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History of Sexual Trauma and Recent HIV-Risk Behaviors of Community-Recruited Substance Using Women

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Abstract

This study examines whether substance using women exposed to a lifetime sexual trauma (n = 457) are distinguishable from substance using women exposed to non-sexual trauma (n = 275) in terms of demographics, psychopathology and high-risk sexual behaviors. Baseline data were collected from out-of-treatment substance using women enrolled in an HIV prevention study. Logistic regression analyses revealed that when demographics, psychopathology and lifetime indicators of sexual risk were assessed simultaneously, poor health, depression, antisocial personality disorder and lifetime sex-trading were associated with sexual trauma exposure. When these significant factors were controlled, the experience of sexual trauma predicted recent (past 4 month) high risk sexual behaviors such as higher than average sexual partners. Treatment efforts with women who have experienced a sexual trauma may be enhanced by the inclusion of assessments of physical and mental health needs as well as sexual risk awareness training.

Keywords

Sexual trauma exposure; HIV-risk; Substance dependence

Introduction

The spread of HIV/AIDS among women has reached epidemic proportions, as women constitute 26% of persons living with the virus [1]. Because of the potential impact on the lives of women, it is important to continue to examine various aspects of HIV risk and make practice and policy decisions based on empirically derived findings. When examining the existing literature, trauma, substance use and HIV-risk emerge as a tripartite association

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[2-4]. Traumatic experience can influence and be influenced by substance use and HIV-risk. Findings from general population and drug using samples indicate the ages of onset for drug use and traumatic event exposure are similar in women suggesting that the occurrences are somehow linked and evidence points to the complexity of this linkage [5-8]. Other research indicates that it is the resulting symptoms of post traumatic stress disorder (PTSD) that can be consequent to trauma exposure that elicits substance abuse and dependence and not necessarily the actual exposure to the trauma [9, 10].

The association of substance use and HIV-risk is well documented in the literature. The primary contributors to HIV infection among U.S. women are injection drug use and heterosexual contact with an HIV-positive male [1]. In addition, some women engage in high-risk sexual behaviors to acquire drugs and drug use can then lead to a heightened likelihood of engaging in risky sexual behaviors [11, 12]. There is also a degree of complexity in the association of substance use and HIV-risk that involves psychopathology. Research indicates that psychopathology can interact with substance use to enhance risk for HIV [2, 13-17]. For instance, individuals with antisocial personality disorder (ASPD) tend to engage in more high risk behaviors such as substance use that places them in situations that create greater risks for sexual trauma exposure and often have higher rates of sexually transmitted diseases [17, 18].

With the exception of childhood sexual abuse, the association of trauma exposure with HIV-risk is the least explored in existing literature. While not a primary culprit, trauma exposure, especially childhood sexual abuse, is a known contributor to HIV-risk and increased adult revictimization [19-24]. Specifically, research indicates that childhood sexual victimization leads to more instances of sex trading, having more sex partners and having an earlier onset of first intercourse [24]. There is also indication that the severity of trauma histories, sexual or physical, independently contributes to the HIV positive status of women [21]. Additional literature is beginning to emerge that examines the relationship that traumatic event exposure has with HIV-risk and the intersecting role of substance use, but few research efforts have examined this topic as it exclusively relates to substance using populations [25, 26].

These analyses seek to contribute to the existing knowledge by assessing factors that distinguish women with traumatic sexual experiences from those with non-sexual traumas by determining if the presence of a sexual trauma predicts recent at-risk sexual behaviors among active substance users. The current analyses examine HIV-negative women to determine whether trauma exposure is associated with other factors known to predict exposure to HIV (e.g. alcohol or drug dependence, psychopathology). While it is believed that exposure to a sexual trauma will have a strong association with sexual risk behaviors, it is possible that sexual trauma serves as a protective factor for recent risk causing women to be more cautious and alert to risky situations.

Methods

Design

Data for these analyses were collected during two concurrent community based HIV prevention studies focused on reducing high-risk sexual and drug use behaviors among drug using females (Women Teaching Women-WTW-NIDA funded) and heavy alcohol using females (Sister to Sister—STS NIAAA funded). Changes in risk were assessed with standardized assessments at baseline, at a 4 month follow-up and at a 12 month follow-up. Only baseline data were utilized in the present analyses.

Baseline interviews were conducted between 2000 and 2004 after Washington University School of Medicine IRB approval was obtained. The study involved non-probability sampling methods as women were simultaneously recruited through a street outreach method that also focused on shelters, social service agencies and health clinics to identify women who were most at-risk for the targeted behaviors. Community health outreach workers familiar with the targeted neighborhoods and the drug culture approached women and provided a brief description of the study. Women were given a voucher with information for the study and the women's contact information was obtained. When contact was made by project staff, women were screened for study eligibility.

Sample

Criteria for eligibility for the WTW study included female gender and being at least 18 years of age, HIV sero-negative at baseline, sexual activity within the prior 4 months and the use of cocaine, heroin or amphetamines in the past 30 days. STS women also had to be at least 18 years of age, sexually active in the 4 months prior to enrollment and had to meet the threshold for problem drinking as determined by the Alcohol Use Disorders Identification Test (AUDIT) while testing negative for cocaine, heroin and amphetamine use.

Baseline data were collected from 858 women but 68 women reported no recent sexual activity and were excluded from analyses. Of the recently sexually active women, 732 reported exposure to a qualifying DSM-IV PTSD event and were included in the present analyses. The majority of women were African American (80%) and ranged in age from 18 to 67 with a mean age of 35.56 (SD = 8.69). Forty-two percent of the women had not obtained a high school diploma or GED. A small proportion of the women (21%) were employed either full or part-time and almost half (48%) received income from welfare, public assistance or AFDC over the previous 12 months. Nearly a third of the women (29%) considered themselves homeless and 41% reported residing in their own home or apartment. A significant percentage of the women (64%) had never married. The sample had a mean of 2.27 (SD = 2.29) children.

Measures

The study assessed, via the Computerized Diagnostic Interview Schedule Version IV (C-*DIS IV*), DSM-IV PTSD, depressive disorder and ASPD [27]. Normative data for the C-DIS IV was obtained in a study of substance abusers revealing fair to good reliability for trauma exposure (κ = .61; 95% CI .33–.89); depressive disorder (κ = .67; 95% CI .55–.80); and ASPD (κ = .49; 95% CI .27–.71) [28]. PTSD was determined by asking the respondents about terrible, frightening, or horrible experiences they may have had at any time in their life. The events included being: shot or stabbed, mugged, raped, held captive, diagnosed with a life threatening illness, exposed to a disaster or radiation, experiencing the untimely death of a close friend or relative, or serious accident, witnessing a serious injury or killing, discovering a dead body and military combat related events. Those who answered yes to a qualifying traumatic event were then asked specific follow-up questions which assessed DSM-IV PTSD criteria for each event. Both lifetime and current (past year) PTSD were assessed along with PTSD-related impairment and treatment. Women were stratified based on the type of trauma they reported. Regardless of the number of traumas experienced, any woman reporting a sexual event, whether it was her most terrifying or horrible event, was stratified into the sexual event group. Sexual trauma included being raped (by a relative or non-relative) and non-sexual events included all other events assessed.

The Composite International Diagnostic Interview (CIDI) Substance Abuse Module (SAM) elicited DSM-IV substance dependence criteria. The nonclinical SAM was found to have

good agreement for alcohol and cocaine dependence with a clinical comparator among populations of active substance users [29, 30].

The Washington University Risk Behavior Assessment for Women (WU-*RBA-W*) queried information regarding demographics, lifetime sexual risk indicators and recent (past 4 month) sexual risk behaviors. Lifetime sexual risk indicators included sex trading and a history of a sexually transmitted disease. Recent sexual risk behaviors included having a higher than sample average number of different sexual partners, sex concomitant with drug use, infrequent condom use, and having an injection drug using sexual partner.

Analyses

Bivariate logistic regression analyses assessed the odds of demographic, psychopathology and lifetime sexual-risk indicators being associated with an experienced sexual trauma compared to a non-sexual trauma. A series of multivariate logistic models were performed using sexual trauma exposure as the dependent variable. The first model assessed simultaneous influence of demographics factors; the second model assessed significant demographic factors along with psychopathology factors; and the third model assessed significant factors from the second model along with lifetime sexual-risk indicators. The final multivariate models predicted the influence of sexual trauma on each of the recent sexual risk behaviors controlling for the influence of significant demographic, psychopathology and lifetime sexual risk indicators.

Results

The 732 sexually active women who experienced at least one DSM-IV qualifying event on average endorsed 4.87 (SD = 2.62) events. In total, 62% (n = 457) of the women had experienced the DSM-IV qualifying sexual event of being raped. The remaining women (n = 275) reported other non-sexual lifetime qualifying events that did not overlap with a sexual trauma. Each of the non-sexual events assessed was fairly prevalent among the women with the exception of combat-related trauma. Women with at least one sexual event reported significantly more events (m = 5.89; SD = 2.47) than women experiencing a non-sexual event (m = 3.19; SD = 1.90) (t = −15.58; df = 730; $P < .0001$).

Bivariate analyses (Table 1) revealed differences in demographics, psychopathology and sexual risk indicators. A greater percentage of women with a non-sexual event reported being never married (72%) compared to 60% of women who reported a sexual event (OR = .60; 95% CI = .43–.83; $P = .002$). Women with a sexual event were more likely to report poor health status (OR = 2.89; 95% CI = 1.43–5.84; $P = .003$) and consider themselves to be homeless (OR = 1.73; 95% CI = 1.24–2.42; $P = .01$) than those experiencing a non-sexual event. Demographic factors such as age, race, education and economic status did not vary by event type.

Overall, 29% of women with an event developed PTSD. Women with a sexual event were more than three times as likely as those with a non-sexual event to meet lifetime criteria for PTSD (OR = 3.79; 95% CI = 2.57–5.59; $P < .0001$), current PTSD (OR = 3.56; 95% CI = 2.30–5.49; $P < .0001$) and/or PTSD-related impairment (OR = 3.59; 95% CI = 2.40–5.37; $P < .0001$). There was no difference evidenced in the desire for and receipt of PTSD-related treatment across the groups. Depression (OR = 2.83; 95% CI = 2.04–3.94; $P < .0001$) and ASPD (OR = 3.74; 95% CI = 2.51–5.59; $P < .0001$) were strongly associated with a sexual event; while alcohol dependence (OR = 1.57; 95% CI = 1.16–2.12; $P = .003$) and cocaine dependence (OR = 1.94; 95% CI = 1.34–2.82; $P = .001$) were moderately so. Lifetime sexual risk indicators also varied based on event type. Not surprisingly, women with a sexual event were more likely to report lifetime sex trading (OR = 2.82; 95% CI = 2.06–

3.85; $P < .0001$) and a history of sexually transmitted disease (OR = 1.62; 95% CI = 1.19–2.22; $P = .003$).

Table 2 shows the results of the multivariate models (demographics, psychopathology and lifetime sexual risk indicators). In the demographics multivariate model ($\chi^2 = 32.48$; df = 8; $P < .0001$), never married remained a protective factor for experiencing a sexual event (AOR = .57; 95% CI = .41–.79; $P = .001$). Self-reported poor health status (AOR = 2.71; 95% CI = 1.33–5.53; $P = .01$) and homelessness (AOR = 1.58; 95% CI = 1.11–2.24; $P = .01$) each maintained significance as risk factors. Within the psychopathology model ($\chi^2 = 69.35$; df = 7; $P < .0001$), poor health status (AOR = 2.51; 95% CI = 1.04–6.05; $P = .04$), depression (AOR = 2.48; 95% CI = 1.60–3.82; $P < .0001$), and ASPD (AOR = 3.03; 95% CI = 1.74–5.29; $P < .0001$) remained significant in experiencing a sexual trauma. In the sexual-risk model, poor health status, depression and ASPD remained significant in the model along with lifetime sex trading (AOR = 2.31; 95% CI = 1.65–3.26; $P < .0001$).

Recent High-Risk Sexual Behaviors

Thirteen percent of the women reported an above average number (m = 3.39; SD = 8.70) of recent sexual partners. The majority of the women (87%) reported infrequent condom use while 31% had recently mixed sexual activity with drug use, and 10% had an injection drug using sex partner in the past 4 months. Women with a sexual trauma were almost two times more likely to have a high number of recent sex partners (OR = 2.84; 95% CI 1.72–4.70; $P < .0001$) and were slightly more likely to mix sexual activity with drug use (OR = 1.48; 95% CI = 1.06–2.06; $P = .02$) than women who had experienced a non-sexual trauma. When significant demographic, psychopathology, and lifetime sexual risk indicators were controlled in multivariate models, sexual trauma exposure continued to predict risk for having a high number of recent sexual partners but did not continue to predict sex concomitant with drug use, infrequent condom use or having an injection drug using sex partner (Table 3).

Discussion

Given the significant relationship that substance use has with traumatic event exposure and HIV-risk, the examination of these factors simultaneously is critical. The present analyses sought to advance knowledge by parceling out the influence of sexual trauma on HIV-risk while simultaneously controlling for the influence of other psychopathology and past history of sexual risk among a sample of active substance using women. The women included in the analyses were highly susceptible to trauma exposure, psychopathology and HIV-risk due to their self-reported substance use patterns.

Marital status, homelessness and health status independently distinguished sexual event exposure from non-sexual event exposure and health status maintained significance when assessing recent sexual risk behaviors. Prior research supports the association of marital status to sexual event exposure in the form of intimate partner violence [31, 32]. As for homelessness, it is likely that such a status places women in vulnerable physical circumstances leading to an increased likelihood of sexual trauma exposure. The association of health status to trauma exposure or HIV-risk has not received a great deal of attention in the literature. Women who self-reported poor health status were more at-risk for sexual trauma exposure but this status was protective of recent sexual risk behaviors. Additional research is needed to parcel out the causal nature of the association. Several explanations are plausible but were beyond the scope of the present analyses. It is possible that a poor health status can make women more vulnerable due to their inability to defend themselves against an attacker. It is also possible that poor health status can result from sexual trauma exposure.

As a protective factor, it is likely that women with poor health avoid sexual contact in general and more so with numerous sexual partners.

As expected, psychopathology was found to be a prevalent risk factor among women exposed to a sexual event. The relationship of PTSD and PTSD-related impairment to sexual trauma exposure was not surprising as research indicates that sexual traumas elicit more PTSD symptoms [33]. Unfortunately, the rates of PTSD treatment did not vary across trauma type. Prior research supports the finding that both ASPD and depression were associated with sexual trauma exposure [18, 34]. Of interest is the finding that the association of alcohol and cocaine dependence with sexual trauma exposure did not maintain significance when other psychopathology was considered. This may indicate that the long-term effects of substance dependence may not create greater risk for sexual trauma exposure as much as the active substance using lifestyles that these women experience on a day-to-day basis.

A history of sex trading and a history of STDs were independently associated with sexual trauma exposure but only sex trading remained significant when other factors were considered. Recent sexual risk was distinguishable among women who had experienced a sexual event compared to those who had not. There is indication that previously exposed women are placing themselves in high-risk situations and thus increasing their risk for subsequent exposure to sexual traumas as evidenced by the finding that they were more likely to have above the sample's average number of recent sex partners. This suggests that experiencing a sexual trauma may not hinder risk taking among some substance-using women. This is consistent with other research that indicates sexual trauma is associated with an increase in risky sexual behaviors and does not serve as a protective factor [35, 36].

The implications of the current findings must be understood in light of several limitations. First, the current analyses are not based on controlled conditions in which it was feasible to ascertain causality among the relationship between sexual trauma exposure and HIV-risk though we did distinguish between lifetime risk indicators and recent sexual risk behaviors. Second, these analyses did not include the respondents' chronic traumas or stressors that could exacerbate PTSD impairment such as chronic childhood trauma. Third, the data presented are self-reported, thus resulting in some potential bias including recall bias, as subjects are required to remember events that may have occurred many years earlier. It should be noted that there is more concern with the reporting of age estimations than with event occurrence as the latter remained consistent throughout the interview. Finally, these data are limited in their ability to test non-study specific hypotheses as data were collected to examine high-risk sexual and drug use behaviors in response to an intervention and not trauma exposure per se.

The findings replicate previous research regarding trauma exposure and HIV-risk and add to a growing body of literature that examines this topic among active out-of-treatment substance using women. There were novel findings that have implications for future research and practice. The stable, though complex, relationship between health status, sexual trauma exposure and recent HIV-risk warrants additional research that explores the nature of this relationship in depth. The approach of assessing substance dependence to distinguish substance use profiles among active substance using women revealed that neither alcohol nor cocaine dependence maintained significance in the examination of sexual trauma exposure. Additional research should focus on the influence of substance use profiles as they interact with psychopathology to influence sexual versus non-sexual trauma.

Most discouraging was the finding that that rates of treatment for PTSD did not vary based on sexual versus non-sexual exposure though resulting symptoms were significantly greater.

Being able to differentiate the association of trauma type with women's psychopathology and HIV risk may be important to effective trauma intervention and treatment with women who are exposed to sexual traumas. Treatment efforts with women who have experienced a sexual trauma may be enhanced by the inclusion of assessments of physical and mental health needs as well as sexual risk awareness training.

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Table 1

Bivariate demographic, psychopathology and sexual-related factors among female substance users exposed to sexual or non-sexual traumas (n = 732)

	Sex-related trauma (n = 457) (%)	Non-sexual trauma only (n = 275) (%)	OR (95% CI) *P* value
Demographics			
Age (above sample mean)	53	52	1.07 (.80–1.45) ns
African American	79	83	.80 (.54–1.17) ns
Never married	60	71	.60 (.43–.83) .002
Poor health	10	4	2.89 (1.43–5.84) .003
No diploma/GED	45	38	1.32 (.98–1.77) ns
Employed	20	24	.78 (.55–1.11) ns
Homeless	32	23	1.61 (1.14–2.27) .01
Receive welfare	47	49	.90 (.67–1.21) ns
Psychopathology			
PTSD-lifetime	39	14	3.79 (2.57–5.59) <.0001
PTSD-current	30	11	3.56 (2.30–5.49) <.0001
PTSD-related impairment	34	13	3.59 (2.40–5.37) <.0001
PTSD-related treatment	31	18	2.10 (.82–5.37) ns
DSM-IV depression-lifetime	48	25	2.83 (2.04–3.94) <.0001
ASPD-lifetime	90	70	3.74 (2.51–5.59) <.0001
Alcohol dependence-lifetime	60	48	1.57 (1.16–2.12) .003
Cocaine dependence-lifetime	70	54	1.94 (1.34–2.82) .001
Sexual risk factors			
History of sex-trading (lifetime)	29	14	2.82 (2.06–3.85) <.0001
STD history (lifetime)	70	59	1.62 (1.19–2.22) .003

Table 2

Separate multivariate models of demographic, psychopathology and sexual-related factors associated with exposure to sexual traumas (n = 732)

	Wald χ^2 (df; *P* value)	AOR (95% CI) *P* value
Demographic model	32.48 (df = 8; *P* < .0001)	
Age (above sample mean)		.88 (.63–1.23) ns
African American		.73 (.49–1.09) ns
Never married		.57 (.41–.79) .001
Poor health		2.71 (1.33–5.53) .01
No diploma/GED		1.36 (.99–1.87) ns
Employed		.80 (.55–1.17) ns
Homeless		1.58 (1.11–2.24) .01
Receive welfare		.84 (.61–1.14) ns
Psychopathology model	69.35 (df = 7; *P* < .0001)	
Never married		.72 (.48–1.07) ns
Poor health status		2.51 (1.04–6.05) .04
Homeless		1.43 (.93–2.21) ns
Depression disorder (lifetime)		2.48 (1.60–3.82) <.0001
Antisocial personality disorder		3.03 (1.74–5.29) <.0001
Alcohol dependence (lifetime)		1.08 (.72–1.62) ns
Cocaine dependence (lifetime)		1.46 (.96–2.21) ns
Sexual risk model	88.10 (df = 5; *P* < .0001)	
Poor health		2.33 (1.11–4.90) .03
Depression		2.45 (1.73–3.48) <.0001
Antisocial personality disorder		2.32 (1.50–3.58) .0002
Lifetime sex trading		2.31 (1.65–3.26) <.0001
Lifetime STD history		1.18 (.83–1.66) ns

Table 3

Associations of sexual trauma exposure with recent HIV-risk behaviors among out-of-treatment substance using women (n = 732)

	High number of sex partners	**Sex concomitant with drug use**	**Infrequent condom use**	**Injection drug using partner**
	Wald χ^2 = 61.57 (df = 5; *P* < .0001)	**Wald χ^2 = 24.57 (df = 5; *P* = .0002)**	**Wald χ^2 = 16.22 (df = 5; *P* = .006)**	**Wald χ^2 = 7.37 (df = 5; *P* = .19)**
	AOR (95% CI)	**AOR (95% CI)**	**AOR (95% CI)**	**AOR (95% CI)**
Poor health	.26 (.08–.89) .03	1.27 (.69–2.31) ns	.64 (.30–1.39) ns	.73 (.25–2.11) ns
Depression	1.16 (.74–1.81) ns	.80 (.57–1.12) ns	.90 (.56–1.45) ns	.86 (.51–1.46) ns
ASPD	1.43 (.61–3.37) ns	2.33 (1.37–3.98) .002	2.42 (1.42–4.13) .001	.76 (.37–1.54) ns
Sex trading	7.25 (3.96–13.26) <.0001	1.52 (1.08–2.13) .02	1.17 (.73–1.90) ns	1.79 (1.04–3.10) .04
Sexual trauma	1.94 (1.13–3.31) .02	1.19 (.83–1.71) ns	1.12 (.69–1.81) ns	1.42 (.80–2.51) ns