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Sociodemographic and Risk Behavior Characteristics Associated with Unprotected Sex with Women among Black Men Who Have Sex with Men and Women in New York City

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Abstract

The objectives of this cross-sectional study were to compare sociodemographic and risk behavior characteristics between black men who have sex with both men and women (MSMW) and those who have sex with men only (MSMO) and assess factors associated with having any unprotected vaginal and/or anal intercourse (UVAI) with women in the last 3 months. Data from 326 black men who reported recent unprotected anal intercourse (UAI) with a man in an HIV behavioral intervention study in New York City were analyzed. Baseline characteristics were compared between MSMW and MSMO, and factors associated with having any UVAI in the past 3 months with women among MSMW were evaluated. In total, 26.8% reported having sex with both men and women in the last 3 months. MSMW were less likely to be HIV-infected, use amyl nitrates, and have unprotected receptive anal sex with most recent male partner. MSMW were more likely to be over 40 years old and use heroin. 55.6% of MSMW reported having UVAI with women in the last 3 months. Compared to MSMW having only protected sex, MSMW having any UVAI with women were less likely to be HIV-infected and to disclose having sex with men to female partners; they were more likely to have greater than 4 male sex partners in the last 3 months. In conclusion, HIV prevention interventions among black MSMW should directly address the risk of HIV transmission to both their female and male partners. Disclosure of bisexuality to female partners may be an important component of future prevention efforts.

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Keywords

Black MSMW; men who have sex with men and women; bisexuality; HIV/AIDS

Introduction

Black men who have sex with men (MSM) bear a disproportionate burden of the U.S. HIV/AIDS epidemic compared with MSM of other racial/ethnic groups,(Centers for Disease Control and Prevention, 2001, 2007, 2009; Hall et al., 2008; HIV incidence among young men who have sex with men--seven U.S. cities, 1994–2000," 2001; G. A. Millett, Flores, Peterson, & Bakeman, 2007; Subpopulation estimates from the HIV incidence surveillance system--United States, 2006," 2008) comprising 35% of new HIV infections among MSM. ("Subpopulation estimates from the HIV incidence surveillance system--United States, 2006," 2008) Among MSM, blacks are more likely to have female sex partners than MSM of other races and ethnicities.(Adimora & Fullilove, 2006; Gorbach, Murphy, Weiss, Hucks-Ortiz, & Shoptaw, 2009; Maulsby, Sifakis, German, Flynn, & Holtgrave, 2011; G. Millett, Malebranche, Mason, & Spikes, 2005; Montgomery, Mokotoff, Gentry, & Blair, 2003; Young, Shoptaw, Weiss, Munjas, & Gorbach, 2011), and black men who have sex with men and women (MSMW) are more likely to have unprotected anal or vaginal sex with women compared with white MSMW.(McKirnan, Stokes, Doll, & al., 1995) In a study in Los Angeles of predominantly black and Latino HIV-infected MSM and MSMW, being black compared with being white and being MSMW compared with being MSM was associated with unrecognized HIV infection.(Young et al., 2011) However, the impact of HIV transmission from black MSMW to their female partners remains uncertain.(Adimora & Fullilove, 2006; Gorbach et al., 2009; Malebranche, Arriola, Jenkins, Dauria, & Patel; Mays, Cochran, & Zamudio, 2004; Mutchler et al., 2008; Siegel, Schrimshaw, Lekas, & Parsons, 2008) Several studies have noted that black MSMW have higher risk behaviors, including more sexual partners and lower rates of condom use, and higher HIV infection rates compared with black men who only have sex with men (MSMO) and with heterosexual men.(Brooks, Rotheram-Borus, Bing, Ayala, & Henry, 2003; Dodge, Jeffries, & Sandfort, 2008; Lehner & Chiasson, 1998; Myers, Javanbakht, Martinez, & Obediah, 2003) More data on black MSMW and HIV transmission risk of HIV-infected black MSMW to both their male and female partners are needed to inform development of HIV prevention interventions tailored specifically to black MSMW and their sexual partners,(Brooks et al., 2003; Dodge et al., 2008) consistent with the U.S. National HIV/AIDS Prevention Strategy's emphasis on prevention interventions focusing on black MSM and black women.(Maulsby et al., 2011)

The primary objectives of this study were to compare sociodemographic and risk behavior characteristics between black MSMW and men who have sex with men only (MSMO), and to evaluate factors associated with any unprotected vaginal and/or anal intercourse (UVAI) with female partners in the last 3 months among black MSMW. This analysis was based on baseline data from DiSH, a behavioral intervention study in New York City (NYC) to reduce behaviors associated with HIV acquisition and transmission among black MSM.

Methods

Study Sample and Procedures

Details about the study sample and procedures have been reported.(Koblin et al.; Tieu et al.) The study was conducted between May 2008–June 2009 and had a non-random, convenience sample, with men recruited through passive and active methods by trained recruiters at street and venue locations throughout NYC, including bars and clubs. Study participation was open to men, regardless of HIV status, who met the following criteria: age

≥18 years; resided in NYC metropolitan area; self-identified as male; comprehended English; self-identified as African American, black, Caribbean black, or multiethnic black; reported ≥2 sexual partners (male or female) and unprotected anal intercourse (UAI) with a man in the last 3 months; and was available for the study duration. Men who self-identified as a transgender woman or refused HIV testing were ineligible.

At the baseline visit, eligible men provided written informed consent and completed a behavioral questionnaire using audio computer-assisted self-interview (ACASI) technology. Participants received HIV pre-test counseling and rapid HIV testing with OraQuick if they reported being HIV uninfected, had never been tested, or did not know their HIV status. Men who learned for the first time that they might be HIV-positive received post-test counseling and underwent Western blot confirmatory testing. Men who self-reported being HIV-positive either provided documentation of their HIV-positive status or underwent HIV testing with OraSure oral fluid test. All men were then randomized to the intervention or control groups at the second study visit.(Koblin et al.; Tieu et al.) The current analysis was based on data collected at the baseline visit only. The institutional review boards at the participating institutions approved the study.

Quantitative Measures

Sociodemographics, STI, and Substance Use—Sociodemographic information from ACASI included age, education, annual personal income, sexual identification, past incarceration history, history of STIs in the last 12 months, and substance use in the last 3 months, including frequency of alcohol and drug use. Heavy alcohol use was defined as drinking ≥5 or more alcoholic drinks per occasion on ≥5 days or ≥6 alcoholic drinks on any day in the past 3 months.(Koblin et al., 2006)

Sexual Risk Behaviors—Participants were asked about their total number of male, female, and transgender sexual partners in the last 3 months. To be eligible to enroll in the study, all participants needed to report having UAI with a man in the last 3 months. Men who reported having vaginal and/or anal sex with ≥1 female partner in the last 3 months were classified as MSMW, while those who did not report having vaginal or anal sex with a woman in the last 3 months were categorized as MSMO. The men were asked if they had a main male partner in the last 3 months, defined as “a man you felt committed to above anybody else, like a boyfriend or lover.” Participants were asked about the last time they had anal sex, either receptive or insertive, with a male partner and about condom use. From these questions, variables of receptive/insertive anal intercourse and unprotected receptive/insertive anal intercourse were constructed.

The men who reported having vaginal and/or anal sex with female partners (MSMW) were asked whether they had told them that they have sex with men. They were also asked whether the female partner was a main partner, defined as “a woman you felt committed to above anybody else, like a girlfriend or lover.” Men with main female partners were asked about the HIV serostatus of these partners and whether they had disclosed their own HIV serostatus to them.

The UVAI outcome variable was defined as follows. MSMW were asked: “In the last 3 months, how many times have you had [vaginal/anal] sex with this female partner?” and “How many of the [vaginal/anal sex] times did you not use a condom from start to finish?” Participants who answered that they had vaginal and/or anal sex with female partners at least once and that they did not use a condom from start to finish at least once were coded as having any UVAI with female partners. Otherwise, those who answered that they had no vaginal and/or anal sex with female partners or that there were no times that they did not use

a condom from start to finish during vaginal and/or anal sex with female partners were categorized as having no UVAI with the partner.

Data Analysis

MSMW and MSMO—All analyses were conducted using Statistical Analysis System (SAS Version 9.2, Cary, NC). Chi-square and Fisher's exact tests were used to compare categorical variables between MSMW and MSMO, with t-test for continuous variables. For age and number of partners, median values were calculated, with classification into two groups based on the median for the subsequent analyses. Variables with p-values<0.05 were entered into multivariate logistic regression models. Logistic regression using forward selection examined variables that were significantly associated with being MSMW (vs. MSMO) with p-values<0.05 by the score test. Sexual identity was not included in the multivariate logistic regression model because of its definitional correlation with being MSMO as opposed to MSMW.

MSMW (UVAI vs. no UVAI)—The comparison of characteristics associated with any UVAI with female partners was restricted to MSMW. Chi-square and Fisher's exact tests compared MSMW who reported having any UVAI with female partners with MSMW who did not. Variables with p-values<0.05 were included in multivariate logistic regression models, and only variables with p-value<0.05 using forward selection were considered statistically significant in the final model.

Results

Study Sample Description

A total of 828 black men were screened for the study; 474 (57.3%) were eligible. Three hundred twenty-eight men (69.2% of eligible men) completed the baseline visit. Two participants who did not answer whether or not they had any female partners in the last 3 months were excluded from this analysis. Hence, a total of 326 men (84 MSMW or 25.8%, and 242 MSMO or 74.2%) were analyzed. Among the 84 MSMW, 3 men who did not have valid data related to having UVAI with their female partners were excluded from the subanalysis comparing men with any UVAI vs. no UVAI with women.

Sociodemographic and Risk Behavior Characteristics of Black MSMW and MSMO

Table 1 depicts an overview of sociodemographics and risk behaviors of the total sample and stratified by MSMW and MSMO status. Median age of the men was 41 years. Median number of male sex partners in the last 3 months was 4, with no difference between MSMW and MSMO (p=0.5). For MSMW, median number of female partners was 2. Only 37 men (11.3%) reported having ≥1 transgender partner. Median number of transgender partners was 0 partner. MSMW were more likely to be HIV-negative than MSMO (50.0% vs. 33.1%, p=0.006). MSMW were generally older than MSMO. Compared with MSMO, MSMW were more likely to identify as bisexual than gay or straight and to have been incarcerated in the past than MSMO. MSMW were less likely to report using amyl nitrates in the previous 3 months and to report having receptive anal intercourse with their most recent male partner compared with MSMO. In contrast, MSMW were more likely to report having insertive anal sex with their most recent male partner than MSMO.

Association with Being MSMW

Table 2 shows sociodemographic and risk behavior characteristics associated with being MSMW (vs. MSMO) in multivariate logistic regression. Compared with MSMO, MSMW were independently less likely to be HIV-positive (OR=0.35, 95% CI 0.19–0.64), use amyl

nitrates in the last 3 months (OR=0.43, 95% CI 0.21–0.87), and have unprotected receptive anal intercourse with most recent male partner (OR=0.48, 95% CI 0.26–0.89). MSMW were also independently more likely than MSMO to be >40 years of age (OR=2.99, 95% CI 1.62–5.52) and use heroin in the last 3 months (OR=7.37, 95% CI 1.54–35.31).

Black MSMW Reporting Any vs. No UVAI with Female Partners

A comparison of sociodemographic and risk behavior characteristics stratified by any vs. no UVAI with female partners in the last 3 months among 81 Black MSMW is displayed in Table 3. Overall, 45 MSMW (55.6%) reported having any UVAI with female partners in the last 3 months. Forty-six men (56.8% of MSMW) reported having a main female partner. Over two-thirds of MSMW (67.1%) reported having UAI with a man during their most recent sexual encounter. MSMW who reported having any UVAI with female partners were more likely to be HIV-negative than HIV-positive (60.0% vs. 40.0%, p=0.03). Men with an incarceration history were more likely to have any UVAI with female partners than men who had never been incarcerated. Those who reported heavy alcohol consumption or powdered cocaine use in the last 3 months were more likely to have any UVAI with female partners (20.0% vs. 2.8%, p=0.02 and 44.4% vs. 17.1%, p=0.01 respectively). MSMW who had >4 male partners in the last 3 months were more likely to report having any UVAI with female partners than MSMW with ≤4 male partners (55.6% vs. 33.0%, p=0.05).

Overall, 71.6% of the MSMW reported having disclosed to female partners (main or non-main) that they have sex with men. Men who disclosed to female partners that they have sex with men were less likely to report having any UVAI with female partners than those who did not disclose (60.0% vs. 86.1%, p=0.01).

Association with Any UVAI with Female Partners

Table 4 describes characteristics significantly associated with having any UVAI with women in the last 3 months among black MSMW based on multivariate logistic regression. Compared with men who reported no UVAI with women, MSMW who reported having any UVAI with female partners were less likely to independently be HIV-infected (OR=0.33, 95% CI 0.12–0.90) and to disclose that they have sex with men to female partners (OR=0.17, 95% CI 0.05–0.57). MSMW having any UVAI with women were independently more likely to have >4 male partners (OR=2.84, 95% CI 1.04–7.77) than were men who report no UVAI.

Discussion

In this analysis of baseline data of 326 HIV-infected and uninfected black MSM in NYC, more than a quarter reported having sex with both men and women in the last 3 months, with the remainder reporting having sex with men only during this time period. Several key differences were noted between black MSMW and MSMO in our sample. MSMW were less likely to be HIV-infected, report recent use of amyl nitrates, and have unprotected receptive anal sex with most recent male partner than MSMO. MSMW were more likely to be >40 years old and report recent heroin use. Previously published studies have documented sociodemographic and risk behavior differences between MSMW and MSM, some of which mirror our study findings.(Brooks et al., 2003; Gorbach et al., 2009; Lehner & Chiasson, 1998; Maulsby et al., 2011; G. Millett et al., 2005; Wheeler, Lauby, Liu, Van Sluytman, & Murrill, 2008; Zule, Bobashev, Wechsberg, Costenbader, & Coomes, 2009) For example, in a Los Angeles study using respondent-driven sampling, in which 52.8% of the sample were black, MSMW were found to be older and less likely to be HIV infected compared with MSMO. However, in contrast to our findings, MSMW in that study were more likely to recently use cocaine and less likely to recently use opiates/heroin and amphetamines/

methamphetamines compared with MSMO.(Gorbach et al., 2009) A study of black MSMO and MSMW in NYC and Philadelphia found that, among other differences, MSMW were older and more likely to use illicit drugs or drink alcohol in the last 3 months compared with MSMO.(Wheeler et al., 2008) Our study did not detect any difference in total number of male sex partners in the last 3 months between MSMW and MSMO, which is similar to a finding noted in a study of black HIV-infected men.(G. Millett et al., 2005)

Our study found that over half of black MSMW (55.6%) reported having at least some UVAI with female partners in the last 3 months, with 75% of these men reporting UAI with a male partner during last sex and 40% being HIV-infected. These rates of unprotected sex are slightly higher than previous reports.("HIV/STD risks in young men who have sex with men who do not disclose their sexual orientation--six U.S. cities, 1994–2000," 2003; McKirnan et al., 1995; Siegel et al., 2008) In a study among black and white MSMW in Chicago, 42% of the men reported having any UVAI with women in the last 6 months compared with 31% of the men reporting any unprotected insertive or receptive anal sex with men.(McKirnan et al., 1995) Although black MSMW in that study were not more likely to have any UAI with male partners compared with white men, they were more likely to have any UVAI with women than white MSMW. Black MSMW were also more likely to have unprotected penetrative sex with both men and women in the last 6 months compared with white MSMW in that study.(McKirnan et al., 1995)

It is encouraging that MSMW who reported having any UVAI with their female partners in our study were less likely to be HIV-positive; however, their risky sexual risk behavior (as evidenced by the higher number of male sex partners) places them at risk for new HIV infection if they engage in unprotected anal sex and possible HIV transmission to their female and male partners. Several studies have found that increased rates of HIV and other STIs among female partners of black MSMW were associated with the men's lack of disclosure of their bisexuality.(Dodge et al., 2008; Montgomery et al., 2003) In contrast, among black MSM aged 15–29 years in the Young Men's Survey, HIV prevalence was higher among men who disclosed compared with men who did not disclose their sexual orientation (24% vs. 14%, respectively). Although nondisclosers were less likely to have ≥5 lifetime male partners and less likely to have UAI with men in the preceding 6 months compared with disclosers, they were more likely to report having UVAI with their female partners in the last 6 months compared with disclosers (23% vs. 7%). ("HIV/STD risks in young men who have sex with men who do not disclose their sexual orientation--six U.S. cities, 1994–2000," 2003) In our study, over 70% of MSMW reported that they had disclosed to female partners (main or non-main) that they have sex with men. This disclosure rate is higher than previously published disclosure rates of 10–30% among black MSMW.(Dodge et al., 2008) In this study, we found that black MSMW who disclosed to their female partners (either main or non-main partner) that they have sex with men were independently less likely to have any UVAI with women in the last 3 months compared with men who did not disclose. This association is consistent with several previously published reports.(Dodge et al., 2008; HIV/STD risks in young men who have sex with men who do not disclose their sexual orientation--six U.S. cities, 1994–2000," 2003) In addition, a high rate of disclosure of HIV serostatus to their female main partners (nearly 85%) was noted among MSMW in our sample who have female main partners. Our analysis was limited in that disclosure of HIV serostatus to female non-main partners among MSMW was not directly asked, but this rate is likely to be lower than the disclosure rate to female main partners. The high rates of disclosure of bisexuality to female partners (both main and non-main) and disclosure of HIV serostatus to female main partners in our study are encouraging. Additional attention should be directed towards HIV prevention efforts that target barriers to disclosure of MSM behaviors. Interventions fostering open communication about sexual history with both male and female partners are important.

The study had several limitations. There was potential selection bias related to the non-random sample, which might affect the generalizability of our findings to all black MSMO and MSMW in NYC. This study recruited sexually active MSM having unprotected sex with male partners in the past 3 months. Our findings might not be applicable to less sexually active and risky black MSMO and MSMW populations in NYC and other urban areas. The study had a relatively small sample of MSMW and even a smaller sample of MSMW who reported having any UVAI with female partners in the last 3 months, which reduced statistical power, yet we found several significant associations. Because sociodemographic and risk behavior data were obtained by self-report, there was a potential for recall bias and socially desirable responding, though these problems were likely mitigated by the 3-month recall period and ACASI use.

Conclusion

Our study findings highlight key differences in sociodemographic and risk behavior characteristics between black MSMW and MSMO and support some tailoring of HIV prevention interventions to MSMW to reduce risk of HIV transmission to both their female and male partners.(G. Millett et al., 2005) Although the rate of disclosure of bisexuality among black MSMW to their female partners was relatively high in our sample, it is important that black MSMW be encouraged to disclose their bisexuality so that their female partners are fully knowledgeable about their HIV acquisition risk and take appropriate precautions to reduce their risk.

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Table 1

Sociodemographic and Risk Behavior Characteristics of Black MSMW and MSMO, DiSH Study, New York City, 2008–09 (N=326)

Characteristic	Total (N=326)	MSMW (N=84)	MSMO (N=242)	P-value
HIV serostatus, n (%)				
Positive	204 (62.6)	42 (50.0)	162 (66.9)	0.006
Negative	122 (37.4)	42 (50.0)	80 (33.1)	
Age (years), n (%)				
≤ 40	152 (46.6)	28 (33.3)	124 (51.2)	0.005
> 40	174 (53.4)	56 (66.7)	118 (48.8)	
Education, n (%)				
Less than high school graduate	53 (16.3)	18 (21.4)	35 (14.5)	0.44
High school graduate	104 (31.9)	23 (27.4)	81 (33.5)	
Some college	115 (35.3)	30 (35.7)	85 (35.1)	
College graduate or more	54 (16.6)	13 (15.5)	41 (16.9)	
Annual income, n (%)				
< $10,000	199 (61.6)	53 (63.9)	146 (60.8)	0.63
≥ $10,000	124 (38.4)	30 (36.1)	94 (39.2)	
Sexual identity, n (%)				
Gay	221 (70.2)	22 (29.3)	199 (82.9)	<0.0001
Bisexual	89 (28.3)	51 (68.0)	38 (15.8)	
Straight	5 (1.6)	2 (2.7)	3 (1.3)	
Past incarceration, n (%)	190 (58.3)	58 (69.1)	132 (54.6)	0.02
STI in last 12 months, n (%)	72 (22.1)	16 (19.1)	56 (23.1)	0.43
Heavy alcohol use in the last 3 months, n (%)[a]	27 (8.3)	11 (13.1)	16 (6.6)	0.06
Any drug use in the last 3 months, n (%)				
Marijuana	186 (57.3)	45 (54.2)	141 (58.3)	0.52
Ecstasy	23 (7.1)	3 (3.6)	20 (8.3)	0.15
Powdered cocaine	88 (27.2)	26 (31.3)	62 (25.7)	0.32
Crack cocaine	95 (29.3)	30 (36.1)	65 (27.0)	0.11
Methamphetamines/amphetamines	27 (8.3)	4 (4.8)	23 (9.5)	0.18
Amyl nitrates	86 (26.5)	12 (14.5)	74 (30.6)	0.004
Club drugs (Special K, GHB, Rohypnol, etc.)	9 (2.8)	1 (1.2)	8 (3.3)	0.85
Heroin	10 (3.1)	7 (8.4)	3 (1.2)	0.001
Viagra or similar drugs	52 (16.0)	16 (19.3)	36 (14.9)	0.35
Other recreational or prescription drugs	34 (10.5)	11 (13.3)	23 (9.5)	0.34
Other illegal drugs	62 (19.1)	21 (25.3)	41 (17.0)	0.10

Characteristic	Total (N=326)	MSMW (N=84)	MSMO (N=242)	P-value
Number of male sexual partners in last 3 months, n (%)				
≤ 4 partners	180 (55.2)	46 (54.8)	134 (55.4)	0.92
> 4 partners	146 (44.8)	38 (45.2)	108 (44.6)	
Main male sexual partner, n (%)	186 (57.4)	44 (53.7)	142 (58.7)	0.43
Receptive anal intercourse with most recent male partner, n (%)	173 (54.8)	32 (40.0)	141 (59.8)	0.002
Unprotected receptive anal intercourse with most recent male partner, n (%)	124 (38.3)	22 (26.8)	102 (42.2)	0.01 [b]
Insertive anal intercourse with most recent male partner, n (%)	213 (67.4)	67 (83.8)	146 (61.9)	0.0003
Unprotected insertive anal intercourse with most recent male partner, n (%)	148 (45.7)	44 (53.7)	104 (43.0)	0.09 [c]

STI: sexually transmitted infection

NB: Numbers may not add to column total because of missing values.

[a] Heavy alcohol use is defined as drinking 5 or more alcoholic drinks per occasion on 5 or more days or more than 6 alcoholic drinks on any day in the past 3 months.

[b] P-value = 0.03 when adjusted for HIV serostatus by multivariate logistic regression.

[c] P-value = 0.09 when adjusted for HIV serostatus by multivariate logistic regression.

Table 2

Final Multivariate Logistic Regression Model: Sociodemographic and Risk Behavior Characteristics Associated with Being MSMW, DiSH Study, New York City, 2008–09 (N=326)

Characteristic	OR	95% CI	P-value
HIV positive serostatus (vs. HIV negative)	0.35	0.19 – 0.64	0.0007
Age > 40 years (vs. age ≤ 40)	2.99	1.62 – 5.52	0.0005
Use of amyl nitrates in last 3 months (vs. no use of amyl nitrates)	0.43	0.21 – 0.87	0.02
Use of heroin in last 3 months (vs. no use of heroin)	7.37	1.54 – 35.31	0.012
Unprotected receptive anal intercourse with most recent male partner (vs. no unprotected receptive anal intercourse)	0.48	0.26 – 0.89	0.019

Table 3

Comparison of Any vs. No Unprotected Vaginal and/or Anal Intercourse (UVAI) with a Female Partner in Last Three Months among Black MSMW, DiSH Study, New York City, 2008–09 (N=81)

	Total	Any UVAI (N=45)	No UVAI (N=36)	P-value
Characteristics of Male Participant				
HIV serostatus, n (%)				
Positive	41 (50.6)	18 (40.0)	23 (63.9)	0.03
Negative	40 (49.4)	27 (60.0)	13 (36.1)	
Age (years), n (%)				
≤ 40	28 (34.6)	14 (31.1)	14 (38.9)	0.46
> 40	53 (65.4)	31 (68.9)	22 (61.1)	
Education, n (%)				
Less than high school graduate	18 (22.2)	10 (22.2)	8 (22.2)	0.57
High school graduate	23 (28.4)	14 (31.1)	9 (25.0)	
Some college	29 (35.8)	17 (37.8)	12 (33.3)	
College graduate or more	11 (13.6)	4 (8.9)	7 (19.4)	
Annual income, n (%)				
< $10,000	52 (64.2)	28 (62.2)	24 (66.7)	0.68
≥ $10,000	29 (35.8)	17 (37.8)	12 (33.3)	
Sexual identity, n (%)				
Gay	21 (29.2)	15 (37.5)	6 (18.8)	0.07
Bisexual	49 (68.1)	23 (57.5)	26 (81.3)	
Straight	2 (2.8)	2 (5.0)	0 (0.0)	
Past incarceration, n (%)	58 (71.6)	37 (82.2)	21 (58.3)	0.02
STI in last 12 months, n (%)	16 (19.8)	8 (17.8)	8 (22.2)	0.62
Heavy alcohol use in the last 3 months, n (%)a	10 (12.4)	9 (20.0)	1 (2.8)	0.02
Any drug use in the last 3 months, n (%)				
Marijuana	43 (53.8)	24 (53.3)	19 (54.3)	0.93
Ecstasy	3 (3.8)	3 (6.7)	0 (0.0)	0.12
Powdered cocaine	26 (32.5)	20 (44.4)	6 (17.1)	0.01
Crack cocaine	30 (37.5)	19 (42.2)	11 (31.4)	0.32
Methamphetamines/ amphetamines	3 (3.8)	2 (4.4)	1 (2.9)	0.71
Amyl nitrates	12 (15.0)	6 (13.3)	6 (17.1)	0.63
Club drugs (Special K, GHB, Rohypnol, etc.)	0 (0.0)	0 (0.0)	0 (0.0)	N A
Heroin	7 (8.8)	5 (11.1)	2 (5.7)	0.40
Viagra or similar drugs	16 (20.0)	11 (24.4)	5 (14.3)	0.26
Other recreational or prescription drugs	10 (12.5)	5 (11.1)	5 (14.3)	0.67

	Total	Any UVAI (N=45)	No UVAI (N=36)	P-value
Other illegal drugs	20 (25.0)	15 (33.3)	5 (14.3)	0.05
Number of male sexual partners in last 3 months, n (%)				
≤ 4 partners	44 (54.3)	20 (44.4)	24 (66.7)	0.05
> 4 partners	37 (45.7)	25 (55.6)	12 (33.3)	
Other Characteristics				
Main female partner	46 (56.8)	26 (57.8)	20 (55.6)	0.84
HIV serostatus of main female partner among those with main female partners (n=46)				0.12
Positive	11 (23.9)	4 (15.4)	7 (35.0)	
Negative	28 (60.9)	16 (61.5)	12 (60.0)	
Unknown	7 (15.2)	6 (23.1)	1 (5.0)	
Participant disclosure of HIV serostatus to main female partner among those with main female partners (n=46)	39 (84.8)	21 (80.8)	18 (90.0)	0.39
Participant disclosure of having sex with men to female partner	58 (71.6)	27 (60.0)	31 (86.1)	0.01
Unprotected anal intercourse with most recent male partner	53 (67.1)	33 (75.0)	20 (57.1)	0.09

STI: sexually transmitted infection

NB: Numbers may not add to column total because of missing values.

Table 4

Final Multivariate Logistic Regression Model: Characteristics Associated with Any Unprotected Vaginal and/or Anal Intercourse (UVAI) with Female Partners in Last 3 Months, DiSH Study, New York City, 2008–09 (N=81)

Characteristic	OR	95% CI	P-value
HIV positive serostatus (vs. HIV negative)	0.33	0.12 – 0.90	0.03
Participant disclosure of having sex with men to female partners (vs. participant nondisclosure of having sex with men)	0.17	0.05 – 0.57	0.004
> 4 male sexual partners in last 3 months (vs. ≤ 4 male sexual partners)	2.84	1.04 – 7.77	0.04