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History of Intimate Partner Violence is Associated with Sex Work but not STI among HIV- positive Female Drinkers in Russia

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Abstract

This paper assesses the associations between intimate partner violence (IPV) and STIs and sexual risks among HIV-positive female drinkers in St. Petersburg, Russia. Survey and STI data were analyzed from 285 women in HERMITAGE, a secondary prevention study with HIV-positive heavy drinkers. Logistic and Poisson regression analyses assessed associations of IPV with STI and risky sex. Most women (78%) experienced IPV and 19% were STI-positive; 15% sold sex. IPV was not significantly associated with STI, but was with selling sex (AOR=3.56, 95% CI=1.02–12.43). In conclusion, IPV is common and associated with sex trade involvement among Russian HIV-positive female drinkers.

Keywords

Russia; sex work; substance use; HIV-positive; sexually transmitted infections (STI); intimate partner violence (IPV)

INTRODUCTION

Male partner-perpetrated intimate partner violence (IPV) and its association with STI and STI/HIV risk-taking behaviors (e.g. sex trade involvement) among women has been well described in multiple national contexts [1–12]. IPV was associated with sex work or multiple sexual partners, prior STIs and lower condom use in Australia and the Ukraine [1]. Married women in India experiencing husband-perpetrated IPV were more likely to have HIV infection than those who did not experience IPV from their husbands [4]. Methadone-

maintained women in New York with an increased risk for IPV had higher self-reported STIs [5]. Higher rates of IPV victimization were found among HIV-positive women compared to HIV-negative women in four Sub-Saharan African countries [8–12]. IPV is particularly pervasive in Russia, with approximately 1/3 of women reporting such victimization in their lifetime [12–15]. Injection drug use (IDU) and alcohol use, higher in Russia than in other national contexts [13, 16–20], have additionally been associated with increased risk for both HIV/STI [21–24] and IPV [13, 232]. For example, in St. Petersburg, alcohol misuse and certain drinking contexts (e.g. on the street) were associated with male IPV perpetration [13, 25]. In St. Petersburg, IDU has been strongly associated with HIV/STIs [26].

Despite the extensive research on IPV and STI risks among women in cross-national settings including Russia, there has, to date, been no published research examining whether history of IPV is associated with increased risk for STI and related risky sexual behaviors among substance using HIV-positive women in Russia. As the epidemic in Russia increasingly includes cases of sexually transmitted HIV [20, 23, 25, 26–27], research on sexual risk factors for HIV becomes more important. This study addresses this gap in the field by examining whether history of IPV increases risk for STI and related sexual risk behaviors among HIV-positive female drinkers in Russia. Specifically, we hypothesize that victims of IPV are more likely to have an incident sexually transmitted infection (STI) than those reporting no such history. Secondly, we hypothesize that victims of IPV are more likely to have increased sexual risk factors (selling sex, recent multiple sexual partners, a higher number of unprotected sexual encounters) than those who report no history of IPV victimization.

METHODS

Data for this study came from baseline female participants (N=285) of the HERMITAGE (HIV Evolution in Russia - Mitigating Infection Transmission and Alcoholism in a Growing Epidemic) study, an HIV intervention study that enrolled HIV-positive heavy drinking adults from October, 2007- April, 2010 from five inpatient/outpatient HIV and substance use care sites in St. Petersburg, Russia. (Further details on methods are described elsewhere [28]). Participants were at least 18 years old; Russian-fluent; HIV-positive; reported past 6 month unprotected anal or vaginal sex; provided stable local addresses and a telephone number; and met criteria for NIAAA “at risk” drinking levels in the prior 6 months [29].

In the overall study, 921 were screened and 700 were enrolled (76%). Patients were excluded due to the following reasons (categories not mutually exclusive): unconfirmed HIV infection (n=2), attempting to conceive (n=4), having a pending legal issue (n=17), not meeting alcohol criteria (n=110), not meeting sex criteria (n=134), living outside of 150 km of St. Petersburg (n=2), failing to provide contact information for two other people (n=23), or not having a telephone (n=14). An additional 32 subjects were eligible but 31 of those refused and 1 was too ill to participate. In addition, any individuals with severe cognitive impairment or anticipated incarceration were excluded, although none met these criteria in the sample. Trained clinician research associates recruited participants, assessed their eligibility in private rooms and obtained written informed consent from those eligible and willing to participate. Participants were then surveyed via face-to-face interviews in Russian and participated in a self-administered questionnaire for particularly sensitive questions (e.g. trauma, IPV). Participants underwent STI testing by providing urine (gonorrhea, Chlamydia, trichomoniasis) and serum (syphilis) samples. If they tested positive for gonorrhea, Chlamydia, trichomoniasis, they were offered treatment, but they were referred to the STI clinic for syphilis. Participants received 300 rubles (US \$7) for their baseline assessment

participation. Procedures were approved by the Institutional Review Boards of Boston Medical Center and St. Petersburg Pavlov State Medical University.

Measures

Single items assessed participants' age, marital status, and education. Depression was measured by the Beck Depression Inventory II (BDI-II) [30, 31]. Alcohol assessments asked about the quantity and frequency of alcohol consumption using a 30-day timeline follow-back (TLFB) instrument. Heavy drinking was defined as either reporting >7 drinks per week or any binge drinking (> 3 drinks in a day), in the past 30 days [32]. Drug use assessments included any use of heroin, prescription analgesics, marijuana, sedatives, tranquilizers, or stimulants over the last year, and drug dependence according to the CIDI-SF [33]. IDU in the past 30 days was assessed using an item from the Risk Behavior Survey (RBS) [34–35].

Our primary independent variable, *IPV victimization*, was assessed via items based on the Conflict Tactics Scale-2 [36] (Has a partner ever threatened you with violence, pushed or shoved you, or thrown something at you that could hurt? Have you ever had an injury, such as a sprain, bruise, or cut because of a fight with a partner? Has a partner ever insisted on or made you have sexual relations with him/ her when you didn't want to?). A participant was classified as 'yes' for IPV victimization if a positive response was recorded [36].

The primary outcome, *current STI*, was assessed via urine testing for *Neisseria gonorrhea* (gonorrhea), *Chlamydia trachomatis* (chlamydia) and *Trichomonas vaginalis* and serum testing for *Treponema pallidum* (syphilis), including confirmatory ELISA testing. Details on STI diagnostics are described elsewhere [28]. A secondary outcome, *STI ever*, was assessed via self-report on survey items asking whether the participant had ever had gonorrhea, chlamydia, trichomoniasis and syphilis in their lifetime.

Additional secondary outcomes included sex risk behavior variables which asked participants about their sexual episodes and the number of unprotected sex encounters (inconsistent condom use) in the past 3 months [37]. They were asked about alcohol and drug use before sex within the past 30 days (for their last 5 partners in the past 3 months). Two sex trade involvement items from the Risk Assessment Battery (RAB) [38] measured how often in the past 3 months the participant "had sex so they could get drugs," and "were paid money to have sex with someone."

Data Analysis

Descriptive statistics were obtained for demographics, STI, sex risk behaviors, and substance use behaviors for the overall sample and stratified by IPV victimization status. Bivariate associations were assessed via chi-square tests, t-tests, or the nonparametric Wilcoxon rank sum test as appropriate.

Simple and multiple logistic regression analyses were used to assess the association between IPV victimization and the primary outcome, STI. Separate analyses were performed to assess each of the secondary outcomes (multiple sex partners and selling sex), odds ratios (OR), and crude and adjusted over-dispersed Poisson regression analyses reporting incidence rate ratios (IRR) for the number of unprotected sex episodes. All adjusted analyses controlled for demographics (age, marital status, and education), IDU, heavy alcohol use, and depressive symptoms. Adjustments were not made for multiple comparisons due to the exploratory nature of the study. All analyses used two-sided tests and a significance level of 0.05. All statistical analyses were conducted using SAS version 9.3 (SAS Institute, Inc., NC, USA).

RESULTS

Sample Characteristics

The women participants (N=285), were aged 18–54 years, with a median age of 28 (IQR=26–32), and 42.1% were married or living with a partner [Table 1]. Nearly half (46.7%) had not completed high school. Over the past 30 days, over three quarters (76.5%) reported heavy drinking, less than half (41.1%) reported injection drug use, and nearly half reported alcohol or drug use before sex (49.5%). Their BDI-II scores included 26.3% having no depression, 21.4% having mild depression, 27% having moderate depression, and 25.3% having severe depression. Less than one in six women (14.7%) had sold sex in the past 3 months, 18.5% currently had an STI based on biologic testing, and 49% reported a history of having an STI. Overall, 22% of the female participants reported having multiple sexual partners over the past 3 months; 25% of those with a history of IPV had multiple sexual partners.

Over three-quarters of participants (78%, N=222) reported a history of IPV victimization [Table 1]. Bivariate analyses suggested that participants reporting a history of IPV victimization were significantly more likely to report multiple sexual partners ($p=0.02$) and selling sex ($p=0.01$). Also, it is worth noting that albeit not statistically significant, participants reporting a history of IPV victimization appeared more likely to report any history of STI ($p=0.10$).

Associations between IPV and STI

Multiple logistic regression analyses, adjusted for age, marital status, education, ever having an STI, any alcohol or drug use before sex in the past 30 days, and multiple sex partners, selling sex, and number of unprotected sexual encounters in the past 3 months, found no significant associations between lifetime IPV victimization and current STIs (AOR=1.01, 95% CI=0.47, 2.16) [Table 2].

Associations between IPV and Sex Risk Behaviors

The multivariable analyses demonstrated that lifetime IPV victimization was associated with higher odds of selling sex (AOR=3.56, 95% CI=1.02, 12.43) [Table 2]. Among the covariates, past 30 day IDU was positively associated with selling sex (AOR=3.44, 95% CI=1.57, 7.55) while being married or living with a partner was negatively associated with it (AOR=0.38; 95% CI=0.17, 0.87). Self-reported STI (ever) was not significantly associated with IPV victimization (AOR=1.69; 95% CI= 0.94, 3.05). No significant associations between lifetime IPV victimization and other secondary outcomes of sex risk behaviors were observed in adjusted analyses [Table 2]. However, although not statistically significant, notable effect sizes were observed for each of the other sexual risk behaviors: having multiple sex partners (2.39, 95% CI=0.99–5.81), alcohol and drug use before sex (1.46, 95% CI=0.78, 2.73), and the number of unprotected sex encounters (1.66, 95% CI=0.93, 2.96).

DISCUSSION

History of IPV victimization is common among female HIV-positive Russian heavy drinkers and is significantly associated with increased risk for sex trade involvement, but not with having a current STI. The apparent lack of an association between history of IPV and current STI is surprising given the extensive evidence of this association previously found in HIV-negative at-risk women in Russia [39] and HIV-positive women in other national contexts [4, 40–41]; this may be attributable to use of different time frames for these variables of focus and possibly a lack of study power. Nonetheless, findings of heightened

risk for IPV among those engaged in sex work is consistent with previous research across national contexts [42–45], including Russia [39]. Research suggests that IPV increases risk for entry into sex work [46], and is more likely to occur in the context of sex work and sex with regular paying and non-paying partners [47]. These findings support ongoing work documenting the effects of violence against women, substance use, and sex work involvement, which appear to be present among HIV-positive women. Such phenomenon has been well documented in other females who use drugs or engage in sex work in Africa, Southeast Asia, Canada, Mexico, and the U.S. [48–52]. Effective interventions for women have been developed that simultaneously address these multiple health concerns [53]. The findings in this paper emphasize the need to consider the long term and synergistic effects of IPV and substance use and sex work involvement among women living with HIV.

Recent sex work involvement was reported by more than one in seven of the HIV-positive women in this study, demonstrating that further exploration of sexual risk (e.g. unprotected sex) may be required for this population. In addition to the observed association between IPV and recent sex work involvement, recent IDU was also associated with greater involvement in sex work. Again, this association between sex work and IDU has been well documented [54–56], and other studies from Russia have demonstrated a significant association between IPV and IDU [45, 57–58]. Furthermore, women may experience IPV as a result of stigma from their HIV-positive status, having multiple partners, or from their involvement in sex work [59–61]. Current findings support the potential utility of targeting violence prevention interventions towards HIV-positive substance using women in Russia, especially those engaged in sex work. The notable prevalence of IPV victimization in this HIV-positive sample (78%) is higher than that seen in other populations of women in Russia, including those recruited from STI clinics [13, 19, 62–63]. The higher prevalence of IPV among HIV-positive women in South Africa and Bangladesh is also evident [64–65]. However, previous research from Russia and other regions also documents a strong association between substance use and IPV victimization [13, 19, 63]; hence, high prevalence of IPV findings may also be attributed to this study's focus on heavy drinkers and inclusion of a high proportion of injection drug users. The sample of heavy drinkers, many of whom also reported recent injection drug use, may use substances as a means to cope with trauma acquired during past experiences of IPV or current engagement in sex work [66, 67]. The high percentage of women reporting moderate or severe depression also suggests that women may self-medicate using alcohol or injection drugs.

Findings from this study should be considered in light of study limitations. Most participants' characteristics were based on self-report data; as such, the data were subject to recall and social desirability biases. Attempts to mitigate this risk included using trained assessors and self-completed portions of the assessment for particularly sensitive data. As noted previously, use of differing time frames across some of our variables of interest (e.g., lifetime IPV sexual victimization, unprotected sex in past 3 months, current STI) may have affected some study findings. Cross-sectional data analyses do not allow an interpretation of the findings in terms of causality. Findings of this study should also be interpreted with caution because the study cannot be generalized beyond HIV-positive individuals, females, and those identified as "at risk" drinkers. However, the findings contribute to understanding the associations of IPV within an important population in Russia, HIV-positive female drinkers. Of note this sample was largely comprised of those who were in clinical care, limiting generalizability among HIV-positive Russian female drinkers who do not obtain health care. Furthermore, we did not collect data on income or employment that distinguishes between sex work and non-sex work employment. This is an area that requires further exploration in future research because of the potential significance of HIV-positive women's economic and financial needs in the associations between IPV, substance use and sexual risk for this population.

Nonetheless, findings from this work support previous research from Russia and elsewhere, highlighting the synergistic relationship among gender-based violence, substance use, and sex work involvement in heightening risk for HIV and HIV transmission among women [48, 50, 68–70]. Secondary HIV prevention efforts must consider the effects of IPV on the likelihood of ongoing sex trade involvement for substance-using HIV-positive women in Russia.

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Table 1

Demographic and HIV/STI Risk Profile of Female HIV-Infected Heavy Drinkers in St. Petersburg, Russia (N= 285) and Stratified by History of IPV Victimization

	Total Sample N=285 n (%)	No History of IPV victimization N=63 n (%)	History of IPV victimization N=222 n (%)	p-value
Age Range (years)	(18 – 54)	(19 – 53)	(18 – 54)	0.68
Mean (SD)	29.3 (5.7)	29.6 (6.1)	29.2 (5.6)	
Married or Living with Partner	120 (42.1%)	25 (39.7%)	95 (42.8%)	0.66
Education				0.07
11 Grades	133 (46.7%)	23 (36.5%)	110 (49.5%)	
> 11 Grades	152 (53.3%)	40 (63.5%)	112 (50.5%)	
Heavy drinking	218 (76.5%)	47 (74.6%)	171 (77.0%)	0.69
IDU Past 30 Day	117 (41.1%)	20 (31.7%)	97 (43.7%)	0.09
Multiple Sex Partners, Past 3 Months	62 (21.8%)	7 (11.1%)	55 (24.8%)	0.02
Selling Sex	42 (14.7%)	3 (4.8%)	39 (17.6%)	0.01
BDI-II Severity				
No Depression	75 (26.3%)	23 (36.5%)	52 (23.4%)	
Mild	61 (21.4%)	12 (19.0%)	49 (22.1%)	0.06
Moderate	77 (27.0%)	19 (30.2%)	58 (26.1%)	
Severe	72 (25.3%)	9 (14.3%)	63 (28.4%)	
Alcohol and Drug Use Before Sex	141 (49.5%)	25 (39.7%)	116 (52.3%)	0.08
Number of Unprotected Sex Episodes, past 3 Months				0.21
(Range)	(0 – 483)	(0 – 93)	(0 – 483)	
Mean (SD)	19.4 (44.6)	13.2 (21.3)	21.2 (49.1)	
Median (IQR)	6.0 (1 – 20)	3 (0 – 20)	8 (1 – 22)	
Current STI	51 (18.5%)	11 (18.0%)	40 (18.6%)	0.92
Self Report STI Ever	139 (48.8%)	25 (39.7%)	114 (51.4%)	0.10

Table 2

Logistic and Poisson Regression Analyses Assessing Associations between IPV Victimization and the Outcomes- STI and Sex Risk Behaviors

Outcomes	Crude OR (95% CI)	Adj^I OR (95% CI)
Current STI	1.04 (0.50, 2.17)	1.01 (0.47, 2.16)
Self Report STI Ever	1.60 (0.91, 2.83)	1.69 (0.94, 3.05)
Multiple Sex Partners	2.63 (1.13, 6.12)	2.39 (0.99, 5.81)
Selling Sex	4.26 (1.27, 14.29)	3.56 (1.02, 12.43) *
Alcohol or Drug Use before sex	1.66 (0.94, 2.94)	1.46 (0.78, 2.73)
	Crude IRR (95% CI)	Adj^I IRR (95% CI)
Number of unprotected sex encounters (past 3 months)	1.61 (0.78, 3.32)	1.66 (0.93, 2.96)

^I Adjusted for age, marital status, education, IDU, past 30-day heavy drinking, BDI-II

*
p<0.05