HIV Risk Behaviors Among Black/African American and Hispanic/Latina Female Partners of Men Who Have Sex With Men and Women

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Abstract

We examined the frequencies of HIV-related risk factors among women reporting and not reporting sex with a man who has sex with men and women (MSMW). We used data from 15,625 visits of Black and Hispanic/Latina females, ages 15–64 years, to Los Angeles County HIV testing sites (2007–2008). The following risk factors were associated with reporting an MSMW partner: number of sex partners, use of party drugs, anal sex, and sexual partners with other risk factors. Overall, females who reported an MSMW partner differed little in their likelihood of testing HIV positive (0.93%) compared to those who did not (0.58%, *p* value =0.19). Among females reporting one male sex partner, having an MSMW partner was strongly associated with HIV (2.8 vs. 0.63%, *p* = 0.03). Interventions targeting women who report other risky behaviors may reach many who have been with MSMW. Women with one partner are an important focus of such efforts.

Keywords

Black/African American; Hispanic/Latino; HIV infection/epidemiology; Bisexuality; HIV testing

Introduction

A disproportionate number of Black and Hispanic women in the United States have been affected by the HIV/AIDS epidemic. According to the Centers for Disease Control and Prevention, Black and Hispanic women comprised 81% of new female HIV cases in 2009, although they accounted for only 24% of the US population in states with long-term HIV reporting. The estimated HIV rates for Black and Hispanic/Latino women were 66.6 and 22.8 per 100,000, respectively, which were 9.2 and 3.2 times the estimated rate for White women (7.2 per 100,000) [1].

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High-risk heterosexual contact (i.e., sex with an injection drug user, man who has sex with other men or an HIV-positive man of unknown risk) has been identified as the leading route of transmission for women. After employing multiple imputation strategies to determine transmission categories for women who were reported with a non-identified HIV risk, the CDC estimated that 76% of Black women, 71% of Hispanic women, and 65% of white women living with HIV in the United States at the end of 2009 were infected due to sexual contact with a high-risk male. The next leading cause of HIV infection, injection drug use, accounted for just 24, 29, and 33% of estimate cases, respectively [1].

Because of the high proportion of infections in females that are due to heterosexual contact, the number of men who have sex with both men and women (MSMW) is of increasing concern and interest. A number of studies have found differences between Black and Hispanic men who have sex with men (MSM) and their White counterparts in the proportions who also report sex with women. For example, in a study of 5,156 HIV-positive MSM conducted at 12 state and local health departments throughout the United States, 34% of Black, 26% of Hispanic, and 13% of white MSM reported also having sex with a female partner [2]. In another study with data collected between 2003 and 2005 from 10,030 MSM, 28% of Black and 17% of Hispanic MSM reported oral, vaginal, or anal sex with both men and women in the last 12 months; whereas, just 8% of their White counterparts reported doing so. Moreover, approximately half of each racial/ethnic group reported unprotected vaginal or anal sex with their female partners [3].

Having an HIV-positive male partner with unspecified risk is the most common HIV transmission category (over 35%) for HIV cases in female adults and adolescents reported to the CDC [4–6]. Concurrently, surveillance data indicate that less than 5% of HIV-infected women report sex with an MSMW [4–6]. These data make it difficult to ascertain the total number of female heterosexual HIV/AIDS cases with unidentified transmission risk that may be attributed to MSMW partners; as there may be cases that are only aware that a male sexual partner had HIV and not his risk transmission category [5–7]. It has been hypothesized that MSMW may serve as a "bridge population" for HIV transmission to heterosexual females [2, 8–11]. However, there is also controversy regarding the extent to which they may play this role [12, 13]. There has been some evidence that MSMW may pose an increased risk for HIV and other sexually transmitted diseases to their female partners versus their male partners. One study surveying 362 Hispanic/Latino MSM in Southern California found that of 41% reporting sex with a woman in the prior 4 months; 73% Of these reported having unprotected vaginal intercourse and approximately 30% reported having unprotected anal intercourse. Less than 50% reported unprotected anal intercourse with male partners in the prior 4 months [14]. In another study, where qualitative interviews were conducted with young non-gay-identifying African American MSMW, participants reported less frequent use of condoms with their female than their male partners [15]. Finally, a 2007 study of 456 HIV-positive MSM found increased transmission risk factors in African American MSM relative to other MSM. Specifically, African American MSM reported knowing their HIV status for a significantly shorter amount of time, lower self efficacy for HIV status disclosure, increased occurrence of drinking alcohol before or during sex, and sex with significantly more women and significantly fewer men [16].

We are aware of just one recent study on the socio-demographics or risk-related behaviors of the female partners of MSMW [17]. Without further data, it is difficult to assess this group's relative risks of HIV infection or to efficiently reach them for HIV prevention and testing services. It is sometimes assumed that women who have sex with MSMW do not participate in risky behaviors themselves, such as sex with multiple casual partners, substance use, or sex work [2, 8]; however, this has not been tested. Furthermore, it is possible, that these female partners may have riskier individual behaviors than other females

because of factors linking stimulant use to exchange sex for both men and women, a greater opportunity for women with multiple partners to come into contact with MSMW, and a greater tolerance of MSMW in male partners among women who are willing to experiment sexually themselves. For example, Voetsch et al. [17] found that Black female college students who reported sex with MSMW were more likely than other Black female students to report 2 or more sex partners in the prior 12 months.

The research reported here addresses gaps in our understanding of HIV risk in women of color by examining data reported to the Office of AIDS Program's and Policy (OAPP) by their contracted HIV testing sites in Los Angeles County for African American and Latino/ Hispanic women who received HIV testing services in 2007–2008. Sexually active women who reported recent sex with an MSMW (cases) were compared to those who did not (controls). We sought to identify sociodemographic, test-related, and behavioral factors particular to Black and Hispanic women who have had sex with MSMW partners and to examine associations of this potential risk factor with HIV infection.

Methods

Data Sources

Data from subjects tested at various HIV test sites—such as mobile testing units, community health clinics, AIDS service centers, commercial businesses called storefronts, and drug treatment centers—that receive public funding through OAPP were used for this study. HIV testing at the County's public tuberculosis and sexually transmitted disease clinics is also publicly funded, but was not reported to OAPP during the study period. Testing was voluntary, with the exception of those tested due to a courtorder (5.7%). As part of the visit, testers participated in a brief, one-on-one counseling session with a Statecertified HIV counselor to assess demographics, HIV risk behaviors, previous HIV test history, and other information routinely captured on the HIV Counseling Information form. The risk assessment period covered the last 2 years or the time since receipt of the last HIV test result (if tested less than 2 years ago). Since about 70% of tests were rapid tests, the information for the form was collected by the counselor during the approximately 20 min that it took for the HIV test results to be ready. In addition to HIV counseling certification, HIV counselors were also trained to capture the results of their counseling session on the HIV Counseling Information form and to enter the data into the computerized HIV information resources system (HIRS).

Instrument

The HIV Counseling Information form was created by OAPP to collect client-level data during HIV counseling and testing (HCT) sessions. Data collected included demographics, self-identified sexual orientation, client referral sources, site and test type, reasons for testing, prior HIV/STD diagnosis, substance use and use of needles for injection, types of sex partners and types of sexual activities with each, and other types of HIV risk factors. Laboratory slips were used to enter HIV lab test requests and results. The data from the Counseling Information form also provided the basis for reimbursement of HCT services to contracted providers and reporting to OAPP funders. In addition, it provided information for program planners to use in directing the allocation of Los Angeles County HIV prevention activities and resources.

Analysis

A multi-step process was used to obtain a model that would examine the association of various known risk factors for HIV infection with the outcome of interest: reporting sex with an MSMW during the risk assessment period. First, we selected possible predictor variables

based on a priori information. These included race/ethnicity, age, homelessness, number of sex partners, stimulant (rock or powder cocaine or amphetamines), party (GHB, ecstasy, nitrates/nitrites, or ketamines) or injection drug use, receipt of drugs or money for sex, anal sex, getting tested because of concern over risky behaviors, or having a partner who was an injection drug user (IDU), involved in sex work, or was known to have HIV. Then, we conducted a series of bivariate analyses to examine their individual relationships with the outcome variable. All predictors were analyzed using dichotomous or dummy variables. Age was divided into four groups: 15–24, 25–34, 35–44, and 45 years and over. Total number of sex partners was grouped into 5 categories: 1 partner, 2 partners, 3–5 partners, 6–10 partners, and 11 plus partners. Subsequently, a full multivariate regression model was run to examine associations of each predictor of interest with the outcome variable while controlling for other predictors in the model. In order to account for clustering within testing sites, the logistic regression model was run using generalized linear mixed models via the SAS GLIMMIX procedure with a random intercept for testing site [18]. The outcomes for this paper were generated using SAS software, Version 9.13 of the SAS System for Windows (SAS Institute Inc., Cary, NC). SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

Results

Subjects

During 2007 and 2008, publicly funded sites, under contract with OAPP, reported 69,699 test encounters while conducting HIV counseling and testing services in Los Angeles County. A total of 15,625 (22.4%) of these encounters were conducted among African American and Hispanic women between the ages of 15 and 64 years who reported at least one sex partner during the risk assessment period.

Sample Characteristics

Of the 15,625 tests in the sample, 862 (5.5%) were to women who reported knowing they had an MSMW partner. 52% of the total tests were among Latina/Hispanic women and 48% were among African American women. Ages were evenly distributed with approximately a quarter of the participants in each of the age categories (see Table 1). Approximately 2.4% reported being pregnant and 6.1% reported being homeless. A majority of testers (63%) reported their reason for seeking the current HIV test was participation in risky behavior within the last 2 years or since their last HIV test result. The next highest reported reason (29%) was "other," followed by pregnancy (4%) and then starting a new relationship (3.5%). Just 10% of tests were anonymous; 90% were confidential. In two instances, a prospective tester received pre-test counseling but did not obtain an HIV test.

Bivariate Analyses

Analyses for the bivariate association of 13 potential predictors with having an MSMW partner were conducted. The covariates, odds ratios and 95% confidence limits are listed in Table 2. All associations were significant at the $p < 0.05$ level except race/ethnicity and age group. Positive associations with the outcome of interest included homelessness; having higher numbers of sex partners; receiving drugs or money for sex; engaging in receptive anal sex; personal use of injection drugs, "party" drugs (i.e., ecstasy, GHB, ketamines, nitrates/nitrites), or stimulants (i.e., powder or crack cocaine, amphetamines); obtaining testing because of concern over risky behaviors; and having a partner that had used injection drugs, engaged in sex work, or was known to have HIV.

Multivariate Analyses

In multivariate analyses, most associations observed in the bivariate analyses remain, but the strength of the association is attenuated. As shown in Table 2, only receiving drugs/money for sex (OR =1.18; 95% CI 0.94–1.48) and stimulant drug use (OR =0.94; 95% CI 0.77–1.14) are no longer associated with having an MSMW partner after control for other covariates. Significant positive associations remain with homelessness; number of partners; anal sex; and personal party drug use; obtaining testing because of concerns related to risky behaviors; and sex with a sex worker, IDU, or HIV-positive person.

The positive bivariate association of injection drug use with having an MSMW partner, however, changes direction in the multivariate analysis and becomes negative (OR =0.56; 95% CI 0.42–0.75). Further examination indicates that this reversal occurs when the random intercept for test site is added to the multiple regression model. In addition, there is either no association or a negative association of injection drug use with having an MSMW partner in all of the HIV testing site types except stand-alone HIV testing centers (e.g., non-clinic, non-mobile HIV test sites). For example, in 2007, drug treatment center test sites had the largest proportion of tests to IDUs (23%), but none of these 454 tests were to clients who reported sex with an MSMW.

Associations with HIV Infection

93 or 0.6% of the 15,625 tests performed were HIV-antibody positive. The seropositivity rate was higher but not statistically different between cases (0.93%) and controls (0.58%) (p =0.19). Nearly half (48%, n =45) of the positive tests were conducted in women who had not received a prior positive test. The prevalence of newly diagnosed HIV infection was similar in cases (0.35%) and controls (0.28%) (p =0.74). A different picture emerged, however, when we examined these associations separately for the 38% of tests conducted in women reporting just one male sex partner. In this subgroup, 2.80% of tests were HIV-antibody positive among females reporting an MSMW partner, compared to just 0.63% of tests for those not reporting an MSMW partner (exact p =0.034). In tests to women with multiple partners, HIV prevalence did not differ between cases and controls, 0.66 versus 0.54% (exact p =0.797). Although sparse numbers of HIV-positive cases limit conclusions, the odds ratios estimating the association of having an MSMW partner with HIV infection were similar when we conducted these analyses separately for African American and Latina/Hispanic women.

Condom Use

To better understand the lack of an association of testing positive for HIV with having an MSMW in the overall sample, we compared the distributions of condom use between women reporting and not reporting MSMW partners. Within the former group, we further compared rates of overall condom use to rates of condom use with known MSMW partners. Frequencies are presented in Table 3. Consistent condom use was low overall, with fewer than 15% reporting always using condoms for vaginal sex. Occasional use was reported by 38–46% and no use was reported by 42–48% of testers in each group. Women were less likely to report condom use for anal than for vaginal sex. Condom use rates were similar between those with and without MSMW partners. Among those reporting MSMW partners, condom use rates were similar with known MSMW and with other partners.

Discussion

Findings for the current study suggest that women who report sex with MSMW also report, on average, higher frequencies of "other" HIV risk factors. According to our results, they can be characterized as women that are more likely to report using party drugs, higher

numbers of sex partners, and engaging in anal sex or sex with sex workers, IDUs, or HIV-positive individuals. Given that we found no differences by race/ethnicity or age, the main demographic variables available for examination in this group of Black and Latino women, a woman tester's risk-related behaviors rather than her demographics appear to be the main predictors of her reporting recent sex with an MSMW.

We suspect that a number of social-behavioral and sexual network factors explain the association of certain risk behaviors with having a bisexual partner. The association of greater numbers of sex partners with having a bisexual partner may be due to chance—the more partners a woman has, the higher likelihood that at least one of them will have engaged in sex with men. It also might reflect that these women have fewer sexual inhibitions than those with fewer partners, including a greater willingness to have sex with MSMW. Supplemental surveillance data from HIV-positive MSMW indicates that a large majority reported sex with multiple male and multiple female partners [2] as did data from a sample of MSMW ages 18–30 years in Chicago [8]. Hence both MSMW and their female partners tend to have multiple partners, potentially facilitating the spread of HIV from them to others.

Other identified risk factors may reflect a woman's participation in social and sexual networks in which gay and bisexual men are more frequent. For example, party drugs, though used by people of all sexual orientations, are frequently part of certain gay social scenes such as clubs and circuit parties [19–22] and are used more frequently by homosexuals and bisexuals than by heterosexuals [23, 24]. There is presumably a larger market for male sex workers among men than there is among women, and significant numbers of Black and Latino MSMW report exchange sex, drug use, or income from drug dealing [25–27]. Hence, women who are a part of drug-using networks may be more likely than other women to encounter potential male partners who have had sex with other men in exchange for drugs or money. Other studies have identified a higher frequency of anal sex among drug-using women than is observed for the general population or for non-users [28–30]. Finally, MSMW who engage in anal sex with their male partners may also be more likely than males who have sex with only females to engage in anal sex with their female partners [31, 32]. Research has shown high rates of both protected and unprotected anal sex with female partners among MSMW [33, 34].

We also found that, contrary to what we expected, women in the full sample who reported sex with MSMW partners were *not* more likely to test positive for HIV antibodies or be newly diagnosed with HIV. These findings are surprising both because this group of females has engaged in sex with a known high-risk group and because they also report high frequencies of other HIV risk behaviors. We further point out that Los Angeles is a setting where HIV infection attributed to MSM predominates. In 2009, 72% of all people living with HIV/AIDS were non-IDU MSM/MSMW [35]. In the testing data from which this sample was extracted, newly diagnosed HIV prevalence among gay and non-gay-identified MSM/MSMW was 3.0 and 2.0%, respectively compared to just 0.6% in men who only reported sex with women [36].

Our examination of condom use did not identify higher rates of consistent use among cases than among controls. Furthermore, among cases (those who reported MSMW partners) condom use was not more consistent with known MSMW partners than it was with other partners. Hence, we conclude that other, unmeasured factors provide some relative level of protection to female partners of MSMW. The data among monogamous women may provide a clue. In this subgroup, sex with an MSM did confer elevated risk for HIV infection. Assuming that women with one partner are more likely to be in a steady relationship than are women with multiple partners, they are also more likely to have frequent, unprotected intercourse with this one partner. If their regular partner is HIV-infected, their risk of

infection may be greater than that of a woman with multiple partners who only occasionally has sex with her one partner who has HIV. At least two studies have identified higher frequencies of anal sex among Latinos in married or serious partnerships than those in non-married or casual partnerships [37, 38], a factor that may also lead to higher HIV risk in partnered/married women than in single women with MSMW partners. Research on HIV-positive MSMW indicates that they are also more likely to report having anal sex (whether protected or unprotected) with their main female partners than with their casual female partners [30], again leading to higher transmission risk with main partners.

Limitations

The current study has a number of limitations. Along with being based on self-reported information from a self-selected sample of testers, the data were not collected in a standardized manner. Although staff attended an in-depth training on how to complete the HIV Counseling Information form, unlike a traditional research survey, they were permitted to answer items by interpreting and inferring the appropriate responses from other responses and information volunteered by their client. Furthermore, all self-report data is subject to false claims, denials, and lapses in recall. A second limitation involved data storage. Some data, especially risk variables, were stored in relational tables where zeros (or "nos") were set as the default response until and unless a "1" for yes was entered. For these variables, it was often not possible to distinguish missing responses from those that contained an appropriate "no" response. We also acknowledge that some cases may have become aware of a partners' same-sex activity only because he was diagnosed with HIV or caught trading sex with men for money—further strengthening the observed associations with these risk factors. Importantly, there were most likely women in the control group that were simply unaware that a recent male partner was an MSMW. Despite this, we assume that nearly all of the cases did have an MSMW partner whereas a smaller portion of the controls had them —likely lower than the overall prevalence of tests to women who reported MSMW partners (5.5%). Unless the distribution of examined risk factors differed widely between the cases and the controls that did have MSMW partners, this underreporting is unlikely to cause major bias.

Conclusion

A small but substantive proportion of African American and Latino/Hispanic female testers at (non-STD, non-tuberculosis) publicly funded HIV test sites in Los Angeles County report recent sex with an MSMW. Among women with one sexual partner, sex with an MSMW is associated with both HIV prevalence and newly diagnosed HIV infection. These associations are not observed, however, among females reporting multiple sexual partners. Further, females who report MSMW partners are far more likely than other women to report other HIV-related risk behaviors including risky substance use, receiving drugs or money in exchange for sex, anal sex, and sex with partners who have other known risk factors. These findings suggest that African American and Latina women with MSMW partners have social and sexual networks that involve high rates of risky behaviors, and are more likely to engage in a range of risky behaviors than other women. Nevertheless, unmeasured factors appear to ameliorate HIV risk in this group and warrant future investigation. Given that many women may not be aware of a male partner's same-sex activity while they are involved with him, efforts to reach female partners of bisexual men might be effective if they target women with the risky behaviors identified here. Reaching monogamous women, through these and other strategies, is particularly called for given that they may be the group most likely to be placed at elevated risk for HIV due to sex with an MSMW. One strategy with the potential to reach high-risk female partners of MSMW is partner notification services. This approach has the benefit of reaching women regardless of their other risk

factors. It is one of the priority areas of the Los Angeles Department of Public Health and one which identifies a higher prevalence of undiagnosed HIV cases than any other testing strategy used by the department.

Acknowledgments

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Table 1

Sociodemographics and risk-related behaviors among African American and Latina female testers, ages 15–64 years, who do (cases or WMSM) and do not report (controls) sex with an MSMW

	WMSM (*N* =862)	Control (*N* =14763)	Total (*N* =15625)
Sociodemographics			
Age group			
15–24	248 (29%)	4468 (30%)	4716 (30%)
25–34	257 (30%)	4217 (29%)	4474 (28%)
35–44	205 (24%)	3220 (22%)	3425 (22%)
45?	152 (18%)	2858 (19%)	3010 (19%)
African American	397 (54%)	7076 (52%)	7473 (48%)
Latina	465 (46%)	7687 (48%)	8152 (52%)
Homeless	120 (14%)	839 (5.7%)	959 (6.1%)
Sexual/drug-risk behaviors			
Number of sexual partners			
1	107 (12%)	5855 (40%)	5962 (38%)
2	140 (16%)	3070 (21%)	3210 (21%)
3–5	197 (23%)	3041 (21%)	3238 (21%)
6–10	141 (16%)	1173 (8.0%)	1314 (8.4%)
11?	276 (32%)	1593 (11%)	1869 (12%)
Received drugs/money for sex			
	339 (39%)	2689 (18%)	3028 (19%)
Anal sex	455 (53%)	3364 (23%)	3819 (24%)
Injection drug use	165 (19%)	1296 (8.8%)	1462 (9.4%)
Party drug use (i.e., ecstasy, special K, GHB, nitrites/nitrates)			
	128 (15%)	465 (3.2%)	593 (3.8%)
Stimulant drug use (i.e., cocaine, amphetamines)			
	391 (45%)	3580 (24%)	3971 (25%)
Tested because of risky behavior			
	762 (88%)	9063 (61%)	9825 (63%)
Partner risk factors			
Sex work	75 (8.7%)	206 (1.4%)	281 (1.8%)
Drug injection	304 (35%)	1810 (12%)	2114 (14%)
HIV-positive	78 (9.0%)	266 (1.8%)	344 (2.2%)

Note Based on secondary analysis of data routinely collected from publicly funded HIV testing sites in Los Angeles County. Some percentages may not add to 100% due to rounding

Table 2

Crude and adjusted associations of potential predictors with reporting sex with an MSMW among 14,763 controls and 862 cases (i.e., known female partners of MSMW)

	Crude OR (95% CL)	Adjusted OR (95% CL)
Socio-demographics		
Race/ethnicity		
(African American vs. Latina)	0.93 (0.81–1.07)	1.11 (0.92–1.32)
Age group (vs. <25 years)		
25–34 years	1.10 (0.92–1.31)	1.12 (0.91–1.36)
35–44 years	1.15 (0.95–1.39)	1.19 (0.95–1.48)
45+	0.95 (0.78–1.18)	0.98 (0.77–1.26)
Homeless	2.68 (2.18–3.29)	1.44 (1.10–1.89)
Sexual/drug-risk behaviors		
Number of sexual partners (vs. 1 partner)		
2	2.50 (1.93–3.22)	1.82 (1.39– 2.39)
3–5	3.55 (2.80–4.50)	2.33 (1.79–3.03)
6–10	6.58 (5.01–8.52)	3.20 (2.36–4.35)
11+	9.48 (7.53–11.93)	3.84 (2.81–5.26)
Received drugs/money for sex	2.91 (2.52–3.36)	1.18 (0.94–1.48)
Anal sex	3.79 (3.30–4.35)	1.31 (1.20–1.57)
Injection drug use	2.46 (2.06–2.95)	0.56 (0.42–0.75)
Party drug use (ecstasy, special K, GHB)	5.35 (4.35–6.60)	2.07 (1.60–2.70)
Stimulant drug use (cocaine, amphetamines)	2.59 (2.26–2.98)	0.94 (0.77–1.14)
Tested because of risky behavior	4.79 (3.88–5.92)	1.65 (1.28–2.14)
Partner risk factors		
Sex work	6.73 (5.12–8.86)	2.41 (1.75–3.33)
Drug injection	3.90 (3.36–4.52)	1.55 (1.26–1.92)
HIV-positive	5.42 (4.17–7.05)	3.42 (2.51– 4.66)

Note Risk behavior concern is defined as a tester's motivation to test because of general concern over recent behaviors they perceive to be related to risk for HIV. This variable does not measure specific HIV risk behaviors

Table 3

Frequency of condom use for sexual intercourse among cases or WMSM (i.e., women who report sex with men who have sex with men) and controls (i.e., women who do not)

Condom use frequency by type of intercourse	WMSM with all male partners	WMSM with just MSMW partner(s)	Control with all male partners
Vaginal sex			
Never	44.9%	48.1%	42.2%
Sometimes	45.6	37.9	45.6
Always	9.4	14.0	12.3
Anal sex			
Never	55.9%	56.2%	55.1%
Sometimes	36.8	36.6	33.0
Always	7.2	7.2	11.9