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# Perceptions of and intentions to adopt HIV pre-exposure prophylaxis among black men who have sex with men in Los Angeles

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## Summary

This study assessed perceptions of pre-exposure prophylaxis (PrEP) and their association with PrEP adoption intention among a convenience sample of 224 low socioeconomic status black men who have sex with men (BMSM) residing in Los Angeles. Participants received educational information about PrEP and completed an in-person interview. More than half (60%) of the participants indicated a high intention to adopt PrEP. Younger BMSM (18–29 years) were twice as likely to report a high intention to adopt PrEP compared to older BMSM (30+ years). Only 33% of participants were aware of PrEP and no participant had ever used PrEP. Negative perceptions were associated with a lower PrEP adoption intention and included being uncomfortable taking an HIV medicine when HIV-negative and not knowing if there are long-term side effects of taking an HIV medication. These findings suggest that BMSM may adopt PrEP but that negative perceptions may limit its uptake among this population. In order to facilitate PrEP adoption among BMSM targeted educational and community awareness programmes are needed to provide accurate information on the benefits of PrEP and to address the negative perceptions of PrEP held by local BMSM populations.

## Keywords

African-American, men who have sex with men, gay, bisexual, pre-exposure prophylaxis, biomedical, HIV prevention

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## Introduction

In the United States, black men who have sex with men (BMSM) have been disproportionately impacted by the HIV/AIDS epidemic. In 2011, BMSM had an estimated 11,805 incident HIV infections, which represented the largest percentage (39%) of new infections among MSM of all races and ethnicities.<sup>1</sup> Young BMSM ages 13 to 24 are especially burdened by HIV. In 2010, young BMSM had an estimated 4800 incident HIV infections, more than twice as many as young white or Latino/Hispanic MSM.<sup>2</sup> In addition, young BMSM comprised the largest percentage (45%) of new HIV diagnoses among BMSM, placing them at greater risk of HIV infection relative to older BMSM

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( $\geq 35$  years).<sup>2</sup> Additional prevention strategies are urgently needed to help curb the spread of HIV in this heavily impacted population.

For most of the HIV/AIDS epidemic, manualised evidence-based behavioural interventions have been utilised with high-risk groups for HIV prevention.<sup>3</sup> Most of these interventions focus on some form of behavioural risk reduction (e.g. increasing condom use, reducing number of sex partners, decreasing substance use in the context of sexual behaviours). Unfortunately, only a very limited number of these interventions were developed or adapted specifically for BMSM.<sup>4</sup> While behavioural interventions remain an important part of our HIV prevention efforts, in recent years, biomedical strategies have moved to the forefront of HIV prevention activities, providing innovative technologies to help curb the spread of HIV infection. Multiple biomedical strategies such as pre-exposure prophylaxis (PrEP), treatment as prevention and medical male circumcision have all shown efficacy in reducing HIV acquisition.<sup>5–10</sup> Other strategies such as intermittent PrEP, microbicides and HIV vaccines have shown promise or are currently being tested.<sup>11–15</sup> Overall, biomedical strategies have raised hopes for much more effective HIV prevention efforts.

PrEP is a biomedical intervention that can help reduce new HIV infections. PrEP has been proven efficacious in preventing HIV infection in multiple high-risk populations with daily use of the HIV antiretroviral medication Truvada<sup>®</sup>.<sup>5–7</sup> The U.S. Food and Drug Administration<sup>16</sup> has approved Truvada (a combination of 300 mg of tenofovir and 200 mg of emtricitabine) for use as PrEP, and the U.S. Centers for Disease Control and Prevention (CDC) has released clinical guidelines for administering PrEP to high-risk populations.<sup>17</sup> At present, demonstration projects are underway to assess the safety, acceptability and feasibility of implementing PrEP with high-risk populations in 'real-world' settings.<sup>18</sup> Despite these advances, important challenges remain in fully implementing PrEP, especially among high-risk BMSM.

A host of social issues may influence PrEP adoption among BMSM. For example, the stigma attached to HIV and homosexuality in the black community<sup>19,20</sup> may lead to greater trepidation about PrEP adoption for fear of mistakenly being identified as someone who is HIV-positive due to the use of an HIV medication or being identified as someone engaging in stigmatised behaviours (i.e. male-to-male sex). In addition, mistrust of the research community among blacks founded in part on the history of discrimination in the Tuskegee syphilis study<sup>21,22</sup> and beliefs in conspiracy theories surrounding the origin of HIV and the role of government in the AIDS epidemic may present significant challenges to adoption of any type of biomedical prevention

strategy by BMSM.<sup>23,24</sup> In addition, limited access to health care services, which is the source for delivery of PrEP, may also reduce the ability of BMSM to use PrEP.

While prior research suggests that, in general, MSM will use PrEP,<sup>25–28</sup> limited information exists on the attitudes and beliefs about PrEP and intentions to adopt PrEP among BMSM, which may impact its scalability and effectiveness in reducing HIV infections in this population.<sup>29</sup> In order to achieve a significant reduction in HIV infections, modelling studies indicate that wide coverage of PrEP is necessary among high-risk populations.<sup>30,31</sup> The present study examined perceptions of PrEP (i.e. PrEP-related attitudes and beliefs) and their association with PrEP adoption intentions among BMSM. These data provide an understanding of the perceptions of and intentions to adopt PrEP among BMSM, which may help inform PrEP implementation programmes targeted to this population.

## Methods

Between March 2012 and February 2013, 428 individuals were screened for the study. They had learned about the study from a variety of referral sources: friends ( $n=133$ ); weekly internet postings on Craigslist.org ( $n=100$ ); study flyer ( $n=92$ ); text messages from a community-based organisation serving BMSM ( $n=46$ ); referred by a house father from the house and ball community ( $n=27$ ); community presentations ( $n=16$ ) and other sources ( $n=14$ ). From those persons screened, 289 individuals were eligible and 224 completed the in-person study interview. Among those eligible, the lack of completion was primarily due to scheduling conflicts.

Participants were eligible to participate in the study if they were 18 years of age or older, identified as African-American/Black, HIV-negative by self-report, have had sex with a male partner in the previous six months and resided in Los Angeles County. Equal numbers of younger (18–29 years of age) and older (30+ years of age) BMSM were recruited in order to ensure representation of younger BMSM in the study. All study materials were approved by the Institutional Review Board of the University of California, Los Angeles. Participants provided informed consent and received \$35 compensation for their participation.

Prior to the start of the interview, each participant was given a one-page information sheet about PrEP that included dosing instructions (i.e. taken once daily), level of effectiveness (i.e. 90% effective in preventing HIV infection if taken every day) and possible side effects (i.e. nausea, headache and unintentional weight loss) based on the iPrEx study results.<sup>6</sup>

The interviewer then read the information sheet to the participant. Participants were also informed about the completion of the iPrEx study to establish for them that PrEP had been proven efficacious in a large clinical trial done with MSM. In addition, participants were told that PrEP does not protect against other sexually transmitted infections. At the end of the information session, participants were asked if they understood the information provided, and any questions were answered before the start of the interview.

### Measures

The outcome of interest was PrEP adoption intention. Participants rated the likelihood of using a PrEP medication that was 90% effective in preventing HIV infection using a 7-Point Likert-type scale: 1 (extremely unlikely) to 7 (extremely likely). The iPrEx study demonstrated that 90% efficacy can be achieved with high levels of adherence.<sup>32</sup> Prior to analyses, the adoption intention data were recoded into a dichotomous variable: (1) 'high adoption intention' if a participant reported being 'very likely' or 'extremely likely' to use PrEP; and (2) 'low adoption intention' if a participant reported being 'somewhat likely', 'not sure', 'somewhat unlikely', 'very unlikely', or 'extremely unlikely' to use PrEP. This conversion provided a more conservative estimate of PrEP adoption intention given that the study was measuring behavioural intention which is not a perfect predictor of actual future behaviour.<sup>33</sup>

Information was collected on participants' demographic characteristics, sexual behaviours in the previous six months, most recent sexual encounter, and perceptions of PrEP. Sexual behaviour items were adapted from the CDC's National Behavioural Surveillance Survey for MSM.<sup>34</sup> Condom use was measured as 'all of the time', 'most of the time', 'occasionally', 'rarely' or 'never' and then dichotomised with 'all of the time' signifying consistent condom use and the remaining responses indicating inconsistent condom use. Participants were asked about their agreement with 24 PrEP-related attitude and belief items (perceptions of PrEP) that were derived from earlier formative work.<sup>25,35</sup> Refer to Appendix 1 for a complete list of these items. At the end of the interview, participants were asked about their awareness of and use of PrEP and non-occupational post-exposure prophylaxis (PEP) prior to completing the study interview.

### Statistical analyses

Statistical analyses were conducted using IBM SPSS Statistics version 21. Chi-square tests were used to assess bivariate associations between PrEP adoption intention and demographic characteristics, sexual risk

behaviours, PrEP-related attitude and belief items, and PrEP and PEP knowledge and use. Multivariate logistic regression was used to identify correlates of PrEP adoption intention using variables significant in the bivariate analyses or theoretically considered important in predicting PrEP adoption intention among BMSM. For all analyses, the standard alpha level of 0.05 was considered to be statistically significant.

## Results

### Demographic characteristics by PrEP adoption intention

Demographic characteristics, distributed by PrEP adoption intention, are presented in Table 1. Participants ranged in ages from 18 to 65 years ( $M = 33.5$ ,  $SD = 11.8$ ) and were equally divided between younger (18–29 years) and older (30+ years) participants. The overwhelming majority (96%) of men identified as gay or bisexual. Participants were primarily lower socioeconomic status (SES), with 67% having very low incomes, 51% not working and 46% with only a high school education or less. In total, 93% of participants reported two or more low SES factors. In the bivariate analysis, demographic characteristics were not statistically associated with PrEP adoption intention.

### Sexual risk behaviour by PrEP adoption intention

A significant proportion of participants reported high-risk sexual behaviours in the previous six months (see Table 1). About half (49%) reported having had three or more male sex partners. Over half (53%) reported engaging in receptive anal intercourse (RAI), with almost half (48%) of these participants reporting inconsistent condom use and approximately one-third (37%) reporting no condom use during their most recent RAI encounter. In addition, an overwhelming majority (84%) reported engaging in insertive anal intercourse (IAI), with more than half (53%) of these participants reporting inconsistent condom use and over one-third (38%) reporting no condom use during their most recent IAI event. In the bivariate analysis, there was no relationship between sexual risk behaviour and PrEP adoption intention.

### PrEP-related attitudes and beliefs by PrEP adoption intention

Nine of the original 24 PrEP-related attitude and belief items were significantly associated with PrEP adoption intention in the bivariate analysis (see Table 2). These items reflected both negative and positive perceptions of PrEP. Four statements were associated with a high

**Table 1.** Demographics and sexual risk behaviours by PrEP adoption intention ( $n = 224$ ).

Characteristics/sexual behaviours	Total population $n$ (%)	PrEP adoption intention	
		High $n$ (%)	Low $n$ (%)
Age ( $M = 33.5$ , $SD = 11.8$ )			
18–29	114 (50.9)	71 (53.0)	43 (47.8)
30+	110 (49.1)	63 (47.0)	47 (52.2)
Sexual identity			
Gay	125 (55.8)	81 (60.4)	44 (48.9)
Bisexual	90 (40.2)	49 (36.6)	41 (45.6)
Other	9 (4.0)	4 (3.0)	5 (5.6)
Education completed			
$\leq 11$ th grade	31 (13.8)	20 (14.9)	11 (12.2)
High school	73 (32.6)	46 (34.3)	27 (30.0)
Some college	95 (42.4)	55 (41.0)	40 (44.4)
$\geq$ College degree	8 (11.1)	13 (9.7)	12 (13.3)
Employment status			
Employed FT/PT	99 (44.2)	56 (41.8)	43 (47.8)
Unemployed/disabled	125 (55.8)	78 (58.2)	47 (52.2)
Annual income			
$\leq \$19,999$	149 (66.5)	94 (70.1)	55 (61.1)
$\geq \$20,000$	75 (33.5)	40 (29.9)	35 (38.9)
Number of male sex partners past six months			
$\leq 2$ male partners	107 (50.7)	68 (52.3)	39 (48.1)
$\geq 3$ male partners	104 (49.3)	62 (47.7)	42 (51.9)
Receptive anal (RA) sex past six months			
Yes	118 (52.9)	73 (54.5)	45 (50.6)
No	105 (47.1)	61 (45.5)	44 (49.4)
Condoms used for RA sex past six months			
Consistent condom use	63 (51.6)	39 (51.3)	24 (52.2)
Inconsistent condom use	59 (48.4)	37 (48.7)	22 (47.8)
Last RA sex encounter condoms used			
Yes	76 (62.8)	51 (68.0)	25 (54.3)
No	45 (37.2)	24 (32.0)	21 (45.7)
Insertive anal (IA) sex past six months			
Yes	188 (84.3)	114 (85.1)	74 (83.1)
No	35 (15.7)	20 (14.9)	15 (16.9)
Condoms used for IA sex past six months			
Consistent condom use	89 (47.3)	58 (50.9)	31 (41.9)
Inconsistent condom use	99 (52.7)	56 (49.1)	43 (58.1)
Last IA sex encounter condoms used			
Yes	116 (61.7)	76 (66.7)	40 (54.1)
No	72 (38.3)	38 (33.3)	34 (45.9)

FT: full time; PT: part time; SD: standard deviation.

intention to adopt PrEP: ‘I would be one of the first people to use PrEP if it were available’ ( $p < .001$ ); ‘If I was taking PrEP, I would feel more comfortable about having sex with someone who is HIV-positive’ ( $p = .04$ ); ‘If I was taking PrEP, I wouldn’t worry about becoming infected with HIV when having sex with someone who is HIV-positive’ ( $p = .003$ ); and ‘Taking a daily

HIV medicine would be a good way to protect myself from getting HIV’ ( $p < .001$ ). Five statements were associated with a low intention to adopt PrEP: ‘I would be very uncomfortable taking HIV medicines when I don’t have HIV’ ( $p < .001$ ); ‘Not knowing if there are long-term side effects of taking a daily HIV medicine makes me very uncomfortable’ ( $p = .002$ );

**Table 2.** Prep-related attitudes and beliefs by PrEP adoption intention ( $n = 224$ ).

Statements	Total population $n$ (%)	PrEP adoption intention	
		High $n$ (%)	Low $n$ (%)
I would be very uncomfortable taking HIV medicines when I don't have HIV			
Disagree/strongly disagree	145 (66.8)	104 (80.0)	41 (47.1)*
Agree/strongly agree	72 (33.2)	26 (20.0)	46 (52.9)
Not knowing if there are long-term side effects of taking a daily HIV medicine makes me very uncomfortable			
Disagree/strongly disagree	80 (36.0)	59 (44.4)	21 (23.6)**
Agree/strongly agree	142 (64.0)	74 (55.6)	68 (76.4)
I would wait until other people were taking PrEP before I use it myself			
Disagree/strongly disagree	137 (61.7)	95 (72.0)	42 (46.7)***
Agree/strongly agree	85 (38.3)	37 (28.0)	48 (53.3)
I would be one of the first people to use PrEP if it were available			
Disagree/strongly disagree	95 (43.3)	34 (25.8)	61 (69.3)***
Agree/strongly agree	125 (56.8)	98 (74.2)	27 (30.7)
I would be very uncomfortable asking my doctor for PrEP pills to protect myself from getting HIV			
Disagree/strongly disagree	197 (87.9)	124 (92.5)	73 (81.1)**
Agree/strongly agree	27 (12.1)	10 (7.5)	17 (18.9)
If I was taking PrEP, I would feel more comfortable about having sex with someone who is HIV-positive			
Disagree/strongly disagree	146 (66.7)	81 (61.4)	65 (74.7)*
Agree/strongly agree	73 (33.3)	51 (38.6)	22 (25.3)
I would be concerned that people will think I have HIV if I am taking an HIV medicine			
Disagree/strongly disagree	143 (64.4)	93 (70.5)	50 (55.6)*
Agree/strongly agree	79 (35.6)	39 (29.5)	40 (44.4)
If I was taking PrEP, I wouldn't worry about becoming infected with HIV when having sex with someone who is HIV-positive			
Disagree/strongly disagree	174 (78.7)	96 (72.2)	78 (88.6)**
Agree/strongly agree	47 (21.3)	37 (27.8)	10 (11.4)
Taking a daily HIV medicine would be a good way to protect myself from getting HIV			
Disagree/strongly disagree	20 (9.2)	1 (0.8)	19 (22.4)***
Agree/strongly agree	197 (90.8)	131 (99.2)	66 (77.6)

PrEP: pre-exposure prophylaxis.

\* $p < .05$ .\*\* $p \leq .01$ .\*\*\* $p \leq .001$ .

'I would wait until other people were taking PrEP before I use it myself' ( $p < .001$ ); 'I would be very uncomfortable asking my doctor for PrEP pills to protect myself from getting HIV' ( $p = .01$ ); and 'I would be concerned that people will think I have HIV if I am taking an HIV medicine' ( $p = .023$ ).

### PrEP and PEP awareness and prior use by PrEP adoption intention

Participants had limited awareness of or prior use of both PrEP and PEP (see Table 3). About one-third (33.0% and 36.2%, respectively) had heard of PrEP and PEP. None of the participants had ever used PrEP but seven reported prior use of PEP. In the bivariate analysis, PrEP and PEP awareness and prior use

were not statistically associated with PrEP adoption intention.

### Multivariate logistic regression analysis

Included in the multivariate logistic regression model were PrEP-related attitude and belief variables significant in the bivariate analysis and demographic variables theoretically thought to contribute to PrEP adoption intention among BMSM (age, sexual identity, education). The model was developed to identify variables independently associated with PrEP adoption intention, while controlling for all other variables. In the final model, negative perceptions were independent predictors of a low PrEP adoption intention. Participants agreeing with the statements: 'I would be

**Table 3.** PrEP and PEP awareness and prior use by PrEP adoption intention ( $n = 224$ ).

Awareness and prior use	Total population $n$ (%)	PrEP adoption intention	
		High $n$ (%)	Low $n$ (%)
<b>PrEP awareness</b>			
Yes	74 (33.0)	44 (32.8)	30 (33.3)
No	150 (67.0)	90 (67.2)	60 (66.7)
<b>Prior PrEP use</b>			
Yes	0 (0.0)	–	–
No	224 (100.0)	134 (59.8)	90 (40.2)
<b>PEP awareness</b>			
Yes	81 (36.2)	48 (35.8)	33 (36.7)
No	143 (63.8)	86 (64.2)	57 (63.3)
<b>Prior PEP use</b>			
Yes	7 (3.1)	5 (3.8)	2 (2.2)
No	216 (96.4)	128 (96.2)	88 (97.8)

PrEP: pre-exposure prophylaxis; PEP: post-exposure prophylaxis.

very uncomfortable taking HIV medicine when I don't have HIV' (AOR = 0.39, 95% CI = 0.16–0.91) and 'Not knowing if there are long-term side effects of taking a daily HIV medicine makes me very uncomfortable' (AOR = 0.36, 95% CI = 0.14–0.88) were less likely to indicate a high-PrEP adoption intention compared with participants who disagreed with these statements (see Table 4). In contrast, positive views were independent predictors of a high-PrEP adoption intention. Participants agreeing with the statements: 'I would be one of the first people to use PrEP if it were available' (AOR = 4.13, 95% CI = 1.74–9.81) and 'Taking a daily HIV medicine would be a good way to protect myself from getting HIV' (AOR = 2.26, 95% CI = 1.6–3.17) were more likely to indicate a high PrEP adoption intention compared with participants who disagreed with these statements. Age was the only demographic predictor of future PrEP use. Younger participants (18–29) were two times more likely than older participants (30+) to indicate a high intention to adopt PrEP (AOR = 2.29, 95% CI = 1.06–4.93).

## Discussion

These findings suggest that BMSM are likely to adopt a highly effective ( $\geq 90\%$ ) PrEP medication and that younger BMSM (18–29 years) are more likely to adopt PrEP compared to older BMSM (30+ years). Because young BMSM are disproportionately impacted by HIV infection it was encouraging to find that young BMSM will consider using PrEP. The uptake of PrEP among young BMSM has the potential to have a significant impact in reducing new HIV infections among BMSM. A feature that may also impact PrEP adoption

among BMSM is their understanding of its level of effectiveness. The iPrEx study demonstrated that higher efficacy ( $\geq 90\%$ ) is attainable with high levels of adherence.<sup>32</sup> As PrEP continues to roll out, a challenge remains for community groups, public health departments and medical providers to accurately present and interpret PrEP efficacy data from clinical trials to BMSM and to emphasise that the efficacy of PrEP is dependent on adherence.<sup>36</sup>

In the present study, we found that BMSM had limited knowledge and use of PrEP and PEP. Only one-third of participants had any prior knowledge of PrEP. This finding is consistent with what has been observed in multiple studies of multi-racial/ethnic MSM populations.<sup>27,37–39</sup> Similarly, only about one-third of participants had any prior knowledge of PEP. This finding is also consistent with what has been reported for a multi-racial/ethnic sample of MSM.<sup>27</sup> None of the study participants had ever used PrEP but seven men reported prior use of PEP. Limited awareness and use of PrEP was expected given that PrEP is a new intervention and at the time of this study was not available in the community. The limited awareness of PEP was unexpected. In Los Angeles, PEP has been available at no-cost since 2009, offered by the public health department in two community-clinic settings, with one of the clinics located in a predominantly African-American community. Even with its availability in the community, BMSM had limited knowledge of this biomedical prevention option. The limited knowledge of PrEP and PEP suggests that greater efforts are needed to raise community awareness and disseminate information specifically to BMSM about biomedical interventions and their availability in the community. This should include increasing BMSM and provider awareness of existing PrEP medication assistance programmes and the ability to access PrEP through private health insurance and publicly funded insurance programmes (e.g. Medicaid).

The perceptions BMSM have regarding using PrEP may impact its scalability with this population. These results demonstrate that negative perceptions are associated with a low intention to use PrEP and positive perceptions are associated with a high PrEP adoption intention. Predictors of a low PrEP adoption intention included statements reflecting the apprehension BMSM may have about taking a prescription medication for an illness they do not have ('I would be very uncomfortable taking HIV medicines when I don't have HIV') and concerns about long-term side effects ('Not knowing if there are long-term side effects of taking a daily HIV medicine makes me very uncomfortable'). This finding is consistent with what has been observed in other studies with multi-racial/ethnic MSM populations.<sup>25,26,29,40</sup> Positive predictors of a high intention

**Table 4.** Multivariate logistic regression analysis for PrEP adoption intention ( $n = 224$ ).

Variable	Adjusted odds ratio (95% CI)
Age	
18–29	2.29 (1.06–4.93)*
30+	1.00
I would be very uncomfortable taking HIV medicines when I don't have HIV	
Disagree/strongly disagree	1.00
Agree/strongly agree	0.39 (0.16–0.91)*
Not knowing if there are long-term side effects of taking a daily HIV medicine makes me very uncomfortable	
Disagree/strongly disagree	1.00
Agree/strongly agree	0.36 (0.14–0.88)*
I would be one of the first people to use PrEP if it were available	
Disagree/strongly disagree	1.00
Agree/strongly agree	4.13 (1.74–9.81)**
Taking a daily HIV medicine would be a good way to protect myself from getting HIV	
Disagree/strongly disagree	1.00
Agree/strongly agree	2.26 (1.6–3.17)**

PrEP: pre-exposure prophylaxis.

1.00 = referent group.

\* $p < .05$ .\*\* $p \leq .001$ .

to adopt PrEP included statements reflecting participants' enthusiasm for PrEP ('I would be one of the first people to use PrEP if it were available' and 'Taking a daily HIV medicine would be a good way to protect myself from getting HIV'). Given the prevalence of HIV/AIDS conspiracy beliefs and medical mistrust among the population,<sup>21–24</sup> developing culturally tailored community awareness campaigns and educational programmes targeted to BMSM about the individual- and community-level benefits of PrEP may help change negative perceptions and facilitate adoption.

A significant proportion of participants reported high-risk sexual behaviours that placed them at-risk for HIV infection, but there was no association between sexual risk behaviours and PrEP adoption intention. Instead, a high PrEP adoption intention was indicated by participants reporting high-risk behaviours as well as those reporting low-risk behaviours. A similar finding was reported among BMSM attending a community event in the southeastern United States.<sup>41</sup> One possible explanation for the similar rates can be drawn from our earlier formative work where MSM indicated varied reasons for wanting to adopt PrEP. For example, some men wanted to use PrEP as an added layer of protection, in addition to using condoms, while others wanted to use PrEP in order to engage in condom-less sex and still feel protected from HIV.<sup>25,35</sup> The roll-out of PrEP as part of a combination HIV prevention strategy will be challenging as the reasons for adopting PrEP will vary among BMSM.

For BMSM who adopt PrEP and then report risk compensation (i.e. condom-less sex while using PrEP), additional support services should be provided to address ongoing risk factors (e.g. substance abuse, mental health issues, transactional sex) contributing to high-risk behaviours; however, PrEP should continue to be available to these men as it may be their only prevention option.

The study findings are subject to several limitations. The cross-sectional design of the study precludes us from inferring causality. The study population consisted of a non-probability sample of BMSM, and therefore the findings may not be generalisable to BMSM in different regions of the country or even in Los Angeles. Because PrEP delivery sites were not yet operational at the time of the present study, PrEP adoption intentions were assessed, which may not reflect actual future behaviour.<sup>33</sup> To account for this limitation a conservative estimate of PrEP adoption intention was constructed. Another limitation is that sexual behaviour was measured using an interviewer-administered survey, which may have limited the accuracy of responses to sensitive and personal questions and may have under-estimated actual risk behaviours.<sup>42,43</sup>

In addition, because only a limited number of covariates were examined in the present study, future investigations should examine the relationship between social factors such as HIV stigma, HIV/AIDS conspiracy beliefs, and medical mistrust, and how these might relate to PrEP adoption among BMSM. Even with



these limitations, the findings contribute to the literature on PrEP acceptability by offering a better understanding of the perceptions and interests in PrEP adoption among BMSM, which may prove useful in scaling up this biomedical intervention with the population.

## Conclusion

The development of targeted educational and community awareness programmes is needed to disseminate accurate information to BMSM about the benefits and availability of biomedical prevention tools such as PrEP. These efforts are needed in order to optimise the scale-up of these tools, prevent disparities in access and contribute to reducing new HIV infections among BMSM.

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