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Association between Having a Regular Healthcare Provider and Pre-exposure Prophylaxis Use among Black and White Men Who Have Sex with Men:
A Cross-sectional Survey

By

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Master of Public Health

Epidemiology

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Dr. Allison Chamberlain
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By

Eleanor W. Garlow
B.A., Franklin & Marshall College, 2014

Thesis Committee Chair: Dr. Allison Chamberlain, Ph.D.

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
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Abstract

Association between Having a Regular Healthcare Provider and Pre-exposure Prophylaxis Use among Black and White Men Who Have Sex with Men:
A Cross-sectional Survey
By Eleanor W. Garlow

Background: Providers whom people see regularly (e.g., primary care providers [PCPs]) are among the most common type of healthcare providers in the United States, making it likely individuals at risk of human immunodeficiency virus (HIV) will interact with them. However, the majority of PCPs report never prescribing or discussing pre-exposure prophylaxis (PrEP) with a patient. Our study aimed to assess the association between having a regular healthcare provider and PrEP use among Black and White men who have sex with men (MSM) in Atlanta, GA.

Methods: We analyzed cross-sectional survey data on healthcare access and behaviors from 264 Black and White MSM in Atlanta who did not report being HIV positive. Using crude and adjusted log binomial regressions, we calculated prevalence ratios for Black and White MSM separately to examine the associations between having a regular healthcare provider and PrEP use.

Results: Among Black MSM, the proportion of those who had ever used PrEP was nearly three times higher for those with a regular healthcare provider compared to those without one (aPR 2.6; 95% CI: 1.0, 6.9). Conversely, the proportion of White MSM who had ever used PrEP was lower for those with a regular healthcare provider compared to those without one (aPR 0.7; 95% CI: 0.4, 1.3).

Conclusions: Findings from this study suggest that having a regular healthcare provider may be more strongly associated with PrEP use among Black MSM compared to White MSM. Further research is needed to understand the mechanisms involved in the differing associations.

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Introduction

In 2018, 38,000 people in the United States were diagnosed with human immunodeficiency virus (HIV), about 70% of whom were in men who have sex with men (MSM) [1]. Pre-exposure prophylaxis (PrEP) is a medication which has more than 90% efficacy in preventing HIV infection [2-4] and has been available in the U.S. since 2012 [5]. Despite this, only about 1 out of 5 people who are indicated for PrEP use it in the U.S [6]. Among MSM, there are notable disparities in PrEP use, with Black MSM, young MSM, and uninsured MSM having lower rates of PrEP use compared to White, older, and insured MSM, respectively [7-9]. To reach the *Healthy People 2030* HIV goal of fewer than 3,000 new HIV infections per year [10], the federal government has stressed the importance of connecting at-risk individuals with PrEP and focusing efforts on communities that could benefit from it the most [11].

Because PrEP requires a prescription, at-risk individuals must interact with a licensed prescriber to obtain the medication [12]. Among the most common types of licensed prescribers in the United States are regular healthcare providers (e.g., primary care providers [PCPs]), making it likely that individuals who are at risk of HIV will interact with them [13-15]. Therefore, regular healthcare providers like PCPs are well positioned to connect indicated patients with PrEP because their longitudinal relationships with patients are conducive to developing a trusting rapport and useful for obtaining refills for a routine medication like PrEP [16, 17]. One study conducted in 2018 found that MSM who recently saw a PCP had increased awareness of PrEP [18], suggesting that PCPs play an important educational role as well.

However, there is also evidence that having a regular healthcare provider may not be a facilitator for PrEP: three surveys of PCPs from across the country conducted between 2014 and 2015 found that less than a third have ever prescribed or discussed PrEP with a patient [19-21],

suggesting that many regular healthcare providers may not be assessing for or recommending PrEP for at-risk patients.

There is sparse literature on whether individuals with a regular healthcare provider are more likely to use PrEP than those without one, and very few studies have investigated this relationship from the patient perspective. One national study of over 2,000 young MSM conducted in 2014 found those who used PrEP were significantly more likely to have a regular healthcare provider [22]. However, no studies have explored how this relationship varies among racial/ethnic groups or whether there is an association between having a regular healthcare provider and interest in starting PrEP among those who have never used PrEP in their lifetime (PrEP-naïve).

This aim of this study was to understand the association between having a regular healthcare provider and PrEP use and interest among non-Hispanic Black and White MSM who are at risk of HIV infection. Using data collected from a 2019 cross-sectional survey of MSM living in metro Atlanta, Georgia, this study investigated the association between having a regular healthcare provider and ever using PrEP among MSM who did not report being HIV positive. In a secondary analysis among PrEP-naïve MSM, we explored the association between having a regular healthcare provider and interest in starting PrEP.

Methods

The Fulton County Board of Health (FCBOH), located in Atlanta, Georgia, administered a cross-sectional HIV survey from September to October 2019 through two in-person Pride events and two online platforms (Facebook and Grindr) with a total of 849 respondents. Complete study aims and methods have been previously described [23]. The Georgia Department of Public Health and the Emory University Institutional Review Boards provided approval of this survey and study.

Data Collection Methods and Study Population

To conduct the in-person surveys, research staff approached festival attendees and invited individuals to participate in a 5 to 10 minute self-administered, anonymous survey. Respondents were eligible if they were over the age of 18 and a resident of Georgia. The survey was only provided in English and respondents could refuse to answer any questions. The survey collected information on demographic characteristics (including zip code of residence); healthcare access and use; HIV status and testing; sexual behaviors; drug use; and PrEP awareness, use, and interest. Respondents provided their verbal consent to research staff, completed the survey on paper or an iPad, and received a $5 grocery store gift card as compensation for their time.

The FCBOH also posted the survey on Facebook and recruited individuals through the Grindr app to solicit additional responses from individuals not likely to attend in-person Pride events; these respondents provided their consent online and could skip any questions. Because the FCBOH wanted to avoid repeated participation to receive multiple gift cards, online respondents did not receive a monetary incentive.

The study population for this analysis was non-Hispanic Black and non-Hispanic White MSM who were at risk of HIV and living in the metro Atlanta area (n= 264) (Figure 1). A secondary analysis of those who were PrEP-naïve was also conducted (n=171). To determine race/ethnicity, respondents selected one race they saw as the "best fit," and reported if they considered themselves to be "Hispanic/Latino/Latinx." The only racial/ethnic groups with sufficient sample sizes for a stratified analysis were non-Hispanic Black and non-Hispanic White MSM (referred to as "Black" and "White" MSM throughout the paper); all other respondents were excluded (n=114). Those who identified themselves as "male," "male to female transgender," or "non-binary/gender queer," and reported having sex with "men only," "both men and women," or "both men and transgender persons" were categorized as MSM for this analysis; all others were excluded (n=188). Those who

reported being HIV positive were excluded because they were ineligible for PrEP (n=156) as were those who lived outside of metro Atlanta (n=190). Respondents who skipped questions that were essential to the analyses were also excluded (Figure 1).

Measures

The main study outcomes were 1) ever having used PrEP and 2) potential interest in starting PrEP among those who were PrEP-naïve, including if they were currently taking PrEP. Respondents indicated if they had taken PrEP at any point in their lifetime [response options: yes/no]. Among PrEP-naïve MSM, respondents were asked if they were interested in starting the medication [response options: yes, no, not sure]. The main exposure of interest was whether the respondent had a "regular healthcare provider," defined in the survey as a medical professional whom a person seeks when they are sick or need advice about their health or a physical need [response options: yes/no]. We used the phrase "regular healthcare provider" in the survey because we thought respondents would be more likely to understand this terminology compared to "primary care provider."

Covariates incorporated into the analysis were insurance status, age, and race/ethnicity, due to their association with healthcare access and PrEP use [7-9, 22]. We dichotomized insurance status as either having any health insurance ("private/commercial insurance," "Medicare/Medicaid," or "TRICARE or Veterans Administration") or no health insurance ("I do not have any health insurance"). Age was categorized into three groups (18-24, 25-34, and 35+) to maintain consistency with categorizations in other studies [9, 24].

Data Analysis

To describe the association between having a regular healthcare provider and ever using PrEP, we calculated prevalence ratios using bivariate and multivariate log binomial regression models, which adjusted for insurance status and age. Because PrEP utilization rates are different for Black and White MSM [7] and sample size was sufficiently large, we presented results separately for the two groups in the primary analysis. When considering only those who were PrEP-naïve in the secondary analysis, we assessed the association between having a regular healthcare provider and interest in starting PrEP using bivariate and multivariate log binomial regression models. We did not conduct a stratified analysis by race/ethnicity for the secondary analysis due to its small sample size. Among PrEP-naïve MSM, we also compared healthcare experiences between racial/ethnic groups using chi-square tests. All data analyses were assessed with an alpha level of 0.05 and were conducted in SAS Version 9.4.

Results

Of the 264 MSM included in the study population, nearly all completed the survey at a Pride event (95%), over half were Black (57%), and the majority were older than 24 years (75%) (Table 1). Most had health insurance (78%), at least some college education (78%), and were employed (81%). Over half reported having sex without a condom in the past 6 months (67%), while fewer reported recently having sex with an HIV-positive partner (22%). Eighty-one percent of the study population had a regular healthcare provider. Most respondents with a regular provider saw them in the last year (85%), had a regular provider who knew their sexual orientation (87%), and had never experienced discrimination in a healthcare setting (89%). Thirty-one percent of the study population had ever used PrEP (Table 2), and 66% of them were taking PrEP at the time of the survey (n=54). Of those

who were PrEP-naïve, 80% had a regular healthcare provider and 35% were interested in starting PrEP (Table 3).

Ever Using PrEP and Interest in Starting PrEP

We assessed for and found evidence of interaction by race/ethnicity in our analyses of the association between having a regular healthcare provider and ever using PrEP (Likelihood Ratio Test [LRT], p=0.01). For Black MSM, the prevalence of ever using PrEP among those who had a regular healthcare provider was 2.9 times the prevalence among those who did not have a healthcare provider (Prevalence Ratio [PR], 2.9; 95% Confidence Interval [95% CI]: 1.1, 7.6) (Table 2). When adjusting for insurance status and age, PrEP use prevalence was still higher among Black MSM with a regular healthcare provider compared to those without one (adjusted Prevalence Ratio [aPR], 2.6; 95% CI: 1.0, 6.9). For White MSM, the prevalence of ever using PrEP among those who had a regular healthcare provider was lower than those without one (PR, 0.7; 95% CI: 0.4, 1.4) (Table 2). After adjusting for insurance status and age, the association among White MSM remained nearly the same (aPR, 0.7; 95% CI: 0.4, 1.3). There was no gain in precision with additional adjustment for employment status and income for either Black or White MSM (data not shown).

In the secondary analysis of PrEP-naïve MSM, because total sample size was small (n=171) and there was no evidence of meaningful interaction by race/ethnicity (LRT, p=0.13), we chose to present the association for Black and White MSM together and adjusted for insurance status, age, and race/ethnicity. Among Black and White PrEP-naïve MSM, the prevalence of those who were interested in starting PrEP was the same among those who had a regular healthcare provider compared to those who without one (PR, 0.9; 95% CI: 0.6, 1.5) (Table 3). In an adjusted model, the prevalence of those who were interested in PrEP was higher for those who had a regular healthcare provider compared to those without one (aPR, 1.7; 95% CI: 1.0, 2.8). In further investigations into

PrEP-naïve MSM, we found that 38% of Black MSM reported having any healthcare provider discuss PrEP with them in the last year compared to 23% of White MSM (p=0.05).

Among those currently using PrEP (n=54), 91% had a regular healthcare provider and 76% of those with a regular healthcare provider indicated receiving their PrEP prescription from that provider. Nearly all saw their regular provider within the last year (98%), had a regular healthcare provider who knew their sexual orientation (98%), and had never experienced discrimination in a healthcare setting because of their sexuality (85%). Distribution of other demographic characteristics including age, education, and annual income were nearly identical to the overarching study population.

Discussion

Our research indicates that the association between having a regular healthcare provider and ever using PrEP differed between Black and White MSM. Among Black MSM, the prevalence of PrEP use among those with a regular healthcare provider was nearly three times higher than those without a regular provider. In contrast, among White MSM, having a regular healthcare provider was associated with a slightly lower rate of ever having used PrEP. These relationships were unchanged even when adjusting for known confounders such as insurance status and age.

While there is sparse literature on the association between having a regular healthcare provider and PrEP use, our findings for Black MSM align with results from the one national study among young MSM on this topic, which also found a positive association [22]. When looking at other HIV preventive care services, such as HIV testing, several studies provide evidence that having a regular healthcare provider may facilitate receiving these services. Research on HIV testing among 197 Black MSM living in Massachusetts in 2008 found that those who had a regular healthcare provider were 60% more likely to have received an HIV test in the past 2 years compared

to those without a regular provider (p=0.02) [25]. Similarly, in a 2007 survey among 306 young African-American men living in Wisconsin, those who had a regular healthcare provider were nearly two times as likely to have had an HIV test in the last year compared to those without a regular healthcare provider [26].

While efforts are underway to promote new modalities for accessing PrEP [27], licensed prescribers remain the primary "gate-keepers" to PrEP prescriptions. One hypothesis which may explain why those who see the same prescriber (i.e. a regular healthcare provider) consistently may be more likely to use PrEP compared to those who see different prescribers is that seeing the same provider may increase the chances of a patient developing a trusting relationship with that provider and being more willing to follow through if a trusted provider recommends PrEP [28]. A survey of 385 New York state residents found that those who had high trust in their regular provider were more than three times as likely to be willing to try PrEP compared to those with lower trust in their provider [17]. However, no studies have investigated whether trust in a regular healthcare provider leads MSM to have higher PrEP initiation.

We did not anticipate finding that White MSM with a regular healthcare provider would be less likely to have ever used PrEP compared to White MSM without one. There is no available research on why this association would be different between Black and White MSM, but one reason for this difference could be related to trust in healthcare providers. Because of the U.S. medical community's history of harming Black patients [29], Black MSM with a regular healthcare provider may be more likely to try a new medication like PrEP if the recommendation is coming from a healthcare provider whom they trust sufficiently. In other words, at-risk Black MSM who have a regular healthcare provider whom they trust may be more likely to speak with that provider about HIV risk indicators or follow their provider's recommendation to start PrEP. In contrast, cultivating deep provider-patient trust among White MSM may not be as necessary. Furthermore, our analysis

of PrEP-naïve MSM found that a higher proportion of Black MSM had a healthcare provider who discussed PrEP with them in the last year compared to White MSM. This too signals that Black MSM may feel more comfortable disclosing risk behaviors to a provider or have a provider who is more proactive in discussing PrEP. Future studies should further investigate the nuances in provider–patient relationships by race/ethnicity to optimize HIV prevention and care provision.

Our study has several limitations, one of which is its cross-sectional design. We could not determine whether those who reported having a regular healthcare provider started seeing that provider before or after they began using PrEP. Furthermore, we did not ask respondents who used PrEP whether they started using the medication due to a recommendation from a regular healthcare provider or because of another reason.

Because we relied on individuals in mostly public settings to opt into taking our survey, our study may also be impacted by selection bias. Eighty-one percent of our respondents reported having a regular healthcare provider, which suggests that the majority of our respondents have access to healthcare generally and could be more informed about health issues compared to a random sample of Black and White MSM. Although respondents completed the survey individually, the public setting may have led some to feel hesitant about disclosing an HIV diagnosis, lack of healthcare access, or lack of PrEP use, which may overestimate of our primary measure of association. Finally, while we were unable to conduct a stratified analysis of interest in starting PrEP among PrEP-naïve MSM by race/ethnicity, we still found that there was a positive association between having a regular healthcare provider and interest in starting PrEP in the overarching study population. This signals that having a regular healthcare provider could be beneficial in increasing PrEP interest among at-risk MSM.

Although our study had several limitations, it is among the first studies to examine racial differences in the association between having a regular healthcare provider and PrEP use,

particularly in an urban setting in the South that has focused heavily on HIV prevention among Black MSM. Compared to other studies, our study surveyed a population with higher overall rates of PrEP use [22], more representation of Black MSM [22], and more recent data [18, 23], which allowed us to calculate a robust and current comparison between those with and without a regular healthcare provider by race/ethnicity.

Overall, this research provides new insights into how the association between having a regular healthcare provider and ever using PrEP differs among Black and White MSM. It suggests that connecting Black MSM at risk for HIV with a regular healthcare provider may be an important facilitator in increasing the proportion of at-risk Black MSM who use PrEP. Future studies should further investigate the mechanisms behind this relationship among both Black and White MSM by collecting data on what healthcare factors lead a person to begin using PrEP. Additionally, upcoming studies should consider examining this relationship among other sub-groups, such as Hispanic MSM, who make up the second-largest group of MSM with a recent HIV diagnosis, and Black cisgender women, who account for 58% of current HIV infections among cisgender women [1].

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Tables

Table 1. Demographic characteristics, HIV risk indicators, and healthcare experiences of at-risk non-Hispanic Black and White MSM residing in metro Atlanta, 2019 Fulton County Board of Health Pride Survey, Georgia (N=264)

	Total (n=264) n (%)	NH Black MSM (n=151) n (%)	NH White MSM (n=113) n (%)
Demographic characteristics			
Venue survey administered (n=264)			
In-person Pride event	250 (95%)	148 (98%)	102 (90%)
Online platform	14 (5%)	3 (2%)	11 (10%)
Age (years) (n=264)			
18-24	68 (26%)	43 (28%)	25 (22%)
25-34	105 (40%)	62 (41%)	43 (38%)
35+	91 (35%)	46 (30%)	45 (40%)
Health insurance (n=260)			
No insurance	57 (22%)	46 (31%)	11 (10%)
Has insurance	203 (78%)	102 (69%)	101 (90%)
Education (n=262)			
No college[1]	58 (22%)	42 (28%)	16 (14%)
Some college or higher	204 (78%)	107 (72%)	97 (86%)
Employment status (n=252)			
Not employed	49 (19%)	34 (23%)	15 (14%)
Employed	203 (81%)	113 (77%)	90 (86%)
Annual income (n=260)			
<$60,000	188 (72%)	121 (81%)	67 (60%)
≥$60,000	72 (28%)	28 (19%)	44 (40%)
HIV risk indicators from the past 6 months			
Had sex without a condom (n=253)			
No	84 (33%)	47 (33%)	37 (34%)
Yes[2]	169 (67%)	97 (67%)	72 (66%)
Had sex with an HIV+ partner (n=229)			
No	179 (78%)	94 (75%)	85 (83%)
Yes[3]	50 (22%)	32 (25%)	18 (17%)
Diagnosed with any bacterial STI (n=259)			
No	246 (95%)	141 (95%)	105 (95%)
Yes	13 (5%)	7 (5%)	6 (5%)
Injected drugs[4] (n=251)			
No	244 (97%)	136 (96%)	108 (98%)
Yes	7 (3%)	5 (4%)	2 (2%)
Healthcare experiences			
Has a regular healthcare provider[5] (n=264)			
No	50 (19%)	34 (23%)	16 (14%)

Yes	214 (81%)	117 (77%)	97 (86%)
Has seen their regular healthcare provider in the last year[6] (n=211)			
No	32 (15%)	17 (15%)	15 (16%)
Yes	179 (85%)	15 (16%)	79 (84%)
Regular healthcare provider knows their sexual orientation (n=208)			
No	28 (13%)	14 (12%)	14 (15%)
Yes	180 (87%)	101 (88%)	79 (85%)
Experienced discrimination in a healthcare setting[7] (n=262)			
No	232 (89%)	133 (89%)	99 (88%)
Yes	30 (12%)	17 (11%)	13 (12%)

Abbreviations: HIV – human immunodeficiency virus, MSM – men who have sex with men, PrEP – preexposure prophylaxis, STI – sexually transmitted infection

[1]Has a high school degree/GED or did not complete high school

[2]Reported having either receptive or insertive sex without a condom

[3]Reported having sex with at least one HIV+ partner

[4]Survey notes that these are not drugs prescribed by a healthcare provider

[5]Defined as a medical professional whom a person seeks when they are sick or need advice about their health or a physical need

[6]Only includes respondents with a regular healthcare provider

[7]Respondents were asked if they had ever been denied healthcare or felt they were given lower-quality care because a clinic staff member knew their sexual orientation

Table 2. Association between having a regular healthcare provider and ever using PrEP among MSM by race/ethnicity, bivariate and multivariate log binomial regression models (N=264)

	Distribution of Characteristics		Ever PrEP users			
	Total Sample (n=264)	Ever PrEP Users (n=82)	Unadjusted PR		Adjusted PR[1]	
	N(%)	N(%)	PR	(95%CI)	aPR	(95%CI)
Black MSM (n=151)						
Has a regular healthcare provider	117 (77%)	40 (91%)	**2.91**	**(1.12, 7.55)**	2.58	(0.96, 6.93)
No regular healthcare provider	34 (23%)	4 (9%)	Ref		Ref	
White MSM (n=113)						
Has a regular healthcare provider	97 (86%)	31 (82%)	0.73	(0.39, 1.37)	0.67	(0.36, 1.27)
No regular healthcare provider	16 (14%)	7 (18%)	Ref		Ref	

Abbreviations: PrEP – preexposure prophylaxis, MSM – men who have sex with men, PR – prevalence ratio, CI – confidence interval

Statistically significant variables at the $p<0.05$ level are indicated in bold

[1]Adjusts for insurance status and age

Table 3. Association between having a regular healthcare provider and being interested in starting PrEP among PrEP-naïve Black and White MSM, bivariate and multivariate log binomial regression models (N=171)

	Distribution of characteristics		Interested in starting PrEP[1]			
	Total PrEP-naïve MSM (n=171)	Interested in starting PrEP (n=60)	Unadjusted PR		Adjusted PR[2]	
	N(%)	N(%)	PR	(95% CI)	aPR	(95% CI)
Has a regular healthcare provider	136 (80%)	47 (78%)	0.93	(0.57, 1.52)	1.67	(0.99, 2.82)
No regular healthcare provider	35 (20%)	13 (22%)	Ref		ref	

Abbreviations: PrEP – preexposure prophylaxis, MSM – men who have sex with men, PR – prevalence ratio, CI – confidence interval

Statistically significant variables at the $p<0.05$ level are indicated in bold

[1]When asked if they were interested in starting PrEP, respondent indicated "yes" instead of "no" or "not sure"

[2]Adjusts for insurance status, age, and race/ethnicity

Figures

Figure 1. Study population and populations used for analyses