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The Relationship Between Self-Reported Sexual Orientation and Behavior in a Sample of Middle-Aged Male Injection Drug Users

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Abstract

Data are sparse on injection drug using (IDU) men who have sex with men (MSM). Previous literature suggests perceived taboos can result in an underreporting of atypical sexual orientation (i.e., bisexuality, homosexuality). As a result, HIV prevention programs have been difficult to mount, particularly programs for IDU-MSM. The association between self-reported sexual orientation and sexual behavior at semi-annual study visits was longitudinally assessed in a population of 1300 male IDUs in Baltimore during the period 1993 to 1998. Overall, a small minority (5%) of the male IDUs inconsistently reported their sexual orientation over time. Logistic regression analyses were performed, which yielded five significant predictors. These men tended to be older, to have been incarcerated, to have attended shooting galleries during follow-up, and were more than twice as likely to be HIV-seropositive (OR, 2.66; 95% CI, 1.62–4.36) compared with those who consistently reported their sexual orientation. Furthermore, men reporting inconsistent sexual orientation tended to engage in higher risk behaviors, suggesting that these men should be especially targeted for interventions.

Keywords

sexual orientation; injection drug users; human immunodeficiency virus; substance abuse; sex behavior

INTRODUCTION

Homosexual sex between men is the leading risk factor of newly diagnosed HIV/AIDS cases in the U.S., and injection drug use is the second leading exposure category (CDC, 2002). HIV incidence rates for men who have sex with other men (MSM) who are also injection drug users (IDU) have remained extremely high. In two recent prospective studies of IDU, male IDUs engaging in homosexual activity were more than twice as likely to undergo HIV seroconversion than men who reported no recent homosexual activity (Kral et al., 2001; Strathdee et al., 2001).

Other studies suggest that high-risk drug injection practices, such as the use of shooting galleries (Celentano et al., 1991; Nelson et al., 1991) and receptive needle sharing (Strathdee et al., 1997), are also higher among MSM-IDU than other male IDU. These facts underscore the dual challenge for MSM-IDUs since they may be at high risk of HIV infection through unprotected anal sex and needle sharing. Other studies have reported elevated rates of hepatitis B, syphilis, gonorrhea, and other sexually transmitted infections (STIs) among MSM-IDUs compared to heterosexual men (de Luise et al., 2002; Gunn, Murray, Ackers, Hardison, & Margolis, 2001; Nelson et al., 1991). However, limited data exist to provide an understanding for developing prevention programs that target and serve MSM-IDUs, a problem that has been noted in previous studies (Kral et al., 2001; Strathdee et al., 1997, 2001).

Additionally, concerns have been raised that MSM-IDUs may not be reached through prevention programs directed toward gay men which aim to influence social networks that reinforce reductions in high risk behaviors (Goldbaum, Perdue, & Higgins, 1996; Wohl & Johnson, 2002a; Wohl et al., 2002b). MSM may not perceive themselves to be part of the gay community and hence may not heed prevention messages aimed at this population (Goldbaum et al., 1996, 1998; Stokes, Vanable, & McKirnan, 1997). To investigate this, studies of self-reported sexual orientation can be compared to actual behaviors. In one study, of 209 HIV infected male blood donors, 25% ($n = 52$) self-identified as heterosexual. This study has shown that HIV infected men who self-identify as heterosexual ($n = 52$) tend to report sexual behavior that is inconsistent with their sexual orientation: 6% reported having exclusive sex with men, 54% exclusively with women, 23% with both men and women, and 17% were currently celibate (Doll, Petersen, White, Johnson, & Ward, 1992). Thus, HIV prevention is needed that focuses on the issues important for those men who self-identify as heterosexual, yet participate in homosexual and bisexual sexual behavior. To our knowledge, the proportion of MSM-IDU who identify as homosexual or bisexual has not been empirically studied nor have studies examined prospectively self-reported sexual orientation compared to reports of sexual behaviors and other risk behaviors. Another point is that the stigma of homosexual orientation varies among different racial ethnic groups (Mays & Cochran, 1987). Thus, there is a need to consider how such behaviors are reported in different groups in order to understand how to better address cultural issues relating to HIV risk.

In an ongoing prospective study of IDUs in Baltimore, Maryland, we examined self-reported sexual orientation (i.e., homosexual, bisexual, and heterosexual) and sexual behavior of male IDUs at semi-annual study visits. We hypothesized that male IDUs who inconsistently reported their sexual orientation may be more likely to harbor feelings of shame, guilt, and internalized homophobia and may, therefore, be more likely to engage in high-risk sexual and/or drug using behaviors than other male IDUs. Previous research suggests that “coming out” reduces internalized homophobia, and thereby, risk behavior (Diaz, 1998; Newman, 2000).

METHOD

Participants

From 1988 to 1989, in 1994, and in 1998, a total of 2198 men were recruited into a longitudinal study of the natural history of HIV infection in IDUs in Baltimore (the ALIVE Study). HIV seropositive and seronegative participants were recruited through extensive community outreach, as described elsewhere (Vlahov et al., 1991). The original questionnaire administered in 1988–1993 did not include questions regarding self-reported sexual orientation. In July 1993, a revised version of the questionnaire included questions regarding sexual orientation. Hence, the analysis described herein included a total of 1300 men who completed the revised version of the questionnaire at least twice between July 1993 and August 1998, when computer assisted self-administered interviewing (ACASI) was initiated.

Of the 1300 men, the median number of visits per individual was eight (range, 2–12) and the cumulative number of visits was 9462. Most (93.9%) participants were African American. The median age was 43 (range, 22–72). At the beginning of the study period (July 1993), 466 (35.8%) participants were HIV-seropositive, 68 (5.2%) seroconverted during the 4-year follow-up period, and 766 (58.2%) remained HIV-seronegative.

After providing informed consent (approved by the Committee on Human Research, The Johns Hopkins Bloomberg School of Public Health, Baltimore), participants underwent interviewer-administered behavioral assessment, physical examination, and blood specimen collection. Baseline interviews collected data on sociodemographics, drug use history and sexual behaviors in the last 6-months, and semiannual follow-up interviews obtained reports of drug use and sexual behavior in the last 6-months. In July 1993, a question was introduced regarding self-defined sexual orientation.

An analysis of the background characteristics for the total sample at baseline, after attrition, and after selecting the subsample of inconsistent men, revealed that these groups were very similar, except that the normal distribution in age changed. After attrition and the subsample selection, the median age was 43. Thus, the findings may be generalizable to mostly middle-aged, injection drug using men, with lower socioeconomic status, and who reside in metropolitan cities.

Measures

The focus of the analysis was to compare reported sexual orientation and sexual behaviors over time and to identify correlates of inconsistent sexual orientation or sexual behavior. The sexual orientation, sexual behavior, and risk measures used for this study were derived from the survey instrument developed and used in the National Institute of Allergy and Infectious Diseases (NIAID) Multicenter AIDS Cohort Study (MACS) between 1983 and 1984. MACS was a collaboration with the AIDS Research Center in order to assess CAM utilization and health outcomes associated with alternative medicine use among HIV-seropositive MACS participants. The drug use measures were developed by the ALIVE investigators, as described elsewhere (Vlahov et al., 1991).

Summary variables were created for each person, describing their reported sexual orientation and sexual behavior over the complete follow-up period. Sexual orientation was asked of the respondents through the following question and response categories: “do you consider yourself: straight/heterosexual; bisexual; gay/homosexual; or don’t know.” According to the sexual orientation reported at all visits during follow-up, we classified participants as consistently heterosexual, consistently bisexual, consistently homosexual, or inconsistent. In the evaluation of consistency over time, the answer “don’t know” to sexual orientation was considered a unique response, distinguished from specific sexual orientation.

In addition, according to the sexual behavior reported at each visit, participants were classified as having no sexual activity, sex with male partners, or heterosexual sex only in the 6-month interval prior to that visit. Individuals who reported any sex with same-sex partners were recorded as MSM even if heterosexual sex was also reported during the same interval. We then summarized sexual behavior over time for each participant as consistently having no sex, consistently heterosexual, consistently homosexual or a combination. Participants in any of the sexual behavior groups (e.g., heterosexual) could still have visits where they reported no sexual activity.

Based on the summaries of both sexual orientation and sexual behavior over time, we then grouped participants into four classes as follows: (1) consistently heterosexual: participants who consistently reported a heterosexual sexual orientation and only heterosexual behavior

during the course of the study; (2) consistently homosexual: participants who consistently reported a homosexual sexual orientation and homosexual behavior during the course of the study; (3) consistently bisexual: participants who reported a consistent bisexual sexual orientation and behavior that included sex with female and male partners; and (4) inconsistent participants who reported inconsistent sexual orientation or behavior that did not match the reported sexual orientation. Finally, we collapsed the three consistent groups into one group and classified participants as either consistent or inconsistent.

When examining the first report of sexual orientation, the vast majority (96%) of participants identified themselves as heterosexual. Among these men ($N = 1251$), 279 (22.3%) reported celibacy, 963 (77%) reported sex with women, and 7 (0.6%) reported sex with men during the six previous months. Among the bisexual men ($N = 17$), three (17.7%) were celibate, three (17.7%) reported sex with women only, and 11 (64.7%) reported sex with men. Of the 23 men who identified as homosexual, six (26.1%) were celibate, none reported sex with women, and 17 (73.9%) reported sex with men.

Data Analysis

Descriptive summaries of reported sexual behaviors for each participant over time accounted for the different number of visits per individual, by computing the percent of visits with a specific sexual behavior: percent of visits with no sex, percent of visits with heterosexual sex only, and percent of visits with same sex partners. We then described the distribution of these percentages for each of the groups defined above.

We used univariate logistic regression to explore associations between inconsistent sexual orientation/behavior and 16 variables, which included: demographic characteristics, drug use behaviors, HIV status, and self-reported incident sexually transmitted infections (STIs). Variables that could change over time were summarized to indicate “high risk” or “low risk” based on each participant’s report of specific high-risk behaviors occurring at least once during follow-up. For example, any report of homelessness during the study period was coded as “homeless” and any report of sharing injection equipment was coded as “sharing.” STIs included any self-reported diagnosis of syphilis, trichomonas, genital ulcers or gonorrhea. HIV serostatus was determined at the last follow up visit; 77 participants who seroconverted between July 1994 and August 1998 were classified as HIV seropositive, consistent with the approach of indicating high-risk at any time during follow-up.

Multivariate logistic regression was then conducted in a manual, stepwise fashion considering all variables that were significant at $p < .05$ in univariate analyses. The likelihood ratio test was used to determine whether the addition of a particular variable significantly improved the overall fit of the model.

RESULTS

Of the 1300 men, there were 1232 (95%) men who consistently reported the same sexual orientation and behavior during the course of the study and 68 (5%) men who reported inconsistent sexual orientation over time or whose behavior did not correspond with their reported sexual orientation. Of the 1232 men who reported consistent sexual orientation, the majority ($N = 1212$, 98%) were heterosexual, and two percent reported their sexual orientation as bisexual ($N = 3$) or gay ($N = 17$). Of the 68 men who reported inconsistent sexual orientation over time, responses varied. The largest group ($N = 29$, 43%) considered their sexual orientation at various points to be heterosexual, bisexual or that they did not know their sexual orientation. Of the additional 39 men who were classified as inconsistent, 20 reported their sexual orientation at various points to be heterosexual or responded “don’t know,” 11 reported bisexual, homosexual, or responded “don’t know,” six reported heterosexual or homosexual,

and two reported their sexual orientation at various points to be heterosexual, bisexual, or homosexual.

In Table I, we summarize sexual behavior with sexual orientation over time. The data show the agreement between the self-reported orientation over time and sexual practices. Men who consistently self-identified as heterosexual ($N = 1212$), reported that, on average, 25.4% of their visits to be celibate, on 74.3% of the visits to have sex only with women, and on 0.0% of the visits to have sex with men. Men who reported consistent sexual orientation as homosexual ($N = 17$) reported, on average, celibacy on 25.7% and sex with men on 74.3% of the follow-up visits.

Homosexual men did not report having sex with women during any of the follow-up visits. Only three men reported consistent sexual orientation as bisexual. Among the 68 men who reported inconsistent sexual orientation over time, their sexual behavior was not consistent. On average, they reported celibacy at 54.6% of the visits, heterosexual sex at 29.8% of the visits, and sex with men at 15% of the follow-up visits.

To assess whether inconsistent sexual orientation was associated with high-risk behaviors and other social factors, univariate logistic regression models were constructed (Table II). Sixteen variables were entered as predictors, including demographic variables, drug use variables, an STD and HIV status variable. Of the five demographic predictor variables, three were significantly associated with an inconsistent sexual orientation/behavior over time. African American male IDUs were less likely to report inconsistent sexual orientation/behavior than their white counterparts (OR, 0.44; 95% CI, 0.21–0.91). Likewise, homelessness (OR, 1.93; 95% CI, 1.20–3.09), and recent incarceration (OR, 1.78; 95% CI, 1.07–2.95) were significantly associated with inconsistent sexual orientation/behavior over time.

Of the nine drug use variables, attending shooting galleries (OR, 1.91; 95% CI, 1.15–3.17) at some time during follow-up was the one variable significantly associated with inconsistent sexual orientation over time. Those who reported inconsistent sexual orientation were 2.6 times more likely to be HIV-seropositive (OR, 2.64; 95% CI, 1.62–4.30) and were significantly more likely to have reported a recent STD (OR, 2.5, 95% CI: 1.38–4.56).

After simultaneously taking into account multiple factors for inconsistent sexual orientation/behavior, four variables remained independently associated with inconsistent sexual orientation/behavior among male IDUs (Table III). These were HIV serostatus, incident STD, incarceration, and use of shooting galleries. In addition, the age variable became significant. Male IDUs who reported inconsistent sexual orientation/behavior over time were more than twice as likely to be HIV-seropositive, twice as likely to report a new STD, more likely to have been incarcerated, attended shooting galleries, and older, when compared to those who reported consistent sexual orientation/behavior. In addition,

Since our study sample was primarily comprised of African American subjects, to assess potentially confounding effects of race, we repeated the analysis in Table III adjusting for race/ethnicity, and the parameter estimates were nearly identical. Since race was not significant in this model, we deleted it to obtain the most parsimonious model.

DISCUSSION

The major findings of this study were two-fold: first, we found that the majority of male IDUs were consistent in their reporting of sexual orientation over time. Second, we found a significant association between inconsistent sexual orientation and conditions that place individuals at high risk of acquiring HIV and other STIs, including homelessness, incarceration, and use of shooting galleries. Corroborating this finding, men who reported inconsistent sexual

orientation were more than twice as likely to test HIV-positive and to report a recent STI. These associations persisted after accounting for potential confounders. These data offer support for HIV prevention efforts that are specifically developed for MSM IDUs, which is crucial not only for preventing HIV among these men and their male partners, but also their female sexual partners and unborn children.

There are several hypotheses that may explain the finding that men who report inconsistent sexual behavior engaged in higher risk behaviors. These men may view their sexual orientation as a preference based on current or recent sexual behavior. Some men may perceive their sexual orientation, according to their sexual behavior, rather than their sexual attraction. Men who trade sex for money may only engage in homosexual sex because they need money for drugs, yet their sexual desire and attraction is exclusively for the opposite sex. On the other hand, an earlier study suggested that those who reported consistent sexual orientation generally aligned their sexual orientation to their desired sexual behavior, regardless of whether they deviate from that desire when trading sex for money (Rust, 2002).

The subgroup of men who reported inconsistent sexual orientation likely included men who were unsure about their orientation, such as those who were in the process of “coming out of the closet.” Some men may have been ashamed to acknowledge their sexual orientation to the interviewer, perhaps because of internalized homophobia, psychological distress, and the stigma associated with being gay (Myers, Javanbakht, Martinex, & Obediah, 2003). In support of this, in a recent analysis we found that, compared to ACASI, men who were interviewed by a female interviewer were less likely to acknowledge engaging in sex with other men (Macalino, Celentano, Latkin, Strathdee, & Vlahov, 2002). For this reason, we implemented ACASI in 1998 to collect data on sensitive self-reported behaviors.

Another finding was that the inconsistent sexual orientation group reported a much higher rate of celibacy than the consistent group. We are unaware of any proposed theories to help explain this finding. Moreover, because these data are from a larger study whose primary focus was not sexual orientation and behavior, we are unable to explain the higher rate of celibate behavior among the inconsistent sexual orientation group. Hence, further exploration of sexual behaviors among inconsistent sexual orientation is needed.

Not unexpectedly, however, we observed a relationship between HIV serostatus, self-reported STDs, and inconsistent sexual orientation. Earlier studies suggested that men who are more closeted with respect to their homosexual orientation may be less likely to practice safer sex, and may be more likely to seek out unsafe places to have sex (CDC, 2003). These men may also be dealing with internalized homophobia and gay-related stigma.

We also observed a relationship between both incarceration and homelessness and inconsistent sexual orientation. Men who are homeless may be predisposed to risk taking, such as prostitution. Moreover, these men often have no place to store their needles, which can predispose to needle sharing. Men who have experienced incarceration may be more likely to have sex with other men and not identify themselves as gay (Wohl, 2002a).

We also found that African American men were less likely to report inconsistent sexual orientation. This was surprising since there is some evidence to suggest that African American men may be less likely than men of other races to identify as gay (Kennamer, Honnold, Bradford, & Hendricks, 2000). Our findings should be interpreted cautiously, however, since our cohort included a small proportion of Caucasian men and those of other races, and race did not exert an independent influence on the odds of inconsistent reporting of sexual behavior after taking into account the other variables mentioned above.

Our data suggest that HIV prevention efforts should not only focus on behavior, but should include education and support programs that focus on developing and strengthening networks for men who do not define their sexual orientation exclusively by sexual behavior due to stigmatization of MSM, drug using behavior, and HIV. HIV prevention programs targeting MSM-IDUs should consider the need to provide support for bisexual men and gay men who are potentially experiencing internalized and externalized homophobia. MSM IDUs who are on the “down low” may be ashamed and stigmatized for participating in sex with another male, and may subsequently participate in sexual encounters with other men in secret, despite having sex with women. These men require expanded and targeted HIV prevention programs to enhance awareness about safer-sex practices and the need to protect their sexual partners, especially noting that women are more likely to be exposed to HIV through sexual contact with MSM and IDUs (CDC, 2002).

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Table I
Summary of Sexual Behavior Over Time for Male Injection Drug Users by Self-Reported Sexual Orientation

Sexual orientation	Distribution of sexual behavior per-person visit					
	Celibate		Heterosexual		Homosexual	
	M	Range	M	Range	M	Range
Consistently heterosexual (N = 1212)	25.4	0–100	74.3	0–100	0.0	—
Consistently bisexual (N = 3)	8.3	0–25	10.0	0–30	81.7	70–100
Consistently homosexual (N = 17)	25.7	0–100	0.0	—	74.3	0–100
Inconsistent (N = 68)	54.6	0–100	29.8	0–100	15.0	0–100

Table II
Factors Associated with Inconsistently Reported Sexual Orientation or Behavior among Male IDUs Over Time^a

Variable ^b	N	% Inconsistent	Odds ratio	95% CI	p
Age					
≤35	185	4.3	0.67	0.30–1.49	ns
36–40	292	6.2	0.97	0.52–1.78	ns
41–45	383	5.2	0.81	0.45–1.46	ns
>45	440	6.4	1.00		
Race					
Black	1221	5.3	0.44	0.21–0.91	.0241
Other	79	11.4	1.00		
Legal income					
Less than 2500	1231	5.9	4.29	0.59–31.31	ns
≥2500	69	1.5	1.00		
Homeless					
Yes	505	7.9	1.93	1.20–3.09	.0057
No	795	4.3	1.00		
Incarcerated					
Yes	731	7.0	1.78	1.07–2.95	.0235
No	569	4.0	1.00		
Alcohol					
High use	418	6.2	1.15	0.71–1.89	ns
Low/no use	882	5.4	1.00		
Drug injection					
At least daily	814	6.1	1.26	0.76–2.08	ns
Never/less than daily	486	4.9	1.00		
Use of shooting galleries					
Yes	270	8.9	1.91	0.87–2.24	.0109
Never	1030	4.9	1.00		
Sharing of needles					
Yes	565	6.7	1.40	0.87–2.24	ns
Never	735	4.9	1.00		
Non-injecting drugs					

Variable ^b	N	% Inconsistent	Odds ratio	95% CI	p
Yes	845	6.2	1.29	0.77–2.15	ns
Never	455	4.8	1.00		
Use of crack					
Yes	573	5.9	1.08	0.68–1.73	ns
Never	727	5.5	1.00		
Trading sex for money/drugs					
Yes	454	5.9	1.07	0.66–1.75	ns
Never	846	5.6	1.00		
Sex with anonymous partner					
Yes	584	6.0	1.11	0.69–1.77	ns
Never	716	5.5	1.00		
Sex with IDU partner					
Yes	734	5.5	0.90	0.56–1.44	ns
Never	566	6.0	1.00		
New STD					
Yes	128	11.7	2.50	1.38–4.56	.0019
Never	1172	5.0	1.00		
HIV status					
HIV+	534	8.8	2.64	1.62–4.30	<.0001
HIV–	766	3.5	1.00		

^a Univariate logistic regression.

^b At any visit (except for the age and race variables).

Table III

Factors Independently Associated with Inconsistently Reported Sexual Orientation or Behavior among Male IDUs Over Time

Variable ^a	Adjusted OR	95% CI	<i>p</i>
HIV status	2.66	1.62–4.36	.0001
New STD	2.32	1.26–4.30	.0072
Incarcerated	1.82	1.08–3.06	.0247
Use of shooting galleries	1.78	1.06–3.01	.0299
Age	1.04	1.01–1.08	.0224

^a At any visit.