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HIV Risk and Sociodemographic Factors Associated with Physician-Advised HIV Testing: What Factors Are Overlooked in African American Populations?

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Abstract

HIV is diagnosed at eight times the rate in African Americans (AAs) compared to whites. One-third of AAs have never been tested for HIV. Studies indicate low rates of HIV testing in healthcare settings, so understanding missed opportunities for HIV testing can inform prevention efforts in these settings. Our study examined predictors of self-reported physician-advised HIV testing using baseline survey data ($N = 1500$) from Taking It to the Pews (TIPS), a church-based HIV/STD testing and education intervention. One-third (33%) of participants reported that their physician ever suggested an HIV test. Results indicated that participants who identified as homosexual/bisexual, received Medicaid or were uninsured, and/or had previously diagnosed STDs were more likely to report physician-advised HIV testing. AA churches provide a unique opportunity to increase the reach of HIV testing and may be well-positioned to equip their church and community members with information on HIV risk and strategies to advocate for physician-advised routine HIV testing in medical settings.

Keywords

HIV testing; Primary care HIV testing; African Americans; Health disparities; Faith-based interventions; HIV prevention

HIV disparities continue to burden African Americans (AAs) who make up 12% of the US population yet account for nearly half of new HIV cases [1, 2]. AAs are also more likely to have delayed HIV diagnoses and delayed receipt of antiretroviral medication treatment than

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Conflict of Interest

The authors declare that they have no conflict of interest.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of University of Missouri—Kansas City Institutional Review Board (Protocol ID: 13–926) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

whites [3]. AAs account for nearly 50% of all HIV-related deaths [3]. HIV testing is a key strategy in national HIV prevention efforts. Studies estimate that antiretroviral therapies can increase the lifespan of individuals who test positive for HIV and reduce the risk of HIV transmission by as much as 96% [4, 5]. HIV testing can also identify HIV-negative individuals at high risk for HIV who may benefit from pre-exposure prophylaxis (PrEP) to reduce their likelihood of contracting the disease.

In 2006, the Center for Disease Control (CDC) updated its HIV testing recommendations to include having all individuals aged 13 to 65 tested at least once as part of routine healthcare and more regular testing for those at highest risk for HIV [6, 7]. Key HIV risk factors include the following: men who have sex with men, exchanging sex for drugs or money, injection drug use, and previous diagnosed STIs [6]. In 2013, the US Preventative Task Force Services updated their guidelines, which recommend routine HIV testing for adults aged 15 to 64 [8]. The recently updated National HIV/AIDS Strategy (NHAS) established a goal of having 90% of all HIV-positive individuals aware of their status, 90% linked to care, and 90% virally suppressed by 2020. To achieve this goal, nearly all AAs will need to know their status and be connected to care if HIV-positive. However, studies estimate that between 30 and 35% of AAs have never received an HIV test [9, 10].

Despite changes in national guidelines, rates of HIV testing in healthcare settings (e.g., emergency rooms and physician offices) have not significantly increased [11], largely due to failure of physicians to offer routine testing to their patients [12]. Past research suggests that this may be due to physicians' unawareness of changes in HIV testing guidelines [13], as well as providers' limited awareness of patient/community risk, insurance coverage for HIV testing, and required HIV testing consent procedures [14]. A large Midwestern study ($N=12,596$) found that only 1.8% of eligible patients received routine HIV testing in primary care settings [15], suggesting that more efforts are needed to encourage primary care physicians to offer HIV testing services (e.g., identifying those at increased risk, suggesting testing, and linking individuals to HIV care) [16].

Studies demonstrate that physician recommendation is one of the strongest predictors of a recent HIV test [17]. Interventions designed to increase primary care HIV testing have been effective, with up to 83% of participants accepting an HIV test and AAs being more likely to accept an HIV test than whites [18, 19]. A recent study by Baumann and colleagues (2018) found that 66% of AAs want their primary care provider to offer HIV testing. Even participants who did not want their provider to offer HIV testing reported that they would get tested if it was medically advised by their provider [20], despite the myriad reports on AAs' mistrust of medical systems and providers [21–23]. However, in a national survey, 40% of AAs reported that their doctor had never talked to them about HIV/AIDS [12]. Addressing these missed opportunities for HIV testing in medical settings and increasing accessible, supportive HIV testing in trusted community settings can assist in achieving NHAS goals and reducing the disproportionate burden of HIV among AAs.

The Black Church is a highly influential institution that can serve as a trusted setting to increase the reach of routine HIV testing and mobilize AAs to advocate for testing in medical settings. AAs have the highest rate of church attendance among all racial/ethnic

groups [24], and researchers have successfully implemented HIV education and testing interventions in Black churches [25–28]. Additionally, AA churches are uniquely positioned to not only serve their congregants but they also have extended reach to serve community members who are served through church outreach ministries (e.g., food/clothing pantries and afterschool programs) [29], and who may experience a range of HIV risks. Many AA churches are also highly concentrated with older AA women, who may be less likely to be tested for HIV and/or may be less likely to accept physician-recommended HIV tests [19, 30].

Further understanding of factors related to physician-advised HIV testing among church-affiliated populations can inform how faith-based HIV prevention efforts may (a) provide HIV testing and counseling/referral services with AAs who may otherwise go untested and (b) inform and mobilize AAs to advocate for increased physician awareness and action in advising testing of AA patients. However, to our knowledge, no studies have examined predictors of physician-recommended HIV testing among AA church-based populations. The purpose of this study was to examine sociodemographic and HIV risk factors associated with physician-recommended HIV testing among AA church members and the community members they serve. We sought to explore physician-advised HIV testing among AA church populations to inform the design of future faith-based HIV testing interventions that empower AAs to advocate for increased testing in medical settings, and thereby reduce delayed HIV diagnosis and disparities among AAs.

Methods

Participants and Procedures

This study used baseline survey data collected from the Taking It to the Pews (TIPS) project, a faith-based HIV/STD education and testing intervention. The TIPS clustered, randomized community trial included 14 AA churches ($N = 1500$) in the Kansas City metropolitan area [31].

Church members were recruited during church services and community members were recruited during community outreach services. Convenience sampling was utilized in recruiting eligible participants. Community members using church outreach ministries, who are often underserved and tend to have limited access to care and preventative resources [26, 29], were included to (a) demonstrate the reach of AA churches in their surrounding communities and (b) represent a broader community-based sample who may be at great risk for HIV and could benefit from receiving encouragement to get tested from AA churches.

Pastors and research team members made announcements about the study during church services and outreach events. Individuals who expressed interest in participating in the TIPS study were provided with study information, screened for eligibility, and completed the informed consent process. Informed consent was obtained from all individual participants included in the study. Eligibility criteria included the following: (a) self-identified as AA, (b) aged 18 to 64, (c) attends church services at least once per month and/or using outreach services (e.g., food/clothing pantries and social services) at least four times per year, (d)

willing to participate in three to four surveys, and (e) willing to provide personal contact information.

Church members and community members completed baseline surveys on HIV/STD health beliefs and behaviors, HIV risk factors, demographic variables, and their history of physicians advising HIV testing. For the purposes of the present study, only survey procedures and measures relevant to this study were described. Baseline survey events were held at the participating AA churches with opportunities for participants to survey before, during, and after church services and community events (e.g., food/clothing programs). Survey completion took approximately 45 min and all participants were compensated \$25 for their time. Study procedures were approved by the University of Missouri—Kansas City Institutional Review Board.

Survey Measures

Physician-Advised HIV Test—Our main outcome variable was assessed using one item: whether a doctor/healthcare provider ever suggested an HIV test (0 = *no* to 1 = *yes*).

Demographics—Demographic survey items included age, gender at birth, sexual orientation, marital status, and church affiliation (e.g., church or community member). Other items asked about health insurance coverage, education level, and average monthly income. Education level and monthly income were both assessed continuously (e.g., \$0–\$1000/month to more than \$3000/month).

Number of Previous Health Screenings—Several questions assessed lifetime preventative health screenings (ever; e.g., blood glucose screening, Pap test, colon cancer screening) (0 = *no* to 1 = *yes*). The number of lifetime health screenings were summed, with total scores ranging from 0 to 7 and higher scores indicating a higher number of previous health screenings received.

Number of Previously Diagnosed STDs—Lifetime diagnoses of other sexually transmitted diseases (STDs) (i.e., chlamydia, gonorrhea, human papilloma virus, syphilis, trichomoniasis, and hepatitis c) were also assessed (0 = *no* to 1 = *yes*). Items were summed, with total scores ranging from 0 to 6 and higher scores indicating a greater number of previously diagnosed STDs.

Number of HIV risk factors—A total number of behavioral HIV risk factors were summed, with total scores ranging from 0 to 10 and higher scores indicating a larger number of endorsed HIV risk factors. Behavioral HIV risk factors (ever) assessed included the following: homelessness, domestic violence, having sex when high/on drugs, sexual activity with a man who has sex with men [MSM], sexual activity with someone who has been incarcerated, sexual activity with someone who injects drugs, history of injection drug use, history of sharing needles, history of alcohol/drug treatment, and a history of involvement with the correctional system.

Injection Drug Use—One question assessed if participants had ever injected street drugs (ever; 0 = *no* to 1 = *yes*).

Homelessness—One question assessed history of homelessness (0 = *no* to 1 = *yes*).

Domestic Violence/Abuse—One question assessed lifetime history of domestic violence/abuse (e.g., physical, sexual, and/or emotional abuse) (0 = *no* to 1 = *yes*).

Data Analysis

Descriptive statistics were used to examine participant characteristics and physician-advised HIV testing. Chi-square analyses for categorical variables and *t* test analyses for continuous variables were conducted to examine differences between those who endorsed receiving physician-advised HIV testing and those who did not. A *p* value of < 0.1 was used for preliminary bivariate analyses to identify significant relationships and variables to include in logistic regression analysis to determine predictors of physician-advised HIV testing. Model fit was assessed using Nagelkerke R Square.

Results

Participant characteristics

As shown in Table 1, participants were predominantly female (68%, *n* = 1017) with a mean age of 44 (*SD* = 12.70). Slightly less than one-third (32%, *n* = 479) were community members. The majority (98%, *n* = 1410) of participants identified as heterosexual, and 37% (*n* = 542) of participants were partnered (i.e., in a monogamous relationship, living with a partner, and/or married). Our sample was highly religious, with 94% (*n* = 1404) identifying as spiritual or religious and 79% (*n* = 1133) attending church services weekly or more.

Descriptive Statistics

Findings indicated that 33% (*n* = 485) of participants reported that a physician had recommended an HIV test. Participants endorsed an average of 1 to 2 HIV risk factors, with a median of 1 (*M* = 1.39, *SD* = 1.86, range 0–10). Among key individual HIV risks reported, 25% of participants (*n* = 366) were survivors of domestic violence/abuse, 20% (*n* = 296) had a history of homelessness, and 3% (*n* = 45) had a history of injection drug use. On average, participants reported 0 to 1 previously diagnosed STDs (*M* = 0.75, *SD* = 1.11, range 0 to 6).

Preliminary Analyses

Chi-square analyses and independent *t* tests (using a *p* value of < 0.1) were conducted to determine which variables to include in logistic regression analyses. As shown in Table 2, participants who received physician-advised HIV testing were more likely to be single ($\chi^2(1) = 8.71, p = 0.003$), identified as homosexual or bisexual ($\chi^2(1) = 7.58, p = 0.006$), received Medicaid or uninsured ($\chi^2(1) = 17.52, p < 0.001$), and/or have a lower income ($t(822.00) = 3.03, p = 0.003$).

Participants who reported physician-advised HIV testing had a larger number of previously diagnosed STDs compared with those who did not (*M* = 0.88, *SD* = 1.12 and *M* = 0.67, *SD* = 1.10, respectively), $t(1437) = -3.33, p = 0.001$. Participants who reported physician-advised HIV testing reported a larger number of HIV risk factors (*M* = 1.75, *SD* = 1.97 and *M* = 1.20, *SD* = 1.77, respectively), $t(850.83) = -5.16, p < 0.001$. Additionally, they were

more likely to report a history of injection drug use ($\chi^2(1) = 2.79, p = 0.095$), homelessness ($\chi^2(1) = 26.14, p < 0.001$), and domestic violence/abuse ($\chi^2(1) = 5.00, p = 0.03$) than those who had not.

Gender, age, church affiliation (e.g., church or community member), education, and number of previous health screenings were not related to physician-advised HIV testing.

Logistic Regression

Using significant variables of interest from preliminary analyses, a direct binary logistic regression analysis was conducted to examine predictors of physician-advised HIV testing. Data screening indicated no issues with multicollinearity, and all assumptions were met. The full model was significant ($\chi^2(9) = 41.37, p < 0.001$, Nagelkerke $R^2 = 0.05$), and the Hosmer-Lemeshow test indicated that the model had good fit.

As shown in Table 3, sexual orientation, health insurance, and number of previously diagnosed STDs were significant predictors in the model. Participants who identified as homosexual or bisexual were 2.4 times more likely to report physician-advised HIV testing compared with those who identified as heterosexual. Participants who reported receiving Medicaid or were uninsured were 1.5 times more likely to report physician-advised HIV testing compared with those who had private insurance or Medicare. Participants who had a larger number of previously diagnosed STDs were 14% more likely to report physician-advised HIV testing compared with those with fewer previously diagnosed STDs. Marital status approached significance, with those identifying as single being 27% more likely to report a physician-advised HIV test. Income, number of HIV risk factors, injection drug use, homelessness, and domestic violence were non-significant predictors in the regression model.

Discussion

To our knowledge, no other studies have examined physician-advised HIV testing and related factors in a church-based population. In the present study, only 33% of participants reported that their provider had recommended an HIV test. Yet, 99% of participants had HIV risks that would warrant routine testing per current CDC and USTPF recommendations. Despite recommendations for routine testing for all adults and targeted testing for those at highest risk, studies indicated that physicians do not regularly or consistently advise HIV testing [11, 32], suggesting limited awareness of testing recommendations among physicians [13]. Physicians may also feel uncomfortable inquiring about HIV risk factors (e.g., sex and drug use behaviors) [33]. Further research is needed to understand the impact of awareness about routine HIV testing recommendations on whether physicians actually advise testing with their patients. Given the well-documented HIV disparities that burden AAs [1], further understanding of overlooked risk factors and testing among church-affiliated AA populations (e.g., church members and community members they serve) in primary care settings can assist in highlighting the need for promoting and providing HIV prevention services, including testing, in medical and community settings.

Consistent with other studies [17], participant factors found to be predictive of physician-advised HIV testing included those who identified as homosexual or bisexual, have an increased number of previously diagnosed STDs, and/or received Medicaid or uninsured. These characteristics are highly likely to be included in patient medical records, and physicians may be more likely to advise testing based on the availability of this information. Research suggests that providers support routine HIV testing [34]. Future practice should consider disseminating updated HIV testing recommendations to healthcare professionals and providing them with electronic medical record (EMR) prompts and questions to ask of their patients about personal risk factors to support provider-patient discussions about HIV testing [34].

In our study, injection drug use, homelessness, and domestic violence along with the number of behavioral HIV risk factors were not significant predictors of physician-advised HIV testing. This suggests that risk factors that are highly associated with HIV may not be assessed with and/or disclosed by AAs in primary care settings. Physicians report many challenges to advising HIV testing. These include time barriers to conduct sufficient HIV risk assessments and subsequent testing in primary care clinics [35], complexity in dealing with patient admittance of homelessness and needed resources [36, 37], and feeling uncomfortable about discussing HIV risks regarding sex and drug use behaviors and violence [33]. Also, studies have reported that many physicians are uncomfortable discussing health needs with sexual minority patients, which could be highly detrimental to AA sexual minorities who are at greatest risk for HIV compared with all other populations [1]. Physician training on how to communicate health issues with their patients should be considered to ensure that testing opportunities are not missed and that patients who test HIV positive can quickly be connected to HIV care.

Additionally, cultural competency training should be considered for physicians serving AAs to enhance patient-provider communication, trust, and quality care. AAs tend to receive delayed and lesser quality medical services across the HIV continuum of care, are less willing to disclose risk factors due to medical mistrust, and report poor communication with physicians [21, 38, 39]. Physician training could include increasing their skills in discussing sexual risk reduction strategies with their patients along with encouraging use of PrEP with at risk patients who test negative for HIV. Lastly, medical system enhancements, such as integrating testing referrals and follow-up in patient EMR systems with patients, should be explored [34, 40].

Although our findings suggest that some key risk factors may be detected by primary care providers (e.g., previously diagnosed STDs, sexual orientation, being on Medicaid, and/or uninsured), other behavioral risk factors (e.g., drug use, homelessness, and domestic violence) may go undetected in medical settings for church-affiliated AA populations. The Black Church may be a trusted community setting in which HIV testing and other prevention services can be offered to assist in closing gaps due to missed opportunities in primary care settings. The current study suggests that AA churches may be uniquely positioned to increase reach of HIV testing with AA church members and the community members they serve who have a broad range of risk for HIV including young AA males, sexual minorities, older women, persons with low-incomes, domestic violence survivors, and

persons experiencing homelessness or transiency. Past research found that HIV education and rapid HIV testing are feasible and acceptable in AA churches [25–27]. Further research is needed to link persons who test positive for HIV to clinical HIV services and to promote and provide linkage to care for PrEP uptake with church-affiliated persons who test negative for HIV but have increased HIV risks.

Additionally, AA churches may be well-positioned to equip their church and community members with information on understanding HIV risks and strategies to advocate for physician-advised routine HIV testing in medical settings. This approach could further inform healthcare providers about the urgency for action in encouraging routine testing, not only with sexual minority patients or those with a history of STDs, but also with patients with a history of interpersonal violence, homelessness, and food insecurity—social issues which are becoming more universally being assessed in regular physician office visits [41–43].

There were some limitations with the current study. Notably, recency and/or frequency of physician-advised HIV testing was not assessed. We also did not assess whether participants had an established, regular healthcare provider. Physician-advised HIV testing was self-reported by participants. Additionally, other self-report measures were used for assessing risk behaviors, which may be subject to limited recall and social desirability biases particularly with HIV risk behaviors, previously diagnosed STDs, and reported injection drug use. We also used convenience sampling to recruit participants. Furthermore, given that our Midwestern sample consisted primarily of females and highly religious AAs, generalizability of our findings may be limited to other regions and populations with similar characteristics. Additionally, a p value of < 0.1 was used for preliminary bivariate analyses due to the exploratory nature of our study, which subsequently increases the likelihood of type I error.

The present study is the first, to our knowledge, to examine factors related to physician-advised HIV testing and contribute to the literature in understanding gaps in primary care prevention efforts among AA church-based populations. Overlooked risk factors that were identified included injection drug use, homelessness, and domestic violence. Future research should further examine missed opportunities for HIV testing among AAs at risk for HIV to better understand and address gaps in routine testing in primary care settings and how HIV testing in community settings can address these gaps.

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Table 1Participant characteristics (*N* = 1500)

Characteristics	No. (%) ^a
Age, mean (SD)	44 (12.7)
Gender	
Female	1017 (68)
Male	474 (32)
Marital status	
Partnered	542 (37)
Non-partnered	939 (63)
Church affiliation	
Church members	1021 (68)
Community members	479 (32)
Sexual orientation	
Heterosexual	1410 (98)
Homosexual or bisexual	27 (2)
Insurance status	
Insured	1020 (68)
Uninsured or Medicaid	480 (32)
Education	
High school or less	520 (36)
Some college or associate degree	616 (42)
College graduate or higher	328 (22)
Monthly household income, \$	
0–1000	198 (15)
1001–2000	229 (18)
2001–2500	181 (14)
2501–3000	184 (14)
> 3000	520 (40)
Number of previously diagnosed STIs	
0	845 (58)
1	323 (22)
2	149 (10)
3	92 (6)
4	28 (2)
5	13 (0.9)
Number of HIV risk factors	
0	708 (48)
1	276 (19)
2	164 (11)
3	123 (8)
4	78 (5)

Characteristics	No. (%) ^a
5	67 (5)
6	61 (4)
Number of health screenings	
0	68 (5)
1	101 (7)
2	90 (6)
3	178 (12)
4	244 (17)
5	452 (31)
6	317 (22)

^aUnless otherwise indicated, values are numbers (percentages). Percentages may total less than 100 because of rounding or missing responses

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Table 2

Factors related to physician-advised HIV testing—preliminary analyses

Variable of interest	Test statistic	
	χ^2	<i>t</i>
Age	-	1.29
Gender	0.26	-
Sexual orientation	7.58**	-
Education	-	0.90
Income	-	3.03**
Health insurance	17.52***	-
Marital status	8.71**	-
Church affiliation	2.01	-
Previous health screenings	-	-1.54
Previously diagnosed STDs	-	-3.33**
Number of HIV risk factors	-	-5.16***
History of injection drug use	2.79*	-
History of homelessness	26.14***	-
History of domestic violence	5.00**	-

*
 $p < 0.1$ **
 $p < 0.05$ ***
 $p < 0.001$

Table 3
 Predictors of physician-advised HIV testing—logistic regression results ($N = 1170$)

Variable of interest	B	SE	Wald	OR	95% CI	P
Sexual orientation						
Heterosexual	Ref.					
Homosexual or bisexual	0.87	0.44	3.85	2.38	[1.00, 5.67]	0.05
Income	0.001	0.05	0.001	1.00	[0.91, 1.10]	0.98
Health insurance						
Insured	Ref.					
Uninsured or Medicaid	0.41	0.15	7.20	1.51	[1.12, 2.04]	0.007
Marital status						
Partnered	-0.23	0.14	2.64	0.80	[0.61, 1.05]	0.10
Non-partnered	Ref.					
Previously diagnosed STDs	0.13	0.06	4.32	1.14	[1.01, 1.28]	0.04
Number of HIV risk factors	0.05	0.06	0.57	1.05	[0.93, 1.18]	0.45
History of injection drug use						
Yes	-0.16	0.42	0.15	0.85	[0.37, 1.93]	0.70
No	Ref.					
History of homelessness						
Yes	0.33	0.21	2.37	1.39	[0.91, 2.11]	0.12
No	Ref.					
History of domestic violence						
Yes	-0.09	0.19	0.25	0.91	[0.63, 1.31]	0.62
No	Ref.					
<i>Ref., reference group</i>						