

The association between healthcare system interactions and PrEP usage among transgender and gender nonconforming adults in Massachusetts and Rhode Island

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ABSTRACT

Background: Transgender and gender nonconforming (TGNC) adults are disproportionately impacted by HIV. Despite the high efficacy of pre-exposure prophylaxis (PrEP) to prevent HIV, research suggests that PrEP is underutilized among TGNC people. Research is needed to identify which subgroups of at-risk TGNC people are not utilizing PrEP.

Methods: In 2019, a survey assessing PrEP knowledge and use, healthcare experiences, sexual risk behavior and demographics was administered to 600 TGNC adults in Massachusetts and Rhode Island in-person and online. For the current analysis, the sample was restricted to HIV-negative individuals who had reported one or more HIV risk behaviors, including having sexual contacts with six or more people in the past 6 months, engaging in condomless sex in the past 6 months, having a lifetime history of STIs, and engaging in sex work in the past year, resulting in an analytic sample of $n=166$. An age-adjusted multivariable logistic regression model tested the association between condomless sex in the past 6 months, lifetime history of STIs, accessing HIV prevention services in the past 12 months and the outcome: lifetime non-utilization of PrEP.

Findings: The mean age of this high HIV-risk sample of TGNC adults was 30.8 years old ($SD=10.0$) and 81.9% were White non-Hispanic. Overall, 31.3% were trans feminine, 24.7% were trans masculine, and 44.0% were non-binary. PrEP awareness was high (80.7%) but few had a history of taking PrEP (14.5%). In the age-adjusted multivariable model, not accessing HIV prevention services in the past 12 months ($aOR=21.14$, 95% $CI=6.43, 69.49$), never having an STI ($aOR=3.10$, 95% $CI= 1.02, 9.39$), and engaging in condomless anal or vaginal sex in the past 6 months ($aOR=3.84$, 95% $CI= 1.12, 13.14$) were associated with the increased odds of never having used PrEP.

Conclusion: This study represents the first to our knowledge to quantitatively assess factors associated with not using PrEP in a multistate sample of TGNC adults who are HIV negative and at-risk for the virus. The findings extend a body of evidence documenting the lack of PrEP usage among TGNC adults. The low number of at-risk TGNC people who used PrEP indicates the need for structural and clinical interventions to increase PrEP access among this population.

INTRODUCTION

Transgender and gender nonconforming (TGNC) adults are at high risk for HIV and are in crucial need of HIV prevention and care services.¹⁻⁴ TGNC is an umbrella term for people whose gender identity, behavior, and expression does not conform to that typically associated with the traditional male or female sex assigned at birth. This includes individuals who identify as transgender and gender nonbinary.⁵ Within the last two decades, there has been a significant increase in research about TGNC people that has increased knowledge of differences within this population.⁶ While transgender (“trans”) people only comprised 0.6% of the U.S. population in 2018, they consisted of 2% of newly diagnosed HIV infections nationally.² High prevalence of HIV is seen especially in trans women, with this group accounting for a staggering 92% of new diagnoses among transgender adults and adolescents in 2018.⁷ Although trans men are generally less likely to acquire HIV than trans women, their rate of infection is higher than the general U.S. population.² Additionally, research related to HIV among trans people focuses almost exclusively on trans women, and there is limited data on HIV rates and risk behaviors among trans men and gender nonconforming individuals.^{8,9} There are also racial and ethnic disparities in HIV infection among trans people, with Black/African American trans women having the highest HIV prevalence estimates of 62% compared to whites (17%) and Hispanics/Latinos (35%).¹⁰

A complex combination of individual and structural factors, including TGNC stigma and discrimination, are associated with inequities in healthcare, employment, and housing.¹¹ Restriction of these fundamental resources is linked to poor mental health, violence, homelessness, sex work, unemployment, and lack of social and familial support among TGNC persons.¹² Additionally, the psychosocial consequences of stigma and discrimination can lead TGNC individuals to have low self-efficacy and self-esteem, reducing their negotiation power in relationships, and with safe sex and substance use.¹³ Stigma, victimization, and violence can also drive high levels of HIV-related risk among TGNC individuals, and can interact with substance use to increase effects on sexual risk.¹⁴ Substance use,

unstable housing, and social and economic marginalization are known barriers to healthcare engagement for TGNC individuals.¹⁵

Pre-exposure prophylaxis, or PrEP, is a key biomedical strategy for preventing HIV acquisition among TGNC individuals at risk for the virus. Data from efficacy trials show that the once-daily oral pill reduces the risk of HIV infection by about 99% and is a key instrument in preventing new HIV transmissions among people at risk for HIV acquisition.^{16,17} As a result of prior studies, the U.S. Food and Drug Administration approved Truvada for PrEP in 2012¹⁸ and Descovy for PrEP in 2019¹⁹ among populations at high risk for acquiring HIV, including in those who engage in condomless sex, inject drugs, or have been diagnosed with a sexually transmitted infection in the past 6 months,²⁰ all which are of higher prevalence in TGNC individuals.^{21,22}

Despite the efficacy of PrEP, research suggests that PrEP is underutilized by at-risk TGNC people. Indeed, a 2020 study found that only 3% of trans adults in the United States who are at high risk for HIV infection use PrEP.²³ Multiple barriers remain to PrEP uptake, with one being awareness of PrEP as a tool to prevent HIV infection. To that end, various studies have found that trans people tend to have low to moderate knowledge of PrEP but those who were familiar with the drug had a predominantly high willingness to use PrEP.²³⁻²⁵ These findings suggest that greater awareness could lead to greater uptake among at-risk TGNC populations who have access to these medications.

Notably, TGNC adults face unique barriers with the healthcare system that can impact access and adherence to PrEP including issues with cost, access to insurance, anti-trans stigma, medical mistrust, and lack of culturally competent care. TGNC individuals often cite prior negative interactions in healthcare settings by providers, clinic staff, and other patients in waiting rooms. Such interactions can include disrespectful remarks, being misgendered, or not being called by their preferred name.²⁵ TGNC patients also report that few providers are knowledgeable in trans medicine.²⁶ As a result, TGNC

individuals may avoid medical settings due to prior experiences of transphobia and lack of trans-competent care, inhibiting healthcare seeking and engagement.

In addition to structural factors, trans individuals may be reluctant to take PrEP for fear of the stigma and negative social norms tied to taking the preventative drug. Indeed, prior research finds that some trans people fear being seen as promiscuous if they utilize PrEP. For example, a 2017 study with men who have sex with men and trans women who have sex with men found the majority of the study group believed PrEP would encourage risky sex, and nearly a quarter believed only promiscuous people used PrEP.²⁷ As a result, high risk individuals may be reluctant to seek out PrEP and healthcare providers may be less likely to prescribe PrEP to their trans patients, due to both encountered and perceived stigma.

The impact of PrEP on reducing HIV incidence is extremely promising, although research on PrEP usage exclusively with transgender adults is limited. Given the documented role of societal stigma and negative healthcare interactions in contributing to poor health outcomes for transgender individuals,¹¹ research is needed to explore the relationship between these exposures and PrEP usage among this marginalized population. The present data analysis examines the association between healthcare interaction and discrimination across the life-course with PrEP usage among TGNC individuals. These findings can be utilized to inform future interventions to increase PrEP uptake among diverse transgender adults in the United States.

METHODS

Study Procedures

Between March and August 2019, The Fenway Institute in Boston, Massachusetts and Brown University in Providence, Rhode Island teamed up to conduct a stress and health needs assessment for Project VOICE Now! The needs assessment was a follow-up to the 2013 Project VOICE study and was

created to gain a better understanding of the physical and mental health of trans adults in Massachusetts and Rhode Island, as well as their healthcare experiences. The project took a community-based participatory research approach to recognize how interpersonal and structural stressors impact the health of transgender and gender nonconforming individuals.²⁸ Non-probability sampling was used between September 2018 and February 2019 to identify and recruit individuals both online, such as electronic listservs and social media, and in-person, including health clinics and community events. Eligibility criteria included: 1) self-identifying as transgender/gender nonconforming, 2) being ages 18 years or older, 3) having resided in MA or RI for at least 3 months in the past year, and 4) having a basic language proficiency in English or Spanish. Written informed consent was obtained at the start of the survey and study activities were approved by the Institutional Review Board at Fenway Health (Project Number: 1280264-6).

For the present analysis focused on PrEP utilization, the sample was restricted to individuals at risk for HIV using indicators from prior research on HIV risk behaviors.²⁹⁻³⁴ Specifically, in order to be included in this secondary-data analyses, individuals were required to be: HIV negative or unaware of their serostatus; AND have engaged in one or more of the following HIV risk behaviors: condomless anal and/or vaginal sex in the past 6 months; 5 or more sexual partners in the past 6 months; used heroin in the last year; lifetime history of bacterial STIs; or engaged in sex work in the past year. This resulted in an initial analytic sample of N=188.

Measures

Main outcome

PrEP usage.³⁵ Participants were asked if they had ever taken PrEP. Participants were categorized as having taken PrEP (yes) or not (no, don't know/not sure). Participants also selected in the survey their reasons for not taking PrEP, which included reasons such as fear of the drug interacting with hormones,

or concerns about the stigma of PrEP. Those who answered, “prefer not to answer” to PrEP usage were excluded from the final model.

Primary independent variables

PrEP knowledge.³⁶ Participants were asked if they had ever heard about taking HIV medication before sex or to lower potential exposure to HIV. Answers were categorized as yes or no (no, don’t know/not sure). Those who preferred not to answer were excluded from the model.

Transgender-related discrimination.³⁷ Participants were asked if any of the 11 discriminatory situations (e.g., being treated with less courtesy, received poor service) ever happened in their lifetime, with the option to choose “never,” “rarely,” “sometimes,” “often,” or “very often.” Participants were then asked what they thought were the reasons for experiencing discrimination, with the option to check all that applied. Those who believed their experiences of discrimination were due to some aspect of being trans (e.g., gender identity, gender expression) were coded as “yes” while those who did not check these experiences were coded as “no.”

Health insurance coverage.^{38,39} Participants were asked to check all insurances and coverages that applied (i.e., Medicare, work insurance). Insurances were re-coded into public insurance and private insurance.

HIV prevention services in the past 12 months.³⁶ Participants were asked, “In the past 12 months, have you accessed any HIV prevention services or programs (for example, risk reduction counseling, demonstrations on how to use condoms, programs for couples or groups focused on reducing HIV risk by changing behaviors)? Participants were given the option to choose yes or no.

Routine check-up in past 3 years.^{39,40} Participants were asked if they had received a routine check-up in the past 3 years to which they responded yes, no, or prefer not to answer. Those who preferred not to answer were excluded from the model.

Sexual contacts in the past 6 months.⁴¹ Participants were asked how many people they had sexual contact with in the past 6 months. Answers were coded as 5 or less people, and 6 or more people.

Transactional sex in past 12 months.³⁹ Participants were asked if they had ever traded sexual activity or favors for food, money, a place to sleep, drugs, or other material goods. Those who replied yes were then asked if they had done so in the past 12 months. Responses were coded as yes or no.

Condomless sex in past 6 months.³⁹ Participants were asked if they had “always,” “sometimes,” or “never” used a condom for insertive or receptive anal or vaginal sex in the past 6 months. Those who marked “sometimes” or “never” to any sexual contact were coded as “yes” for engaging in condomless sex in the past 6 months.

History of STIs.⁴¹ Participants were asked if a doctor or other healthcare provider ever told them they had any STIs (e.g., chlamydia, syphilis, gonorrhea). Those who selected any of the STIs were coded as “yes” for having a history of STIs while those who selected “none of the above” were coded as having no history of STIs.

Lifetime diagnosis of a substance use disorder.^{39,42} Participants were asked if they had ever been told by a doctor or health professional if they had any of the following health conditions, and to check all that applied. Those who checked “substance use disorder” were marked “yes” for having a lifetime diagnosis of a substance use disorder.

Sexual and physical abuse.^{39,43} Participants were asked about experiences of abuse throughout the life course. Childhood physical and sexual abuse were assessed before age 18. Physical and sexual abuse (partner and non-partner) in adulthood were also assessed. Responses for both adult and childhood abuse were coded as yes or no. Survey questions were drawn from prior measures as well as created by the VOICE Now! team.

Covariates

Demographics. Age of the participants was reported in years. Race/ethnicity was assessed and included Black/African American, Asian/Asian American, White, Hispanic, Middle Eastern/North African, Native Hawaiian/Pacific Islander, and American Indian/Alaskan Native.⁴² Race was assessed and coded as White non-Hispanic vs. Person of Color (Black, Asian, Hispanic/Latinx, Multiracial/Other). Gender identity was assessed using both assigned sex at birth (male, female)⁴⁴ and current gender identity (trans masculine, trans feminine, non-binary, or another gender identity not listed).^{39,45} Responses to the two questions were cross-tabulated and categorized into non-binary, trans masculine spectrum, and trans feminine spectrum. Participants were asked if they had ever accessed any gender-affirming, transgender-related medical interventions to which they responded yes or no. The gender affirmation question was created by the VOICE Now! study team. Sexual orientation was assessed by having participants choose one response that best describes their identity at the time of the survey.³⁹ For the logistic regression, sexual orientation was consolidated into two categories: queer, and straight/heterosexual. Socioeconomic status was assessed by asking participants about their highest educational attainment (some college or less, college graduate or more), whether they were employed for wages (yes or no), and whether or not they had unstable housing in the past 12 months (yes or no).^{36,38,42} Unstable housing was assessed by asking participants to check where they have lived in the past 12 months. Those who checked housing such as living in a shelter or on the streets were coded as unstably housed.⁴² Financial insecurity was assessed using an item from the Federal Consumer Financial

Protection Bureau's Financial Well-Being Scale.⁴⁶ Participants were asked to indicate the extent to which they experience the following statement: "I have money left over at the end of the month." Those who responded "always" or "often" were coded as not financially insecure. Those who responded "sometimes," "rarely," or "never" were coded as financially secure.

Data Analysis

The sample was restricted to individuals who had complete data for the independent variables and the outcome, resulting in a final analytic sample of $N=166$ (Figure 1). Bivariate logistic regressions were conducted to examine the associations between the independent variables, the covariates, and PrEP usage. In bivariate logistic regression analyses, variables that were associated with PrEP usage at $p<0.10$ were entered into the multivariable model. Manual backward selection was then used to select variables that were significant at $p<0.05$. The final multivariable model adjusted for age, with not using PrEP modeled as the outcome. All statistical analyses were performed in SAS Studio (SAS Institute Inc., Cary, NC).

RESULTS

Sample Characteristics

Participants in this HIV negative and at-risk sample were on average 30.8 years old ($SD=10.0$) (Table 1). Overall, 44.0% were non-binary, 31.3% were trans feminine, and 24.7% were trans masculine. Most participants were White non-Hispanic (81.9%), employed (71.1%), and received some college education or less (53.0%). Nearly three-quarters of the sample (71.1%) were financially insecure, with 9.6% being unstably housed. The prevalence of self-reported physical and sexual abuse was high in both childhood (65.7%) and adulthood (72.9%). The majority of participants (88.6%) reported experiencing discrimination in their lifetime due to being transgender.

Of the 166 participants in the analysis, 134 (80.7%) had heard of PrEP, but only 24 (14.5%) have ever taken PrEP, despite this sample being at higher risk for HIV infection. Additionally, the majority of the sample (80.1%) had engaged in condomless sex in the past 6 months, 35.5% had an STI in their lifetime, 20.5% had a lifetime diagnosis of a substance use disorder, 19.9% traded sexual activity or favors in the past year, and 15.7% had sexual contact with 6 or more people in the past 6 months. When asked why they did not take PrEP, the top three reasons were because they were low/no risk for HIV (50.0%), never offered PrEP by their provider (17.6%), and concerned about the cost of PrEP (17.6%)

Outcomes

The results of the adjusted logistic regression analyses are shown in Table 2. In the multivariable model adjusted for age, not accessing HIV prevention services in the past 12 months (aOR=21.14, 95% CI=6.43, 69.49), never having an STI (aOR=3.10, 95% CI= 1.02, 9.39), and engaging in condomless anal or vaginal sex in the past 6 months (aOR=3.84, 95% CI= 1.12, 13.14) were each associated with increased odds of not using PrEP to prevent HIV.

DISCUSSION

This study represents the first, to our knowledge, to quantitatively identify factors associated with not using PrEP in a multistate sample of transgender and gender non-conforming adults who are HIV negative and at high risk for the virus. Most TGNC adults in this sample reported having heard of PrEP; however, despite this population being at higher likelihood of HIV infection, very few reported taking PrEP to prevent HIV. Additionally, not accessing HIV prevention services, never having an STI, and engaging in condomless sex were each associated with the higher odds of not using PrEP. The present results extend a body of evidence documenting the lack of PrEP usage among TGNC adults.^{23,47} Findings have implications for structural and clinical interventions to increase PrEP uptake among TGNC adults at high-risk for HIV.

In this sample of at-risk TGNC adults, more than 80% had heard of PrEP. These findings align with recent studies among TGNC individuals in the United States, which found a similarly high knowledge of PrEP. For example, Wood et al.'s 2017 study of young, at-risk trans women found that 64% reported prior knowledge of PrEP and Wilson et al.'s 2022 study of trans women in San Francisco found that 94% had heard about PrEP.^{48,49} A 2021 study of transgender and nonbinary youth found that 50.1% had heard of PrEP, but the sample was not limited to at-risk individuals.⁵⁰ While prior literature has analyzed PrEP awareness in transgender populations, none have focused on at-risk, gender diverse adults in multiple US states as seen in this study.

The high level of PrEP knowledge in our sample and other studies may be due to the widespread adoption of the drug in recent years. Indeed, the World Health Organization reported in March 2021 that oral PrEP use increased 70% globally since 2018.⁵¹ Importantly, our findings suggests that overwhelmingly, the TGNC people who are most at risk for PrEP are aware of this biomedical tool to prevent HIV and awareness is an essential first step to uptake. Despite the high knowledge of PrEP, only 24 participants (14.5%) in this sample had ever taken PrEP even though this analytic sample was restricted to those who had one or more indicators of HIV risk (i.e., condomless sex, transactional sex, substance use, history of an STI). These findings extend prior biobehavioral and qualitative research on HIV risk behaviors in TGNC people.^{13,52} The low use of PrEP among this high-risk sample is similar to a 2020 national study of at-risk transgender individuals, which found that only 2.7% reported currently taking Truvada for PrEP.²³ In the age-adjusted model, never having an STI and lack of engagement in HIV prevention services in the past 12 months were each associated with lack of PrEP usage. These findings align with participants' top two self-reported reasons for not taking PrEP: no perceived risk of HIV and not being referred to take PrEP by a provider. Research finds that having an STI can be a cue to action to obtain sexual healthcare, including HIV testing.^{53,54} Notably, however, 81.3% of this high-HIV risk sample did not receive HIV prevention services. Prior research finds that TGNC people may face a number of

barriers to accessing HIV prevention including past experiences of discrimination and cost.⁴⁸ Although transgender-related discrimination was not associated with PrEP usage in our sample, cost was noted as the third most common reason for not taking PrEP. Efforts are needed to improve at-risk TGNC people's access to affordable clinical and biomedical HIV prevention services.

Interestingly, condomless sex in the past 6 months was also associated with the increased odds of non-utilization of PrEP in the multivariable model. This finding could be due to the fact that PrEP guidelines strongly encourage the use of condoms in addition to PrEP as a means of preventing STIs. Thus, it is possible that those on PrEP may be more aware of the importance of condom use and more likely to prioritize their sexual health than those who are not on PrEP. Notably, however, our study did not assess the relationship status or HIV status of the sexual partners with whom participants engaged in condomless sex. This, it is possible that participants who engaged in condomless sex were in relationships that carried a low risk for HIV acquisition (ie., monogamous relationship with HIV-negative partner) and therefore they did not have a need to utilize PrEP. Qualitative research is needed to explore TGNC people's specific risk behaviors and examine how they evaluate their own risk and need for HIV prevention tools such as PrEP. Such research could be useful in informing clinical interventions aimed at improving PrEP uptake among TGNC individuals at risk for HIV.

The low number of at-risk TGNC people who used PrEP in this sample highlight the need for structural and clinical interventions to increase PrEP access among this population. Specifically, culturally competent health providers are needed to identify at-risk patients and link them to PrEP, considering 17.6% reported not being referred for PrEP. Training about PrEP for non-prescribing providers and incorporating PrEP screening and referrals into routine HIV and STI testing are necessary for linking TGNC people to PrEP. Additionally, the cost of PrEP was cited as a common reason for not using PrEP among this TGNC sample, and research shows that when PrEP is made free of charge, there is

high uptake among high-risk populations.⁵⁵ Interventions are therefore needed to educate and link TGNC patients to PrEP drug assistance programs that cover out-of-pocket costs for those who are uninsured or whose insurance won't cover PrEP. Together these efforts can help to increase PrEP uptake among TGNC populations who are at the greatest risk of HIV infection.

Limitations

This study has several methodological limitations. As a cross-sectional study, causality cannot be inferred. Although the racial/ethnic distribution of this sample (82% white) was similar to the racial/ethnic distribution of Massachusetts (81% white) and Rhode Island (84% white), it is possible our findings may not be generalizable to TGNC people belonging to racial/ethnic minority groups or in other locations.^{56,57} As such, future research should address this gap by expanding participant demographic characteristics and representativeness by geographic location. Lastly, the size of this analytic sample was small, which contributed to wide confidence intervals for some variables in our logistic regression analyses. Future research should aim to recruit a larger sample of TGNC people at risk for HIV and seek to replicate our findings.

Conclusion

Despite these aforementioned limitations, this study is among the first to identify factors associated with the non-utilization of prEP among a multistate sample of HIV-negative, at-risk TGNC individuals. The findings support and expand existing literature on the lack of PrEP usage among TGNC people at risk for HIV, and underscore the need for clinical and structural interventions to increase uptake of the drug. Efforts to incorporate PrEP referrals in HIV and STI testing, train providers on PrEP, and educate patients on PrEP drug assistance programs to reduce cost barriers are all needed to increase access to and uptake of PrEP among TGNC people at greatest risk for HIV infection.

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Figure 1. Study sample exclusion/inclusion criteria

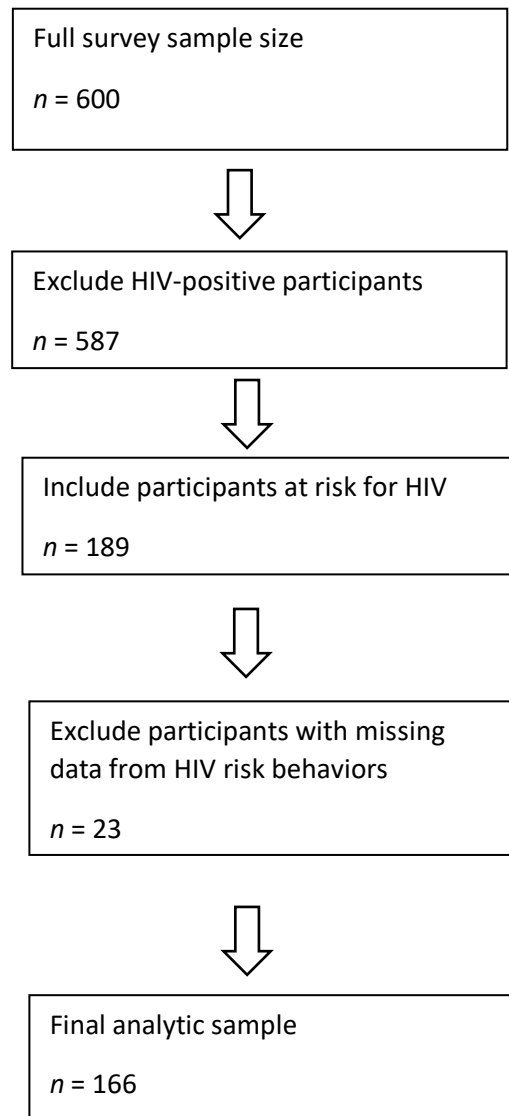


Table 1: Study sample characteristics by PrEP use in a sample of transgender adults in Massachusetts and Rhode Island

Characteristic	Never took PrEP <i>n</i> =142		Has taken PrEP <i>n</i> =24	
	Mean	SD	Mean	SD
Age (years)	30.5	10.2	32.7	9
	Percent(<i>n</i>)		Percent(<i>n</i>)	
Gender identity				
Trans masculine (man, trans man)	22.5(32)		37.5(9)	
Trans feminine (woman, trans woman)	33.1(47)		20.8(5)	
Nonbinary (e.g., gender variant, genderqueer, other)	44.4(63)		41.7(10)	
Queer				
Yes	97.2(138)		87.5(21)	
No	2.5(4)		12.5(3)	
Sexual orientation				
Straight	2.8(4)		12.5(3)	
Queer	86.6(123)		79.2(19)	
Questioning	2.8(4)		4.2(1)	
Asexual	2.1(3)		4.2(1)	
No label	5.6(8)		0.0(0)	
Race/ethnicity				
Non-Hispanic White	83.1(118)		75.0(18)	
Person of color ¹	16.9(24)		25.0(6)	
Employed for wages				
Yes	69.7(99)		79.2(19)	
No	30.3(43)		20.8(5)	
Education				
Some college or less	52.1(74)		58.3(14)	
College grad or more	47.9(68)		41.7(10)	
Accessed any gender-affirming care				
Yes	67.6(96)		83.3(20)	
No	32.4(46)		16.7(4)	

Table 1. (Continued)

Health insurance type		
Public insurance ²	31.0(44)	41.7(10)
Private insurance	66.2(94)	58.3(14)
Missing	2.8(4)	0.0(0)
Financially insecure		
Yes	69.0(98)	83.3(20)
No	30.3(43)	16.7(4)
Missing	0.7(1)	0.0(0)
PrEP awareness		
Yes	77.5(110)	100.0(24)
No	22.5(32)	0.0(0)
Received routine check-up in past 3 years		
Yes	89.4(127)	91.7(22)
No	10.6(15)	8.3(2)
Accessed HIV prevention services in past 12 months		
Yes	11.3(16)	62.5(15)
No	88.7(126)	37.5(9)
Transgender-related discrimination		
Yes	88.0(125)	91.7(22)
No	11.3(16)	4.2(1)
Missing	0.7(1)	4.2(1)
Sexual contacts in past 6 months		
6 or more people	15.5(22)	16.7(4)
5 or less	84.5(120)	83.3(20)
Transactional sex in past 12 months		
Yes	19.0(27)	25.0(6)
No	59.2(84)	37.5(9)
Missing	21.8(31)	37.5(9)
Unstably housed		
Yes	9.9(14)	8.3(2)
No	90.1(128)	91.7(22)

Table 1. (Continued)

Lifetime diagnosis of SUD		
Yes	19.0(27)	29.2(7)
No	81.0(115)	70.8(17)
Physical or sexual abuse in childhood		
Yes	64.8(92)	70.8(17)
No	33.8(48)	16.7(4)
Missing	1.4(2)	12.5(3)
Physical or sexual abuse in adulthood		
Yes	73.2(104)	70.8(17)
No	24.7(35)	20.8(5)
Missing	2.1(3)	8.3(2)
Condomless sex in past 6 months		
Yes	82.4(117)	66.7(16)
No	17.6(25)	33.3(8)
History of STI		
Yes	31.0(44)	62.5(15)
No	69.0(98)	37.5(9)

SD, standard deviation.

SUD, substance use disorder.

STI, sexually transmitted infection

¹ Persons of color include Black (non-Hispanic), Asian/Pacific Islander, Hispanic/Latinx, Multiracial, and other

² Public insurance includes Medicare, Medicaid, Veterans Health Administration, and COBRA

Table 2: Bivariate and multivariable logistic regression examining the association between accessing HIV prevention services, STI history, and condomless sex with not using PrEP (*n*=166)

Outcome: no lifetime usage of PrEP						
Outcome	Bivariate model			Age-adjusted multivariable model		
	OR	95% CI	p-value	aOR	95% CI	p-value
Age	0.98	0.94-1.02	0.319	0.98	0.94-1.03	0.475
Gender identity						
Trans feminine	2.64	0.81-8.62	0.107	-	-	-
Nonbinary	1.77	0.65-4.80	0.26	-	-	-
Queer						
Yes	4.93	1.03-23.60	0.046	-	-	-
Race/ethnicity						
Person of color	0.61	0.22-1.70	0.344	-	-	-
Employed for wages						
Yes	0.61	0.21-1.73	0.349	-	-	-
Education						
Some college or less	0.78	0.32-1.87	0.573	-	-	-
Accessed any gender-affirming care						
Yes	2.40	0.77-7.41	0.13	-	-	-
Health insurance type						
Public insurance	0.66	0.27-1.59	0.35	-	-	-
Financially insecure						
Yes	0.46	0.15-1.41	0.174	-	-	-
Received routine check-up in past 3 years						
Yes	0.77	0.17-3.60	0.74	-	-	-
Accessed HIV prevention services in past 12 months						
No	13.13	4.94-34.85	<.0001	21.14	6.43-69.50	<.0001
Transgender-related discrimination						
Yes	0.36	0.05-2.82	0.327	-	-	-

Reference groups: Gender identity (trans masculine); Queer (no); Race/ethnicity (non-Hispanic White); Employed for wages (no); Education (college grad or more); Accessed any gender-affirming care (no); Health insurance type (private insurance); Financially insecure (no); Received routine check-up in past 3 years (no); Accessed HIV prevention services in past 12 months (yes); Transgender-related discrimination (no).

Table 2. (Continued)

Sexual contacts in past 6 months 6 or more people	0.92	0.29-2.94	0.884	-	-	-
Transactional sex in past 12 months Yes	0.48	0.16-1.48	0.202	-	-	-
Unstably housed Yes	1.20	0.26-5.66	0.815	-	-	-
Lifetime diagnosis of SUD Yes	0.57	0.22-1.51	0.259	-	-	-
Physical or sexual abuse in childhood Yes	0.45	0.14-1.41	0.172	-	-	-
Physical or sexual abuse in adulthood Yes	0.87	0.30-2.54	0.805	-	-	-
Condomless sex in past 6 months Yes	2.34	0.90-6.06	0.08	3.84	1.12-13.14	0.032
History of STI No	3.71	1.51-9.13	0.0043	3.10	1.02-9.39	0.046

Reference groups: Sexual contacts in past 6 months (5 or less); Transactional sex in past 12 months (no); Unstably housed (no); Lifetime diagnosis of SUD (no); Physical or sexual abuse in childhood (no); Physical or sexual abuse in adulthood (no); Condomless sex in past 6 months (no); History of STI (yes).

Note: Variables associated with outcome at $p < 0.10$ were initially included in the multivariable model. Manual backward selection was then used to select the final variables for inclusion.

aOR= adjusted odds ratio; CI= confidence interval.

Bolded text= significant at the $p < 0.05$ level