Sexual Partnering and HIV Risk among Black Men Who Have Sex with Men: New York City

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ABSTRACT *Black men who have sex with men (MSM) are disproportionately affected with HIV in the US. Limited event-specific data have been reported in Black MSM to help understand factors associated with increased risk of infection. Cross-sectional National HIV Behavioral Surveillance Study data from 503 MSM who reported ≥ 1 male sexual partner in the past year in New York City (NYC) were analyzed. Case-crossover analysis compared last protected and last unprotected anal intercourse (UAI). A total of 503 MSM were enrolled. Among 349 tested for HIV, 18% were positive. Black MSM (N=117) were more likely to test HIV positive and not know their HIV-positive status than other racial/ethnic groups. Case-crossover analysis of 208 MSM found that men were more likely to engage in protected anal intercourse with a first time partner and with a partner of unknown HIV status. Although Black MSM were more likely to have Black male partners, they were not more likely to have UAI with those partners or to have a partner aged >40 years. In conclusion, HIV prevalence was high among Black MSM in NYC, as was lack of awareness of HIV-positive status. Having a sexual partner of same race/ethnicity or older age was not associated with having UAI among Black MSM.*

KEYWORDS *HIV infection, Sexual partnering, Black men who have sex with men, African American, Unprotected anal intercourse*

INTRODUCTION

Men who have sex with men (MSM) constitute the largest proportion of new HIV infections in the US, accounting for 53% of new HIV cases in 2006.¹ In particular, Black MSM are disproportionately affected with HIV, comprising about a quarter of new HIV infections.²⁻⁴ Several studies have shown that the disproportionate rate of HIV infection in Black MSM is not explained by differences in individual risk behavior, such as unprotected anal intercourse (UAI), number of sexual partners, and substance use.^{2,3} One hypothesis to explain the racial/ethnic disparities in HIV among MSM is that the high HIV prevalence and incidence within the sexual networks of Black MSM place them at increased risk of HIV compared to non-Black MSM.² Sexual networks play a critical role in HIV acquisition and transmission,⁵ as

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a person's risk of HIV infection is not only dependent on one's risk behaviors, but also on the risk behaviors and HIV prevalence of other partners in one's sexual network. Several studies have indicated that Black MSM may have increased risk of HIV infection because they are more likely to select sexual partners from populations with higher HIV prevalence, such as male partners of the same race/ethnicity and older partners.^{6–9} More research is needed to investigate the relationship between sexual network characteristics and HIV risk among Black MSM to help understand the considerable disparities in HIV infection rates and guide the development of interventions to curtail the HIV epidemic affecting this population. The National HIV Behavioral Surveillance Study conducted in New York City (NHBS-NYC) provides the opportunity to explore sexual partnering characteristics of Black MSM in New York City (NYC) using event-specific data to understand the factors (in particular, the characteristics of sexual partnerships during the last sexual encounter) associated with increased risk of HIV infection in this population.

METHODS

NHBS-NYC was part of a cross-sectional national survey conducted in 17 US cities in 2004–2005 by the Centers for Disease Control and Prevention (CDC) to evaluate HIV risk behaviors among MSM who attend public venues. Participants were recruited using a multistage venue identification and sampling framework as previously described.¹⁰ Men were recruited from public venues, including bars, dance clubs, street locations, sex establishments, cafes and restaurants, gay pride and other events, and retail businesses. The methods of the NHBS study have been described in greater detail elsewhere.^{10–14}

The men were eligible to participate in the study if they met the following criteria: at least 18 years old, had ≥ 1 male sexual partner in the past 12 months, resident of metropolitan NYC, and provided informed consent. Participants completed interviewer-administered standardized questionnaires, which collected data on demographics, sexual risk behaviors, incarceration history, drug (both injection and noninjection drugs) and alcohol use, history of sexually transmitted infections (STIs) in the last 12 months, and HIV testing history. Participants were asked to identify their sexual preference as: heterosexual or “straight”; homosexual or gay; bisexual; or other. Event-specific information about the last protected anal intercourse and UAI episode was also obtained by asking the participants about the last time they had anal sex with a condom and the last time they had anal sex without a condom.¹⁰ The participants were queried about use of alcohol and drugs by the participant and partner during the sexual event. The participants were asked the following questions: “Did [you/he] drink alcohol within 2 h before having sex?” and “Did [you/he] use drugs just before or while having sex?” If the participants responded yes to these questions, they were then asked about the specific drug used, including cocaine, Ecstasy, amphetamines, poppers, heroin, and hallucinogens. In addition, the participants were asked about partner characteristics, such as age, race/ethnicity, and HIV status; place of meeting; whether or not the partner was a first time partner; and occurrence of receptive or insertive anal intercourse or both.

Blood specimens were tested for HIV antibody by enzyme-linked immunosorbent assay (EIA; Genetic Systems HIV-1/HIV-2 PLUS EIA, Bio-Rad Laboratories, Redmond, WA, USA). Reactive results were retested, and specimens with a reactive result on repeat testing were confirmed by Western blot (Genetic Systems HIV-1

Western Blot, Bio-Rad Laboratories). Because HIV testing was regarded as a separate protocol by the CDC and this component did not receive institutional review board approval until part way through recruitment, the first 101 participants were not offered HIV testing.

Chi-square analysis was performed to compare sociodemographics, sexual risk behaviors, and HIV test results by race/ethnicity. Race/ethnicity of partners (i.e., Black or African American, White, Hispanic, and Other, which includes Asian/Pacific Islander and Native American/Alaskan Native) was also examined. Conditional logistic regression compared event-specific variables with last protected anal intercourse and UAI by employing a case-crossover approach for which each individual served as his own control.^{10,15,16} In the conditional logistic regression analysis, partner age >40 years was considered a surrogate for higher HIV prevalence, as older MSM tend to have a higher cumulative HIV prevalence than younger MSM.^{17,18} All analyses were conducted using the Statistical Analysis System (SAS Version 9.1, Cary, NC, USA). A two-sided p value ≤ 0.05 was considered significant.

RESULTS

Between July 2004 and January 2005, 1,498 men were approached at recruitment events, of which 1,003 (67.9%) met the eligibility criteria. Five hundred seventy (56.8%) men enrolled, and 503 men with complete data who reported sex with a man in the previous 12 months were included in the final analysis. Of 402 men who were offered testing, 349 (86.8%) men agreed to HIV testing. Sixty-four (18.3%) of these men tested HIV positive, with 33 (51.6%) who were not aware of their positive serostatus. No specific factors, with the exception of race/ethnicity, were significantly associated with unrecognized HIV infection.

The race/ethnicity composition of the men was diverse. Of the 503 MSM, 117 (23.3%) men were Black, 199 (39.6%) White, 138 (27.4%) Hispanic, and 49 (9.7%) Other. A comparison of sociodemographic, risk behavior, and HIV testing characteristics by race/ethnicity is depicted in Table 1. Black MSM in the sample were generally younger than White MSM, with 59.0% of Black MSM aged <30 years compared to 41.7% of White MSM; there was no significant difference in age among Black, Hispanic, and Other MSM. Black MSM were more likely to test HIV positive and not know their HIV-positive status than the other three racial/ethnic groups (p values range from 0.0001 to 0.0039). Compared to White and Other MSM, Black MSM were less likely to self-identify as gay ($p < 0.0001$ and $p = 0.0190$, respectively) and to be college educated ($p < 0.0001$ and $p < 0.0001$, respectively) and more likely to have an annual income $< \$30,000$ ($p < 0.0001$ and $p = 0.0061$, respectively). Compared to White MSM, Black MSM were more likely to have been recently incarcerated ($p = 0.0008$) and were less likely to report non-injection drug use ($p = 0.0216$) and UAI ($p = 0.0218$) in the past 12 months. Black MSM reported fewer male sexual partners ($p = 0.0129$) than White MSM in the last year. History of recent STIs and injection drug use did not differ among the groups. Black MSM were more likely to have Black male partners compared to the other three racial/ethnic groups (57.1% for Black MSM vs. 5.7% for White, 21.0% for Hispanic, and 17.7% for Other, $p < 0.0001$) in the last 12 months.

The case-crossover analysis requires both protected and unprotected sex events to be reported in the past 12 months; so only a subset, 208 men, were included in this part of the analysis. This subset comprised 42 (20.2%) Black MSM, 87 (41.8%)

TABLE 1 Comparison of demographics, risk behaviors, and HIV testing results by race/ethnicity

Characteristic	Black (N=117)	White (N=199)	Hispanic (N=138)	Other (N=49)	Total (N=503)
Age (years), <i>n</i> (%)					
18–24	48 (41.0)	36 (18.1)	57 (41.3)	10 (20.4)	151 (30.0)
25–29	21 (18.0)	47 (23.6)	25 (18.1)	13 (26.5)	106 (21.1)
30–34	18 (15.4)	41 (20.6)	17 (12.3)	10 (20.4)	86 (17.1)
35–39	15 (12.8)	34 (17.1)	17 (12.3)	11 (22.5)	77 (15.3)
40+	15 (12.8)	41 (20.6)	22 (15.9)	5 (10.2)	83 (16.5)
Education, <i>n</i> (%)					
Less than high school graduate	16 (13.7)	4 (2.0)	19 (13.8)	2 (4.1)	41 (8.2)
High school graduate	33 (28.2)	13 (6.5)	37 (26.8)	6 (12.2)	89 (17.7)
Some college	35 (29.9)	45 (22.6)	45 (32.6)	8 (16.3)	133 (26.4)
College graduate or more	33 (28.2)	137 (68.8)	37 (26.8)	33 (67.4)	240 (47.7)
Annual income, <i>n</i> (%)					
<\$30,000	73 (62.9)	67 (33.8)	85 (63.0)	19 (39.6)	244 (49.1)
≥\$30,000	43 (37.1)	131 (66.2)	50 (37.0)	29 (60.4)	253 (50.9)
Sexual identity, <i>n</i> (%)					
Gay	72 (61.5)	185 (93.0)	99 (71.7)	41 (83.7)	397 (78.9)
Bisexual	37 (31.6)	12 (6.0)	36 (26.1)	6 (12.2)	91 (18.1)
Straight/other/do not know/refuse	8 (6.8)	2 (1.0)	3 (2.2)	2 (4.1)	15 (3.0)
Venue of recruitment, <i>n</i> (%)					
Bars	43 (36.8)	140 (70.4)	60 (43.5)	27 (55.1)	270 (53.7)
Dance clubs	10 (8.6)	13 (6.5)	23 (16.7)	11 (22.5)	57 (11.3)
Retail businesses	27 (23.1)	1 (0.5)	18 (13.0)	1 (2.0)	47 (9.3)
Street locations	22 (18.8)	6 (3.0)	19 (13.8)	2 (4.1)	49 (9.7)
Cafes and restaurants	7 (6.0)	12 (6.0)	10 (7.3)	3 (6.1)	32 (6.4)

Gay pride and other events	7 (6.0)	14 (7.0)	4 (2.9)	2 (4.1)	27 (5.4)
Other	1 (0.9)	13 (6.5)	4 (2.9)	3 (6.1)	21 (4.2)
Recent incarceration, <i>n</i> (%)	17 (14.5)	8 (4.0)	21 (15.3)	3 (6.1)	49 (9.8)
STIs in past 12 months, <i>n</i> (%)	10 (8.6)	16 (8.0)	10 (7.3)	2 (4.1)	38 (7.6)
Injection drug use ever in the past, <i>n</i> (%)	3 (2.6)	12 (6.0)	4 (2.9)	2 (4.1)	21 (4.2)
Other illicit drug use in past 12 months, <i>n</i> (%)	63 (53.9)	133 (66.8)	81 (60.0)	30 (61.2)	307 (61.4)
Any female sexual partner in past 12 months, <i>n</i> (%)	34 (29.1)	9 (4.5)	32 (23.2)	5 (10.2)	80 (15.9)
Number of male sexual partners in past 12 months, <i>n</i> (%)					
≤2 partners	36 (30.8)	44 (22.1)	51 (37.0)	14 (28.6)	145 (28.8)
3 to 5 partners	36 (30.8)	41 (20.6)	38 (27.5)	12 (24.5)	127 (25.2)
6 to 10 partners	24 (20.5)	55 (27.6)	23 (16.7)	8 (16.3)	110 (21.9)
>10 partners	21 (18.0)	59 (29.7)	26 (18.8)	15 (30.6)	121 (24.1)
UAI in past 12 months, <i>n</i> (%)					
Yes	52 (44.4)	115 (57.8)	76 (55.1)	24 (49.0)	267 (53.1)
No	65 (55.6)	84 (42.2)	62 (44.9)	25 (51.0)	236 (46.9)
HIV antibody test results (<i>N</i> =349), <i>n</i> (%)					
Negative	50 (64.1)	119 (86.2)	83 (85.6)	33 (91.7)	285 (81.7)
Positive and knew status	10 (12.8)	12 (8.7)	6 (6.2)	3 (8.3)	31 (8.9)
Positive and did not know status	18 (23.1)	7 (5.1)	8 (8.3)	0 (0.0)	33 (9.5)

Those who did not answer the specific question on the questionnaire were excluded from the computation

White, 62 (29.8%) Hispanic, and 17 (8.2%) Other. The men included in the case-crossover analysis were younger (age ≤ 30 years, 59.3% vs. 50.4%, $p=0.05$) and more likely to identify as being gay (86.8% vs. 71.5%, $p<0.0001$) than the other men in the sample. Anal intercourse with a first time partner was reported in 89 (42.8%) of the protected encounters compared with 61 (29.3%) of the unprotected encounters (odds ratio [OR]=2.28, 95% confidence interval [95% CI]=1.39–3.89). Similarly, anal intercourse with a partner of unknown HIV status was described in 84 (40.4%) of the protected episodes compared with 61 (29.3%) of the unprotected episodes (OR=2.89, 95% CI=1.54–5.85). Alcohol and drug use during sex, same race/ethnicity, age of partner >40 years, partner meeting place, and sexual position were not significantly associated with last UAI. Among the 42 Black MSM in the case-crossover analysis, they were not more likely to have UAI with Black male partners (50.0% unprotected vs. 56.3% protected, $p=0.76$) or to have a partner aged >40 years (18.0% unprotected vs. 15.4% protected, $p=0.71$). In addition, alcohol and drug use during sex, partner meeting place, partner HIV status, first time partner, and sexual position were not significantly associated with last UAI among Black MSM.

DISCUSSION

In this cross-sectional study of MSM recruited at public venues in NYC, sociodemographic and HIV infection disparities were evident by race/ethnicity. Black MSM in this sample were less likely to self-identify as gay, consistent with previous studies.¹⁹ Black MSM were less likely to have received a college education than White and Other MSM and more likely to have been incarcerated during the past year than White MSM. The finding that, compared to White MSM and other racial/ethnic groups, Black men were more likely to test HIV positive and not be aware of their HIV-positive status, has been well documented in previous studies.^{19,20} A meta-analysis showed that unrecognized HIV infection was 7.67 times more common among Black MSM than White MSM.¹⁹ The higher rates of HIV infection and unrecognized HIV disease among Black MSM compared to other racial/ethnic groups may reflect the large proportion of young Black men aged <30 years enrolled in this study. Recent New York City Department of Health and Mental Health HIV incidence data showed that Black MSM accounted for the largest group, 45.1%, of new HIV infections among MSM <30 years of age in 2006.²¹ It is interesting to note that Black MSM in this study had lower reported risk behaviors than White MSM, with fewer male partners and less UAI in the past 12 months. The contradiction between higher HIV infection rate and lower risk behaviors among Black MSM has been referenced in the literature^{3,8} and accentuates the need for further investigation into other factors contributing to higher HIV risk among Black MSM.

In the case-crossover analysis, men were more likely to engage in protected anal intercourse with a first time partner than with a nonfirst time partner, and they were more likely to use condoms with a partner of unknown HIV status than with an HIV-negative partner. Interestingly, alcohol and drug use during sex, same race/ethnicity, age of partner >40 years, and sexual position were not associated with the last episode of UAI. The finding that Black MSM were more likely to have Black male partners is consistent with previously published studies that showed high rates of same racial/ethnic partnership among Black MSM.^{7,8} However, in this analysis, Black MSM were not more likely to have UAI with those partners or to have a partner aged >40 years. This is in contrast to previously published data which have

documented assortative mixing (people who choose sex partners who share similar attributes)²² by race/ethnicity and disassortative mixing (people who choose sex partners who are different from themselves)²² by age among Black MSM, permitting HIV to perpetuate and amplify within Black MSM sexual networks. In a study examining data from NHBS in San Francisco, Black MSM were likely to have a partner of the same race/ethnicity and a partner ten or more years older.⁸ Another study involving young MSM aged 23–29 years from the Los Angeles Young Men's Survey found that Black MSM were more likely to have Black partners in the past 12 months than non-Black MSM and more likely to have partners who were either 5 years older or younger than themselves, although the latter difference was statistically significant when Black MSM were compared to White MSM only.⁷ In a cross-sectional study of MSM in San Francisco, 9% of sexual partnerships of Black MSM were with other Black men. Same racial/ethnic partnership among Black MSM was three times higher than what would be expected by chance alone.⁶ These findings are similar to those found in a study by Laumann and Youm to explain the higher rates of STIs among Black heterosexuals in the US, in which Blacks tended to choose sexual partners of the same race/ethnicity and, in contrast to Whites, Blacks with few sexual partners were more likely to select Black partners who had many sexual partners, forming bridges between peripheral and core groups within the same racial/ethnic class.²³ Interestingly, in a recent study among 197 Black MSM in Massachusetts, although Black MSM were more likely to have Black male partners (49% Black vs. 40% Hispanic and 13% White), they were less likely to have UAI with them compared to partners of other race/ethnicity.⁹

The study findings highlight the need for further exploration of sexual partnering characteristics among Black MSM to better comprehend the higher HIV prevalence and incidence in this population despite lower risk behaviors. An enhanced understanding of the sexual networks of Black MSM will help guide HIV prevention efforts to stem the HIV epidemic affecting this community. The strengths of this study include incorporation of event-specific, case-crossover analysis in which each individual served as his own control and comprehensive event-level characteristics were analyzed. Limitations are the small sample size, cross-sectional study design, and potential selection bias in the case-crossover analysis, as only those men who reported both last protected anal intercourse and UAI were included.

CONCLUSION

HIV prevalence was high among Black MSM in NYC, as was lack of awareness of HIV-positive status, corroborating previously published study findings. Having a sexual partner of same race/ethnicity and >40 years of age was not associated with having UAI among Black MSM. More research is needed to delineate the relationship of sexual networks and sexual mixing patterns to risk behavior among Black MSM to better inform HIV prevention endeavors to curtail the HIV epidemic in this community.

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