Published in final edited form as:

J Trauma Stress. 2012 February ; 25(1): 86–93. doi:10.1002/jts.21658.

Partner Violence Perpetration and Victimization and HIV Risk Behaviors in St. Petersburg, Russia

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Abstract

Whether intimate partner violence (IPV) perpetration and victimization are associated with human immunodeficiency virus (HIV) risk behaviors is seldom investigated in Russia. The present study hypothesized that patients from a sexually transmitted infection center in Russia who perpetrated IPV or were victims of IPV would be more likely to have HIV risk behaviors including injection drug use, multiple partners, and inconsistent condom use than those who were not involved with IPV. We used a self-administered questionnaire to collect information from 381 patients on demographics, health status, drug injection, sexual behaviors, and violence involving sexual partners between 2008 and 2009. After adjusting for sociodemographics, lifetime IPV perpetration was significantly associated with having had multiple sexual partners among male patients (odds ratio [OR] = 2.61, $p < .05$). Intimate partner violence victimization was significantly associated with injection drug use among male and female patients (OR = 5.22, $p < .05$) and with inconsistent condom use among female patients (OR = 8.93, $p < .05$). Intimate partner violence perpetration and victimization were common among male and female study participants and were associated with greater HIV risk behaviors. Human immunodeficiency virus prevention programs in Russia should address the risks associated with IPV among people at risk for HIV.

Intimate partner violence (IPV) is a significant public health problem that can lead to physical and psychological problems and to fatal health consequences such as homicide and suicide (Horne, 1999; McCauley et al., 1995; Pico-Alfonso et al., 2006; Stickley, Timofeeva, & Sparen, 2008). Both IPV perpetration and victimization have been linked to human immunodeficiency virus (HIV) infection and HIV risk behaviors such as injection drug use, multiple sexual partnerships, and inconsistent condom use in the United States (Decker et al., 2009; Raj et al., 2006) and around the world (Dunkle et al., 2004; Silverman, Decker, Saggurti, Balaiah, & Raj, 2008; Zablotska et al., 2009), but few studies have been conducted in Russia. Moreover, the majority of the studies have investigated the association

between IPV victimization and HIV risk behaviors, and studies that investigate the association between HIV risk behaviors and both IPV perpetration and victimization are needed.

Although the exact mechanisms underlying the relationship between IPV and HIV risk behaviors remain unclear, several possible explanations have been proposed (Gielen et al., 2007; Manfrin-Ledet & Porche, 2003; Silverman et al., 2008). First, IPV (particularly perpetration) and HIV risk behaviors may share common environmental determinants (e.g., lower educational levels and unemployment) and cultural factors (e.g., sexual risk behaviors being considered symbols of masculinity). For example, IPV perpetration and HIV risk-taking practices, such as having multiple sexual partnerships may be considered as demonstration of masculinity, and these two behaviors may be more likely observed among individuals with lower educational levels (Dunkle et al., 2006; Manfrin-Ledet & Porche, 2003). Second, IPV leads to HIV risk behaviors such as inconsistent condom use because IPV or fear of IPV may impair people's ability to successfully negotiate condom use (Gielen, et al., 2007). In addition, the negative mental health consequences of IPV have been linked to HIV risk (Cavanaugh, Hansen, & Sullivan, 2010). For example, victims of IPV may use drugs to cope with the negative affects resulting from IPV. Third, some HIV risk behaviors may lead to IPV. Drug use is a good example. Drug use can impair cognitive function and restrain the ability of social interactions for both perpetrators and victims of IPV (El-Bassel, Gilbert, Wu, Go, & Hill, 2005). For these reasons, programs to reduce IPV and to prevent the sexual transmission of HIV in Russia may benefit greatly from a better understanding of the association between HIV and IPV among populations at risk for HIV and other sexually transmitted infections (STIs).

Research on IPV in Russia has been limited, but it is estimated that the rates of family and partner violence exceed Western rates by 4 to 5 times (Horne, 1999). The data provided by the Russian Ministry of Internal Affairs in 1998 suggested that violence against women occurs in one out of four Russian families. On average, 14,000 Russian women are killed by their partners each year (Fastenko & Timofeeva, 2004). In a survey of 3,900 women from three Russian cities, one in seven women reported being moderately or severely abused by her partner in her lifetime (Fastenko & Timofeeva, 2004). Additionally, although reports of female violence against men are infrequent, there is growing awareness in Russia that women can also commit violence against their male partners (Fastenko & Timofeeva, 2004). For example, in a survey of 338 students (54% female) from three Russian universities, participants reported high rates of physical assault (25.5% victimization; 31.0% perpetration), sexual coercion or assault (24.1% victimization; 23.6% perpetration), and psychological aggression (61.6% victimization; 61.6% perpetration) in their sexual relationships (Lysova & Douglas, 2008). Although there was no difference in victimization by gender, the women were more likely to report physical violence perpetration against their partners (Lysova & Douglas, 2008). Despite the negative consequences of IPV (Horne, 1999; McCauley et al., 1995; Pico-Alfonso et al., 2006; Stickley et al., 2008) and the prevalence of IPV in Russia (Cubbins & Vannoy, 2005; Horne, 1999; Lysova & Douglas, 2008; Lysova & Hines, 2008; Stickley et al., 2008), research has not adequately studied potential associations between IPV and HIV risk (Lysova & Hines, 2008). This is

particularly important as Russia is experiencing one of the most rapidly expanding HIV epidemics in the world (UNAIDS/World Health Organization, 2009).

This is an initial study that cross sectionally examined the link between IPV and HIV risk behaviors in a sample of male and female patients who attended a sexually transmitted infection (STI) clinic in St. Petersburg, Russia. Specifically, this study examined the association of lifetime IPV perpetration and victimization with injection drug use, multiple sex partners, and inconsistent condom use. We hypothesized that those who perpetrated IPV or were victims of IPV would be more likely to have HIV risk behaviors including injection drug use, multiple partners, and inconsistent condom use than those who had no corresponding experience.

Method

Participants and Measures

A cross-sectional study was conducted among adult patients (aged 18 years and older) who visited a dermatovenereology dispensary (STI clinic) in St. Petersburg, Russia from June 2008 to June 2009. The clinic is funded by the local government and provides services for no charge or for a nominal fee. About 3,000–5,000 patients, most of whom are local residents, visit the clinic annually. Recruitment occurred through two of the six clinic physicians, whereby consecutive adult patients who required STI services were invited to participate in the study. Of the 500 patients approached, 440 patients enrolled in the study and completed a self-administered questionnaire. Of the 60 patients (23 women and 37 men) who refused to participate, 21 did not provide a reason. The main reasons that the patients reported for their refusal to participate were lack of time (19/39), length of the questionnaire (8/39), and fear of confidentiality being breached or an unwillingness to provide personal information (7/39). Of the 440 participants, 59 reported having had no sexual partners during the previous 3 months and were therefore excluded. Our final sample thus comprised 381 participants (248 men and 133 women). Written informed consent was obtained from all participants and the study was approved by the institutional review boards of the Biomedical Center in St. Petersburg, Russia and Yale University in New Haven, Connecticut USA.

The questionnaire was constructed in English, translated to Russian, and then translated back to English to ensure the integrity of the syntax and meaning. The questionnaire included 58 items on sociodemographic characteristics, health status (including the result of the most recent HIV test), drug use, sexual behaviors, and history of IPV. We defined violence perpetration as having ever (a) insulted, sworn at, or threatened a sexual partner; (b) pushed, grabbed, slapped, punched, beaten up, or choked a sexual partner; or (c) physically forced a sexual partner to have sex or to do something sexually that he or she did not want to do. Violence victimization was defined as having ever been the target of the above list by a sexual partner. These partner violence items were adapted from the Conflict Tactics Scale (Straus, 1979). The questions asked if participants had been the victim of emotional, physical, and sexual abuse by their partner or partners (Agrawal, Ickovics, Lewis, Magriples, & Kershaw, 2009). As in the Conflict Tactics Scale, participants were asked about the frequency of various abusive acts. For the current study, parallel items were added to assess the perpetration of violence. Each violence item is used as an individual indicator

of the perpetration or victimization of emotional, physical, or sexual violence to or from a relationship partner.

We defined injection drug use as having ever injected illegal drugs. Having multiple sexual partners was defined as reporting two or more sexual partners during the 3 months prior to the interview. A proportion of condom use in the 30 days prior to the interview less than 100% was considered as inconsistent condom use, which is commonly used in HIV research (Ehrensstein, Horton, & Samet, 2004; Mansergh et al., 2006). The proportion of condom use was calculated by dividing the total number of times that the participants had used condoms during vaginal and anal sex in the past 30 days by the total number of times that they had had vaginal and anal sex during that period. Considering that nearly 30% of participants did not take any HIV test and that only three participants reported being HIV-positive in their most recent HIV test, we did not include HIV status as a variable.

Data Analysis

Descriptive statistics were calculated and chi-square tests were used to determine whether there were gender differences in the participants' sociodemographic characteristics and HIV risk behaviors. Chi-square tests were also used to assess whether risk behaviors differed by violence perpetration and victimization for men and women. We used Fisher's exact tests when chi-square tests were inappropriate because of small expected frequencies. Patients with missing data were excluded in the bivariate and multivariate analyses.

Multivariate hierarchical logistic regression models were derived to determine whether violence perpetration and victimization were associated with HIV risk behaviors. Our primary model was conducted using two nonindependent IPV variables, i.e., any report of IPV perpetration and any report of IPV victimization. Sociodemographic characteristics were entered in the first step, and IPV variables were entered in the second step. The variance inflation factor was used to detect collinearity between the different covariates particularly between IPV perpetration and victimization. A value of variance inflation factor greater than 2.5 may indicate concern for collinearity in logistic regression models (Allison & SAS Institute, 1999). The correlation between perpetration and victimization was .52 and the largest variance inflation factor among all predicting variables was 1.5, suggesting no collinearity concern in the models. Because no evidence for collinearity was detected, both IPV perpetration and victimization were included in the final model. In the third step, we examined interactions between violence perpetration/victimization and gender. When we detected a significant interaction, the interaction was included in the final model.

Although our primary analysis controlled for the shared variance between IPV perpetration and victimization to identify the independent effect of each, and the hierarchical analysis was able to model the impact of any IPV experience, it was not able to model the effect of being only a victim or only a perpetrator. Thus we conducted a secondary multiple logistic regression analysis, adjusting for sociodemographic characteristics using an IPV variable containing four independent categories: victimization only, perpetration only, both perpetration and victimization, and neither. This analysis was considered secondary because the small sample size within each IPV category limited the power of the tests. The

significance level was defined as $p < .05$ and the data were analyzed using SAS software version 9.1 (SAS Institute Inc., 2003).

Results

Characteristics of the Sample

Most participants had heterosexual sex (two men had sex only with men; Table 1). Compared to women, men had a significantly lower likelihood of being married, having a monthly income below 15,000 rubles (about US \$530), and living with a child or children. Male participants also had significantly higher rates of full-time employment and of having multiple sexual partners during the previous 3 months. The difference for inconsistent condom use between men and women was at borderline significance (70% in men vs. 81% in women, $p = .05$). There were no gender differences in age, education, or history of injection drug use.

Overall, 83 (23%) participants reported engaging in perpetration and 95 (26%) reported experiencing victimization. Among 121 participants who had ever been a perpetrator or a victim, 56 had both experiences of perpetration and victimization, and one perpetrator's victimization status could not be determined. Women reported a significantly higher rate of victimization than men (36% vs. 20%, respectively, $p < .001$), but there were no differences in the rate of perpetration for women and men ($p = .29$).

Injection Drug Use

We hypothesized that there was an association between IPV and injection drug use. In bivariate analyses (Table 2), participants who had injected illegal drugs had a higher rate of victimization than those who had not, for both men (50% vs. 20%, $p = .04$) and women (100% vs. 34%, $p = .006$). In the multivariate hierarchical analysis, the addition of IPV variables in Step 2 significantly improved prediction, $\chi^2(2) = 6.5$, $p < .05$, confirming that IPV significantly contributed to drug injection. Intimate partner violence victimization remained significantly associated with injection drug use for both genders with an adjusted odds ratio = 5.22, 95% CI [1.15, 23.69]. No significant association between IPV perpetration and injection drug use was observed (Table 3), nor were significant interactions found between sex and either perpetration or victimization.

In the secondary analysis using four independent, nonoverlapping IPV categories (Table 4), injection drug use was independently associated with the category containing both IPV victimization and IPV perpetration. Note that all drug injectors in the sample had experienced IPV, and that most were either victims or both victims and perpetrators; few were perpetrators only. Therefore, in the secondary analysis, the category with both IPV perpetration and victimization had the strongest relationship with injection drug use. In the primary multiple regression analysis controlling for the shared variance of perpetration and victimization, however, only victimization had an independent relationship with drug injection, suggesting that although IPV in general is related to injection drug use, victimization appears to be central to this relationship.

Multiple Sexual Partnerships

A second hypothesis tested whether there was an association between IPV and multiple sexual partnerships. In bivariate analyses, we found that men who reported multiple sexual partners in the previous 3 months had a higher rate of perpetration than men with only one partner (29% vs. 14%, $p = .01$; Table 2).

In the multivariate hierarchical analysis, the addition of IPV variables did not improve the model fit beyond demographics (Table 3). The addition of gender and violence interactions, however, did significantly improve the model, $\chi^2(1) = 5.1$, $p < .05$. The interaction between gender and victimization was not significant, but the interaction between gender and perpetration was, thus this interaction was subsequently included in the analysis. In the final model, perpetration (Table 3) remained significantly associated with multiple sexual partners among men, adjusted $OR = 2.61$, 95% CI [1.18, 5.77]. There was no significant association between victimization and multiple sexual partners. The analysis using four independent nonoverlapping IPV categories (Table 4) showed results similar to that of the 2-variable regression analysis, namely that perpetration was independently associated with multiple sexual partners among men.

Inconsistent Condom Use

The third hypothesis tested whether there was an association between IPV and inconsistent condom use. In bivariate analyses (Table 2), women who reported inconsistent use in the previous 30 days were more likely than women who reported consistent use to have been a perpetrator (30% vs. 5%, $p = .02$) and to have been a victim (37% vs. 10%, $p = .02$).

Similar to the finding for multiple sex partners, in the hierarchical analysis for inconsistent condom use, the addition of IPV variables in Step 2 did not improve model fit over demographic variables but the addition of gender and violence interactions in Step 3 did significantly improve the model, $\chi^2(1) = 7.0$, $p < .01$ (Table 3). The interaction between gender and perpetration was not significant, but the interaction between gender and victimization was and this interaction was included in the model. In the final model, victimization, adjusted $OR = 8.93$, 95% CI [1.03, 77.20] remained significantly associated with inconsistent condom use among women. No significant association between perpetration and inconsistent use was observed.

In the analysis using the four independent, nonoverlapping categories (Table 4), the association between IPV and inconsistent condom use was not significant. This is likely because the gender interaction is not modeled and the separation of IPV into multiple categories reduced the power. To address this, an additional post hoc analysis compared the relationship of any type of IPV exposure to inconsistent condom use by gender. This revealed that 94.6% of women who had experienced any type of IPV used condoms inconsistently in the prior 30 days versus 71.9% of women without IPV, $\chi^2(1) = 7.62$, $N = 101$, $p < .01$. Similar to the findings for drug injection, in the primary regression analysis which controlled for the shared variance between perpetration and victimization, only victimization had an independent relationship with inconsistent condom use among women.

Discussion

This study produced three main findings: (a) male and female participants who experienced any IPV were more likely to engage in injection drug use than those who had not experienced IPV, with victimization independently related to drug injection; (b) male perpetrators were more likely to have multiple sexual partners than male nonperpetrators; and (c) female participants who experienced victimization were more likely to engage in inconsistent condom use than female participants who did not experience victimization. These results suggest that perpetration and victimization play a role in the transmission of HIV among STI clinic patients.

The association between victimization and injection drug use is an important finding, given that injection drug use is the primary mode of HIV transmission in Russia (Heimer, Barbour, Shaboltas, Hoffman, & Kozlov, 2008). This association has also been found in studies in other countries (El-Bassel et al., 2005; Silverman, Raj, Mucci, & Hathaway, 2001). The relationship between victimization and drug use is complex (El-Bassel et al., 2005). On the one hand, drug use can increase the risk of victimization through psychopharmacological effects (e.g., perceptual distortions and loss of inhibitions) and through an economic motivation pathway (e.g., failure to pay drug debts and the engagement in commercial sex to finance a drug addiction; Hoaken & Stewart, 2003). On the other hand, victimization has been shown to increase the risk of drug abuse because victims may use drugs to cope with their victimization (El-Bassel et al., 2005). Our study did not find an association, however, between perpetration and injection drug use. Similar to victimization, perpetration has also been linked to drug use and several theories have been proposed to support the direction from drug use to perpetration through psychopharmacological effects and monetary factors (Dunkle et al., 2006; Moore & Stuart, 2005; Stuart et al., 2008). The association between male perpetration and multiple sexual partners has been observed elsewhere (El-Bassel et al., 2001; Frye et al., 2007; Raj et al., 2006). For example, in a study conducted among 283 men who reported having sexual intercourse with a steady female partner during the past 3 months, perpetrators were twice as likely to have sexual intercourse with other women during the same period, compared to nonperpetrators (Raj et al., 2006). Another study conducted among 317 male HIV-positive injection drug users found that perpetrators had a greater number of sex partners in the prior 3 months than nonperpetrators (Frye et al., 2007). Although we are unaware of a direct path from perpetration to multiple sexual partners, it is possible that some underlying set of factors is causally related to perpetration and having multiple sexual partners. Alcohol consumption may be one such factor (Jewkes, 2002; Townsend et al., 2010). Also, studies showing that impulsivity may be associated with IPV (Schafer, Caetano, & Cunradi, 2004; Shorey, Brasfield, Febres, & Stuart, 2010) as well as a tendency to have multiple sex partnerships (Semple, Zians, Grant, & Patterson, 2005) suggest that psychological traits may be another factor. Future studies should investigate the motivations of men who both engage in multiple sex partnerships and perpetrate IPV.

Another finding of this study is that victimization was associated with inconsistent condom use in women. This association is consistent with results from previous studies (Gielen, McDonnell, & O'Campo, 2002; Wu, El-Bassel, Witte, Gilbert, & Chang, 2003; Zablotska et al., 2009), and may be explained by a lack of control over sexuality as a consequence of

violence (Wu et al., 2003). Although bivariate analysis indicated that perpetration was significantly associated with inconsistent condom use, the relationship did not persist in the multivariate analyses. This is likely because a proportion of participants reported both perpetration and victimization. After controlling for victimization in the multivariate analysis, the association between perpetration and inconsistent condom use also was nonsignificant, indicating that victimization is likely the larger contributor to the relationship between IPV and inconsistent use. This finding also suggests that IPV research should control for the possible confounding effects of co-occurring victimization and perpetration. Failure to control for both may produce biased results due to the lack of independence between predictors and criteria.

Approximately a quarter of this study's participants experienced IPV. This proportion is consistent with the findings of previous studies in Russia, in which 25–27% of the participants reported being victims of IPV (Cubbins & Vannoy, 2005; Lysova & Douglas, 2008) and 31% reported perpetrating violence against their partners (Lysova & Douglas, 2008). Our results confirm that IPV has not received sufficient attention in Russia (Stickley et al., 2008) and indicate that there is a need for state- and community-level interventions to increase public awareness of IPV, including its negative physical and mental health consequences. Future studies should identify the dynamics of IPV that increase HIV risk behaviors among Russian men and women and develop appropriate programs for violence perpetrators and victims.

Several important limitations in the present study should be noted. First, it is possible that the relationships between IPV and HIV risk behaviors observed in the present study may be explained by uncontrolled factors. For example, the experience of childhood abuse has been reported to be associated with both IPV and HIV risk behaviors (L. Bensley, Van, & Wynkoop, 2003; L. S. Bensley, Van, & Simmons, 2000). However, we did not collect this variable in the present study and thus we could not exclude the possibility that the experience of childhood abuse may explain the observed relationships. Second, our data are cross sectional; therefore, we cannot infer causality. Third, our findings may not be generalizable to other settings. It should be emphasized that the nature of the sample (the STI clinic) may have biased our results because patients in an STI clinic may have higher rates of risk behaviors and IPV than individuals in the overall Russian population. Fourth, as with other research on sensitive behaviors, our study may have underestimated IPV perpetration and victimization, injection drug use, number of sexual partners, and condom use because of social desirability effects. Bias caused by underestimation, however, should have been diminished because we used self-report (Kissinger et al., 1999). Finally, due to limitations in the sample size, the characteristics of individuals who are both perpetrators and victims of IPV could not be fully compared with the characteristics of those who are either perpetrator or victims. Although the results from the sensitivity analysis were, in general, consistent with our main findings, differences were observed for the association between IPV and inconsistent condom use among women. For example, the association between IPV victimization and inconsistent condom use among women was no longer significant in the sensitivity analysis. Moreover, we did not collect information on the patterns, situations in which IPV occurs, frequency, duration and other contextual factors of

IPV, which may increase the difficulty and uncertainty of the interpretation of our findings. Thus, longitudinal studies with larger sample sizes are needed to confirm our findings.

In summary, our results show that lifetime IPV perpetration and victimization were common among male and female study participants and were associated with current HIV risk behaviors. Human immunodeficiency virus prevention programs in Russia may be improved by addressing the risks associated with violence perpetration and victimization. Finally, more research into the factors that predispose individuals to IPV perpetration and victimization and culturally appropriate approaches to prevention and treatment of IPV and its consequences in Russia are needed.

Acknowledgments

This work was funded by Grant Number R01AA017389 from the National Institute on Alcohol Abuse and Alcoholism (PI: N. Abdala).

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Table 1
Demographic Characteristics, HIV/AIDS Risk Behaviors, and Subcategories of Partner Violence by Sex

Variable	Men			Women			$\chi^2(1)$
	<i>n</i> ₁	<i>n</i> ₂	%	<i>n</i> ₁	<i>n</i> ₂	%	
Age 25	136	247	55	73	132	55	0.002
Married	95	248	38	78	132	59	15.01***
Completed college or more	179	248	72	98	133	73	0.10
Monthly income < 15,000 rubles	55	225	24	75	126	60	42.62***
Employed full-time	176	248	71	67	133	50	15.89***
Living with children	33	243	14	38	133	29	12.61***
Injected drugs	10	234	4	5	132	4	0.05
Multiple sexual partners ^a	105	235	45	30	127	24	15.63***
Inconsistent condom use	131	187	70	83	103	81	3.81
No IPV	163	230	71	77	131	59	5.48*
Victimization only	19	230	8	20	131	15	4.25*
Perpetration only	20	230	9	6	131	5	2.12
Both	28	230	12	28	131	21	5.39*

Note. *N* = 381. IPV = intimate partner violence; HIV/AIDS = human immunodeficiency virus/acquired immunodeficiency syndrome; *n*₁ = frequency; *n*₂ = nonmissing total.

^aTwo men had sex only with men and four participants (two men and two women) had sex with both sexes.

* *p* < .05.

** *p* < .01.

*** *p* < .001.

Table 2
Bivariate Analyses: Rates of Partner Violence and Victimization by HIV/AIDS Risk Behaviors Among Men and Women

Variable	Partner violence perpetration						Partner violence victimization					
	With risk behavior			No risk behavior			With risk behavior			No risk behavior		
	<i>n</i> ₁	<i>n</i> ₂	%	<i>n</i> ₁	<i>n</i> ₂	%	<i>n</i> ₁	<i>n</i> ₂	%	<i>n</i> ₁	<i>n</i> ₂	%
Injected drugs												
Among men	4	10	40.0	42	208	20.2	5	10	50.0	41	209	19.6*
Among women	3	5	60.0	31	125	24.8	5	5	100	43	126	34.1**
Multiple sexual partners												
Among men	29	101	28.7	17	118	14.4**	22	100	22.0	21	120	17.5
Among women	6	29	20.7	26	96	27.1	10	30	33.3	34	96	35.4
Inconsistent condom use												
Among men	21	123	17.1	14	52	26.9	24	123	19.5	12	52	23.1
Among women	24	81	29.6	1	20	5.0*	30	82	36.6	2	20	10.0*

Note. HIV/AIDS = Human immunodeficiency virus/acquired immunodeficiency syndrome; *n*₁ = frequency, *n*₂ = nonmissing total. Chi-square tests were used to test statistical significance (Fisher's exact tests were used instead, in case of small expected frequencies).

* *p* < .05.
** *p* < .01.
*** *p* < .001.

Table 3

Multivariate Hierarchical Analyses Using Two Nonindependent IPV Variables: Association Between Partner Violence and HIV Risk Behaviors

Variable	Injected drugs		Multiple sexual partners		Inconsistent condom use	
	OR	CI	OR	CI	OR	CI
Age 25	0.14	[0.03, 0.63]	1.13	[0.63, 2.02]	0.95	[0.47, 1.91]
Being male	2.82	[0.63, 12.68]	7.41 ^a	[2.22, 24.77] ^a	0.07 ^b	[0.01, 0.57] ^b
Married	2.00	[0.50, 7.92]	0.88	[0.51, 1.52]	1.14	[0.59, 2.22]
Completed college or more	0.17	[0.05, 0.58]	0.79	[0.45, 1.37]	1.12	[0.55, 2.28]
Monthly income <15,000 rubles	0.95	[0.25, 3.66]	1.04	[0.58, 1.86]	0.63	[0.31, 1.26]
Employed full-time	0.20	[0.05, 0.80]	1.48	[0.84, 2.60]	1.10	[0.55, 2.21]
Living with child/children	0.30	[0.05, 1.72]	0.71	[0.33, 1.53]	2.32	[0.83, 6.43]
IPV perpetration	0.95	[0.21, 4.27]			1.36	[0.54, 3.40]
Among men			2.61	[1.18, 5.77]		
Among women			0.60	[0.19, 1.95]		
IPV victimization	5.22	[1.15, 23.69]	0.97	[0.49, 1.90]		
Among men					0.73	[0.29, 1.85]
Among women					8.93	[1.03, 77.20]

Note. IPV = intimate partner violence; OR = odds ratio; CI = confidence interval. Significant interaction between IPV perpetration and sex on multiple sexual partners and significant interaction between IPV victimization and sex on inconsistent condom use were observed.

^aThe OR and CI were for perpetrators; for nonperpetrators, they were 1.71 [0.92, 3.18].

^bThe OR and CI were for victims; for nonvictims, they were 0.81 [0.39, 1.68].

Table 4

Multivariate Analyses Using A Variable With Four Independent IPV Categories: Association Between Partner Violence and HIV Risk Behaviors

Variable	Multiple sexual partners						Inconsistent condom use	
	Injected drugs			Men			Women	
	OR	CI		OR	CI		OR	CI
Age 25	0.13	[0.03, 0.62]		0.85	[0.42, 1.73]		2.55	[0.79, 8.18]
Being male	2.72	[0.61, 12.01]		–	–		–	–
Married	1.84	[0.46, 7.31]		0.66	[0.33, 1.32]		1.06	[0.38, 2.98]
Completed college or more	0.16	[0.05, 0.56]		1.25	[0.63, 2.51]		0.29	[0.10–0.79]
Monthly income < 15,000 rubles	0.86	[0.22, 3.31]		1.17	[0.55, 2.48]		0.90	[0.32, 2.48]
Employed full-time	0.21	[0.05, 0.82]		1.80	[0.86, 3.76]		0.90	[0.34, 2.37]
Living with child/children	0.31	[0.06, 1.75]		0.73	[0.27, 2.00]		0.93	[0.25, 3.48]
IPV								
No IPV	1.00	Reference		1.00	Reference		1.00	Reference
Victimization only	3.82	[0.69, 21.15]		0.83	[0.28, 2.46]		1.83	[0.48, 6.98]
Perpetration only	NE			3.85	[1.24, 11.94]		NE	
Both	5.11	[1.24, 21.01]		2.03	[0.81, 5.10]		0.66	[0.20, 2.19]
							2.28	[0.87, 5.99]

Note. OR = odds ratio; CI = confidence interval; IPV = intimate partner violence; Reference = reference group; NE = not estimable because the validity of the model fit was questionable when perpetration only was included.