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Forced Sexual Encounters and HIV Pre- and Post-Exposure Prophylaxis Use Among Men Who Have Sex With Men: A Cross-Sectional Analysis

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Abstract

Men who have sex with men (MSM) experiencing forced sexual encounters (FSE) are at heightened HIV vulnerability. PrEP and PEP are effective HIV prevention strategies; yet, limited research exists exploring the relationships between FSE, PrEP, and PEP use. Primary data were collected from August 2022-July 2023. Among the 21,373 participants, 21% experienced FSE in the last 5 years, 3.26% indicated past-year PEP use, and 24.81% reported current PrEP use. MSM who experienced FSE reported greater odds of past-year PEP use and lower odds of current PrEP use. Communication surrounding HIV prevention is needed among MSM at risk of sexual violence and subsequent HIV acquisition.

Keywords Men who have sex with men · Sexual violence · HIV Pre-Exposure prophylaxis (PrEP) · HIV Post-Exposure prophylaxis (PEP)

Introduction

In the United States (U.S.), HIV remains a significant public health concern with 39,201 people diagnosed with HIV and more than 1.1 million people living with HIV in 2023 [1]. Men who have sex with men (MSM) are disproportionately impacted by HIV, accounting for nearly 66% of all new infections in 2023 [1]. MSM also experience high rates of sexual violence (i.e., sexual activity that occurs when consent is not obtained or freely given) [2]. Data from the National Intimate Partner and Sexual Violence Survey suggest nearly 60% of MSM have experienced sexual violence and approximately 47% have experienced unwanted or forced sexual encounters (a type of sexual violence) in their lifetime [2].

MSM represent a community with disproportionate rates of both HIV and sexual violence risk. Among MSM, history of sexual violence is associated with factors that increase HIV vulnerability [3, 4]. A 2001 study among a convenience sample of 595 MSM found that participants who experienced forced sexual encounters were more likely to engage in condomless anal intercourse, exchange sex for money or drugs, and use substances [3]. Further, data from the 2017 National HIV Behavioral Surveillance illustrated that MSM who experienced sexual violence reported greater substance use and were more likely to exchange sex with a male

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partner compared to MSM who did not experience sexual violence [4].

While oral HIV pre-exposure (PrEP) and post-exposure (PEP) prophylaxis are effective biomedical prevention strategies for HIV acquisition [5], the relationships between sexual violence, PrEP, and PEP use among MSM remain understudied. To date, the majority of research has emphasized PrEP use within the context of intimate partner violence (IPV) [6–9]. For instance, in their cross-sectional study of 151 young Latino MSM, Blashill and colleagues (2020) found that IPV was statistically significantly correlated with lower PrEP awareness, willingness, and adherence [7]. Another cross-sectional study among 863 MSM found that participants who experienced emotional IPV, forced sex, and monitoring, were less likely to use PrEP [8]. Lastly, one study among 629 Black MSM found that only physical IPV was statistically significantly associated with PrEP use and the relationship between sexual IPV and PrEP use was unfounded [9]. While this is a growing area of investigation, there is a need for research that examines these relationships beyond the context of IPV, as forced sexual encounters that occur within broader contexts of sexual violence may have distinct implications for HIV prevention.

To date, there remains limited research exploring how forced sexual encounters—either within the context of IPV or more broadly—influence PrEP use, and, to our knowledge, no literature examining this relationship with PEP use among MSM, thereby warranting further investigations. Understanding the use of these biomedical prevention strategies within the context of forced sexual encounters can inform the development of HIV and violence prevention interventions for MSM and trainings for healthcare providers who prescribe PrEP and PEP. The purpose of this study was to examine the associations between forced sexual encounters, past-year PEP use, and current PrEP use among MSM.

Methods

Participants and Procedures

This analysis used screener/enrollment data from the American Transformative HIV Study (AMETHST)—a geographically diverse, U.S.-based national longitudinal cohort study that aims to identify missed opportunities for HIV prevention and PrEP uptake, as well as identify multilevel and biological determinants of HIV seroconversion risk among MSM and gender diverse people with and without methamphetamine use [10]. Recruitment occurred from August 2022-July 2023 using geospatial social networking applications. Interested participants completed an online eligibility screener to collect initial data (e.g., sociodemographic characteristics, substance use, sexual behavior). Over 70,000 people began the screener, though only 39,645 completed it. Others were removed from the dataset for being duplicate or fraudulent participants (n = 7,681). The current analysis was further restricted to include participants who were assigned male at birth, reported same-sex behavior, resided in the U.S. or territories, and provided responses to the exposure and outcome variables (N = 21,373). The City University of New York Institutional Review Board approved all study procedures.

Measures

Exposure Variable

Forced sexual encounters (FSE) was measured using a single, check-all that apply item, “In the past five years, have you had a sexual encounter that you did not consent to?” with “yes, not under the influence of drugs or alcohol,” “yes, while under the influence of drugs or alcohol,” and “No” (exclusive) as answer choices. We operationalized FSE two ways. First, we created a dichotomous variable where responding “yes, not under the influence of drugs or alcohol,” “yes, under the influence of drugs or alcohol,” or selecting *both* choices were coded as affirmative responses. Reporting “no” was coded as a negative response. Second, to elucidate the effects of FSE while under the influence of drugs or alcohol, we retained FSE as a four-level categorical variable (“yes, not under the influence of drugs or alcohol,” “yes, while under the influence of drugs or alcohol,” “yes, both under the influence and not under the influence of drugs or alcohol” and “no”), as alcohol- and substance-involved forced sexual encounters may differ in their implications for HIV prevention.

Outcome Variables

The primary outcome variables were past-year PEP use and current PrEP use. PEP use was measured with a single item, “Have you ever been prescribed HIV medications after an exposure to prevent getting HIV? This is called Post-Exposure Prophylaxis.” Past-year PEP use was dichotomized, where “yes, in the last year” (3.26% of the sample) was coded as an affirmative response and “yes, more than one year ago” (7.55% of the sample) and “no, never” (89.19% of the sample) were coded as negative responses. PrEP use was measured with a single item, “Have you ever been prescribed Pre-Exposure Prophylaxis to prevent HIV (e.g., Truvada/Descovy/etc.)?” We operationalized current PrEP use as a dichotomous variable, where “yes, I am currently on PrEP” (24.81% of the sample) was coded as an affirmative

Table 1 Results from descriptive analyses and multivariable logistic regression models assessing the associations between forced sexual encounters, past-year PEP use, and current PrEP use among men who have sex with men screening for an HIV prevention cohort, $n = 21,373$, 2022–2023

Characteristic	Overall		Past-Year PEP use						Current PrEP use					
			Yes		No		Test Statistic	P-Value	Yes		No		Test Statistic	P-Value
	N = 21,373		*n* = 697		*n* = 20,676				*n* = 5,302		*n* = 16,071			
	n	*(%)*	*n*	*(%)*	*n*	*(%)*			*n*	*(%)*	*n*	*(%)*		
Forced Sexual Encounter (past 5 years)							60.70 (1)	< 0.001					43.03 (1)	< 0.001
Yes	4,545	(21.27)	4,314	(20.86)	231	(33.14)			958	(18.07)	3,587	(22.32)		
Forced Sexual Encounter (past 5 years)							64.13 (3)	< 0.001					49.87 (3)	0.007
Not under the influence of drugs or alcohol	1,080	(5.05)	54	(7.75)	1,026	(4.96)			249	(4.70)	831	(5.17)		
Under the influence of drugs or alcohol	3,211	(15.02)	159	(22.81)	3,052	(14.76)			644	(12.15)	2,567	(15.97)		
Both under the influence and not under the influence of drugs or alcohol	254	(1.19)	18	(2.58)	236	(1.14)			65	(1.23)	189	(1.18)		
Age [Mean (SD)]	36.46	(11.70)	33.96	(9.96)	36.54	(11.75)	5.91	< 0.001	37.48	(11.26)	36.12	(11.82)	−8.53	< 0.001
Race/Ethnicity							113.39 (4)	< 0.001					140.75 (4)	< 0.001
White	11,328	(53.00)	241	(34.58)	11,087	(53.62)			2,954	(55.71)	8,374	(52.11)		
Black	2,542	(11.89)	107	(15.35)	2,435	(11.78)			439	(8.28)	2,103	(13.09)		
Latine	4,977	(23.29)	240	(34.43)	4,737	(22.91)			1,268	(23.92)	3,709	(23.08)		
Asian	899	(4.21)	54	(7.75)	845	(4.09)			303	(5.71)	596	(3.71)		
Other	1,627	(7.61)	55	(7.89)	1,572	(7.60)			338	(6.37)	1,289	(8.02)		
Sexual Identity							5.20 (3)	0.156					646.41 (3)	< 0.001
Gay/queer	15,260	(71.40)	521	(74.75)	14,739	(71.29)			4,496	(84.80)	10,746	(66.98)		
Bisexual/pansexual	5,218	(24.41)	149	(21.38)	5,069	(24.52)			723	(13.73)	4,490	(27.49)		
Straight/something else	494	(2.31)	12	(1.72)	482	(2.33)			18	(0.34)	476	(2.96)		
Sexually fluid	401	(1.88)	15	(2.15)	386	(1.87)			60	(1.13)	341	(2.12)		
Substance Use (past 3 months)							24.10 (4)	< 0.001					118.28 (4)	< 0.001
None	7,690	(35.98)	236	(33.86)	7,454	(36.05)			2,005	(37.82)	5,685	(35.37)		
Cannabis, only	6,642	(31.08)	184	(26.40)	6,458	(31.23)			1,812	(34.18)	4,830	(30.05)		
Methamphetamine, only	1,332	(6.23)	41	(5.88)	1,291	(6.24)			257	(4.85)	1,075	(6.69)		
Cocaine, only	270	(1.26)	17	(2.44)	253	(1.22)			99	(1.87)	171	(1.06)		
Polysubstance use	5,439	(25.45)	219	(31.42)	5,220	(25.25)			1,129	(21.29)	4,310	(26.82)		
Sex Partners (past 6 months) [Median (IQR)]	5.00	(2–10)	7.00	(3–16)	4.00	(2–10)	2.10 (1)	< 0.001	7.00	(3–15)	4.00	(2–9)	540.98 (1)	< 0.001

Characteristic	Models 1 & 3*				Models 2 & 4*			
	Past-Year PEP Use vs. No Past-Year PEP Use				Current PrEP Use vs. No Current PrEP Use			
	Ref = No Past-Year PEP use				Ref = No Current PrEP Use			
	aOR	95% CI		P-Value	aOR	95% CI		P-Value
Forced Sexual Encounter (past 5 years)								
Yes	1.61	1.36	1.91	< 0.001	0.79	0.72	0.86	< 0.001
Forced Sexual Encounter (past 5 years)								
Not under the influence of drugs oralcohol	1.68	1.25	2.52	< 0.001	0.88	0.73	1.03	0.11

Table 1 (continued)

Characteristic	Models 1 & 3*				Models 2 & 4*			
	Past-Year PEP Use vs. No Past-Year PEP Use				Current PrEP Use vs. No Current PrEP Use			
	Ref = No Past-Year PEP use				Ref = No Current PrEP Use			
	aOR	95% CI		P-Value	aOR	95% CI		P-Value
Under the influence of drugs or alcohol	1.56	1.28	1.89	<0.001	0.74	0.67	0.82	<0.001
Both under the influence and not under the influence of drugs or alcohol	2.05	1.24	3.40	0.005	0.93	0.69	1.26	0.64

*Models adjusted for age, race/ethnicity, sexual identity, substance use (past 3 months,) and total sex partners (past 6 months)

response while "yes, but I am not currently taking PrEP" (19.31% of the sample), "no, never taken PrEP" (54.05% of the sample) and "I don't know what PrEP is" (1.83% of the sample) were coded as negative responses.

Sociodemographic and Health Behavior Variables

We collected data on participant's age, race/ethnicity, gender identity, sexual identity, substance use (past 3 months), and total sex partners (past 6 months).

Statistical Analysis

Statistical analyses were conducted using Stata 18.0 (StataCorp LP, College Station, TX) with $\alpha = 0.01$. We used descriptive statistics (means, standard deviations, medians, interquartile ranges, frequencies, and percentages) to summarize sample characteristics. We then conducted bivariable analyses (Chi-squared, equality-of-medians, and Mann-Whitney U tests) to examine if these characteristics differed significantly for each outcome variable. Lastly, we conducted four individual multivariable logistic regression models. The first two models estimated the adjusted odds ratios (aOR) and 95% confidence intervals (CIs) for the associations between the dichotomous FSE variable and (1) past-year PEP use and (2) current PrEP use. The remaining models estimated aORs and 95% CIs for the associations between the expanded FSE variable and (3) past-year PEP use and (4) current PrEP use. Based on a directed acyclic graph constructed from a priori knowledge, all models included age, race/ethnicity, sexual identity, substance use (past 3 months), and total sex partners (past 6 months) as confounders.

Results

Participant Characteristics

The average age of participants was 36.46 years (SD = 11.70). Most identified as gay/queer (71.40%). Just over half were White (53.00%), 23.29% were Latine, and 11.89% were Black. Additional characteristics appear in Table 1.

Past-year PEP Use and Current PrEP Use

Table 1 presents the results of the multivariable logistic regression models. Only 3.26% of participants indicated past-year PEP use. In bivariable analyses, we observed a statistically significant association between the dichotomous FSE variable and past-year PEP use ($\chi^2(1) = 60.70$, $p < 0.001$). After adjusting for confounding, MSM who

experienced FSE had higher odds (aOR = 1.61, 95% CI: 1.36, 1.91) of past-year PEP use compared to MSM who did not experience FSE. Similarly, we observed a statistically significant association in bivariable analyses between the expanded FSE variable and past-year PEP use ($\chi^2(3) = 64.13$, $p < 0.001$). In adjusted analyses, MSM who experienced FSE not under the influence of drugs or alcohol (aOR = 1.68, 95%CI: 1.25, 2.52), under the influence of drugs or alcohol (aOR = 1.56, 95% CI: 1.28, 1.89), and both under the influence and not under the influence of drugs or alcohol (aOR = 2.05, 95% CI: 1.24, 3.40) had higher odds of past-year PEP use compared to MSM who did not experience FSE.

Approximately one-quarter of participants (24.81%) indicated current PrEP use. For the dichotomous FSE variable, bivariable analyses suggested a statistically significant inverse association between FSE and current PrEP use ($\chi^2(1) = 43.03$, $p < 0.001$). After adjusting for confounding, MSM who experienced FSE had lower odds (aOR = 0.79, 95% CI: 0.72, 0.86) of current PrEP use compared to MSM who did not experience FSE. We also observed a statistically significant association in bivariable analyses between the expanded FSE variable and current PEP use ($\chi^2(3) = 49.87$, $p = 0.007$). In adjusted analyses, MSM who experienced FSE under the influence of drugs or alcohol had lower odds (aOR = 0.74, 95% CI: 0.67, 0.82) of current PrEP use compared to MSM who did not experience FSE.

Discussion

MSM experience high rates of both HIV and sexual violence. In this U.S.-based study of MSM, we found that participants who experienced FSE had higher odds of past-year PEP use, yet lower odds of current PrEP use. Our findings highlight how experiences of FSE may shape the use of HIV biomedical prevention strategies and highlight the need for tailored programs to support HIV and violence prevention among vulnerable communities, including MSM.

In our study, 21% of MSM reported FSE. While MSM who experienced FSE had higher odds of past-year PEP use for the dichotomous exposure variable, we also found that experiencing any category of the expanded FSE variable (i.e., not under the influence of drugs or alcohol, under the influence of drugs or alcohol, and both under the influence and not under the influence of drugs or alcohol) was associated with higher odds of past-year PEP use. This is surprising, considering modest levels of HIV PEP awareness among MSM and low proportions of use among MSM experiencing nonconsensual sex or rape in previous studies [11]. Our findings highlight the need for additional investigations regarding PEP awareness and use among communities with high HIV burden who also experience sexual violence, including forced sexual encounters.

In our sample, experiencing FSE was associated with lower odds of current PrEP use. This is consistent with previous research examining forced sex and PrEP use, particularly within the context of IPV [8, 9]. For instance, Braksmajer and colleagues (2020) found that MSM who experienced forced sex were less likely to use PrEP, yet participants who experienced controlling IPV behaviors (e.g., "prevented you from seeing your family"), were more likely to use PrEP [8]. Similarly, Wirtz and colleagues (2022) found no association between recent sexual IPV and current PrEP use, but a statistically significant inverse association between recent physical IPV and current PrEP use [9]. Coupled together, our results suggest a nuanced relationship between FSE (either within the context of IPV or without) and PrEP use. MSM who experience FSE within the context of intimate relationships may endure different relational dynamics (e.g., controlling behaviors, physical violence) that may have a greater impact on PrEP use [8, 9]. Further, we found that MSM who experienced FSE under the influence of drugs or alcohol had lower odds of current PrEP use. This finding is supported by previous literature illustrating the association between forced sex and increased substance use among MSM [3], which has been shown to heighten MSM's vulnerability for HIV [12].

Our findings offer valuable insights and suggest the need for additional research examining the relationships between FSE, PrEP, and PEP use. First, most current studies examining these associations have employed cross-sectional study designs [6], limiting any inferences of causality and temporality. This underscores the need for longitudinal and qualitative investigations to better understand the underlying mechanisms linking FSE to PrEP and PEP use. Second, our findings, coupled with previous work [9], highlight the need to implement multilevel interventions that are culturally sensitive, patient-centered, and seek to address sexual violence among MSM while also increasing HIV prevention uptake. Lastly, our findings surrounding FSE within the context of alcohol and substance use highlight the need for patient-provider communication that addresses how substance use may heighten MSM's vulnerability for HIV and sexual violence, and the importance of HIV biomedical prevention strategies.

This study is not without limitations. First, this analysis used data from an unincentivized screener designed to be low burden, thus some characteristics (e.g., income, mental health, alcohol use) were not assessed, which limited our ability to include them as potential confounders. Second, given the parent study's focus on HIV prevention and methamphetamine use, our sample, by design, is not representative of the U.S. population. Third, our large sample

size may have influenced the statistical significance of our results; however, we attempted to mitigate this by using α-level = 0.01. Fourth, it is possible that participants confused PrEP and PEP, despite being provided with descriptions, leading to misclassification bias. Fifth, due to survey logic, those who self-reported living with HIV were not presented with questions related to PrEP and PEP, as such interventions are intended to prevent HIV acquisition; however, HIV status remains an important consideration and should be investigated in future studies to understand prevention needs and HIV burden. Lastly, the cross-sectional nature of the data and the recall periods of our variables preclude any inferences of temporality and causality. Despite these limitations, this study provides valuable insights into the associations between FSE, past-year PEP use, and current PrEP use among a population with high HIV burden.

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Data Availability Data are available upon reasonable request from the corresponding author, CG.

Declarations

Conflict of interest The authors report there are no competing interests to declare.

References

1. Centers for Disease Control and Prevention. HIV Diagnoses, Deaths, and Prevalence: 2025 Update. 2025. Available from: https://www.cdc.gov/hiv-data/nhss/hiv-diagnoses-deaths-and-prevalence-2025.html
2. Chen J, et al. The National intimate partner and sexual violence survey (NISVS) 2016/2017: report on victimization by sexual identity. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2023.
3. Kalichman SC, et al. Unwanted sexual experiences and sexual risks in gay and bisexual men: associations among revictimization, substance use, and psychiatric symptoms. J Sex Res. 2001;38(1):1–9.
4. Freeman JQ, et al. Physical and sexual violence and sexual behaviors among men who have sex with men in 22 US cities—National HIV behavioral surveillance, 2017. J Interpers Violence. 2023;38(1–2):37–59.
5. National Institutes of Health Office of AIDS Research. The Basics of HIV Prevention. 2025. Available from: https://hivinfo.nih.gov/understanding-hiv/fact-sheets/basics-hiv-prevention
6. Hong C. Intimate partner violence and HIV pre-exposure prophylaxis care engagement among sexual minority men: a systematic review. AIDS Patient Care STDS. 2024;38(9):438–52.
7. Blashill AJ, et al. Syndemics and the PrEP cascade: results from a sample of young Latino men who have sex with men. Arch Sex Behav. 2020;49(1):125–35.
8. Braksmajer A, et al. Pre-exposure prophylaxis use among men who have sex with men experiencing partner violence. AIDS Behav. 2020;24(8):2299–306.
9. Wirtz AL, et al. Abuse in the continua: HIV prevention and care outcomes and syndemic conditions associated with intimate partner violence among black gay and bisexual men in the Southern united States. AIDS Behav. 2022;26(11):3761–74.
10. Grov C, et al. The American transformative HIV study: Protocol for a US national cohort of sexual and gender minority individuals with HIV. JMIR Public Health Surveill. 2025;11:e66921. https://doi.org/10.2196/66921
11. Jain S, et al. Subsequent HIV infection among men who have sex with men who used non-occupational post-exposure prophylaxis at a Boston community health center: 1997–2013. AIDS Patient Care STDS. 2015;29(1):20–5.
12. Woolf SE, Maisto SA. Alcohol use and risk of HIV infection among men who have sex with men. AIDS Behav. 2009;13:757–82.