



The Role of Social Support in HIV Testing and PrEP Awareness among Young Black Men and Transgender Women Who Have Sex with Men or Transgender Women

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Abstract Young black men and transgender women (transwomen) who have sex with men or transwomen are most vulnerable in terms of risk for HIV infection, also reflected in their extremely high incidence rates. As testing rates and pre-exposure prophylaxis (PrEP) uptake remain suboptimal among these groups, primarily due to unique structural barriers, the present analyses draw on data from an online survey, administered October 2014 to August 2015, to explore social support-related predictors of knowledge and behavior around HIV prevention.

Participants were 169 biological men who identified as black, with a mean age of 24 (SD = 2.97, range 17–29); 8% identified as transwomen. Logistic regression

models assessed whether HIV-related social support predicted HIV testing patterns, PrEP awareness, and use. Those with higher HIV-related social support reported having been more likely to have ever tested (adjusted odds ratio (aOR) = 1.48; $p < 0.001$) and tested in the past 6 months (aOR = 1.22; $p < 0.01$). They were also more likely to intend to test in the next 6 months (aOR = 1.16; $p < 0.001$), including at a medical office or community-based organization (aOR = 1.20; $p < 0.001$), yet less likely to intend to self-test (aOR = 0.81; $p < 0.001$). Lastly, higher social support was significantly associated with prior knowledge of self-testing (aOR = 1.19; $p < 0.05$), couples testing (aOR = 1.26; $p < 0.001$), and PrEP (aOR = 1.22; $p < 0.01$), as well as prevention

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self-efficacy (aOR = 1.30; $p < 0.001$), but inversely associated with prior self-testing (aOR = 0.80; $p < 0.05$). For young black men and transwomen who have sex with men or transwomen, HIV-related social support, which likely has a strong peer component, appears to be a facilitator of optimal testing and intentions to test, as well as awareness of novel prevention strategies (like self-testing or PrEP). However, community resourcefulness needs to be bolstered by other mechanisms, such as changes within healthcare settings, to increase actual use of novel prevention modalities.

Keywords HIV-prevention · HIV testing · Pre-exposure prophylaxis · Peer support · Men who have sex with men · Transgender women · Black individuals

Introduction

As HIV prevention options have expanded to include a range of testing methods (e.g., self and couples HIV testing and counseling (CHTC)) and highly efficacious biomedical tools (e.g., pre-exposure prophylaxis) [1, 2], making these viable prevention strategies accessible for the groups who could benefit from them most remains a constant challenge for public health. Young black men and transgender women (transwomen) who have sex with men or transwomen represent some of the most vulnerable populations in terms of significantly increased odds of HIV contraction, as reflected in their extremely high incidence rates [3–6]. Between 2005 and 2016, black men who have sex with men in the United States (US) experienced a 154% increase in HIV diagnoses [5], most of which was driven by those aged 24–34 [4]. Young black transwomen have even higher HIV rates than men who have sex with men [7–13], with some estimates indicating that the risk of being HIV-positive is 34.2 times higher for transwomen compared with the general US population [14].

Progress has been made in investigating what might be some predictors of HIV testing facilitation, such that tailored recommendations may be made to increase testing odds [15, 16]. These include linkage to nearby testing locations (clinics, community-based organizations (CBOs), mobile vans, home), couples-based testing (CHTC), self-testing [16, 17], and technology-facilitated testing (e.g., using apps, clinic locators, text messaging). While recent initiatives have significantly increased testing rates for young black men who have

sex with men [18], these remain suboptimal, including among black transwomen, primarily due to structural barriers that are unique to each of the groups [10, 13, 19]. The number of unrecognized infections among these groups continues to be high [18, 20], demanding that further investigations uncover additional facilitators for HIV testing [21].

Shifting to discussions of the most recent and promising prevention strategy, specifically PrEP, soon after its FDA approval in 2012, the US has experienced a replication of the HIV treatment cascade in the new PrEP cascade, from awareness to adherence [22]. On this cascade, young black men and transwomen who have sex with men or transwomen are less likely to be aware of or use PrEP [23, 24], despite their interest in this powerful prevention tool once acquainted with it [22, 24, 25]. Multi-level barriers have been identified to explain and address low PrEP uptake rates by these groups, from systems level (e.g., health insurance, access to settings where PrEP is dispensed), to provider level (e.g., provider/health system distrust, discomfort discussing sexual behavior, and provider cultural competency and bias), to individual level (e.g., cost, daily medication regimens, HIV-related stigma, distrust in PrEP efficacy) [24, 26–29]. However, the need for continued progress to break through barriers and efficiently utilize facilitators of PrEP uptake is evidenced by young black men and transwomen who have sex with men or transwomen's persistent low awareness of and engagement with PrEP.

Social support and cultural norms and practices within the black community are pivotal elements to consider for attaining a deeper understanding of transmission, prevention, and treatment modalities that would be most resonant with these groups [30]. Evidence indicates that black and Latino men who have sex with men who had more social support, including from peers, reported less delayed and more frequent HIV testing, and less unrecognized HIV infection and risky sexual behaviors [30–32], despite documented barriers to HIV testing, such as exposure to racism and homophobia, low socioeconomic status, risky sexual behaviors, and age [33]. Furthermore, nurturing emotional social support from peers improved acceptance and PrEP adherence among black men who have sex with men, which was also positively associated with larger peer networks [32, 34]. While social support may come from multiple types of sources (e.g., families, schools), the role of peers (as intervention deliverers, systems navigators, or

recruitment facilitators) has been proven to be key in promoting HIV testing, HIV risk reduction, and engagement in observational and intervention research with young black men and transwomen who have sex with men or transwomen [33, 35–38]. Peers are considered to be similar others in terms of one's race/ethnicity, age, gender, sexual orientation, and susceptibility to HIV as a community that shares sexual networks and similar stigma-based barriers to healthcare [30, 39]. Due to high homo- and transphobia from young black men and transwomen who have sex with men or transwomen's social spheres (e.g., families, schools, religious groups) [32, 40, 41], they often find support from alike persons (e.g., peers) [39], with whom they share both adversity (in the form of social rejection) and a strong sense of community, resourcefulness, and empowerment [42–44].

The salience of social/peer support in HIV-related health promotion is likely due to three essential components of social support: informational (e.g., knowledge sharing of various testing options), emotional (e.g., reinforcement of self-worth, encouragement to test, discuss anxiety-invoking HIV status with partners, or condom negotiation), and appraisal support (e.g., motivational messaging that fosters perseverance towards a potentially challenging goal such as regular testing or PrEP uptake) [39]. Tapping into naturally occurring dynamics within communities of young black men and transwomen who have sex with men or transwomen, such as propagating a community discourse around HIV prevention and treatment, would augment the continuum of HIV prevention and care [45]. Harnessing naturally forming networks among which HIV-related information may "travel" and potentially lead to improved engagement with HIV prevention seems warranted given the seminal role that sources of support can play in behavioral change among young black men and transwomen who have sex with men or transwomen [46, 47].

Despite building a layered understanding of both barriers to and facilitators of HIV testing and PrEP uptake among young black men and transwomen who have sex with men or transwomen, bolstering our tools to reduce the HIV epidemic requires continued queries to determine means for increasing their HIV prevention engagement. Linkage to prevention services would not only minimize the odds of HIV acquisition, but also build young black men and transwomen who have sex with men or transwomen's health self-efficacy to extend

beyond prevention and into other domains where health disparities exist, such as mental health and medication adherence (for prevention or treatment). The present analyses draw on data from a comprehensive online survey that examined associations among intentions to use various HIV testing options (self-testing, testing at a clinic or other provider, and CHTC) and demographic, behavioral, psychosocial, and socio-structural factors among young black men and transwomen who have sex with men or transwomen [48]. In these analyses, we explored social support-related predictors of knowledge and behavior around HIV prevention, specifically as they pertain to HIV testing and PrEP.

Methods

Participants

Participants were eligible if they (1) were a male at birth and had a current gender identity of either male/man or female/woman/transgender woman; (2) self-identified as black, African-American, Caribbean black, African black, or multiethnic black; (3) were between 16 and 29 years of age; (4) were not known to be HIV-infected (including those who had never tested for HIV); (5) reported insertive or receptive anal intercourse with a man or transwoman in the last 12 months; and (6) provided informed consent or assent for the study. Participants were ineligible for the current study if they were enrolled in other HIV-related research studies involving HIV testing and/or were participating in an HIV vaccine trial [48].

Recruitment and Consent

Recruitment into the study employed several methods, including online advertising on social and sexual networking sites and apps, face-to-face outreach at New York City events, and referrals by study participants. Online ads led to a brief eligibility screener on the study website. Eligible participants completed a Web-based consent form stating the purpose of the survey, estimated time of survey completion, and a brief description of survey content. The consent provided assurances of confidentiality and secure data storage and the principal investigator's information. Consenting participants were directed to the Web-based survey, on Health

Insurance Portability and Accountability Act–compliant, password-protected servers at Survey Gizmo. At the end of the survey, participants had the option to provide their first name, mobile phone number, and email to facilitate distribution of gift codes for the incentive. Internet Protocol (IP) addresses were only recorded for the purpose of collecting one survey per IP address. The survey was administered between October 2014 and August 2015 for the New York City metropolitan area initially, without compensation, followed by a survey that was incentivized with a \$10 gift code once completed. From June 2015 to July 2015, surveys were completed at New York City events and incentivized with a \$10 gift card once completed (after undergoing the above-mentioned eligibility and consent procedures on an iPad). In order to increase the number of participants, we distributed the survey at a national level for approximately 1 month, from July 2015 to August 2015, with no gift code. Only 7 respondents in the national survey resided in the State of New York. Those ineligible were provided a link to locate HIV testing sites [48].

Measures

The survey included a wide range of questions and scales pertaining to HIV testing and risk behaviors. We only describe measures used in the current analyses.

Demographics These included age, education, employment, sexual and gender identity, relationship status, and level of “outness.”

Predictor Variable

The “social support” scale ($\alpha = 0.92$) [30] is an average composite of three Likert-type items, which asked the following: How often do you have someone to (1) share concerns about HIV/AIDS?; (2) talk about sex?; and (3) talk to about HIV testing? Response options ranged between “never” (0) and “always or all of the time” (4) [48]. These items were selected from prior research that found positive associations between social support and HIV health promotion practices (e.g., HIV testing, condom use) among young African-American men who have sex with men [30]. An average (continuous) score of social support was calculated for the present analyses.

Outcome Variables

HIV Testing Patterns The current analyses included two HIV testing–related questions: (1) having ever tested (yes/no) and (2) having tested in the past 6 months (yes/no).

Testing Intentions in the Next 6 Months These questions included likelihood of testing (1) in the next 6 months; (2) on one’s own at a medical office or CBO; (3) with one’s partner at a medical office or CBO; or (4) at home using a self-testing kit. These questions were measured with one item each, using responses options that ranged between “very unlikely” (0) and “very likely” (4) [48]. These items were recoded into dichotomous “low” (including 0 and 1) and “high” (including 2, 3, and 4) categorical variables.

Novel Testing Methods

HIV Self-Testing Awareness of self-testing was measured with one item that asked about having knowledge of this method prior to the day of the survey (yes/no), while prior self-testing use was measured with one item that asked whether one had ever used this method before (yes/no).

CHTC These questions asked whether or not participants had (1) prior awareness of CHTC (yes/no) and (2) previously engaged in CHTC (yes/no).

PrEP-Related Measures PrEP awareness was measured with one item that asked about having knowledge of PrEP prior to the day of the survey (yes/no), while prior PrEP use was measured with one item that asked whether one had ever used PrEP before (yes/no).

HIV Prevention Self-Efficacy One’s proactive attitude towards knowing one’s status and communicating about it was measured with 5 items, including “I want to know if I have HIV, so I don’t give it so someone else.” or “I know where I can get an HIV test.” These were measured using a Likert scale with response options that ranged between “strongly disagree” (0) and “strongly agree” (4). First, a total average score was calculated, and then it was dichotomized at the median split into “low” and “high.”

Testing Comfort Lastly, although this is not an outcome, we hypothesized that intentions to test in the next 6 months using certain modalities (above) may be mediated by the level of comfort with the corresponding testing modality. As such, participants were asked how

comfortable they would be testing (1) with one's provider, (2) using CHTC, or (3) self-testing. These questions were measured with one item each, using response options that ranged between "not comfortable" (0) and "comfortable" (3) [48]. These items were recoded into dichotomous "low" (including 0 and 1) and "high" (including 2 and 3) categorical variables.

Institutional Review Board Approval

The study was approved and was reviewed annually by the Institutional Review Boards of the New York Blood Center, Public Health Solutions, and Binghamton University. A Certificate of Confidentiality was obtained from the funder.

Analyses

Prior to conducting analyses, we considered whether or not to include the subsample of transgender women ($n = 14$). Inclusion of transgender women in previous research with men who have sex with men has not allowed for a nuanced understanding of their distinct needs and subsequent tailored supports. However, given the scope of the study and importance of continued research on the prevention patterns and needs of transgender women, we assessed whether the results varied based on whether or not the transgender subsample was included. Given that none of the analyses/models yielded different results when the subsample was included/excluded, we made the decision to include transgender women in analyses. Descriptive statistics (including means, medians, standard deviations, ranges, and proportions) were conducted to examine the distribution of the items of interest. The three items related to social support were averaged to yield a social support score that was entered in subsequent models as the predictor variable. Bivariate associations (correlations, chi-squares, and t -tests) were run preliminarily to examine relationships among social support, demographics, and the HIV testing and PrEP outcomes of interest. Next, given our dichotomous outcomes, we ran multivariate logistic regression models for all significant predictor-outcome variable associations indicated by our bivariate analyses. Variables that were statistically associated at $p < 0.05$ with our outcomes (e.g., age, levels of education, and outness about sexual orientation to others) were included into the multivariate models. Further, we included in the two models that predicted likelihood of testing in the next 6 months (e.g., on one's own with their provider and self-

testing) variables indicative of one's level of comfort with each of these testing modalities to test mediational hypotheses. Associations are reported as adjusted odds ratios (aORs). Analyses were conducted in SPSS 25.

Results

This analysis included 168 participants, whose mean age was 24 ($SD = 2.97$), with a range between 17 and 29. Table 1 presents our sample's characteristics. While the sample of transgender women was too small to be able to yield valid results in separate analyses for this subgroup, nearly a quarter (24%) had a bachelor's degree, and most (60%) were out to more than half of the people they knew, did not work full time (57%), did not have a main partner (60%), and were under the age of 24 (56%). Level of social support around HIV topics did not differ significantly across demographic characteristics, including gender, with the exception of education (i.e., those with more social support were more likely to have a bachelor's degree) and outness (i.e., those with more social support were more likely to be out to more people). Therefore, education and outness were included in subsequent regression models in order to adjust for these sample differences. Age was only associated with one outcome, specifically with having ever tested (e.g., older participants were more likely to have tested in their lifetime), therefore, it was only included in this model.

Preliminary Bivariate Associations among Predictor and Outcomes

Table 2 illustrates bivariate associations between the predictor variable of social support ($M = 8.3$, $SD = 2.9$) and all outcomes of interest. The majority of outcomes were significantly associated with having social support around HIV-related issues, with the exception of likelihood of using CHTC in the next 6 months, having previously used CHTC or PrEP (Table 2). Consequently, regression models were not run for these last three variables.

HIV Testing Patterns

Table 3 outlines the results of our regression models. Those who reported higher peer support around HIV-related issues also reported having been more likely to have ever tested (aOR = 1.48; $p < 0.001$) and to have tested in the past 6 months (aOR = 1.22; $p < 0.01$).

Table 1 Sample characteristics ($N = 168$)

	Total N (%)	Peer support, M (SD)	Test statistic
Gender			
Male	154 (92)	8.3 (2.9)	n.s.
Transgender female	14 (8)	8.9 (3.4)	
Education			
Less than college degree	128 (76)	7.9 (2.8)	$t(166) = -2.9, p < 0.01$
College degree or more	40 (24)	9.5 (2.8)	
Employment			n.s.
Full time	72 (43)	8.3 (3.0)	
Less than full time	96 (57)	8.3 (2.9)	
Sexual identity			n.s.
Gay	123 (73)	8.4 (3.0)	
Other	45 (27)	8.2 (3.0)	
Relationship status			
Single	100 (60)	8.5 (3.0)	n.s.
In a relationship	68 (40)	8.1 (2.9)	
Outness			
Out to half or less	65 (39)	7.7 (2.6)	$t(165) = -2.4, p < 0.05$
Out to more than half	103 (61)	8.8 (3.1)	
Age			
17–24	94 (56)	8.4 (2.9)	n.s.
25–29	74 (44)	8.2 (3.0)	

HIV Testing Intentions in the Next 6 Months

Higher social support around HIV-related issues was significantly associated with increased intentions to test in the next 6 months (aOR = 1.16; $p < 0.01$). Higher social support was also associated with increased intentions to test in the next 6 months with one's provider and increased levels of comfort with this testing modality (aOR = 1.20; $p < 0.05$, and aOR = 2.36; $p < 0.01$, respectively); however, the latter did not mediate the former.

CHTC

Increased social support was significantly associated with having prior knowledge of CHTC (aOR = 1.26; $p < 0.001$), but not associated with prior use or intentions to use CHTC in the next 6 months.

Self-Testing

While higher social support around HIV issues significantly predicted having prior knowledge of self-testing

(aOR = 1.19; $p < 0.01$), it also predicted significantly lower odds of actually having previously used self-testing (aOR = 0.80; $p < 0.05$). Higher social support significantly predicted lower intentions to self-test in the next 6 months (aOR = 0.81; $p < 0.01$), but was also associated with higher levels of comfort with self-testing (aOR = 1.52; $p < 0.05$). There was no mediation of the latter by the former, however.

PrEP Awareness and Use

Similarly, while higher social support was significantly associated with having prior knowledge of PrEP (aOR = 1.22; $p < 0.01$), it was not associated with actually having used PrEP before.

Self-Efficacy around HIV Status Communication and Prevention

Lastly, having increased social support was a significant predictor of having higher self-efficacy around knowing and communicating one's HIV status and intentions to

Table 2 Distribution of peer support, stratified by HIV testing and prevention outcomes ($N = 168$)

	N (%)	Peer support, M (SD)	Test statistic
Peer support (continuous predictor)		8.3 (2.9)	
Outcomes			
Testing patterns			
Ever tested			$t(166) = -4.3, p < 0.01$
No	24 (14)	6.0 (2.3)	
Yes	144 (86)	8.7 (2.8)	
Tested for the past 6 months			$t(142) = -2.9, p < 0.01$
No	46 (32)	7.7 (2.7)	
Yes	98 (68)	9.2 (2.9)	
Likelihood of future testing			
Likelihood of testing in the next 6 months			$t(166) = -2.9, p < 0.01$
Low	73 (43)	7.6 (2.7)	
High	95 (57)	8.9 (3.0)	
Likelihood of testing at medical office or CBO			$t(166) = -2.7, p < 0.01$
Low	25 (15)	6.9 (2.9)	
High	143 (85)	8.6 (2.9)	
Likelihood of CHTC			n.s.
Low	88 (52)	8.4 (2.9)	
High	80 (48)	8.3 (2.9)	
Likelihood of self-testing			$t(166) = 3.9, p < 0.001$
Low	100 (59)	9.1 (3.1)	
High	69 (41)	7.3 (2.3)	
Prior knowledge or use			
Knew about self-testing before today			$t(166) = -3.2, p < 0.01$
No	50 (30)	7.2 (2.9)	
Yes	118 (70)	8.8 (2.9)	
Used HIV self-testing before today			$t(105) = 2.4, p < 0.05$
No	91 (85)	9.4 (2.7)	
Yes	16 (15)	7.6 (2.6)	
Knew about CHTC before today			$t(166) = -4.5, p < 0.001$
No	76 (45)	7.2 (2.9)	
Yes	92 (55)	9.2 (2.7)	
Used CHTC before today			n.s.
No	66 (78)	9.5 (2.6)	
Yes	19 (22)	2.8 (2.8)	
Knew about PrEP before today			$t(166) = -4.1, p < 0.001$
No	55 (33)	7.1 (2.5)	
Yes	113 (67)	8.9 (2.9)	
Used PrEP before			n.s.
No	88 (78)	8.9 (2.9)	
Yes	25 (22)	8.8 (2.9)	
HIV prevention self-efficacy			$t(166) = -5.2, p < 0.001$
Low	79 (47)	7.2 (2.5)	
High	89 (53)	9.4 (3.0)	

protect others from contracting HIV (aOR = 1.30; $p < 0.001$).

Discussion

These analyses sought to determine the role played by having social support in discussing HIV-related issues (e.g., having someone to discuss sex, HIV testing and HIV/AIDS concerns) and young black men and transwomen who have sex with men or transwomen's HIV prevention patterns, awareness, and use. Documenting whether one's networks of support (e.g., families, peers) may facilitate engagement with the HIV prevention continuum is essential to our continued efforts to bolster prevention efforts among most marginalized groups. To a great extent across our outcomes of interest, having greater social support in discussing HIV-related issues had a positive impact on HIV prevention knowledge, patterns, and intentions for young black men and transwomen who have sex with men or transwomen. These findings suggest utility in creating resonant community-level discourses around HIV prevention and spaces in which these could be propagated among members, including peers. These findings augment previous research on the benefits of supportive peer involvement in HIV-related protection (prevention and/or treatment) among samples similar to ours [33, 35, 36], with the present analyses extending that knowledge to newer prevention methods such as self-testing, CHTC, and PrEP.

Our analyses of this online sample indicate that social support for these discussions increases with one's education level and with being out about one's sexual orientation to more people. The latter have been associated with lower levels of internalized homophobia [40, 41], supporting the need for messaging that is empowering and affirming of one's sexual, gender, and race-based identity, in order to combat stigma (whether through public health campaigns, school curricula, individual- or community-level interventions) [35, 49]. Further, lower education levels are generally associated with hardship, such that the more structural barriers to resources related to stigma and discrimination, including to uninterrupted and quality education, the higher one's health risks. Recent analyses indicate that HIV risk (e.g., condomless sex, multiple partners, recent STI) among black men who have sex with men is predicted by a recent job loss, financial crisis, housing

instability, or convictions, indicating the persistence of concrete structural adverse factors that need to be addressed in order to minimize HIV vulnerability [5, 19, 50], among others.

Overall, having more social support indicated a positive impact on past and future HIV testing patterns (lifetime, recent and near-future anticipated testing), as well as awareness of PrEP, and self-testing, and CHTC options. These findings resonate with previous research demonstrating the resilience of the black community, where members constitute resources from within, and have played important roles in program implementation and intervention research [30, 33, 35–38]. Peer support, especially from larger networks, has been associated with more optimal HIV testing, PrEP adherence, and less unrecognized HIV infection and HIV risk [31–34]. Most importantly, peer norms among black men who have sex with men have had a significant positive impact on condom use [51], suggesting both the resourcefulness of the community itself and the benefits of engaging members in playing agentic roles against the HIV epidemic by propagating positive sexual health norms. These positions have the potential to empower young black men and transwomen who have sex with men or transwomen, which will continue counteracting their historical disenfranchisement and marginalization in the US.

Furthermore, we found that having greater HIV prevention support was associated with higher HIV status self-efficacy (e.g., wanting to know one's status for both protection of others and own treatment initiation), which indicates that connections to one's community are accompanied by a positive sense of responsibility and agency in protecting it. Knowing one's status is not only a benefit to the self, but to the larger networks to which young black men and transwomen who have sex with men or transwomen belong and wish to protect. This, again, reverberates an agentic stance towards the in-group, which may be viewed as a healthy protective adaptation in the face of systemic healthcare mistreatment and barriers to equitable resources [5, 19]. Consistent with prior research on peer social support [39], we postulate that our participants rely on their communities for information, emotional support, and motivation to engage in health promotion behaviors.

However, our analyses also signal that additional intervention is needed to augment the positive effects of social support on HIV prevention for young black men and transwomen who have sex with men or

Table 3 Adjusted associations between peer support and HIV prevention patterns, awareness, and use from multivariate logistic regression models ($N = 168$)

Outcomes	Adjusted odds ratios (aOR)	95% CI
Testing patterns (no/yes)		
Ever tested		
Education	0.76	0.21–2.75
Level of outness	1.11	0.43–2.89
Age	1.24**	1.05–1.47
Peer support	1.48***	1.20–1.81
Tested for the past 6 months		
Education	0.95	0.39–2.31
Level of outness	0.76	0.35–1.63
Peer support	1.22**	1.06–1.40
Testing intentions in the next 6 months (low/high)		
Likelihood of testing in the next 6 months		
Education	1.28	0.59–2.79
Level of outness	1.18	0.62–2.28
Peer support	1.16**	1.03–1.29
Likelihood of testing at medical office or CBO		
Education	0.77	0.24–1.47
Level of outness	0.61	0.23–1.62
Level of comfort testing with one's provider	2.36**	1.26–4.43
Peer support	1.20*	1.01–1.42
Likelihood of self-testing		
Education	0.57	0.25–1.31
Level of outness	1.14	0.57–2.29
Level of comfort self-testing	1.52*	1.00–2.33
Peer support	0.81**	0.72–0.92
Prior knowledge or use (no/yes)		
Knew about self-testing before today		
Education	1.24	0.52–2.98
Level of outness	1.08	0.53–2.19
Peer support	1.19**	1.05–1.35
Used HIV self-testing before today		
Education	0.54	0.11–2.78
Level of outness	1.71	0.52–5.59
Peer support	0.80*	0.65–0.99
Knew about CHTC before today		
Education	1.50	0.68–3.35
Level of outness	0.91	0.47–1.80
Peer support	1.26***	1.12–1.42
Knew about PrEP before today		
Education	3.66*	1.29–10.38
Level of outness	0.50	0.63–2.61

Table 3 (continued)

Outcomes	Adjusted odds ratios (aOR)	95% CI
Peer support	1.22**	1.08–1.39
HIV prevention self-efficacy (low/high)		
Education	1.35	0.60–3.03
Level of outness	1.14	0.58–2.24
Peer support	1.30***	1.15–1.47

*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Notes: Age was entered as a continuous (age per year) variable. Due to sample size limitations, we did not include employment, sexual identity, or relationship status into the multivariate models because they were not statistically associated ($p < 0.05$) with the outcomes

transwomen. Specifically, what social support did not predict was the actual use of or intentions to use self-testing, CHTC, or PrEP. This finding provides reason for vigilance in how we promote these relatively newer, yet potentially efficacious prevention options in order to avoid missed opportunities. On an individual level, it is possible that the relative novelty of these prevention strategies, compared with condom use or individual clinic HIV testing, elicits less trust and therefore willingness to use them [52], despite increased intentions to use strategies such as CHTC or PrEP, both within our sample and others similar to ours [53, 54]. Certain conditions are more likely to facilitate self-testing, for example, such as affordability, pre-test messaging that would reduce anxiety around use in general and correct use in particular, and easy and comfortable access to immediate support in case of a positive result [16]. While social support may motivate young black men and transwomen who have sex with men or transwomen towards readiness of using multiple prevention tools, there are also concrete support strategies needed to translate use intentions into action, such as resonant digital demonstrations of self-testing use or app-based access to live post-test counseling.

On a systems level, recent research indicates that medical professionals present lower intentions of prescribing PrEP to black individuals than white individuals [55]. The historically and systemically determined medical distrust of individuals of color, especially as they present intersectionality of sexual orientation and gender identity, has been well documented and

explained by inequitable access to resources, medical maltreatment, and racism [56, 57]. It is not surprising, therefore, that increased engagement with new prevention strategies such as PrEP, self-testing, and CHTC by black sexual and gender minority individuals may necessitate increased public health efforts to move these practices towards becoming more trust-conducive and normative [52, 58], including tailoring messaging to young black men and transwomen who have sex with men or transwomen by finding resonant and culturally affirmative promotion strategies with which they can identify.

Furthermore, documented structural barriers to HIV testing continue to persist, such as stigma and discrimination in healthcare settings (where cultural sensitivity is yet to be largely established), inadequate services in correctional facilities, and limited relevant prevention access in neighborhoods where young black men and transwomen who have sex with men or transwomen live [19]. Thus, even though awareness and acceptability of new preventive methods exist among young black men and transwomen who have sex with men or transwomen, they are less likely to use these because their access to them might be more limited. Concomitantly, structural interventions targeting healthcare systems and providers remain just as essential in order to increase cultural competency [19] and uniformity in prescribing PrEP to all candidates, regardless of racial/ethnic, sexual orientation, and gender identity [55, 59, 60]. Furthermore, having CHTC or PrEP, for example, available in settings where young black men and transwomen who have sex with men or transwomen feel comfortable accessing care would also increase their acceptability and uptake [19, 26], as a next step beyond social support for their use.

Individual unmet needs and systems-level deficits in serving these needs ought to be viewed in unison for change to occur. It is also possible that our findings are consistent with the information, motivation, behavioral (IMB) skills model of behavior change [61]. The IMB model posits that individuals must possess three components for behavioral action: requisite information (e.g., comprehensive PrEP-related knowledge), motivation to progress towards a goal (e.g., willingness to take PrEP), and behavioral skills necessary for attaining that goal (e.g., agency in requesting that their provider discusses PrEP with them and provides a prescription if appropriate). We hypothesize that our sample found support in community members and/or peers in

knowing about and understanding what PrEP is, and perhaps even becoming motivated to consider it, but more may be needed in order to support the formation of self-efficacy skills in seeking PrEP counseling and services. This assumption is ripe for empirical testing in future research. However, our sample's perceived self-efficacy to engage with PrEP is likely undermined by documented provider differential PrEP counseling and prescription across groups, as well as documented systems- and provider-level barriers to obtaining PrEP [29, 62], including insurance, utilization of healthcare settings where PrEP is actually available, and comfort with providers [26]. The leap from awareness and motivation to action may be facilitated by increasing young black men and transwomen who have sex with men or transwomen's sense of agency in their own healthcare decisions by fostering assertiveness, but also more equitable healthcare practices that are within their reach.

Limitations

Our findings need to be interpreted in light of several limitations. This paper describes findings generated from self-reported survey data; therefore, we cannot make causal inferences. Findings are also limited to those who self-selected to participate online and those who agreed to participate when approached offline. Thus, we can only generalize to the individuals who use websites, apps, or venues from which participants were recruited. Additionally, this is a primarily New York-based sample, and findings may not generalize to dissimilar urban or suburban locales. Furthermore, we did not collect biospecimens to verify whether participants used PrEP or were truly HIV-negative. Future longitudinal research should assess social and/or peer support and PrEP uptake that includes measuring biospecimens for tenofovir. Lastly, the nature of "social support" source(s) was not elucidated in our survey, in order to determine, for example, whether this was largely represented by peer groups, resource centers such as LGBT groups, families, or other potentially supportive entities. Subsequent research to determine the ideal combination of sources of support, or the utility of a particular source (e.g., peers) for HIV prevention promotion, would be beneficial in augmenting optimal avenues for health promotion.

Conclusions and Future Directions

As we continue our joint efforts to remove structural barriers to prevention for young black men and transwomen who have sex with men or transwomen, within-community resourcefulness and support should not be underestimated in its capacity to uphold HIV prevention. The resilience within various black communities, operationalized in this analysis as social support around HIV prevention, is proving to have a significant impact on both testing patterns, prevention self-efficacy, and awareness of newer prevention modalities such as self-testing, CHTC, and PrEP. Interventions seeking to support optimal and individually tailored HIV testing and PrEP engagement for young black men and transwomen who have sex with men or transwomen would be advantaged by leaning on the social capital that communities may bring to engagement efforts. Several documented barriers to prevention (e.g., medical distrust, differential provider approaches across minority-majority groups, awareness) may be minimized by having individuals with shared experiences engage each other in adopting frequent HIV testing patterns, using testing modalities that are acceptable to them and/or assertively initiating PrEP-related conversations with providers. Our analyses also point to gaps community-driven initiatives cannot fill alone, such as the step between “awareness” and “use.” Facilitating more culturally acceptable bridges from community engagement to healthcare access and utilization, to augment the positive impact of social networking for HIV prevention, seem to be needed to help young black men and transwomen who have sex with men or transwomen move from motivation to action. How healthcare entities can “re-invent” themselves towards increased equity remains a public policy challenge we may only be able to tackle together with the communities who strive to have an equal opportunity to prevention.

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