
Missing	0 (0.0)	1 (100.0)		
Sex with a Female				
No	91 (72.8)	34 (27.2)		
Yes	131 (71.6)	52 (28.4)	0.258	1.09 (0.65-1.83)
Received cash for sex				
No	117 (79.6)	30 (20.4)		
Yes	103 (65.2)	55 (34.8)	0.019	2.08 (1.24-3.49)
Missing	2 (66.7)	1 (33.3)		

Table 4: Sexual behavior characteristics associated with PEP use.

Discussion

The study aimed at determining the prevalence and correlates of post-exposure prophylaxis (PEP) uptake among men who have sex with men (MSM) in Kisumu County, Kenya. From the findings, only 27.9% of the participants had ever used PEP, indicating limited uptake despite the population's high HIV risk. This low uptake is consistent with other regional studies. A study among MSM in Nigeria reported a similarly uptake of 28% despite high awareness levels Ajayi, et al. This underscores the persistent gap between awareness and utilization of HIV prevention services. Barriers such as stigma, limited access to LGBTQ-friendly healthcare, and misconceptions about PEP efficacy may contribute to this trend (Rao et al., 2020). Even though a higher proportion of PEP users were aged 25–29 years, this association was not statistically significant in the multivariable model. This revealed that age alone may not be a strong independent predictor of PEP uptake once other behavioural factors are considered. Similar patterns have been noted in South African studies, where age-related differences diminished after adjustment for sexual risk behaviours Mabuto, et al [31-47].

A strong predictor of PEP use was knowing someone currently using PrEP and having ever used PrEP. These associations remained robust even after adjustment,

revealing that personal or peer engagement with HIV prevention methods enhances PEP uptake. Similar findings were reported in a Ugandan study where community PrEP awareness was linked to increased uptake of other biomedical prevention tools Ssemata, et al. These results emphasize the importance of peer-led interventions and integration of PEP into broader PrEP programming. Use of social networks was also associated with higher odds of PEP use in bivariate analysis, though this attenuated after adjustment. Nonetheless, digital platforms may still serve as effective mediums for disseminating HIV prevention messages, as demonstrated in recent trials in sub-Saharan Africa Odhiambo, et al [48-55].

Sex with a regular partner was significantly associated with lower odds of PEP use [56-61]. This suggests that individuals in regular partnerships may perceive lower HIV risk, possibly due to assumptions of monogamy or mutual trust, even when this perception may not align with actual risk Kagaayi, et al. Interventions must therefore address risk perception, particularly within regular or intimate partnerships. A clear trend was observed in the number of male sexual partners and PEP use: those with five or more partners had the highest odds of PEP use. This suggests a dose-response relationship between sexual exposure and PEP uptake, consistent with findings from Kenya and South Africa showing increased PEP awareness and use among

MSM with high partner turnover Mutua, et al.; Mabuto, et al.

Engaging in receptive or insertive anal intercourse was not significantly associated with PEP use. This contrasts with studies in urban Nigeria and Cape Town, where receptive anal intercourse was a strong predictor of PEP initiation due to its higher risk of HIV transmission (Ajayi, et al.; Tucker, et al. The lack of significance in this study may reflect normalization of certain sexual behaviors among MSM, irrespective of perceived risk. Receiving cash for sex was significantly associated with higher odds of PEP use [62]. This finding aligns with previous research indicating that transactional sex is associated with higher HIV risk and, consequently, increased use of post-exposure measures Rao, et al. Participants engaging in sex work may have greater exposure to HIV prevention messaging through targeted outreach or peer networks, contributing to higher PEP uptake.

Conclusion

These findings underscore the need for differentiated HIV prevention strategies that address the specific behaviors and contexts influencing PEP use. Programs should especially target MSM involved in transactional sex and those with multiple sexual partners while also addressing complacency in regular partnerships.

Conflict of Interest

The authors declare no conflicts of Interest

Informed Consent

The researcher sought explicit consent from all participants involved in the study.

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