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Sociodemographic Characteristics of HIV Pre-Exposure Prophylaxis Use and Reasons for Nonuse Among Gay, Bisexual, and Other Men Who Have Sex with Men from Three US Cities

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Abstract

HIV pre-exposure prophylaxis (PrEP) is a preventive medication that could reduce new infections among men who have sex with men (MSM). There are limited data on differing reasons for PrEP nonuse by condomless anal sex (CAS). We examined demographic and behavioral variables associated with PrEP use and reasons for PrEP nonuse by CAS. Data are from the M-cubed Study, collected in a 2018 baseline assessment of MSM ($n = 798$) in Atlanta, Detroit, and New York City. Participants reported current PrEP use (31%), previous use (8%), and never use (61%). MSM reporting CAS [adjusted odds ratio (aOR) = 2.60, confidence interval (95% CI) = 1.73–3.91], age 18–29 (aOR = 2.11, 95% CI = 1.26–3.52), 30–39 (aOR = 2.12, 95% CI = 1.25–3.59), with a college degree (aOR = 1.96, 95% CI = 1.20–3.21), or postgraduate education (aOR = 2.58, 95% CI = 1.51–4.40) had greater odds of current (vs. never) use; uninsured (aOR = 0.30, 95% CI = 0.16–0.57) men had lower odds of current (vs. never) use. For never use, more MSM who reported CAS (vs. did not) endorsed the following reasons (p's < 0.05): *Insurance wouldn't cover PrEP (20% vs. 12%)*, *Didn't know where to get it (33% vs. 24%)* and fewer reported *Didn't need PrEP (23% vs. 39%)* and *Started a committed relationship (7% vs. 25%)*. For discontinuation, more MSM who reported CAS (vs. did not) endorsed *Worry about the safety of PrEP (19% vs. 3%)*. Efforts are needed to enhance PrEP as an option among older, less educated, and uninsured MSM. These findings may inform how providers can facilitate PrEP use by messaging on access and safety for MSM who reported CAS.

Keywords: MSM, PrEP nonuse, HIV, current PrEP users, previous PrEP users

Introduction

Four decades into the HIV epidemic, gay, bisexual, and other men who have sex with men (collectively referred to as MSM) continue to be affected by HIV in the United States, accounting for 69% of new HIV infections in 2018.[1] HIV incidence among MSM has remained stable in recent years, despite declines in other groups; MSM accounted for nearly 82% of new HIV infections among males in 2018.[2] HIV pre-exposure prophylaxis (PrEP), an effective biomedical intervention, can reduce risk of transmission by 90%; thus, it has a potential to reduce HIV infection rates among MSM.[3–5] Increasing PrEP use for individuals who have behavioral risk for HIV infection is a key strategy of Ending the HIV Epidemic.[6] Recent modeling work demonstrated that by expanding PrEP uptake to 40% among MSM at risk for HIV, with 62% of men adhering to daily PrEP, 33% of expected cases in the next decade could be averted with a 41% reduction in incidence.[7]

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Although PrEP use has increased to 19–35% among MSM,[8–10] challenges remain in reaching men at the highest risk.[11–13] PrEP use and persistence are lower for MSM who are younger (18–24 years), of racial/ethnic minorities, and living in the US South.[8,10,11,13–24] Prior research found that condomless anal sex (CAS), substance use, lack of insurance, and other sociodemographic factors were associated with current PrEP nonuse.[8,19,25–27] Research on PrEP discontinuation is increasing; associated factors are younger age, substance use, fewer sex partners, being single, and lack of insurance.[17,19,22] Examining sociodemographic and behavioral variables associated with PrEP use status (currently using, previously used, never used) could provide information to tailor interventions for specific subgroups of MSM.

Reasons for PrEP nonuse generally fall into two categories: barriers (at odds with clinical recommendations for use)[28] and appropriate reasons (consistent with recommendations). Past studies found cost and lack of insurance coverage,[16,26,29,30] concerns about safety and side effects,[26,29,30] and perceived lower risk[31,32] as barriers to starting PrEP. Somewhat similar barriers apply to PrEP persistence: lower perceived risk, cost/insurance issues, and side effects were reported as reasons for PrEP discontinuation.[21,26,33] Appropriately stopping PrEP for periods of decreased risk described as ''seasons of risk,''[34,35] entering monogamous relationships, and reducing sex partners were reported as reasons for discontinuing PrEP use.[21,22,34] CAS is important in determining the need of PrEP use. However, because CAS is dynamic, some MSM might consider PrEP use for preemptive protection from future CAS.[36] MSM who report CAS may have different reasons for PrEP nonuse than those who do not report CAS.[20,21,26] Identifying specific reasons could help inform strategies to improve PrEP use.

We used baseline data from an HIV prevention study of US MSM to examine the sociodemographic and behavioral characteristics associated with PrEP use. We also describe reasons for PrEP nonuse and examine the differences in reasons by self-reported CAS.

Methods

Data are from the baseline assessment of the 2018 M-cubed Study, a randomized controlled trial (RCT) testing the efficacy of a sexual health mobile app for MSM in Atlanta, Detroit, and New York City.[37] Eligible cisgender men were ≥18 years old, self-reported sex with a man (past year), and a resident in one of the three city metropolitan statistical areas (MSAs). Participants completed an online behavioral survey that included PrEP use behaviors, demographics, and other behavioral characteristics. Full recruitment and data collection methods are described in detail elsewhere.[37] The study was approved by Emory University's Institutional Review Board (Protocol No. 87684).

Measures

Demographic characteristics were categorized by age (18–29, 30–39, ≥40 years), race/ethnicity (White, Black/African American, Hispanic/Latino, Other/mixed), education (<4-year college degree, 4-year college degree, post-Bachelor's education), health insurance (private, public only, uninsured), sexual orientation (gay, bisexual/other), and city/MSA of residence (Atlanta, Detroit, New York City).

For CAS, participants were asked ''In the past 3 months, have you had any anal sex with casual male partner in which a condom was not used from start to finish?'' (Yes/No). Risky drinking was assessed by using the Alcohol Use Disorder Identification Test-Concise (AUDIT-C),[38] a three-item abbreviated form of the original AUDIT questionnaire.[39] As recommended in literature, scores ≥5 out of 12 were coded ''Yes'' for risky drinking.[39,40] Problematic drug use was assessed by using Drug Use Dependency Identification Test (DUDIT), an 11-item self-reported questionnaire.[41] Scores ≥6 out of 44 were categorized as ''Yes'' for problematic drug use as recommended in literature.[41–43]

Participants were asked several questions about their PrEP use and discontinuation. MSM who responded ''Yes'' to ''Are you currently taking PrEP to prevent HIV?'' were categorized as *currently* using PrEP. Men not currently using PrEP were asked; ''In the past 3 months, were you taking PrEP but stopped?'' and ''Have you ever used PrEP to prevent HIV?''; those who responded ''Yes'' to either question were categorized as *previously* used PrEP. Participants who responded ''No'' to ''Have you ever used PrEP to prevent HIV?'' were considered as *never* users of PrEP.

Reasons for never using PrEP and PrEP discontinuation were assessed by asking ''What are some of the reasons you've never used (stopped using) PrEP?'' (Select all that apply). Examples of response options (see full list in Table 3) include ''*I didn't know where to get it*,'' ''*I couldn't afford it*,'' and ''*I was worried about the safety of PrEP*.'' Additional reasons were presented to participants but were not reported in Table 3, due to low response frequency.

Statistical analysis

The full RCT study included HIV-positive and HIV-negative MSM ($N=1226$); however, current analyses were limited to HIV-negative MSM ($N=778$). Key characteristics were assessed for the sample and by PrEP use/nonuse. Bivariate analyses were conducted by using chi-square tests to examine differences among the three PrEP use/nonuse categories by age group, race/ethnicity, education level, insurance type, sexual orientation identification, city/MSA, CAS, risky drinking, and problematic drug use, selected based on prior literature.[8,19] We conducted multinomial logistic regression models for PrEP use [current vs. never (Model 1), previous vs. never (Model 2), and current vs. previous (Model 3)], with all variables in each model to determine their independent associations with PrEP use. Participants who never heard of PrEP ($n=26$) were excluded from the reasons for PrEP nonuse analysis, as these items were not asked. We calculated frequencies of reasons for not using and for discontinuing PrEP and conducted Chi-square/Fisher exact tests to examine differences based on CAS. Analyses were performed by using SAS® 9.4.

Results

In the analytic sample ($N=778$), 31.2% ($n=243$) reported current daily PrEP use, 7.6% ($n=59$) previous PrEP use, and 61.2% ($n=476$) never PrEP use (Table 1); 83.8% of current PrEP users reported 100% adherence over the past 7 days (not reported in Table 1). CAS was reported by 59.2% of the men,

Table 1. Characteristics of Pre-Exposure Prophylaxis (PrEP) Use Among HIV-Negative Men Who Have Sex With Men (MSM) in Three US Cities, 2018

Characteristic	*Total sample* n = *778* n *(%)*	*PrEP use*		
		Currently n = *243* n *(%)*	*Previously* n = *59* n *(%)*	*Never* n = *476* n *(%)*
Condomless anal sex*				
Yes	331 (59.2)	145 (69.7)	26 (68.4)	160 (51.1)
No	228 (40.7)	63 (30.3)	12 (31.6)	153 (48.8)
Risky drinking (AUDIT-C score ≥5 of 12)				
Yes	318 (40.9)	102 (42.0)	26 (44.1)	190 (39.9)
No	460 (59.1)	141 (58.0)	33 (55.9)	286 (60.1)
Problematic drug use (DUDIT score ≥6 of 44)*				
Yes	126 (16.2)	47 (19.3)	14 (23.7)	65 (13.7)
No	652 (83.8)	196 (80.7)	45 (76.3)	411 (86.3)
Age group (in years)*				
18–29	353 (45.4)	103 (42.4)	28 (47.5)	222 (46.6)
30–39	238 (30.6)	89 (36.6)	25 (42.3)	124 (26.1)
40+	187 (24.0)	51 (20.9)	6 (10.2)	130 (27.3)
Race/ethnicity*				
Non-Hispanic White	396 (50.9)	130 (53.5)	30 (50.9)	236 (49.6)
Black/African American	153 (19.7)	38 (15.6)	7 (11.9)	108 (22.7)
Hispanic/Latino	108 (13.9)	40 (16.5)	11 (18.6)	57 (11.9)
Other/mixed	121 (15.5)	35 (14.4)	11 (18.6)	75 (15.8)
Education*				
<4-year college degree	279 (35.9)	62 (25.5)	17 (28.8)	200 (42.2)
4-year college degree	280 (36.1)	96 (39.5)	22 (37.3)	162 (34.2)
Any postgraduate degree	217 (28.0)	85 (35.0)	85 (33.9)	112 (23.6)
Health insurance*				
Private insurance	525 (67.7)	189 (77.7)	38 (64.4)	299 (63.0)
Public insurance only	121 (15.6)	37 (15.3)	9 (15.3)	84 (17.7)
Uninsured	130 (16.8)	17 (7.0)	12 (20.3)	92 (19.4)
Sexual orientation*				
Gay	674 (86.7)	230 (94.7)	51 (86.4)	393 (82.7)
Bisexual/other	103 (13.3)	13 (5.3)	8 (13.6)	82 (17.3)
City/MSA*				
Atlanta	273 (35.1)	88 (36.2)	20 (33.9)	165 (34.7)
New York City	268 (34.4)	99 (40.7)	25 (42.3)	144 (30.3)
Detroit	237 (30.5)	56 (23.0)	14 (23.7)	167 (35.0)

*$p < 0.05$ for chi-square test of characteristic across PrEP use subgroup (Currently, Previously, Never).

AUDIT-C, Alcohol Use Disorders Identification Test-Concise; DUDIT, Drug Use Disorders Identification Test; MSA, metropolitan statistical areas; PrEP, pre-exposure prophylaxis.

40.9% reported risky drinking, and 16.2% reported problematic drug use. Half (50.9%) of the sample was non-Hispanic White, 19.7% Black, 13.9% Hispanic/Latino, and 15.5% were Other/mixed race or ethnicity.

CAS differed by PrEP use category (Table 1): 69.7% of current PrEP users, 68.4% of previous users, and 51.1% of never users reported CAS. Current and previous PrEP use was more commonly reported by MSM aged 18–29 years (42.4% and 47.5%, respectively) and 30–39 years (36.6% and 42.3%) versus ≥40 years (20.9% and 10.1%). Reporting lack of insurance was more common in previous (20.3%) and never PrEP users (19.4%) versus current PrEP users (7%).

In the Model 1 (current vs. never PrEP use, Table 2), MSM reporting CAS had greater adjusted odds of current PrEP use [vs. never use; adjusted odds ratio (aOR) = 2.60, confidence interval (95% CI) = 1.73–3.91]. Compared with MSM ≥40 years, men aged 18–29 years (aOR = 2.11, 95% CI = 1.26–3.52), and 30–39 years (aOR = 2.12, 95% CI = 1.25–3.59) had greater adjusted odds of current PrEP use (vs. never use). Compared with MSM reporting less education, participants with a 4-year college degree (aOR = 1.96, 95% CI = 1.20–3.21) or postgraduate education (aOR = 2.58, 95% CI = 1.51–4.40) reported higher adjusted odds of current PrEP use. MSM without insurance (vs. private insurance) had lower adjusted odds of current PrEP use (aOR = 0.30, 95% CI = 0.16–0.57). Gay (vs. bisexual/other-identified) men had greater adjusted odds (aOR = 3.14, 95% CI = 1.62–6.12) and men living in Detroit (vs. Atlanta) had lower adjusted odds (aOR = 0.48, 95% CI = 0.29–0.81) of current PrEP use. Risky drinking, problematic drug use, and race/ethnicity were not associated with current PrEP use.

Table 2. Demographic, Behavioral, and Psychosocial Correlates of Pre-Exposure Prophylaxis (PrEP) Use Among HIV-Negative Men Who Have Sex With Men (MSM), 2018

	PrEP use		
Characteristic	*Model 1 Currently (vs. Never) aOR (95% CI)*	*Model 2 Previously[a] (vs Never) aOR (95% CI)*	*Model 3 Currently (vs Previously[a]) aOR (95% CI)*
Condomless anal sex			
Yes	2.60 (1.73–3.91)*	2.32 (1.07–5.0)*	1.12 (0.51–2.46)
No	Ref.	Ref.	Ref.
Risky drinking (AUDIT-C ≥5 of 12)			
Yes	0.87 (0.57–1.30)	0.62 (0.28–1.35)	1.41 (0.64–3.09)
No	Ref.	Ref.	Ref.
Problematic drug use (DUDIT ≥6 of 44)			
Yes	1.17 (0.68–2.00)	1.35 (0.54–3.35)	0.87 (0.35–2.15)
No	Ref.	Ref.	Ref.
Age group (in years)			
18–29	2.11 (1.26–3.52)*	8.88 (1.88–41.84)*	0.24 (0.05–1.13)
30–39	2.12 (1.25–3.59)*	13.45 (2.94–61.61)*	0.16 (0.03–0.73)*
40+	Ref.	Ref.	Ref.
Race/ethnicity			
Non-Hispanic White	Ref.	Ref.	Ref.
Black/African American	0.85 (0.50–1.46)	0.82 (0.28–2.37)	1.04 (0.35–3.09)
Hispanic/Latino	1.48 (0.80–2.75)	2.06 (0.75–5.68)	0.72 (0.26–1.96)
Other/mixed	0.83 (0.47–1.47)	1.18 (0.45–3.12)	0.70 (0.26–1.89)
Education			
<4-year college degree	Ref.	Ref.	Ref.
4-year college degree	1.96 (1.20–3.21)*	1.63 (0.61–4.41)	1.20 (0.44–3.30)
>Any postgraduate degree	2.58 (1.51–4.40)*	4.29 (1.58–11.68)*	0.60 (0.22–1.65)
Health insurance			
Private insurance	Ref.	Ref.	Ref.
Public insurance only	0.85 (0.49–1.50)	1.02 (0.34–3.04)	0.83 (0.28–2.49)
Uninsured	0.30 (0.16–0.57)*	1.20 (0.46–3.10)	0.25 (0.09–0.70)*
Sexual orientation			
Gay	3.14 (1.62–6.12)*	1.25 (0.44–3.55)	2.52 (0.81–7.90)
Bisexual/other	Ref.	Ref.	Ref.
City/MSA			
Atlanta	Ref.	Ref.	Ref.
New York City	0.97 (0.59–1.58)	1.28 (0.52–3.14)	0.76 (0.31–1.87)
Detroit	0.48 (0.29–0.81)*	0.46 (0.17–1.27)	1.05 (0.38–2.92)

Multivariable regression models include all variables listed within the column.
[a]Results are based on a small sample for a previously used group ($n = 59$) and may be unstable.
*$p < 0.05$.
aOR, adjusted odds ratio; AUDIT-C, Alcohol Use Disorders Identification Test-Concise; CI, confidence interval; DUDIT, Drug Use Disorders Identification Test; MSA, metropolitan statistical area; PrEP, pre-exposure prophylaxis.

In Model 2 (previous vs. never PrEP use), CAS was associated with greater adjusted odds of previous PrEP use (aOR = 2.32, 95% CI = 1.07–5.0). Younger MSM aged 18–29 years (aOR = 8.88, 95% CI = 1.88–41.84) and 30–39 years (aOR = 13.45, 95% CI = 2.94–61.61) old had greater adjusted odds of previous PrEP use compared with MSM aged ≥40 years. Compared with men with <4-year college degree, men with postgraduate education had higher adjusted odds of previously using PrEP (aOR = 4.29, 95% CI = 1.58–11.68). No other characteristics were associated with previous (vs. never) PrEP use.

In Model 3, (current vs. previous PrEP use), MSM aged 30–39 (vs. ≥40) years had lower adjusted odds (aOR = 0.16, 95% CI = 0.03–0.73) of current PrEP use. MSM without insurance (vs. private insurance) had lower adjusted odds of currently using PrEP (aOR = 0.25, 95% CI = 0.09–70).

Reasons for PrEP nonuse

Reasons for PrEP nonuse (never and discontinued use) were categorized as: cost and availability; health and safety; lower perceived need and committed relationship; and other. Among the MSM who never used PrEP ($n = 450$), commonly reported reasons were related to cost and availability (Table 3): *Not knowing where to get PrEP (27%)*; *Not able to afford PrEP (25%)*; and *Having insurance that wouldn't cover PrEP (15%).* Lower perceived need and committed relationship reasons were *Decided didn't need PrEP (34%)* and *Starting a committed relationship (19%).* Health and safety reasons were *Worrying about side effects of PrEP (38%)* and *Doctor did not recommend PrEP (20%).* In bivariate analysis ($p < 0.05$), more men who reported CAS

Table 3. Reasons for Pre-Exposure Prophylaxis (PrEP) Nonuse Among Men Who Have Sex With Men (MSM) Who Never or Previously Used PrEP, 2018

	Never used PrEP			*Previously used PrEP*		
Reasons	*Total* n = *450* n *(%)*	*Reported CAS* n = *151* n *(%)*	*Not reported CAS* n = *299* n *(%)*	*Total* n = *59* n *(%)*	*Reported CAS* n = *26* n *(%)*	*Not reported CAS* n = *33* n *(%)*
Cost and availability						
I couldn't afford it	113 (25)	45 (30)	68 (23)	11 (19)	6 (23)	5 (15)
My insurance wouldn't cover it	67 (15)	30 (20)	37 (12)*	7 (12)	5 (19)	2 (6)
I didn't know where to get it	122 (27)	50 (33)	72 (24)*	N/A		
Health and safety						
I was worried about the side effects	171 (38)	66 (44)	105 (35)	N/A		
My doctor did not recommend PrEP for me	92 (20)	35 (23)	57 (19)	N/A		
I didn't like the side effects	N/A			10 (17)	5 (19)	5 (15)
I was worried about the safety of PrEP	N/A			6 (10)	5 (19)	1 (3)*
My kidney and liver function began to suffer	N/A			2 (3)	1 (4)	1 (3)
Lower perceived need and committed relationship						
I decided I didn't need it	151 (34)	35 (23)	116 (39)*	N/A		
I decided I didn't need it anymore	N/A			17 (29)	8 (31)	9 (27)
I started a committed relationship	86 (19)	10 (7)	76 (25)*	19 (32)	5 (19)	14 (42)
Other reasons						
I didn't think it was worth it	62 (14)	18 (12)	44 (15)	6 (10)	1 (4)	5 (15)
It was too inconvenient/didn't fit my life	35 (8)	10 (6)	25 (8)	6 (10)	3 (12)	3 (9)
I was worried someone would think I had HIV if they saw me take it	33 (7)	11 (7)	22 (7)	N/A		
I have never heard of it	9 (2)	2 (1)	7 (2)	N/A		

*$p < 0.05$ for chi-square test of reason for never using/discontinuing PrEP across men who have sex with men who reported CAS and not reported CAS.

CAS, condomless anal sex; N/A, not applicable; PrEP, pre-exposure prophylaxis.

($n = 151$) [vs. did not ($n = 299$)] reported that *Insurance wouldn't cover PrEP (20% vs. 12%, respectively)*, and *Didn't know where to get it (33% vs. 24%)*. Fewer men who reported CAS (vs. did not) said they *Didn't need PrEP (23% vs. 39%)* or *Started a committed relationship (7% vs. 25%)* as reasons for never use.

Reasons for PrEP discontinuation

MSM who previously used PrEP ($n = 59$), *Starting a committed relationship (32%)* and *Deciding they didn't need PrEP anymore (29%)* were most reported reasons for discontinuation (Table 3). Cost and availability reasons were: *Not being able to afford PrEP (19%)* and *Lack of insurance covering PrEP (12%)*. Health and safety related reasons were: *Didn't like side effects (17%)* and *Worry about safety of PrEP (10%)*. More men who reported CAS ($n = 26$) [vs. did not ($n = 33$)] said *Worry about safety of PrEP (19% vs. 3%,* respectively*)* was a reason for discontinuing PrEP.

Discussion

Use of PrEP currently, previously, and never

This study examined correlates of current, previous, and never use of PrEP in a sample of HIV-negative MSM from three cities. We assessed reasons for PrEP nonuse by CAS,[28] in a sample with more current PrEP users (31%) compared with prior research;[8,9,19,44] another 8% were previous PrEP users, similar to past studies.[19,21,44] Having representation of current, previous, and never users in our sample allowed us to examine sociodemographic and behavioral associations with PrEP use status, and reasons for nonuse, in an era of increasingly common PrEP use where gaps persist in access, uptake, and persistence of use for MSM.[11,12,16,20]

Compared with never users, current and previous PrEP users were similar in reporting CAS, younger age, and higher education. The association between CAS and PrEP use is not surprising, because CAS is an indication for PrEP use.[19,28,44] In addition, participants reported high adherence to PrEP (84% reported 100% adherence for past 7-day), which could offer protection against HIV and may explain the association of current PrEP use and CAS. However, among MSM previously used PrEP, higher CAS indicates heightened risk for HIV infection for those who discontinued PrEP use. These findings are telling in the context of expanding community PrEP use, where measurement and understanding of unprotected sex (condomless and PrEP less sex as ''unprotective'' and condom or PrEP use as ''protective'') are changing.[45] Thus, our finding of previous PrEP users reporting CAS underscores the need for new interventions in this era to reinitiate condom use among MSM who discontinue PrEP.[20,35,44] Messaging is also needed to enhance PrEP use among less educated MSM, if they are PrEP eligible, given their associations with lower likelihood of PrEP use found here; for example, messaging about PrEP through community outreach ads and other social marketing efforts.[46,47]

Contrary to earlier studies on substance use and current PrEP use and adherence,[19,48] we found that risky drinking and problematic drug use were not associated with current and previous PrEP use, as have others recently.[26,49] This may suggest that risky drinking and problematic drug use may not necessarily interfere with PrEP use for some men.[49,50] However, considering the evidence on the association of alcohol use and substance use with sub-optimal ART adherence,[51–53] future studies might examine PrEP use among MSM who report drug and alcohol use. We found no differences in PrEP use for Black and Hispanic/Latino MSM compared with White MSM, similar to other recent studies[8,44,54,55] but in contrast with earlier research.[10,16–18] This could be due to biases in our sample, which was recruited from urban areas and highly educated, similar to studies that found no significant racial/ethnic differences in PrEP use when controlled for urbanicity and education levels.[8,44] However, given that MSM of color have higher HIV incidence than White MSM, equivalent levels of PrEP use might still not translate to equitable prevention and widen disparities in HIV incidence.[56] It is important to continue addressing PrEP access and uptake issues for MSM of color.

Not having health insurance was associated with lower likelihood of current PrEP use. Although improving in some parts of the United States,[57–59] lack of insurance is still a barrier to PrEP access,[8,10,19] despite current implementation of financial assistance programs for covering PrEP costs.[10,33,44,60–62] Further efforts are needed in this area, including implementation of PrEP-Drug Assistance Programs and consideration for expansion of Medicaid,[13] and other mechanisms to reduce in PrEP costs for the uninsured.[63]

Reasons for PrEP nonuse

Primary reasons for not using PrEP (both never and discontinuation) were health and safety concerns, cost and availability, and lower perceived need. These findings highlight the need for messaging about: relatively low side effects to ease concerns about PrEP, personal risk assessment and indications for PrEP, and PrEP clinics and assistance programs to help cover PrEP costs.[12,16,20,21,64–68] Evidence of effective messaging through advertisement campaigns and social networks to enhance PrEP uptake has been encouraging and might be expanded to reach more MSM who need PrEP.[46,47]

We found that insurance coverage and access were prominent reasons for never using PrEP among MSM who reported CAS. More MSM who did not report CAS indicated lower perceived need and starting a committed relationship as appropriate reasons for never use. For discontinuation, more MSM who reported CAS noted concerns about safety of PrEP as a reason. Although marginally significant, more MSM who did not report CAS said starting a committed relationship was an appropriate reason for PrEP discontinuation. A considerable proportion (23% of never and 31% of previous users) of MSM who reported CAS indicated lower perceived need (*Decided I didn't need it/anymore)* as a reason. This finding underscores the discrepancy between perceived need and PrEP eligibility.[21,32,68–70] Efforts are needed to educate MSM about personal risk assessment and further discussion between MSM and their provider on PrEP eligibility.

Many reasons noted by MSM who reported CAS may be considered barriers (e.g., lack of access, insurance coverage, affordability, concern for side effects), although some reasons for not using PrEP are appropriately determined by an individual and their provider (e.g., provider not recommending, actual side effects). Reasons for PrEP nonuse noted by MSM who did not report CAS could be appropriate (e.g., starting committed relationship), until their risk status and PrEP eligibility changes. This distinction may help in designing tailored prevention messaging to increase PrEP uptake. For example, messaging about safety and side effects could help alleviate some concerns of MSM who reported CAS. Providers should discuss with MSM about perceived vs experienced side effects of PrEP. Messaging all men on availability of PrEP could improve PrEP use if and when it is needed.[21]

Our study has limitations, including behavioral assessment recall and reporting and a nonexhaustive list of reasons provided for PrEP nonuse, although they are consistent with previous research.[19,20,26,44] The study sample had high education levels and was recruited only from three cities (i.e., nonrural),[8,71] with accordingly limited generalizability. However, the sample was relatively large and diverse with sizeable representation of current, previous, and never PrEP users, which provides timely results in a transitional era of increasing PrEP use. Future research might continue to focus on current and previous PrEP users to better understand PrEP use over time in the context of long-acting injectable PrEP medications and other future products.[8,19,31,45,72]

Differing reasons for PrEP nonuse by CAS among MSM has important implications for public health and clinical decision making. Among MSM who reported CAS, access, and lack of insurance coverage, and worry about safety of PrEP were major barriers for never use and discontinuation, respectively. Lower perceived need was understandably a major reason for nonuse among MSM who did not report CAS. Future research might focus on better understanding barriers specific to MSM based on individual HIV risk level. The association of CAS with previous use could indicate increased HIV risk, providing messaging about re-initiating condom use for men who discontinue PrEP.

Authors' Contributions

K.K. contributed to the conception, data analysis, interpretation of the data, drafting, and critically revising the article. G.M. was involved in study conception, data analysis, interpretation of the data, drafting, and critically revising the article. R.S. was involved in critically revising the article. S.H. was involved in critically revising the article P.S. was involved in the conception and critically revising the article.

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