



Published in final edited form as:

Behav Med. 2023 ; 49(3): 283–291. doi:10.1080/08964289.2022.2048249.

Pre-exposure prophylaxis (PrEP) Use, Anticipated PrEP Stigma, and Bisexual Identity among a Black and Hispanic/Latino Sexual and Gender Diverse Sample

Ryan J. Watson¹, Ethan Morgan^{2,3}, Jessica Sherman², Antonia Caba¹, Christopher W. Wheldon⁴, Philip A. Chan⁵, Lisa A. Eaton¹

¹Department of Human Development and Family Sciences, University of Connecticut, Storrs, CT, US

²College of Nursing, The Ohio State University, Columbus, OH

³Infectious Disease Institute, The Ohio State University, Columbus, OH

⁴Department of Social and Behavioral Sciences, College of Public Health, Temple University, Philadelphia, PA, US

⁵Department of Medicine, Brown University, Providence, RI, US

Abstract

Black and Hispanic/Latino sexual minority men and gender diverse (SMMGD) individuals are disproportionately impacted by the HIV epidemic. Uptake and adherence to pre-exposure prophylaxis (PrEP) is suboptimal among SMMGD Black and Hispanic/Latino individuals, but most research has approached this population as homogenous (e.g., a group operationalized as men who have sex with men). Bisexual men are less likely to disclose their sexual identity and report more mental health problems than their gay counterparts, but there is less attention to the impact of different sexual identities on PrEP use over time. We utilized data from three waves of a national longitudinal study (2020–2021) to characterize Black and Hispanic/Latino SMMGD participants' PrEP use including: 1) PrEP uptake during the study; 2) consistent PrEP use across the study; and 3) discontinuation of PrEP use since study baseline. We found bisexual men were significantly less likely than gay men to be consistent PrEP users and were more likely to discontinue PrEP use over the course of the study. Of the sample who reported PrEP use across surveys, 10% initiated PrEP during the study period, 0% of whom were bisexual. Additionally, bisexual participants reported statistically significantly higher anticipated PrEP stigma relative to gay participants. These findings have implications for HIV prevention interventions. Given the differences in PrEP experiences as a function of sexual identity, researchers and clinicians should consider the disruptive role of stigma (both biphobia and anticipated PrEP stigma) in PrEP care and adherence.

Address Correspondence: Ryan Watson, PhD. Department of Human Development and Family Sciences, University of Connecticut, Storrs, CT. Phone: +1 (860) 380-1212, Fax: +1 (860) 509-0009, ryanwatson@uconn.edu.

The authors have no disclosures to report.

Keywords

PrEP; HIV prevention; bisexual; MSM; care cascade

Introduction

Gay and bisexual men account for the majority of new HIV infections in the United States (US). However, uptake of pre-exposure prophylaxis (PrEP), a once daily pill highly effective at reducing HIV infection risk among HIV-negative individuals,^{1,2} has been slow. In 2019, the Centers for Disease Control and Prevention (CDC) estimated that only 23% of eligible individuals were using PrEP³ despite a large body of evidence to support its efficacy and safety.² One key reason may be due to persistent, significant disparities⁴ in PrEP knowledge and use within the population of gay and bisexual men.

Interrelated systems of racism and biphobia likely contribute the health inequities experienced by Black and Hispanic/Latino bisexual men.⁵⁻⁷ In general, bisexual men experience unique forms of stigma and discrimination.^{5-6,8} These include frequent stereotypes such as being promiscuous, unstable, and indecisive in their sexual preferences.⁶ PrEP stigma may reinforce these stereotypes, and perpetuate PrEP use disparities among bisexual men as PrEP use is associated with condomless anal sex.⁹⁻¹⁰ However, the relationship between sexual identity and PrEP stigma remains vastly understudied. Additionally, bisexuality is often dismissed as a sexual identity, which perpetuates discrimination and exclusion of bisexual individuals from both heterosexual and sexual minority communities.⁶ Bisexual men are less likely to have ever been tested for HIV⁸ relative to their gay-identified peers. They are also less likely to know about and utilize PrEP,^{11,12-18} and more likely to discontinue PrEP use over time.¹⁵ Taken together, we are unsure to the degree of which unique forms of biphobia may contribute to worse HIV prevention outcomes. Therefore, a major impetus of this study was to explore differences in PrEP experiences and PrEP stigma by sexual identity.

Beyond differences related to sexual identity, significant racial disparities in PrEP use also persist.¹² In the US, Black and Hispanic/Latino gay and bisexual men are significantly less likely than their white peers to report PrEP use and are less likely to report discussing it with a health care provider despite high rates of awareness.^{4,12,19-20} Key barriers to PrEP use in this community include cost of prescriptions, medical mistrust, lack of access to care, and stigma surrounding PrEP use.^{7,12,22-25}

Compounding issues of race, bisexual men of color are often conflated into a single group of men who have sex with men (MSM), despite having unique health needs.¹² Many HIV prevention programs treat gay, bisexual, and other MSM as a homogenous group²⁶ despite significant differences in HIV risk behaviors and prevention needs.^{17,27-29} This results in prevention services that may not be as culturally relevant.³⁰⁻³² Overall, support from peers and a strong connections to the gay community has been shown to increase awareness¹² and access to PrEP,¹⁸ but stigma, marginalization, and the lack of targeted HIV prevention programs may create unique barriers to PrEP awareness and use among sexually and ethnoracially diverse populations.

There is a growing body of literature that acknowledges disparities related to PrEP use among SMMGD subpopulations; however, few studies have identified factors contributing to these disparities. Understanding the role of stigma in the use of PrEP among bisexual individuals could be vital in developing effective interventions aimed at increasing PrEP use in this population. To address this gap in the literature, we aimed to assess the relations between sexual identity and anticipated PrEP stigma, patterns of PrEP use among bisexual and gay identifying Black and Hispanic/Latino SMMGD, and test potential differences in PrEP use patterns among bisexual and gay participants.

Methods

Study Design and Participant Recruitment

We utilized data from the first three waves of the *Longitudinal Study of PrEP and Substance Use National Survey*,³³ an online survey assessment focused on Black and/or Hispanic/Latino SMMGD individual's HIV testing, PrEP, and health experiences. Wave 1 (baseline) was collected between March and August 2020, wave 2 was collected between February and March 2021, and wave 3 was collected between July 2021 and August 2021. To participate in the baseline survey all respondents needed to identify as Black and/or Hispanic/Latino, be 18–29 years of age, report being male sex assigned at birth, reside in the United States, and report having anal sex with another man in the past 12 months at the time of survey completion. Participants were not excluded based on sexual or gender identity. All study protocols, including permission to recontact participants, and the process for receipt of electronic informed consent, were approved by the University of Connecticut's Institutional Review Board.

At baseline, Black and/or Hispanic/Latino SMMGD individuals were invited to participate in a confidential self-report survey hosted by REDCap; participants were recruited from national networks, several large mailing lists, and social media (Twitter, Facebook, and Instagram) with the assistance of the Human Rights Campaign's wide-reaching network of community partners. The research team connected with local community-based organizations, health departments, and other health centers to advertise the survey. For their participation, participants were provided a \$15 [Amazon.com](https://www.amazon.com) gift card. In total, N=992 participants responded to the baseline survey. Six months after the baseline survey was completed, the research team re-contacted 300 individuals who participated in the first wave and invited them to partake in a longitudinal that included 2 additional waves 4 months apart. SMMTW with PrEP and/or substance use histories were prioritized for re-enrollment.

At follow up in wave 2, 300 participants participated by completing a survey. Most survey instruments were repeated from wave 1. For their participation, participants were provided a \$25 gift card to Amazon, or a Venmo (cash) payment of \$25 to their private Venmo account. The third survey was administered to each participant four months later, and 290/300 (96%) were retained. Participants were remunerated \$30 for completing the third survey. Surveys 2 and 3 were hosted via [Qualtrics.com](https://www.qualtrics.com). Mean time to completion for surveys 1, 2, and 3 was 43 minutes, 24 minutes, and 22 minutes, respectively.

Measures

Race and Ethnicity.—Ethnicity was assessed by asking participants, “Are you Hispanic/Latino?” Response options were “No” and “Yes” and coded as such for this analysis. To assess race, participants were asked, “What is your race? (check all that apply)”. Response options included, “American Indian or Alaska Native”, “Asian”, “Black or African American”, “Native Hawaiian or other Pacific Islander”, “White”, and “None of these”. Given the low percentages of some racial identities, we recoded participants into categories of Black, white, and other. Ethnicity and race were treated as separate variables in all analyses.

Sexual orientation.—Participant’s sexual orientation was assessed by asking, “Which of the following best describes your sexual orientation?” with participants selecting from “Bisexual”, “Gay, same gender loving”, “Heterosexual or straight”, “Pansexual”, “Queer”, “Not sure or questioning” or “Other”. For purposes of this analyses, this variable was recoded as gay, bisexual, and those identifying with a different sexual identity.

PrEP Use.—Across all three study visits, participants were asked to report their PrEP use, “Do you currently take PrEP?” with response options of “No” and “Yes”. These responses were categorized into three groups: 1) PrEP uptake, 2) consistent PrEP use, and PrEP discontinuation. PrEP uptake was defined as commencement of PrEP use at any point during the study period following self-reported non-use at a prior survey wave, compared to those who consistently do not use PrEP across all survey waves. Consistent PrEP use was defined as those reporting PrEP use at all survey waves compared to those reporting no PrEP use across all three survey waves. Intermittent PrEP use was defined as those who reported use at baseline, no use at survey two, and again reported use at survey three. PrEP discontinuation was defined as: 1) those reporting use of PrEP at baseline and no PrEP use at surveys two and three; or 2) those reporting use of PrEP at baseline and visit two and no PrEP use at survey three, relative to those who consistently use PrEP.

Secondarily, as this survey began during the onset of the COVID-19 pandemic, we also assessed changes in access to PrEP during the pandemic. This question was asked as, “Has your access to PrEP been impacted by the COVID-19 pandemic?” with it operationalized dichotomously.

Anticipated PrEP Stigma.—To assess anticipated stigma related to PrEP use, we asked participants three questions that originated from a 5-item scale at wave 3.³⁴ These included: 1) “If I used PrEP, I would be worried that people would think I was gay.”; 2) “If I used PrEP, I would keep it a secret.”; and 3) “If I used PrEP, I would worry that people would judge me.” Each of these scales was assessed on a 1–6 Likert scale ranging from Strongly Disagree on the low end to Strongly Agree on the high end. Each of the three questions was operationalized as an individual, continuous variable (Cronbach’s alpha = 0.78). A fourth variable was also constructed by linearly summarizing the scores for all three variables, resulting in a sum score range of 3 – 18, and operationalized as a continuous variable.

Other Variables.

Condomless sex.: To measure the number of instances of condomless sex, participants were asked, “How many times have you had anal sex with a man without a condom in the past three months?” Participants could choose between “0” or “5 or more”. *Substance Use.* The variable was operationalized as a continuous variable. Substance use was assessed by asking participants, “Have you ever, even once, used any drug in any way a doctor did not direct you to?” with the variable operationalized dichotomously (yes/no). *Employment status.* We operationalized employment status as a categorical variable after asking participants, “What is your current employment status?” Categories included full-time, part-time, unemployed, and other (e.g., retired, student disabled). *Relationship status.* Participants were asked “What is your marital status?” Categorical options included single, married/domestic partnership/civil union, and other.

Statistical analyses

Participant characteristics were described using means, standard deviations, and proportions with p-values calculated for either Student’s T-test or Pearson’s chi-square analyses, as appropriate. First, multivariable linear regression models using baseline data ($N=992$) were utilized to assess the association between sexual identity and anticipated PrEP stigma, including the three individual scale measures and the constructed summary score. Next, among participants with data from all three waves ($n = 290$), multivariable logistic regression models were utilized to assess the association across the three study visits between sexual orientation and: 1) PrEP uptake during the course of the study; 2) consistent PrEP use across the study; and 3) discontinuation of PrEP use since study baseline. Both models were adjusted for demographic characteristics and known confounders. Statistical significance was established at $\alpha < 0.05$. All analyses were performed in Stata 17.0.

Results

At baseline (Table 1), the mean age of the baseline analytic sample ($N = 992$) was 25.16 years (Standard Deviation [SD] = 2.78). The majority (59.9%) participants identified as Hispanic/Latino ($n=594$) while 398 (40.1%) identified as non-Hispanic/Latino. Regarding race, 467 (47.1%) identified as Black, 336 (33.9%) identified as white, and 189 (19.0%) identified as a different racial or mixed identity. The majority of the sample identified as gay ($n=754$, 76.0%), followed by bisexual ($n=125$, 12.6%), and those that identified in another way ($n=103$, 11.4%). The majority of participants reported full-time employment status ($n=546$, 55.0%), a single relationship status ($n=895$, 90.6%), and the use of at least one illicit substance in their lifetime ($n=617$, 64.3%). Most of the sample was cisgender men ($n=934$, 94.2%); the remainder of the sample identified as something other than cisgender ($n=58$, 5.8%). Last, 112 participants (14.0%) reported their access to PrEP had been impacted due to the COVID-19 pandemic. Also shown in Table 1 are the demographics for the sample at the follow up (wave 2, $n = 300$). Patterns of demographics of the subsample of $n=300$ were similar: the majority of participants were Hispanic (66.0%), gay (80.7%), employed full-time (56.5%), single (91.6%), cisgender (93.3%), and used any substance (69.3%).

Baseline differences in anticipated PrEP stigma by sexual identity are reported in Table 2.. The model that examined the summary score indicated that bisexual participants reported significantly higher anticipated PrEP stigma (Adj. $\beta = 2.23$; 95% CI: 1.39 – 3.07) relative to gay participants. This remained true for each of the subcomponents: 1) “...people would think I was gay.” (Adj. $\beta = 0.91$; 95% CI: 0.57 – 1.25); 2) “...I would keep it a secret.” (Adj. $\beta = 0.70$; 95% CI: 0.37 – 1.03); and 3) “...I would worry people would judge me.” (Adj. $\beta = 0.62$; 95% CI: 0.28 – 0.97). Across all individual models and the summary score model, age was inversely associated with each measure suggesting older age was associated with less anticipated PrEP stigma. No significant relationship was observed in any model in regard to race or ethnicity.

Table 3 presents findings utilizing multivariable logistic regression models to assess the relationship between sexual identity and PrEP use patterns across the subset of participants who completed all three study visits only. Bisexual participants were less likely to consistently use PrEP relative to gay participants (adjusted odds ratio [aOR] = 0.16; 95% confidence interval [CI]: 0.03 – 0.92). Similarly, bisexual participants were significantly more likely to discontinue PrEP use relative to gay-identifying participants (aOR = 9.96; 95% CI: 1.21 – 81.86). In the same model, higher instances of condomless sex were also associated with greater odds of discontinuing PrEP use (aOR = 1.06; 95% CI: 1.01 – 1.11). No bisexual participants reported uptake of PrEP; thus these models could not be assessed. Models considering intermittent PrEP use are not presented as models did not converge due to too few participants fitting this criterion ($n = 6$).

Discussion

To date, most research on SMMTW’s PrEP use has treated this group as homogenous, overlooking possible disparities of PrEP use between gay and bisexual participants. Additionally, the bulk of the body of research on PrEP use measures PrEP experiences at one point in time. In this study, we utilized longitudinal data from 3 waves of surveys over the span of one year to determine three patterns of PrEP use among bisexual- and gay-identified Black and Hispanic/Latino SMMTW. Additionally, we assessed whether gay and bisexual Black and Hispanic/Latino individuals differed in their PrEP use over the span of one year. We found that bisexual Black and Hispanic/Latino SMMTW had lower odds of PrEP continuation and higher odds of PrEP discontinuation relative to their gay counterparts. Furthermore, compared to gay SMMTW, bisexual SMMTW reported higher anticipated PrEP stigma.

There are potential explanations for the observed disparities in PrEP continuation and discontinuation. Our findings may reflect a “triple jeopardy” at the intersection of racism, homophobia, and biphobia. For Black and Hispanic/Latino gay SMMTW, the confluence of racism and homophobia leaves them susceptible to increased HIV and sexual orientation-related stigma relative to white counterparts.⁷ However, the bisexual SMMTW in the sample may additionally experience biphobia from both within and outside of sexual minority communities.⁷ Future research is necessary in order to understand how biphobia influences PrEP uptake and continuation in this population.

We also observed greater anticipated PrEP stigma among bisexual participants relative to gay participants. In line with previous research that highlights a link between PrEP-related stigma and PrEP discontinuation, this finding could play a role in bisexual participants's higher odds of PrEP discontinuation and lower odds of PrEP continuation.³⁶ Furthermore, PrEP use may signal to sexual partners and others that one is at risk of HIV.⁷ Given that bisexual participants reported greater PrEP stigma, they could be more likely than gay participants to discontinue PrEP in order to avoid PrEP-related stigma and discrimination. Finally, Black and Hispanic/Latino bisexual men report that HIV prevention is a sensitive conversation topic in their communities.³⁷ Difficulty communicating about HIV prevention strategies, such as PrEP, could foster or reinforce anticipated PrEP stigma and potentially motivate PrEP discontinuation.

Findings also highlight the importance of considering time, place, and personal circumstances in determining PrEP use. For example, in studies of PrEP discontinuation, those using PrEP cite a perception of temporarily reduced HIV risk, reduction in sexual partners, medication side effects, and challenges with medication adherence as motives for temporarily or permanently discontinuing PrEP.^{38–39} Income and health insurance status is also associated with PrEP discontinuation.⁴⁰ Given that bisexual men report lower incomes than gay men,⁹ it could be that in our sample, bisexual participants' PrEP discontinuation was driven by lack of financial resources to obtain PrEP. As a recent example of the importance of context, one in four daily PrEP users in one Australian study conducted during the COVID-19 pandemic reported that they discontinued PrEP use, mostly frequently citing a reduction in casual sex during lockdown measures.⁴¹ In another study based in the United States, 9% of gay and bisexual men reported disruptions in access to PrEP prescriptions.⁴² However, in the same study, bisexual men reported no significant change in sex partners relative to gay men, suggesting that a reduction in sex partners may not be driving differences in PrEP continuation and discontinuation between Black and Hispanic/Latino gay and bisexual individuals.

Despite novel contributions (e.g., a longitudinal assessment of PrEP use, the investigation of sexual identity among SMMGD individuals to better understand PrEP experiences, a large national dataset), the study is not without limitations. First, these data are not representative and thus should and cannot be generalized to all Black and/or Hispanic/Latino SMMGD individuals, in particular ones that are not connected through social media and community organizations that serve Black and/or Hispanic/Latino SMMGD individuals. Second, we followed ($n = 290$) a select subset of SMMGD individuals over time from our baseline survey, intentionally prioritizing individuals who had used PrEP in the past. Future studies should continue to include individuals who have never initiated PrEP to better understand the factors that drive first-time PrEP use. Last, though we followed several hundred SMMGD individuals over the period of a year, some cell sizes were small (e.g., no bisexual participants initiated PrEP during the study period), and although we found statistically significant differences across study outcomes, some confidence intervals were large indicating high variability in our estimated effects.

Conclusions

It is known from prior literature that individuals who identify as bisexual face “double discrimination”,⁴³ a phenomenon distinct from homophobia, where bisexual individuals experience mistreatment from both heterosexual and gay communities. This phenomenon likely impacts programmatic efforts to implement HIV prevention interventions to reach bisexual individuals. Efforts to specifically reach bisexual individuals, in particular, efforts to reach racial/ethnic minority bisexual individuals, need to be prioritized. Continuing with our current approach that largely relies on grouping individuals across diverse sexual orientations may result in the opposite of the intended response for bisexual individuals who have experienced double discrimination. Further, based on findings from the current study, sexual orientation has important associations with the PrEP care cascade, which underscores the importance of reevaluating our approach to reaching diverse populations of SMMGD people.

Acknowledgments

This work was supported by the National Institutes of Health under Grant [number K01DA04719].

References

1. Fonner VA, Dalglish SL, Kennedy CE, et al. Effectiveness and safety of oral HIV preexposure prophylaxis for all populations. *AIDS*. 2016;30(12):1973–1983. doi:10.1097/QAD.0000000000001145 [PubMed: 27149090]
2. Huang X, Hou J, Song A, et al. Efficacy and safety of oral TDF-Based pre-exposure prophylaxis for men who have sex with men: A systematic review and meta-analysis. *Front Pharmacol*. 2018;9(799):1–11. doi:10.3389/fphar.2018.00799 [PubMed: 29387012]
3. Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data United States and 6 Dependent Areas, 2019: National Profile. <https://www.cdc.gov/hiv/library/reports/hiv-surveillance/vol-26-no-2/content/national-profile.html>. Updated May 27, 2021. Accessed October 2, 2021.
4. Kanny D, Jeffries WL, Chapin-Bardales J, et al. Racial/ethnic disparities in HIV preexposure prophylaxis among men who have sex with men - 23 Urban Areas, 2017. *MMWR Morb Mortal Wkly Rep*. 2019;68(37):801–806. doi: 10.15585/mmwr.mm6837a2
5. Bowleg L “Once you’ve blended the cake, you can’t take the parts back to the main ingredients”: Black gay and bisexual men’s descriptions and experiences of intersectionality. *Sex Roles*. 2013;68(11):754–767. doi:10.1007/s11199-012-0152-4
6. Feinstein BA, Dyar C. Bisexuality, minority stress, and health. *Cur Sexual Health Rep*. 2017;9(1):42–49. doi:10.1007/s11930-017-0096-3
7. Quinn K, Bowleg L, Dickson-Gomez J. “The fear of being Black plus the fear of being gay”: The effects of intersectional stigma on PrEP use among young Black gay, bisexual, and other men who have sex with men. *Soc Sci Med*. 2019;232:86–93. doi:10.1016/j.socscimed.2019.04.042 [PubMed: 31075752]
8. McCree DH, Oster AM, Jeffries WL, et al. HIV acquisition and transmission among men who have sex with men and women: What we know and how to prevent it. *Prev Med*. 2017;100:132–134. doi:10.1016/j.ypmed.2017.04.024 [PubMed: 28450120]
9. Brooks RA, Nieto O, Landrian A, Fehrenbacher A, Cabral A. Experiences of pre-exposure prophylaxis (PrEP)-related stigma among black MSM PrEP Users in Los Angeles. *Journal of Urban Health*. 2019 Jun 18:1–3.
10. Golub SA PrEP Stigma: Implicit and Explicit Drivers of Disparity. *Curr HIV/AIDS Rep* 15, 190–197 (2018). 10.1007/s11904-018-0385-0 [PubMed: 29460223]

11. Tao J, Montgomery MC, Chu CT, et al. HIV pre-exposure prophylaxis awareness and use among men who have sex with men only and men who have sex with both men and women. *AIDS Patient Care STDS*. 2020;34(8):327–330. doi:10.1089/apc.2020.0072 [PubMed: 32706624]
12. Friedman MR, Sang JM, Bukowski LA, et al. Prevalence and correlates of PrEP awareness and use among Black men who have sex with men and women (MSMW) in the United States. *AIDS Behav*. 2019;23(10):2694–2705. doi:10.1007/s10461-019-02446-3 [PubMed: 30820849]
13. Watson RJ, Fish JN, Allen A, Eaton L. Sexual identity disclosure and awareness of HIV prevention methods among Black men who have sex with men. *J Sex Res*. 2018;55(8):975–983. doi:10.1080/00224499.2017.1375452 [PubMed: 29023141]
14. Watson RJ, Eaton LA, Maksut JL, Rucinski KB, Earnshaw VA. Links between sexual orientation and disclosure among Black MSM: Sexual orientation and disclosure matter for PrEP awareness. *AIDS Behav*. 2020;24(1):39–44. doi:10.1007/s10461-019-02696-1 [PubMed: 31606770]
15. Timmins L, Schneider JA, Chen Y-T, et al. Sexual identity, sexual behavior and pre-exposure prophylaxis in Black cisgender sexual minority men: The N2 cohort study in Chicago. *AIDS Behav*. 2021;25(11):1–10. doi:10.1007/s10461-021-03246-4
16. Shover CL, Javanbakht M, Shoptaw S, et al. HIV Preexposure prophylaxis initiation at a large community clinic: Differences between eligibility, awareness, and uptake. *Am J Public Health*. 2018;108(10):1408–1417. doi:10.2105/AJPH.2018.304623 [PubMed: 30138062]
17. Feinstein BA, Moran KO, Newcomb ME, Mustanski B. Differences in HIV risk behaviors between self-identified gay and bisexual young men who are HIV-negative. *Arch Sex Behav*. 2019;48(1):261–275. doi:10.1007/s10508-018-1148-0 [PubMed: 29508171]
18. Phillips G, Raman A, Felt D, Han Y, Mustanski B. Factors associated with PrEP support and disclosure among YMSM and transgender individuals assigned male at birth in Chicago. *AIDS and Behavior*. 2019 Oct;23(10):2749–60. [PubMed: 31228025]
19. Arrington-Sanders R, Morgan A, Oidman J, Qian I, Celentano D, Beyrer C. A medical care missed opportunity: Preexposure prophylaxis and young Black men who have sex with men. *J Adolescent Health*. 2016;59(6):725–728. doi:10.1016/j.jadohealth.2016.08.006
20. Kuhns LM, Hotton AL, Schneider J, Garofalo R, Fujimoto K. Use of pre-exposure prophylaxis (PrEP) in young men who have sex with men is associated with race, sexual risk behavior and peer network size. *AIDS Behav*. 2017;21(5):1376–82. doi:10.1007/s10461-017-1739-0 [PubMed: 28238119]
21. Crepez N, Mullins MM, Higa D, Gunn JK and Salabarría-Peña Y, 2021. A rapid review of disparities in HIV prevention and care outcomes among Hispanic/Latino men who have sex with men in the United States. *AIDS Educ Prev*. 2021;33(4):276–289. doi:10.1521/aeap.2021.33.4.276 [PubMed: 34370568]
22. Brooks RA, Landovitz RJ, Kaplan RL, Lieber E, Lee SJ, Barkley TW. Sexual risk behaviors and acceptability of HIV pre-exposure prophylaxis among HIV-negative gay and bisexual men in serodiscordant relationships: A mixed methods study. *AIDS Patient Care STDS*. 2012;26(2):87–94. doi:10.1089/apc.2011.0283 [PubMed: 22149764]
23. Cahill S, Taylor SW, Elsesser SA, Mena L, Hickson D, Mayer KH. Stigma, medical mistrust, and perceived racism may affect PrEP awareness and uptake in black compared to white gay and bisexual men in Jackson, Mississippi and Boston, Massachusetts. *AIDS Care*. 2017;29(11):1351–1358. doi:10.1080/09540121.2017.1300633 [PubMed: 28286983]
24. Jaiswal J, LoSchiavo C, Meanley S, Hascher K, Cox AB, Dunlap KB, Singer SN, Halkitis PN. Correlates of PrEP Uptake Among Young Sexual Minority Men and Transgender Women in New York City: The Need to Reframe “Risk” Messaging and Normalize Preventative Health. *AIDS and Behavior*. 2021 Apr 8:1–7.
25. Hascher K, Jaiswal J, Lorenzo J, LoSchiavo C, Burton W, Cox A, Dunlap K, Grin B, Griffin M and Halkitis PN, 2021. ‘Why aren’t you on PrEP? You’re a gay man’: reification of HIV ‘risk’ influences perception and behaviour of young sexual minority men and medical providers. *Culture, health & sexuality*, pp.1–15.
26. Feinstein BA, Dodge B. Meeting the sexual health needs of bisexual men in the age of biomedical HIV prevention: Gaps and priorities. *Arch Sex Behav*. 2020;49(1):217–232. doi:10.1007/s10508-019-01468-1 [PubMed: 31691076]

27. Shadaker S, Magee M, Paz-Bailey G, Hoots BE. Characteristics and risk behaviors of men who have sex with men and women compared with men who have sex with men-20 US cities, 2011 and 2014. *J Acquir Immune Defic Syndr*. 2017;75 Suppl 3(Suppl 3):S281–s7. doi: 10.1097/QAI.0000000000001403 [PubMed: 28604429]
28. Friedman MR, Wei C, Klem ML, Silvestre AJ, Markovic N, Stall R. HIV infection and sexual risk among men who have sex with men and women (MSMW): A systematic review and meta-analysis. *PLoS ONE*. 2014;9(1):e87139. doi: 10.1371/journal.pone.0087139 [PubMed: 24498030]
29. Crosby RA, Mena L, Geter A, Hickson D. Similarities and differences in sexual risk behaviors between young Black MSM who do and do not have sex with females. *AIDS Behav*. 2016;20(4):717–721. doi: 10.1007/s10461-015-1227-3 [PubMed: 26547716]
30. Ellen JM, Greenberg L, Willard N, Stines S, Korelitz J, Boyer CB. Cross-sectional survey comparing HIV risk behaviours of adolescent and young adult men who have sex with men only and men who have sex with men and women in the US and Puerto Rico. *Sex Transm Infect*. 2015;91(6):458–461. doi:10.1136/sextrans-2014-051712 [PubMed: 25587181]
31. Holmes N, Beach LB. Bisexual people’s utilization of sexual health services at an LGBTQ community center in Chicago. *J Bisex*. 2020;20(3):342–359. doi: 10.1080/15299716.2020.1825270 [PubMed: 34413707]
32. Mirandola M, Gios L, Sherriff N, et al. Socio-demographic characteristics, sexual and test-seeking behaviours amongst men who have sex with both men and women: Results from a bio-behavioural survey in 13 European cities. *AIDS Behav*. 2017;21(10):3013–3025. doi:10.1007/s10461-017-1831-5 [PubMed: 28643241]
33. Wheldon CW, Eaton LA, & Watson RJ. Predisposing, enabling, and need related factors associated with human papillomavirus vaccination intentions and uptake among Black and Hispanic sexual and gender diverse adults in the US. *J Racial Ethn Health Disparities*, in press. doi: 10.1007/s40615-021-01214-1
34. Driver R, Allen AM, Finneran S, Maksut JL, Eaton LA, & Kalichman SC Masculine ideology and Black men who have sex with men’s interest in HIV pre-exposure prophylaxis (PrEP). *J Health Psychol*. 2020;1–13. doi:10.1177/1359105320941236
35. Meanley S, Connochie D, Choi SK, Bonett S, Flores DD, Bauermeister JA. Assessing the role of gay community attachment, stigma, and PrEP stereotypes on young men who have Sex with men’s PrEP uptake. *AIDS Behav*. 2021;25(6):1761–1776. doi:10.1007/s10461-020-03106-7 [PubMed: 33211207]
36. Arnold T, Brinkley-Rubinstein L, Chan PA, et al. Social, structural, behavioral and clinical factors influencing retention in pre-exposure prophylaxis (PrEP) care in Mississippi. *PLoS One*. 2017;12(2):e0172354. doi:10.1371/journal.pone.0172354 [PubMed: 28222118]
37. Henny KD, Drumhiller K, Sutton MY, Nanín J. “My sexuality...It creates a stress”: HIV-related communication among bisexual Black and Latino men, New York City. *Arch Sex Behav*. 2019;48(1):347–356. doi:10.1007/s10508-018-1264-x [PubMed: 30141119]
38. Nieto O, Brooks RA, Landrian A, Cabral A, Fehrenbacher AE. PrEP discontinuation among Latino/a and Black MSM and transgender women: A need for PrEP support services. *PLoS ONE*. 2020;15(11):1–13. doi:10.1371/journal.pone.0241340
39. Whitfield THF, John SA, Rendina HJ, Grov C, Parsons JT. Why I quit pre-exposure prophylaxis (PrEP)? A mixed-method study exploring reasons for PrEP discontinuation and potential re-initiation among gay and bisexual men. *AIDS Behav*. 2018;22(11):3566–3575. doi:10.1007/s10461-018-2045-1 [PubMed: 29404756]
40. Zimmermann HM, Eekman SW, Achterbergh RC, et al. Motives for choosing, switching and stopping daily or event-driven pre-exposure prophylaxis – a qualitative analysis. *J Int AIDS Soc*. 2019;22(10):e25389. doi:10.1002/jia2.25389 [PubMed: 31612621]
41. Chow EPF, Hocking JS, Ong JJ, et al. Changing the use of HIV pre-exposure prophylaxis among men who have sex with men during the COVID-19 pandemic in Melbourne, Australia. *Open Forum Infect Dis*. 2020;7(7):1–4. doi:10.1093/ofid/ofaa275
42. Stephenson R, Chavanduka TM, Rosso MT, Sullivan SP, Pitter RA, Hunter AS, Rogers E. Sex in the time of COVID-19: results of an online survey of gay, bisexual and other men who have sex with men’s experience of sex and HIV prevention during the US COVID-19 epidemic. *AIDS Behav*. 2020;25(1):40–48.

43. Friedman MR, Dodge B, Schick V, et al. From bias to bisexual health disparities: Attitudes toward bisexual men and women in the United States. *LGBT Health*. 2014;1(4):309–318. doi: 10.1089/lgbt.2014.0005 [PubMed: 25568885]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1.

Sample characteristics for baseline (N=992) and Longitudinal Study (n=300)

Characteristic	Baseline (N=992)		Longitudinal (n = 300)	
	n (%)	Mean (SD)	n (%)	Mean (SD)
Age	-	25.16 (2.78)	-	26.16 (2.78)
Ethnicity				
Non-Hispanic	398 (40.1)	-	102 (34.0)	-
Hispanic	594 (59.9)	-	198 (66.0)	-
Race				
White (Hispanic)	336 (33.9)	-	120 (40.0)	-
Black	467 (47.1)	-	120 (40.0)	-
Other	189 (19.0)	-	60 (20.0)	-
Sexual Orientation				
Gay	754 (76.0)	-	242 (80.7)	-
Bisexual	125 (12.6)	-	31 (10.3)	-
Pansexual	42 (4.2)	-	7 (2.3)	-
Queer	40 (4.0)	-	16 (5.3)	-
Not sure/questioning	15 (1.5)	-	0 (0.0)	-
Write-in	6 (0.6)	-	4 (1.3)	-
Employment Status				
Full-time	546 (55.0)	-	169 (56.5)	-
Part-time	153 (15.4)	-	43 (14.4)	-
Unemployed	155 (15.6)	-	37 (12.4)	-
Other	128 (14.0)	-	50 (16.7)	-
Relationship Status				
Single	895 (90.6)	-	274 (91.6)	-
Married	48 (4.9)	-	13 (4.3)	-
Other	45 (4.5)	-	12 (4.0)	-
PrEP Use				
Consistent Use	-	-	88 (76.5)	-
Discontinuation	-	-	14 (10.9)	-
Uptake	-	-	13 (10.2)	-
PrEP Stigma				
...think I was gay. ¹	-	2.01 (1.56)	-	1.90 (1.49)
...keep it a secret. ¹	-	2.29 (1.52)	-	2.10 (1.40)
...people would judge me. ¹	-	2.19 (1.55)	-	2.10 (1.52)
Summary score ²	-	6.48 (3.86)	-	6.09 (3.62)
Condomless Sex	-	1.54 (1.67)	-	1.59 (18.1)
Any Substance Use	617 (64.3)	-	208 (69.3)	-
PrEP Access Impact due to COVID-19	112 (14.0)	-	40 (14.3)	-

Abbreviations: SD = standard deviation

¹ Assessed on a Likert scale, range 1–6

² Summarized across all three measures, range 3–18

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2.

Adjusted linear regression models examining sexual orientation differences on anticipated PrEP stigma at study baseline visit (*N* = 992)

Characteristic	If I used PrEP, ...						Total Score	
	Adj. β	95% CI	Adj. β	95% CI	Adj. β	95% CI	Adj. β	95% CI
Age	-0.04	-0.08 – 0.01	-0.05**	-0.10 – -0.02	-0.04	-0.08 – 0.005	-0.13*	-0.23 – -0.03
Ethnicity								
Non-Hispanic	Ref	-	Ref	-	Ref	-	Ref	-
Hispanic	-0.45	-0.94 – 0.04	-0.43	-0.91 – 0.05	-0.03	-0.53 – 0.47	-0.92	-2.14 – 0.30
Race								
White	Ref	-	Ref	-	Ref	-	Ref	-
Black	-0.26	-0.76 – 0.25	-0.58*	-1.07 – -0.08	-0.34	-0.86 – 0.18	-1.18	-2.43 – 0.08
Other	-0.14	-0.42 – 0.14	-0.12	-0.39 – 0.16	-0.08	-0.37 – 0.21	-0.33	-1.03 – 0.36
Sexual Orientation								
Gay	Ref	-	Ref	-	Ref	-	Ref	-
Bisexual	0.91***	0.57 – 1.25	0.70***	0.37 – 1.03	0.62***	0.28 – 0.97	2.23***	1.39 – 3.07
Other	0.39*	0.03 – 0.75	0.35	-0.004 – 0.70	0.38*	0.007 – 0.75	1.09*	0.19 – 1.98
Employment Status								
Full-time	Ref	-	Ref	-	Ref	-	Ref	-
Part-time	0.19	-0.14 – 0.52	0.31	-0.01 – 0.63	0.13	-0.21 – 0.47	0.62	-0.21 – 1.44
Unemployed	0.33*	0.02 – 0.65	0.23	-0.07 – 0.54	0.05	-0.27 – 0.37	0.65	-0.14 – 1.43
Other	0.70***	0.36 – 1.04	0.47**	0.13 – 0.80	0.41	0.06 – 0.75	1.58***	0.74 – 2.42
Relationship Status								
Single	Ref	-	Ref	-	Ref	-	Ref	-
Married	-0.48*	-0.87 – -0.09	-0.04	-0.43 – 0.34	-0.06	-0.47 – 0.34	-0.62	-1.61 – 0.36
Other	0.70***	0.36 – 1.04	1.30	-0.14 – 2.75	-0.27	-1.78 – 1.23	0.92	-2.73 – 4.58
Any Drug Use								
Never	Ref	-	Ref	-	Ref	-	Ref	-
One or more	-0.07	-0.29 – 0.16	-0.15	-0.37 – 0.08	-0.04	-0.28 – 0.19	-0.27	-0.84 – 0.29

PrEP Access Impact due to COVID-19

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Characteristic	If I used PrEP, ...				Total Score			
	Adj. β	95% CI	Adj. β	95% CI	Adj. β	95% CI	Adj. β	95% CI
...People would think I was gay.	Ref	-	Ref	-	Ref	-	Ref	-
...I would keep it a secret.	0.03	-0.28 - 0.34	-0.06	-0.37 - 0.24	0.14	-0.18 - 0.46	0.10	-0.67 - 0.87
...I would worry people would judge me.								
Impacted								

** p < 0.01

*** p < 0.001

Table 3.

Multivariable logistic regression models examining sexual orientation differences in PrEP based on consistency of use, discontinuation of use, and uptake during the longitudinal study period ($n = 290$)

	Consistent Use		Discontinuation of Use		Uptake	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Age	1.09	0.86 – 1.37	1.09	0.83 – 1.43	0.86	0.63 – 1.18
Ethnicity						
Non-Hispanic	Ref	-	Ref	-	Ref	-
Hispanic	1.62	0.16 – 16.67	5.48	0.58 – 52.05	0.54	0.008 – 38.45
Race						
White	Ref	-	Ref	-	Ref	-
Black	3.29	0.30 – 35.81	6.34	0.61 – 66.24	0.25	0.03 – 20.08
Other	4.36 [*]	1.04 – 18.30	0.13	0.10 – 1.69		
Sexual Orientation						
Gay	Ref	-	Ref	-	Ref	-
Bisexual	0.16 [*]	0.03 – 0.92	9.96 [*]	1.21 – 81.86	Empty	-
Other	0.29	0.05 – 1.65	5.53	0.65 – 47.11	0.86	0.08 – 9.72
Condomless Sex	1.07	0.98 – 1.17	1.06 [*]	1.01 – 1.11	0.99	0.90 – 1.09
Employment Status						
Full-time	Ref	-	Ref	-	Ref	-
Part-time	0.47	0.06 – 3.40	1.78	0.13 – 24.82	0.41	0.03 – 4.87
Unemployed	0.42	0.09 – 1.89	Empty	-	Empty	-
Other	5.33	0.66 – 43.10	3.09	0.53 – 18.07	0.49	0.06 – 4.29
Relationship Status						
Single	Ref	-	- [^]	-	- [^]	-
Married	0.09 ^{**}	0.01 – 0.51	-	-	-	-
Other	Empty	-	-	-	-	-
Any Drug Use						
Never	Ref	-	Ref	-	Ref	-
One or more	0.70	0.22 – 2.23	1.52	0.30 – 7.58	1.33	0.30 – 5.98
PrEP Access Impact due to COVID-19						
No Impact	Ref	-	Ref	-	Ref	-
Impacted	0.53	0.13 – 2.18	1.79	0.28 – 11.54	3.62	0.73 – 18.00

* $p < 0.05$

** $p < 0.01$

[^] Relationship status not included in this model, all participants in model are reported as single