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A Comparison of HIV Seropositive and Seronegative Young Adult Heroin- and Cocaine-Using Men Who Have Sex with Men in New York City, 2000–2003

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ABSTRACT *The purpose of this analysis was to determine the prevalence and correlates of HIV infection among a street-recruited sample of heroin- and cocaine-using men who have sex with men (MSM). Injection (injecting ≤3 years) and non-injection drug users (heroin, crack, and/or cocaine use <10 years) between 18 and 40 years of age were simultaneously street-recruited into two cohort studies in New York City, 2000–2003, by using identical recruitment techniques. Baseline data collected among young adult men who either identified as gay/bisexual or reported ever having sex with a man were used for this analysis. Nonparametric statistics guided interpretation. Of 95 heroin/cocaine-using MSM, 25.3% tested HIV seropositive with 75% reporting a previous HIV diagnosis. The majority was black (46%) or Hispanic (44%), and the median age was 28 years (range 18–40). HIV-seropositive MSM were more likely than seronegatives to be older and to have an HIV-seropositive partner but less likely to report current homelessness, illegal income, heterosexual identity, multiple sex partners, female partners, and sex for money/drug partners than seronegatives. These data indicate high HIV prevalence among street-recruited, drug-using MSM compared with other injection drug use (IDU) subgroups and drug-using MSM; however, lower risk behaviors were found among HIV seropositives compared with seronegatives. Large-scale studies among illicit drug-using MSM from more marginalized neighborhoods are warranted.*

KEYWORDS *Drug use, HIV, MSM, Sex risk behavior.*

INTRODUCTION

Men who have sex with men (MSM) have been at the forefront of the HIV epidemic in the United States, but especially in Northeastern cities, a considerable portion of HIV infection is related to injection drug use (IDU). The intersection of these risk behaviors has received relatively limited attention, especially in minority communities where both behaviors are stigmatized. The extent to which there might be differences in infection

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rates by mode of administration of illicit drug use has also received limited attention in MSM. Although HIV incidence rates have been declining among injection drug users in the United States,[1,2] some evidence suggests that a similar decline may not be occurring among IDU men who have sex with men (IDU-MSM).[3] However, HIV surveillance data from 1999 to 2002 suggest that IDU-MSM have lower prevalence rates (5%) of newly diagnosed HIV cases compared with non–drug-using MSM (60%).[4] These data reflect only information from individuals who actually tested for HIV and may miss other drug user categories at high risk (e.g., noninjecting heroin, crack cocaine users). Furthermore, it is estimated that approximately 25% of all HIV-infected individuals in the United States are underrepresented in these surveillance reports.[5]

Populations identified as being difficult to reach through research and prevention programs include black and Hispanic IDU-MSM and noninjection heroin- and crack cocaine-using MSM (non–IDU-MSM).[6–9] Early HIV research with IDU study populations has found higher rates of infection among IDU-MSM,[10,11] yet little information exists with respect to sexual and drug use (specifically heroin and/or cocaine) behaviors and risk for acquiring HIV among black and Hispanic IDU-MSM.

HIV research among MSM-study populations has recognized the potential for underrepresentation of black and Hispanic MSM subgroups.[7,8,12–15] One reason for this may be that recruitment methods commonly employed in studies of MSM often involve sampling from gay-identified venues such as bars, clubs, circuit venues, and parks.[16] While these settings yield sizeable samples of MSM who may use illicit drugs, they tend to miss non-gay identified and disenfranchised MSM[7,8] from drug-use neighborhoods characterized by high frequency of heroin and crack cocaine use.

Among the few current studies conducted among illicit drug-using MSM, varying sampling or recruitment strategies have been employed so that marginalized populations are better represented. Studies conducted in New York, Chicago, San Francisco, and Los Angeles, for example, report HIV prevalence rates among IDU-MSM as high as 40–43%.[17] In a seven-city study, HIV prevalence rates among IDU-MSM were 14.5% compared with 6.7% among non–IDU-MSM.[18] These prevalence rates are higher than recent HIV surveillance data[4] and higher than estimates for other subpopulations of injection drug users and noninjection drug users sampled during similar periods (e.g., heterosexual injection drug users and noninjection drug users).[1,19,20]

Given the limited reports on the intersection of illicit drug use and MSM, particularly injection and noninjection heroin and cocaine use, coupled with the few reports on illicit drug-using MSM of color from more marginalized communities, we set forth to estimate prevalence and correlates of HIV infection in a street-recruited sample of predominantly black and Hispanic MSM using heroin and cocaine in New York City.

METHODS

Study Population

In August 2000, enrollment of an IDU cohort (Hepatitis C Study) and non-IDU cohort (Harlem Outreach Prevention and Education (HOPE) Study) began in several New York City neighborhoods known for illicit drug activity (Lower East Side Manhattan, South Bronx, Central Brooklyn, and Queens) targeting young, new injection drug users and noninjection drug users. Eligibility included individuals between the ages of 15 and 40 years who injected ≤3 years and noninjecting heroin, crack, and cocaine users of the same age with <10-year histories of illicit drug use.

Study participants were recruited simultaneously in each neighborhood by using similar street outreach techniques as described elsewhere.[21] Baseline data collected through March 2004 from both the Hepatitis C (n=71) and HOPE (n=71) studies were combined for this analysis. The study population was restricted to male participants who reported ever having sex with a man and/or identified as gay or bisexual. The study was approved by the Institutional Review Boards of the New York Academy of Medicine and the New York Blood Center.

Data Collection

Eligible and consenting participants underwent a private, structured interview administered by a trained interviewer. Demographic factors included age, race/ethnicity (black, Hispanic, white, or other race), sexual identity (gay or bisexual vs. heterosexual), education (≤high school or general equivalency diploma vs. some college or higher), source of income (any illegal vs. only legal), homelessness at enrollment (yes vs. no), and drug treatment (ever vs. never). Drug-use variables collected included injection status (injected drugs in past 2 years vs. never) and current drug used in past 2 months (heroin, crack, cocaine, speedball, methamphetamine, ecstasy). Sexual partnerships and behaviors measured over the past 2 months included number of sex partners, type of sexual partnerships (any female, injection drug user, noninjection drug user, known HIV positive, exchanging sex for money/drugs, steady and casual partnerships), and condom use (ever vs. never). Study participants underwent also blood draws at baseline for serological testing of HIV by using standard criteria.

Data Analysis

Frequencies and proportions were calculated to compare sociodemographics, drug use, and sexual behaviors stratified by HIV serostatus. Chi-square tests were used to determine bivariate statistical differences. Significant associations between HIV serostatus and exposure variables of interest were determined by Fisher's exact P values <.05 (due to small cell sizes).

RESULTS

Of 101 drug-using MSM, 95 had HIV serology results available for analysis with a prevalence rate of 25.3% (Table 1). Seventy-five percent of the HIV-seropositive participants had been previously diagnosed with HIV prior to study entry. The median age of the overall sample was 28 (range 18–40), with HIV-seropositive persons significantly older than seronegatives (35 vs. 26 years; $P<.001$). Most sample was black (46%) and Hispanic (44%) and there were no race/ethnic differences by HIV serostatus. Compared with seronegative MSM, a larger proportion of HIV-seropositive MSM self-identified as either gay or bisexual (92% vs. 65%; $P<.012$). A smaller proportion of HIV-seropositive MSM reported current homelessness (13%) and some type of illegal income source (46%) compared with seronegative MSM (66%; $P<.001$, and 69%; $P<.042$, respectively). Many HIV-seropositive MSM had at least a high school diploma or equivalent (63%) than seronegative MSM (45%; $P<.140$). Approximately two thirds of both HIV seropositive and seronegative MSM reported a history of drug treatment.

Table 2 summarizes recent drug-use behaviors in association with HIV-seropositive status. A smaller proportion (25%) of HIV-seropositive MSM reported recent intranasal heroin use compared with seronegative MSM (46%), and approximately three fourths of both HIV seropositive and seronegative MSM reported recent crack

TABLE 1. Sociodemographic characteristics associated with HIV-seropositive status among young adult heroin- and cocaine-using men who have sex with men (MSM) in New York City, 2000–2003

Sociodemographic characteristics	Total (n = 95) N (%)	HIV seropositive (n = 24) N (%)	HIV seronegative (n = 71) N (%)	Fisher's exact *P* value
Self-identity				
Gay or bisexual	68 (72)	22 (92)	46 (65)	
Heterosexual	27 (28)	2 (8)	25 (35)	<.012
Race				
Hispanic	42 (44)	10 (42)	32 (45)	
Black	44 (46)	14 (58)	30 (42)	
White/other	9 (10)	0 (0)	9 (13)	<.130
Median age (range)	28 (18–40)	35 (19–40)	26 (18–40)	<.001
Education				
<High school	48 (51)	9 (37)	39 (55)	
≥High school/general equivalency diploma	47 (49)	15 (63)	32 (45)	<.140
Current homelessness*				
No	45 (47)	21 (87)	24 (34)	
Yes	50 (53)	3 (13)	47 (66)	<.001
Any illegal income†				
No	35 (37)	13 (54)	22 (31)	
Yes	60 (63)	11 (46)	49 (69)	<.042
Drug treatment				
Never	33 (35)	8 (33)	25 (35)	
Ever	62 (65)	16 (67)	46 (65)	<0.868

*Homeless at the time of study entry.
†Past 6 months.

and/or cocaine use. Only 9% of the total sample reported having ever used noninjection methamphetamines, which did not differ by HIV serostatus. Many MSM reported a history of ecstasy use (20%) with a significantly smaller proportion of HIV-seropositive MSM reporting use (4%) compared with seronegative MSM (25%; $P < .036$). Twenty-five percent of the sample injected drugs, with the majority injecting heroin (92%) and/or cocaine (75%). One participant reported ever having injected methamphetamine or some other form of speed. A smaller proportion of HIV-seropositive MSM (13%) reported ever injecting drugs compared with seronegative MSM (30%; $P < .097$); contrary to what would be expected. HIV prevalence was notably higher among non–IDU-MSM (29.6%) compared with IDU-MSM (12.5%).

For sexual partnerships and behaviors that occurred over the past 2 months (Table 3), a smaller proportion of HIV-seropositive MSM reported ≥3 sex partners (38% vs. 65%; $P < .020$), having any female sex partners (8% vs. 63%; $P < .001$), and having an IDU sex partner (12% vs. 25%; $P < .190$) compared with seronegative MSM. Having a non-IDU sex partner was common in this sample of drug-using MSM (67%) regardless of HIV serostatus. HIV-seropositive MSM reported not being sexually active (17% vs. 10%) or having a steady partner (29% vs. 10%) more often than seronegative MSM. Similar proportions of HIV seropositive and seronegative MSM reported having a casual partner only (25% vs. 23%); however,

TABLE 2. Drug-use behaviors associated with HIV-seropositive status among young adult heroin-, crack-, and/or cocaine-using men who have sex with men (MSM) in New York City, 2000–2003

Drug-use behaviors	Total (N = 95) [n (%)]	HIV seropositive (N = 24) [n (%)]	HIV seronegative (N = 71) [n (%)]	Fisher's exact *P* value
Intranasal heroin use*				
No	56 (59)	18 (75)	38 (54)	
Yes	39 (41)	6 (25)	33 (46)	<.064
Intranasal cocaine use*				
No	2 (22)	7 (29)	14 (20)	
Yes	74 (78)	17 (71)	57 (80)	<.335
Smoke crack*				
No	26 (27)	7 (29)	19 (27)	
Yes	69 (73)	17 (71)	52 (73)	<.820
Intranasal/smoke methamphetamine				
Never	86 (91)	22 (92)	64 (90)	
Ever	9 (9)	2 (8)	7 (10)	<.999
Ecstasy use				
Never	76 (80)	23 (96)	53 (75)	
Ever	19 (20)	1 (4)	18 (25)	<.036
Injection drug use†				
No	71 (75)	21 (88)	50 (70)	
Yes	24 (25)	3 (12)	21 (30)	<.097

*Past 2 months.
†Majority injected heroin (92%) and/or cocaine (75%); only one reported injecting methamphetamines.

fewer HIV seropositives reported having both steady and casual partner types (29% vs. 57%; $P<.055$), respectively. Significantly fewer HIV-seropositive MSM reported having a sex partner with whom they exchanged sex for money/drugs (42%) compared with seronegative MSM (73%; $P<.006$). Finally, having a known HIV-seropositive sex partner was more common among HIV-seropositive MSM compared with seronegatives (33% vs. 3%; $P<.001$).

DISCUSSION

The major finding of this study was that among this street-recruited population of young adult non-IDU-MSM and IDU-MSM in New York City, a high HIV prevalence rate was observed relative to other studies of illicit drug users[1,19,22,23] (ranging from 3 to 14%) and MSM[8,9,17,18,24] (ranging from 3 to 21%) and yet, several sexual risk behaviors demonstrated an inverse association with HIV-seropositive status. Specifically, HIV-seropositive MSM were less likely to report multiple sex partners, exchange-for-sex partnerships, and female partnerships compared with seronegative MSM, behaviors that have been previously suggested as high-risk among illicit drug users and/or drug-using MSM.[25–28] Additionally, HIV-seropositive MSM tended to report a higher level of socioeconomic status compared with seronegative MSM. This may seem paradoxical; however, there is a plausible explanation for these findings that is supported by previous reports and various aspects of this study.

TABLE 3. Sex partner characteristics and behaviors associated with HIV-seropositive status among young adult heroin-, crack-, and/or cocaine-using men who have sex with men (MSM) in New York City, 2000–2003

Sex partner characteristics and behaviors	Total (N = 95) [n (%)]	HIV seropositive (N = 24) [n (%)]	HIV seronegative (N = 73) [n (%)]	Fisher's exact *P* value
Number of sex partners*				
<3	40 (42)	15 (62)	25 (35)	
≥3	55 (58)	9 (38)	46 (65)	<.020
Any condom use†				
No	32 (38)	8 (40)	24 (38)	
Yes	52 (62)	12 (60)	40 (62)	<.999
Sexual partner characteristics				
No sex	11 (12)	4 (17)	7 (10)	
Steady partner only	14 (15)	7 (29)	7 (10)	
Casual partner only‡	22 (24)	6 (25)	16 (23)	
Both partner types	46 (49)	7 (29)	39 (57)	<.055
Any female partners				
No	48 (51)	22 (92)	26 (37)	
Yes	47 (49)	2 (8)	45 (63)	<.001
IDU sex partner				
No	74 (78)	21 (88)	53 (75)	
Yes	21 (22)	3 (12)	18 (25)	<.190
Non-IDU sex partner				
No	31 (33)	9 (37)	22 (31)	
Yes	64 (67)	15 (63)	49 (69)	<.557
Known HIV-seropositive sex partner§				
No	85 (89)	16 (67)	69 (97)	
Yes	10 (11)	8 (33)	2 (3)	<.001
Exchange sex for money/ drugs partner				
No	33 (35)	14 (58)	19 (27)	
Yes	62 (65)	10 (42)	52 (71)	<.006

*Median number of sex partners during past 2 months was used to dichotomize number of sex partners.
†Measured among sexually active participants only.
‡Casual partnerships also included partners who exchanged sex for drugs.
§Participants who answered either "no" or "don't know" were categorized as "no."

Prior research suggests that it is possible that the HIV-seropositive individuals may have known about their HIV status for some time and have since reduced high-risk behaviors.[29–31] Two characteristics of the study population and design provide support for earlier HIV diagnoses. First, three fourths of HIV-seropositive MSM reported having been previously diagnosed with HIV at study entry and in this study, risk classification was based on recent behavior and not necessarily behavior preceding HIV acquisition and/or receiving an HIV-seropositive result. In addition, HIV-seropositive MSM tended to be older than seronegative MSM which may further indicate a longer history of known HIV-seropositive status.[29,32] In support of this claim, several studies have reported that younger MSM of color, including

drug-using MSM, tend to be at higher risk for HIV and to engage in higher sexual risk behaviors.[9,18,27,32–36]

In addition to reporting lower sexual risk, HIV seropositives reported, surprisingly, a higher level of socioeconomic status. Specifically, HIV-seropositive MSM were significantly less likely to be homeless and tended not to use illegal means for income/survival compared with seronegative MSM. Nearly two thirds of the HIV-seropositive group had at least completed high school compared with less than half of the HIV-seronegative MSM. This level of education among a street-recruited illicit drug-using population was higher than that observed in other similar HIV-study populations, including the few conducted among heroin- and/or cocaine-using MSM.[10,37,38] An explanation for these findings is the possibility that this population of HIV-seropositive MSM were less marginalized and more stable compared with the seronegative comparison group. It is plausible that HIV-seropositive MSM had earlier and better access to HIV care and counseling and had since reduced risk behaviors. In support of this assertion, a higher proportion of HIV-seropositive MSM were on Medicare (92%), had seen the same health care provider for the past 2 years (46%), and had been seen in a doctor's office or clinic as opposed to an emergency department (75%) compared with HIV seronegatives (66%, 24%, and 31%, respectively).

Several studies have suggested that MSM of color are less likely to disclose their sexual identity to female sex partners[39,40] indicating an increased HIV risk of heterosexual transmission from MSM of color to their female sex partners. High-risk sexual behaviors have been reported by black MSM who also report sex with women,[40–42] particularly among MSM who have not disclosed their sexual history to their female partners.[43] Assessing disclosure of sexual identity or HIV status was not possible for this analysis; however, a very small proportion of HIV-seropositive MSM reported sex with female partners. Decisions on female sexual partnerships among black and Hispanic MSM may differ from white MSM for many reasons, such as racial/ethnic or cultural differences with regard to images of masculinity; differing social contexts, expectations, and norms; and fear of stigma and social discrimination associated with sexual identity and race/ethnicity.[40,44–46] Further study is needed to understand partnership dynamics among MSM of color, with particular attention to how race/ethnicity, cultural factors, social norms, HIV serostatus, and HIV disclosure may affect sexual risk behavior among drug-using/nonusing MSM who also have sex with women.

Having a recent HIV-seropositive partner was more common among HIV seropositives than seronegatives. At first glance, this could be considered an extremely high-risk practice. Given the cross-sectional design of the study, it is uncertain whether a sexual partnership with an HIV-seropositive person existed prior to acquiring HIV or after. Sexual partnerships were measured over the past 2 months. Previous reports have suggested that HIV-seropositive MSM may seek partnerships with known HIV-seropositive individuals.[47] This finding highlights the importance of examining the social context in which certain types of partnerships occur to fully understand sexual risk taking and protective behaviors.

There are limitations to this study, including the small sample size. The street-recruitment methods used resulted in a relatively sizeable number of black and Hispanic drug-using MSM; however, the absolute sample size was small. This may be, in part, a consequence of targeting both young noninjection drug users and injection drug users with less specific attention to enrolling MSM. Peer-driven or social network-based methods could be combined with street outreach to recruit a larger sample of illicit drug-using MSM for future studies of this type.[48,49] As noted earlier, temporal

relationships between HIV exposure, seroconversion, and HIV-seropositive status could not be determined in this study because of its cross-sectional design. The observed inverse association between HIV-seropositive status and sexual risk behaviors may be due in part to the older age of HIV-seropositive individuals compared with seronegative comparison group. Larger prospective cohort studies with this population are feasible[8,23] and would help to elucidate these findings.

This study has identified a high-risk subgroup of MSM who remain burdened with HIV disease and poorly understood. Although the findings are limited, they suggest that a vulnerable subgroup of drug-using MSM, who may not necessarily self-identify as being MSM, may be systematically missed in HIV research that targets more mainstream gay-identified venues or more socially integrated drug-using MSM. Most HIV research with MSM has involved either illicit drug users or more mainstream MSM who self-identify as being gay; both may underrepresent groups of hard-to-reach or "hidden" drug-using MSM. Recruitment efforts need to be expanded, for example, by using peer- and network-based outreach techniques, to bolster study enrollment.[48,49] Such efforts will ultimately help us to replicate these preliminary findings and to use them for improving intervention strategies that reach this elusive population.

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