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Relationship Between Trauma and High Risk Behavior among HIV Positive Men Who Don't have Sex with Men (MDSM)

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Abstract

The incidence of heterosexual HIV transmission continues to increase in the US. However, little is known about factors that influence high-risk behavior among men who do not have sex with men (MDSM). This study examines the association of childhood sexual abuse and high-risk behaviors among MDSM. The Coping with HIV/AIDS in the Southeast (CHASE) study included 611 HIV-positive individuals in the Southeastern U.S. Bivariate statistics were used to examine the influence of childhood sexual abuse among MDSM, MSM, and women. Study findings indicated that among MDSM with HIV, childhood sexual abuse predicted a higher number of sexual partners, alcohol and drug use problems, depression, PTSD, and less trust in medical providers. Similar statistically significant relationships between childhood sexual abuse and negative outcomes were not found for MSM and women with the exception of childhood sexual abuse predicting PTSD and alcohol use in women. Study findings indicate a need for more in-depth research to examine the role of childhood sexual abuse in shaping adult risk behaviors among MDSM as well as a need to assess for and address childhood sexual abuse in this population.

Introduction

HIV continues to spread in the United States, as an estimated 56,300 people become infected each year (Hall et al 2008). The national strategy outlined by the Obama Administration aims to lower the annual number of new infections by 25 percent by 2014 (ONAP, 2010). As a way to reach that goal, the National HIV/AIDS Strategy has been specifically targeting high-risk populations by developing funding mechanisms for state and local health departments to address high-risk groups identified by epidemiologic profile of their jurisdiction (ONAP, 2010). High-risk populations are defined by gender, race/ethnicity, and as men who have sex with men.

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An estimated 83% of women and 14.6% of men with HIV have reported contracting the disease via heterosexual contact (CDC, 2010a). The proportion of those reporting infection from heterosexual contact has increased since the mid-1990s when the incidence of HIV transmission from heterosexual contact was reported to be 56.9% and 9.5% for women and men respectively. While the proportion of men with HIV reporting transmission through heterosexual contact is lower than for women, because men account for nearly 75% of new diagnoses the absolute numbers of men being infected through heterosexual contact is substantial (CDC 2010b).

Understanding predictors of high-risk heterosexual behavior among men is important for reducing male acquisition of the disease and male to female transmission. If rates of high risk sexual activity among heterosexual HIV positive men can be reduced, this would result in decreases in the rates of new infections among both genders. While a significant number of studies have focused on predictors of female high risk heterosexual activity (Dhaliwal, Gauzas et al. 1996; Bensley, Van Eenwyk et al. 2000; Cohen, Deamant et al. 2000; Romano and De Luca 2001; Dilorio, Hartwell et al. 2002; O'Leary, Purcell et al. 2003; Brennan, Hellerstedt et al. 2007; Schraufnagel, Davis et al. 2010), relatively few have focused on predictors of high risk heterosexual activity among men, (Dilorio, Hartwell et al. 2002; Holmes, Foa et al. 2005; Schraufnagel, Davis et al. 2010) and even fewer on HIV-positive heterosexual men.

Previous studies among women and men who have sex with men have determined that childhood sexual abuse is significantly associated with an increase in adult HIV high risk behavior including alcohol abuse, number of lifetime sexual partners, and engaging in transactional sex as well as mal adherence to medications and poor mental health status. (Dhaliwal, Gauzas et al. 1996; Bensley, Van Eenwyk et al. 2000; Cohen, Deamant et al. 2000; Romano and De Luca 2001; Dilorio, Hartwell et al. 2002; O'Leary, Purcell et al. 2003; Brennan, Hellerstedt et al. 2007; Schraufnagel, Davis et al. 2010; Mimiaga et al. 2009). Childhood sexual abuse has been hypothesized to influence risky behavior through a number of pathways. In a theoretical model developed to explain the relationship between childhood sexual abuse and risky sexual behavior, Miller (1999) postulates that childhood sexual abuse influences sexual behavior through four mechanisms: (a) using substances to cope with the abuse, (b) mental illness resulting from the abuse, (c) riskier social networks, and (d) poorer sexual adjustment. (Miller and Senn).

There has been a small body of research that examined the impact of childhood sexual abuse among heterosexual males. As with women and with men who have sex with men, these studies suggests that heterosexual men who have experienced childhood sex abuse are more likely to have alcohol and drug problems and to participate in high risk sexual behavior (Dilorio, Hartwell et al. 2002; Holmes, Foa et al. 2005; Schraufnagel, Davis et al. 2010; Medrano et al. 2003). To our knowledge, there have been no studies that have analyzed the impact of childhood sexual abuse among HIV positive heterosexual men. Yet, if we are to reduce the spread of the disease among heterosexual men and women then policy makers, medical and mental health providers, and health education professionals need to understand the underlying causes of high risk sexual behavior among heterosexual HIV-positive and negative men. By analyzing reported childhood sexual abuse histories and risk taking behaviors among men who do not have sex with men (MDSM) gathered from a sample of HIV positive persons in the Southeastern US this article begins to fill this gap in our understanding.

The term 'men who don't have sex with men' (MDSM) is used rather than 'heterosexual male' to differentiate this group from men who define themselves as heterosexual, but participate or have participated in sexual activity with other men. The behaviors and risk

factors of the MDSM group may differ from men who indicated that they were heterosexual but have a history of sex with men.

Methods

Sample and Procedures

The CHASE study recruited HIV-infected patients who received care at one of eight Infectious Diseases clinics in five southern states: Alabama, Georgia, Louisiana, North Carolina, and South Carolina. The study methods have been described in detail previously (Pence, Reif et al., 2007). The study's primary goal was to examine the sociodemographic characteristics, coping strategies, life histories, and care utilization patterns of persons receiving HIV-related care outside the three major cities (Atlanta, Charlotte, and New Orleans) in the Southeast. Consecutive sampling of patients was employed to minimize recruitment/volunteer bias and to yield a study cohort reflective of patients engaged in clinical care in this region. From December 2001 through April 2002, 611 patients enrolled in the CHASE study, representing 79% of patients approached.

Sociodemographic and psychosocial information was obtained through structured interviews by trained, field-certified interviewers using validated instruments at enrollment. This study was approved by Institutional Review Boards at Duke University and all recruitment sites.

Measures

Mental Health and Trauma—The psychosocial measures included in the CHASE interviews have been described in detail previously. (Mugavero et al 2005; Pence et al 2007). In short, The Life Events Checklist Civilian (LES-C) was adapted from prior research and demonstrated adequate validity for use in HIV-positive samples. This measure was used to measure potentially traumatic events including childhood sexual abuse before age 13 (Leserman 2008; Sarason et al; 1978). Additional questions asked about traumatic experiences such as physical assault; serious injury, illness or death of a partner, child or close family/friend; and major physical co-morbidity or injury.

Depressive symptoms were measured with the depression subscale of the Brief Symptoms Inventory (BSI) (Derogatis 1983). The BSI has demonstrated good internal consistency reliability in samples of HIV-positive individuals (McShane et al; 2004; Moneyham et al; 2000) The depression subscale scores were converted to gender-specific T scores ranging from 0 to 100, with a change of 10 units corresponding to a shift of one standard deviation in the normative population.(Derogatis and Melisaratos 1983). The internal consistency reliability of the BSI depression subscale in the CHASE sample was assessed by calculating a Cronbach's Alpha Test. This Cronbach's Alpha score, .88, was consistent with Cronbach's Alpha scores of the BSI depression scale in other samples (Mohammadkhani et al, 2010). Post-traumatic stress disorder (PTSD) symptoms in the past 9 months were assessed with the PTSD Checklist, a 17-item instrument assessing DSM-IV PTSD symptom criteria (Blanchard et al., 1996), which has demonstrated favorable diagnostic accuracy among diverse populations including individuals with HIV (McDonald and Calhoun, 2010). The PTSD scale also demonstrated adequate internal consistency on a Cronbach's Alpha Test (.93), which was consistent with Cronbach's Alpha scores of previous tests (International Society for Traumatic Stress Studies, 2012) PTSD diagnoses were assigned using the scoring that follows DSM-IV symptom criteria.

Alcohol and Drug Use—Recent *alcohol and drug use*, including type of drug and frequency of use were measured with the Addiction Severity Index (ASI). The reliability and validity of the ASI are well-established (McLellan et al., 1992 McCusker et al. 1994)).

Although the ASI alcohol and drug severity scores have been widely used for research purposes, there is no single cutoff that is generally accepted to indicate the presence of a probable alcohol or drug use disorder. Furthermore, the distributions of the ASI scores are skewed so not appropriate for use in ordinary least squares regression models (Pence et al., 2008). Therefore, to explore predictors of drug use we defined drug use with the following dichotomous outcomes: 1) use of any non marijuana drug in the past 9 months and 2) weekly use of any non marijuana drug in the past 9 months. To explore problematic alcohol use, we examined the days of alcohol intoxication in the last 4 weeks.

Sexual Orientation and Sexual Risk Information—Demographic data including sexual preference was measured in the participant survey. Participants were asked “Which of these terms best describes how you think of yourself”? Response categories included “straight heterosexual”, “lesbian, gay, homosexual”, “bisexual (attracted to both men and women)”, “other”, and “prefer not to say. Participants who indicated heterosexual sexual preference but stated ever having sex with men on the Risk Assessment Battery (Metzger et al., 1993) were classified as men who have sex with men while men indicating a heterosexual preference who stated never having sex with men were classified as “men who do not have sex with men (MDSM).” The Risk Assessment Battery, which has demonstrated adequate validity and reliability in determining HIV risk, was used to measure the number of recent male and female sex partners and the number of unprotected sex acts (HIV/AIDS Prevention Research Division, 2012).

Physical Functioning and Adherence—The SF-36 Physical Health Composite Score to measure physical functioning (McHorney, Ware, Lu and Sherbourne, 1994;) Antiretroviral Medication Adherence was measured using questions created by the Patient Care Committee and the Adherence Working Group of the Outcomes Committee of the Adult AIDS Clinical Trial Group (AACTG) (Chesney et al. 2000). Antiretroviral medication adherence was measured by the patient’s self-reported response to the question, “When was the last time you skipped any of your HIV medicines?” Patients were considered non-adherent if they reported missing any doses of their antiretroviral medication during the past 7 days. Patient self-report and one-week adherence are validated measures in assessing antiretroviral adherence that have been shown to predict immunologic and virologic responses (Bangsberg et al. 2001; Godin et al. 2003; Haubrich et al. 1999)

Statistical Analysis—Descriptive statistics were utilized to examine baseline participant characteristics, history of sexual abuse, and mental health and substance use issues. We conducted analysis of variance (ANOVA) tests to detect differences in psychosocial characteristics between women, MSM, and MSDM. In addition, bivariate statistics, including Chi-square tests and Student’s T-tests, were used to examine differences in psychosocial characteristics by occurrence of sexual abuse before age 13 in each subgroup: MDSM, MSM, and women. The risk behavior variables, number of sex partners and number of unprotected sex acts, and the days of alcohol intoxication were not normally distributed; therefore negative binomial regression, which is appropriate for use with count data, was used to examine differences in risk behavior and alcohol intoxication between women, MSM, and MDSM. In addition, negative binomial regression models were estimated to examine differences in risk behavior and alcohol intoxication by occurrence of sexual abuse before age 13 in each of the subgroups.

Results

A majority of CHASE participants were African American (64%) and nearly one-third of participants were female (31%). Less than half (45.7%) reported any education past high school and over one-third (36.5%) were disabled. Depression was relatively common among

participants, as 35% had scores on the BSI that indicated a probable mental disorder. Nearly one-quarter reported any drug use (non-marijuana) in the previous 9 months (Table 1). Sexual abuse before the age of 13 was reported by 25% of the individuals in the CHASE study. [Insert table 1 about here]

Comparing HIV risk behavior and other characteristics among MDSM, MSM, and Women

When comparing risk behaviors across gender and sexual orientation, MDSM and women had fewer sexual partners than MSM ($p=.02$ and $p < .001$ respectively). However, for alcohol use, MDSM had higher frequency of alcohol intoxication than MSM ($p=.03$).

No statistically significant differences between levels of unprotected sex acts and drug use were identified for the three groups.(Table 2)..

MDSM, MSM, and women reported similar levels of mental health issues and physical functioning. Differences were noted in their trust in the government, which was lower for MDSM than for MSM, and women ($p=.027$).

Childhood Sexual Abuse and HIV risk behavior and other characteristics among MDSM, MSM, and Women

Women and MSM were more likely to experience CSA before the age of 13 than MDSM. Among women, 26% had been sexual abused before the age of 13, 29% among MSM, and 10% among MDSM. CSA before age 13 was associated with higher PTSD symptoms ($p < .01$), greater alcohol use ($p=.03$) and any non marijuana drug use ($p < .03$) among study participants. CSA was not significantly associated unprotected sex acts but was associated with a greater number of sexual partners ($p=.007$).. When we examined whether childhood sexual abuse (CSA) influences outcomes such as risk behavior and mental health among MDSM, MSM, and women, we found differences between these subgroups. For example, a history of sexual abuse was associated with a greater number of sex partners over 9 months among MDSM ($p<.01$) but not among women and MSM. MDSM who had experienced CSA were significantly more likely to report a higher number of days of intoxication ($p<.01$) and any non marijuana drug use in the last 9 months ($p=.018$) than MDSM who were did not experience CSA. For MSM and women participants, CSA did not significantly predict drug or alcohol use. However, for women, CSA did show a relationship with alcohol intoxication ($p=.042$). MDSM who experienced CSA were also more likely to report depressive symptoms ($p<.03$) than MDSM who did not experience CSA. Similar statistically significant BSI Depression Score differences among MSM and women were not found. Additionally, MDSM with CSA were more likely to experience PTSD symptoms ($p < .01$) than MDSM without a CSA history. A similar relationship between CSA and PTSD was identified among the women in the sample ($p<.01$). Lower levels of trust in medical providers ($p=.03$) was also identified among MDSM with CSA but not among MSM and women with CSA. Finally, medication adherence was lower in MDSM with a CSA history than MDSM without a CSA history but this difference was not statistically significant.

Discussion

Study findings indicate that for MDSM living with HIV/AIDS a history of childhood sexual abuse was a statistically significant predictor of risky sexual behavior and alcohol and drug use problems as well as higher levels depression and PTSD and less trust in medical providers. Although adherence was lower for the MDSM with CSA, this difference did not reach statistical significance. In contrast, few statistically significant differences were noted by history of sexual abuse among MSM and women. The findings regarding MDSM support recent research that found childhood sexual abuse in heterosexual males contributes to

mental health problems, substance abuse, and high-risk sexual behavior (Schraufnagel, 2010; Holmes et al 2008) The findings of this study also indicate that while MDSM report levels of risky behavior that are similar or lower than MSM and women, childhood sexual abuse may have a greater long-term influence on the behavior and mental health of MDSM who experienced this abuse.

Study findings may be interpreted in the context of Miller's Theoretical Framework of the relationship of CSA to risky sexual behavior, which postulates that CSA influences risky sexual behavior through an influence on mental health, substance use, risky social networks and poor sexual adjustment. Although the last two factors were not measured in this study, the finding that MDSM had higher levels of alcohol/drug use and psychiatric symptoms as well as higher levels of sexual risk are consistent with this theory and may offer an explanation for the greater sexual risk among identified among MDSM with CSA. However, the exact pathways of higher risky behavior could not be determined in this study due to small sample size of MDSM with CSA, which impedes our ability to perform more complex analyses of the pathways through which CSA may affect risky behavior and the influence other patient characteristics may exert on the relationship of CSA to risk behavior.

An additional study limitation is that the findings from this sample may not be generalizable to populations in other geographic areas and settings. In addition, it is possible that MDSM and MSM were misclassified. This may occur in several ways including a participant not reporting a history of sex with men thus being incorrectly classified as MDSM. In addition, some participants may have been classified as MSM because they reported ever having sex with men; however, their history of sex with men may have been a one-time or rare occurrence and they may have a greater identification with MDSM. To address the latter possibility, we repeated the statistical analyses and included the men who categorized themselves as heterosexual and had not had sex with a man in the last year (n=16) in the MDSM category rather than the MSM category. The results of these analyses of the association between CSA and outcomes for the subgroups of MDSM, MSM, and women were very nearly identical to the original findings. Despite the limitations of the study, because men represent the largest number and proportion of persons with HIV, with approximately 15% reporting heterosexual sex as the mode of transmission, and because approximately 84% of HIV infected women in the US report heterosexual sex as the primary mode of transmission it is very important that we understand why at least some MDSM may not be amenable to simple risk reduction messages. This study indicates the need for more in-depth study of the role of childhood sexual abuse in shaping the behaviors of MDSM and the pathways through which CSA may influence future sexual risk. More research is also needed to examine the role of additional types of trauma and other risk factors that may influence high risk sexual and substance abuse behaviors. Study findings also point to the need to assess for a history of childhood sexual abuse and other trauma history among MDSM and to identify treatments that can successfully address trauma issues among MDSM with HIV disease.

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Table 1

Baseline Characteristics of the CHASE Participants

	Overall
	N=611
Age, years (range 20–71)	40.1
Female gender	191 (31.3%)
Race/ethnicity	
Caucasian non-Latino	189 (31.6%)
African American non-Latino	383 (64.0%)
Other*	26 (4.4%)
Education beyond high school	278 (%)
Men who don't have sex with men	134(%)
Men who have sex with men	272()
Mode of HIV acquisition	
Homosexual sex	219(35.9%)
Heterosexual sex	261(42.8%)
Injection drug use	40(6.6%)
Other [†]	25(4.1%)
Unknown	65(10.7%)
CD4 <200 cells/mm ³	117 (22.7%)
VL <400 copies/mL	237 (46.1%)
Probable psychiatric disorder (BSI)	329 (53.9%)
Substance use, past 9 months	
Drinking to intoxication weekly	40 (6.9%)
Any non-marijuana drug use	136 (22.3%)
Crack use	67 (11.1%)

* Includes Latino (2.7%), Asian (0.5%), Native American (1.2%)

[†] Other modes of transmission were reported by 25 (4.1%) participants and 65 (10.7%) had an unknown mode of transmission.

TABLE 2
Participant Characteristics by Gender, MDSM, MSM, and childhood sexual abuse (CSA)

Outcome	Range	MDSM				MSM				Women			
		All	CSA <13y	No CSA	P	All	CSA <13y	No CSA	P	All	CSA <13y	No CSA	P
N		134	13	121		272	80	192		191	50	141	
BSI Depression Score	0-100	57.5	65	57	.027	58.5	59	58	0.75	55.9	57	55	0.29
Days alcohol Intoxication	0-28	.90*	6.4	.78	.032	.33	.36	.31	0.76	.27	.04	.36	0.042
Any nonmarijuana use weekly 9 months	0-1	.20	.46	.18	.018	.25	.31	.22	.12	.20	.22	.19	0.66
Any nonmarijuana use weekly 9 months	0-1	.14	.31	.12	.071	.092	.13	.078	.22	.11	.12	.11	.79
PTSD symptoms	17-85	28.9	36	28	<.01	31.5	34	31	0.07	40	38	30	<.01
SF-36 Physical composite	0-100	44.1	43.5	44.2	0.83	46.7	44	48	0.02	45.1	41	47	<.01
SF-36 Mental composite	0-100	45.5	38	46	0.05	44.7	45	44	0.64	43.7	40	45	0.07
Adherent %	0-100	73	77	78	.72	78	81	77	.47	77	78	77	.91
# of partners in last 9 mo	0-20	1*	2.9	0.85	<.01	1.5	1.8	1.4	0.27	.82	0.9	0.8	.45
Greater than 3 partners - 9 months (%)	0-100	7.4*	25	5.4	.014	11.7	13.3	11	.60	1.7	2	1.6	.85
Unprotected sex acts, 9 mo	0-90	2.4	4.4	2.2	0.65	5.1	3.9	5.5	0.50	5.5	3.2	.28	.25
Trust in providers	3-15	13.3	12.2	13.5	0.03	13.7	13.6	13.7	0.64	13.4	13.6	13.4	.60
Trust in government	2-10	6.1*	5.5	6.2	0.34	6.8	6.6	6.9	0.28	6.5	6.3	6.5	.69

* F < .05 on the ANOVA or negative binomial test for differences between MDSM, MSM, and Women