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Sexualized substance use among female sex workers in Iran: Findings from a nationwide survey

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Abstract

Introduction: Female sex workers (FSWs) are at higher risk of HIV due to high-risk sexual and drug use related behaviors. This study characterized sexualized substance use among FSWs in Iran.

Methods: In 2015, 1,337 FSWs were recruited from centers for vulnerable women and through outreach efforts in 13 major cities in Iran. Data were collected via face-to-face interviews from consenting FSWs on a range of socio-demographic and behavioral characteristics. The primary outcome of interest was sexualized substance use, defined as reporting alcohol or drug use before or during sex in the past month. Bivariable and multivariable modified Poisson regression models were used to assess the correlates of sexualized substance use. Adjusted prevalence ratio (aPR) and 95% confidence interval (CI) were reported.

Results: The prevalence of sexualized substance use was 31.3% (95% CI: 28.7, 34.0). Inconsistent condom use during sex with clients in the past month (aPR = 1.31; 95% CI: 1.01, 1.71), regular (i.e., at least weekly in the past month) alcohol use (aPR = 2.87; 95% CI: 2.17, 3.80), regular opioid use (aPR = 2.09; 95% CI: 1.45, 3.02), regular stimulant use (aPR = 2.68; 95% CI: 2.12, 3.39), and self-reported HIV negative status (aPR= 1.88; 95% CI: 1.14, 3.10) were significantly and positively associated with sexualized substance use.

Conclusions: Sexualized substance use was associated with riskier sexual behavior and self-reported HIV sero-negativity. Harm reduction messaging to FSWs needs to go beyond focusing on sexual health promotion and further highlight the risks associated with sexualized substance use.

Disclosure of interest

The authors report no conflict of interest.

Keywords

Female sex workers; sexualized substance use; substance use disorders; survey; Iran

Introduction

Female sex workers (FSWs) are a key population at risk of HIV and other sexually transmitted infections (STIs) (Shannon et al., 2015). Recent estimations suggest that the prevalence of HIV among FSWs is 10.4% globally (Shannon et al., 2018); however, HIV epidemics among FSWs vary greatly across different world regions. For example, the pooled prevalence of HIV among FSWs in the Middle East and North Africa (MENA) is estimated at 1.4% (Chemaitelly et al., 2019), which could be partly due to the limited quantity and quality of HIV data in these countries (Karamouzian, Madani, et al., 2017; Karamouzian & Sharifi, 2022). It is estimated that 228,700 (95% confidence interval [CI]:153,500– 294,300) FSWs live in Iran, a country that based on the available data has the largest HIV epidemic in MENA (Sharifi et al., 2017). The pooled prevalence of HIV among FSWs is estimated at 2.23% (95% CI: 0.82, 3.64), while varying from 0.0% to 5.0% across different provinces (Karamouzian et al., 2020; Mirzazadeh et al., 2020). HIV epidemics among FSWs in Iran are mainly driven by unprotected sex, with a pooled prevalence of last-month inconsistent condom use with clients estimated as high as 49.0% (95% CI: 21.6, 76.7) (Khezri et al., 2022). Although sex work is criminalized in Iran, Islamic *Shia* law has a loophole for engaging in sex work and extramarital sex through temporary marriage (i.e., *Sigheh*). This temporary contract enables married or unmarried men to marry an unmarried woman for a fixed period of time and with no long-term commitment. While some clerics in Iran encourage the practice of *Sigheh* and portray it as a morally and religiously acceptable behaviour, it is culturally stigmatized and viewed as a cover for facilitating the exploitation of women, and complicating the landscape of sex work in Iran (Badran & Turnbull, 2019; Haeri, 2014; Karamouzian et al., 2016). Previous studies have shown that engaging in temporary marriage practices often benefit the male partner and are associated with high risk sexual and substance use practices among FSWs (Ahmady, 2022; Badran & Turnbull, 2019; Haeri, 2014). Also, the prevalence of condom use in a temporary marriage was significantly lower among the FSWs (Fehrenbacher et al., 2018). Moreover, the prevalence of STIs among Iranian FSWs varies greatly for different infections (e.g., syphilis (0.4%), gonorrhea (1.3%), chlamydia (6.0%), trichomoniasis (11.9%), and human papillomavirus (41.9%)) (Shahesmaeili et al., 2018).

In addition to being at an increased risk for HIV and other STIs, FSWs are likely to be at an increased risk for substance use-related harms. Alcohol and drug use practices are common among FSWs worldwide (Ditmore, 2013; Sharifi et al., 2017). In Iran, the pooled prevalence of recent non-injection drug use and injecting drug use among FSWs is estimated at 56.9% (95% CI:44.7, 68.8) and 5.7% (95% CI: 2.1, 10.7), respectively, and opium is the most commonly used substance among them (Tavakoli et al., 2021). FSWs may use substances for several reasons; while some may initiate sex work following substance use disorders, others may initiate substance use as a coping strategy to deal with the challenges associated with involvement in sex work (Ditmore, 2013; Li et al., 2010; Shokoohi, Karamouzian, et al.,

2019; Syvertsen et al., 2019; Zolala et al., 2016). Regardless of the underlying motives for substance use among FSWs, those who engage in frequent substance use practices are at an increased risk for adverse mental and physical health outcomes (Ditmore, 2013).

Using alcohol or drugs before or during sex (i.e., sexualized substance use) is of particular importance among FSWs and could increase the risk of practicing unsafe sex, experiencing verbal and sexual violence, as well as contracting HIV and other STIs (Lancaster et al., 2018; Leddy et al., 2018; Ong et al., 2021; Robertson & Plant, 1988). However, our understanding of sexualized substance use is limited in the context of Muslim majority settings, such as Iran, where both sex work and substance use are highly stigmatized and FSWs are at an elevated risk for social and physical harms (Karamouzian et al., 2019). In Iran, although the government has provided several harm reduction programs for people who use drugs (i.e., opioid agonist therapy and needle and syringe programs) (Ekhtiari et al., 2020), there are no systematic interventions to reduce alcohol-related harms, partly due to the criminalization of alcohol production, trade, and use (Shokoohi, Rahimi-Movaghar, et al., 2019). Additionally, involvement in sex work is also criminalized and subject to harsh penalties, which further complicates investigating sexualized substance use among FSWs (Hosseini-Hooshyar et al., 2022; Karamouzian, Mirzazadeh, et al., 2017; Karamouzian et al., 2019).

Despite the established importance of sexualized substance use and its associated risks, only a few small-scale studies have been conducted to examine this behavior among FSWs and the existing evidence on sexualized substance use has primarily focused on men who have sex with men globally (Knight et al., 2019; Maxwell et al., 2019; Tomkins et al., 2019). A narrow body of evidence suggests that sexualized substance use and sharing drugs with clients is frequently practiced among FSWs. For example, 63% of FSWs in the US-Mexican border had used drugs before or during sex in the previous month (Morris et al., 2011) and 59% of FSWs in Western Canada had recently shared drugs with clients (Shannon et al., 2008). Understanding the prevalence of sexualized substance use and associated factors with sexualized substance use among FSWs in Iran could help inform harm reduction policy making and planning efforts to be better equipped in meeting the special needs of FSWs who engage in sexualized substance use. This study aims to measure the prevalence of sexualized substance use and its correlates among a nationwide sample of FSWs in Iran.

Material and Methods

Study design and participants

This is a secondary analysis of data collected in the second national bio-behavioral surveillance survey of FSWs in Iran. Details of the survey methodology are previously published (Mirzazadeh et al., 2020; Shokoohi et al., 2017). In brief, 1337 FSWs were recruited from January to August 2015. 1185 participants were recruited through 20 centers for vulnerable women in 13 cities. These facilities provide vulnerable women who are at a higher risk of HIV (e.g., FSWs, women who inject drugs, homeless women) with a range of harm reduction services, such as HIV testing and counseling, free condoms, and sexual health education (Fahimfar et al., 2013). Most facilities were non-governmental organizations run under the supervision of the Ministry of Health and Medical Education

and a small portion were supervised by the Social Welfare Organization. We also recruited 152 FSWs through outreach efforts in known street-based sex work venues. Participants were eligible for the survey if they were female, ≥18 years old, self-reported penetrative sex in exchange for money, goods, drugs, or services at least once during the last 12 months, and lived or worked in the city of the study. FSWs were included in the current analysis if they were sexually active in the past month.

Data collection instrument

A standardized paper-based questionnaire in Farsi was used to collect data on FSWs' characteristics and behavior through a face-to-face interview. The questionnaire consisted of 12 sections that gathered data on a range of topics, including demographic information, sexual practices with paying and non-paying partners, knowledge about HIV and other STIs, history of HIV testing, history of encounter with law enforcement, and substance use practices. The substance use-related section included detailed questions about FSWs' history of alcohol use and drug use before or during sex in the previous month. After the interview, a rapid HIV test was done for all participants, followed by a confirmatory test for those who had a reactive result for the initial test.

Outcome variable

The outcome of interest was a binary variable (yes or no) on sexualized substance use, defined as using any alcohol or drugs before or during sexual intercourse with any paying or non-paying sexual partner during the past month.

Covariates

The selection of covariates for this analysis was informed by the modified social-ecological theoretical model which conceptualizes HIV-related risk factors as individual, social and sexual networks, community, and policy layers (Baral et al., 2013). We categorized the covariates into four different blocks, including individual factors, sexual-related factors, substance use-related factors, and HIV-related factors.

Individual factors included age (18–24, 25–34, or ≥35 years of age), current marital status (single, married, temporary marriage, or divorced/widowed), educational level (less than high school diploma, high school diploma or higher), having an income source other than sex work (yes or no). *Sexual-related factors* included early sex work initiation, defined as involvement in sex work before the age of 18 (Khezri et al., 2020) (yes or no), using brothels as the primary solicitation venue (yes or no), number of clients in the last working day (1 or >1), history of group sex in the last 12 months (yes or no), and inconsistent condom use with clients in the past month (yes or no). *Substance use-related factors* included regular (i.e., on an at least weekly basis over the past month) alcohol use (yes or no), regular opioid use (yes or no), regular stimulant use (yes or no), and lifetime history of drug injection (yes or no). Opioids included heroin, opium, Iranian crack (i.e., a heroin derivative) (Farhoudian et al., 2014), illicit methadone, and stimulants included amphetamines, and cocaine (rock or powder). *HIV-related factors* included self-perceived risk for HIV (no/low risk or moderate/high risk), and self-reported HIV status (positive or negative), and sufficient HIV knowledge (yes or no). HIV knowledge was measured by asking five knowledge-related questions, and

the answers were defined as yes or no (Shokoohi, Karamouzian, et al., 2019). Participants who provided correct answers to all questions were considered as having sufficient HIV knowledge.

Statistical analysis

Absolute and relative frequencies and 95% confidence interval (CI) were computed to present descriptive statistics for the outcome variable and subgroups of covariates. Bivariable analyses were examined through the Rao-Scott modified Chi-square test (Rao & Scott, 1981). A separate block regression was conducted for each block of variables, including individual, sexual-related, substance use-related, and HIV-related covariates (i.e., base model). To estimate and report the adjusted prevalence ratios (aPR) along with 95% CI, variables with a p-value < 0.15 in each regression block were included to the final multivariable regression model (Dohoo et al., 2012). The multivariable regression models were built using a generalized linear model (GLM) with Poisson as family and log link function (Zou, 2004). Survey analysis was conducted to adjust for the clustering effect of the cities. Stata version 14.2 was used for all the analyses and p-values less than 0.05 were considered as statistically significant.

Ethical considerations

Verbal informed consent was obtained from all participants before the interview. Data collection was anonymous, and participants were compensated for their time (~2 USD). The ethical committee of the Kerman University of Medical Sciences reviewed and approved the study protocol (Ethical Code: K/93/209).

Results

Out of the 1,337 recruited participants, 1,227 (93.6%) were sexually active in the past month and were included in the analysis; 1087 were recruited through facilities and 140 through outreach efforts (Table 1). The mean (SD) age of participants was 35.3 (8.8) years old. Most participants had lower than high school diploma (73.6%; n = 903) and did not have any income source other than sex work (59.9%; n = 732). Moreover, 42.6% (n = 522) of them were divorced or widowed. About 1.9% of the participants included in the analysis tested positive for HIV, all of whom were aware of their HIV sero-status. The overall prevalence of sexualized substance use in the past month was 31.3% (95% CI: 28.7, 34.0).

Sexualized substance use across groups of factors

None of the included variables in the individual-level block had a significantly higher prevalence among participants with a history of sexualized substance use. Among the variables in the sexual-related block, the prevalence of sexualized substance use was significantly higher among those who used brothels as the primary solicitation venue (52.0% vs. 27.9%; P-value: 0.002), as well as those with a history of the group sex in the last 12 months (56.3% vs. 29.2%; P-value: <0.001) and inconsistent condom use with the clients (38.6% vs. 25.2%; P-value: 0.009). Among the variables in the substance use-related block, the prevalence of sexualized substance use was significantly higher among FSWs who had regular alcohol use (75.6% vs. 27.8%; P-value: <0.001), regular opioid use (78.8% vs.

23.7%; P-value: <0.001), regular stimulant use (89.4% vs. 21.4%; P-value: <0.001), and lifetime drug injection (45.8% vs. 30.4%; P-value: 0.023). Lastly, among the variables in the HIV-related block, the prevalence of sexualized substance use was significantly higher among those who had insufficient HIV knowledge (33.9% vs. 26.0%; P-value: 0.020), and those with no or low self-perceived risk for HIV (24.4% vs. 36.5%; P-value: 0.014).

Factors associated with sexualized substance use

As shown in Table 2, in the final multivariable regression model, sexualized substance use was significantly and positively associated with inconsistent condom use during sex with clients in the past month (aPR = 1.31; 95% CI: 1.01, 1.71), regular alcohol use (aPR = 2.87; 95% CI: 2.17, 3.80), regular opioid use (aPR = 2.09; 95% CI: 1.45, 3.02), regular stimulant use (aPR = 2.68; 95% CI: 2.12, 3.39), and self-reported HIV sero-negativity (aPR = 1.88; 95% CI: 1.14, 3.10).

Discussion

Our study showed that around one-third of sexually active FSWs in Iran had recently engaged in sexualized substance use. Sexualized substance use was associated with inconsistent condom use with clients during sex, regular alcohol and drug use, and self-reported HIV sero-negativity. Previous estimates on sexualized substance use among FSWs in Iran and other Muslim majority settings are lacking, which makes the comparison of our findings with regional estimates challenging. However, our findings could be compared with studies on sexualized substance use among FSWs in other low- and middle-income settings, such as China (20% lifetime history (Ong et al., 2021)), Thailand (80.4% sexualized alcohol and 14.2% sexualized drug use (Nemoto et al., 2013)), and Kenya (31.5% (Priddy et al., 2011)).

We found a significant association between sexualized substance use and regular alcohol use, regular opioid use, and regular stimulant use. These findings are comparable with an existing body of international evidence in Canada, China, Kenya, Mexico, and Thailand (Morris et al., 2011; Nemoto et al., 2013; Ong et al., 2021; Priddy et al., 2011; Shannon et al., 2008; Strathdee et al., 2008). Our findings highlight that harm reduction services tailored towards FSWs in Iran need to pay special attention to the needs of those who frequently use substances, particularly non-opioid substances (i.e., alcohol and stimulants). Indeed, existing treatment services for alcohol or stimulant use disorders are very limited in Iran and existing interventions are primarily opioid-centric and fail to provide care for FSWs who are living with alcohol and/or stimulant use disorders (Al-Ansari et al., 2020; Alam-mehrjerdi et al., 2015). Women-only treatment settings for alcohol use disorders are lacking and women-only drug treatment services are inadequate. While educational interventions are helpful in raising awareness among FSWs, there is a need to expand gender-sensitive integrated low-threshold one-stop-shop models of care to meet the unique needs of FSWs who use drugs and alcohol regularly and address all of their health needs once they are connected to care (Shokoohi, Karamouzian, et al., 2019). Peer-led harm reduction initiatives as well as provision of medical interventions, such as pre-exposure prophylaxis (PrEP) have also been shown to facilitate positive behavior changes over time among high-risk subgroups of FSWs and need

to be supported and scaled up (He et al., 2020; Karamouzian & Sharifi, 2022; Zappulla et al., 2020).

Our results also suggested that FSWs who self-reported being HIV-negative were more likely to practice sexualized substance use. Previous studies have shown that being aware of HIV sero-positivity could be protective against risky behaviors. For example, the prevalence of high-risk sexual practices among people living with HIV who were aware of their HIV status was about half of those who did not know about their serostatus (Marks et al., 2006). Similarly, the prevalence of high-risk behaviors has been shown to decrease over time among FSWs who are diagnosed with HIV (Ding et al., 2014). While HIV testing among FSWs in Iran has increased in the past few years due to the expansion of rapid HIV testing services across the country, FSWs' HIV testing rates are suboptimal and they continue to face several social and structural barriers in accessing HIV testing (Shokoohi et al., 2016; Shokoohi et al., 2017).

We also found that sexualized substance use was about 31% higher among FSWs who had inconsistent condom use with clients in the previous month. Our results are comparable with the finding of other studies conducted in Mexico, United States, and Zambia (Lindsay et al., 2015; Malama et al., 2020; Operario et al., 2011). Indeed, the pharmacological effect of drugs on the brain could reduce safe sex practices, effective condom negotiation, and lead to increased unprotected sex (Colfax et al., 2004). Our findings highlight the importance of continued investments in condom promotion and improving access to free condoms among FSWs in Iran, which have unfortunately been suboptimal in recent years (Karamouzian et al., 2014).

Limitations

We acknowledge the limitations of our study. First, the participants were recruited through facility-based and outreach sampling approaches from the urban population of Iran. As centers for vulnerable women are publicly funded and tailored towards marginalized women, FSWs who choose to seek care in non-governmental sectors are less likely to visit such settings. Therefore, our findings may not be generalizable to Iranian FSWs who are not connected to publicly funded harm reduction services or those who seek care in the private sector. Second, we measured sexualized substance use based on self-report; thus, reporting, recall, and social desirability biases could not be ruled out. To reduce these biases, we used local researchers familiar with the context and asked FSWs about recent behaviors and substance use practices in the previous month. Third, some participants (n = 129) who had never tested for HIV, self-reported themselves as HIV sero-negative and were treated as such in the analysis. Fourth, due to the design of the questionnaire, we were unable to assess sexualized alcohol use and sexualized drug use separately and used a pooled metric (i.e., sexualized substance use). Lastly, given the cross-sectional design of our survey, the observed associations do not imply causal relationships.

Conclusions

Our findings showed that one out of three FSWs in Iran had recently engaged in sexualized substance use. This is a concerning finding given the significant association of sexualized

substance use with increased practices of other high-risk behaviors, such as regular substance use and inconsistent condom use and its potential contribution to HIV epidemics among FSWs and their partners. It is essential to ensure that harm reduction services tailored for FSWs in Iran go beyond focusing on sexual health promotion and are equipped with substance use-related harm reduction. Introduction of PrEP and scaling up educational harm reduction programs led by peers as well as integrated one-stop-shop models of care through gender-sensitive centers which provide drugs-, alcohol-, and sexual-related harm reduction services could help address the special needs of these subgroups of FSWs.

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Availability of data and materials

Data is available upon reasonable request from the corresponding author following the fulfillment of Iran's Ministry of Health's data security regulations.

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Table 1:

Characteristics of Iranian female sex workers included in the study (N=1227)

Variables	Sexualized substance use in the last 30 days		
	N	% (95% CI)	P-value[¥]
Total	1227	31.3 (28.7, 34.0)	
Individual factors			
Age (years)			
18– 24	128	39.1 (25.9, 54.0)	0.104
25– 34	483	33.7 (26.2, 42.2)	
≥ 35	611	28.0 (19.7, 38.1)	
Marital status			
Single	90	32.2 (19.5, 48.3)	
Married	415	25.1 (17.9, 33.9)	0.100
Divorced/ widowed	522	35.6 (25.6, 47.0)	
Temporary married	197	32.0 (21.9, 44.1)	
Education level			
Less than high school diploma	903	32.4 (23.9, 42.4)	0.308
High school diploma or higher	324	28.1 (21.0, 36.5)	
Income source other than sex work			
Yes	489	30.5 (19.0, 45.1)	0.821
No	732	32.0 (24.4, 40.6)	
Sexual-related factors			
Early sex work			
Yes	121	47.1 (30.3, 64.6)	0.019
No	1070	29.9 (23.0, 37.9)	
Brothels as the primary solicitation venue			
Yes	175	52.0 (37.6, 66.1)	0.002
No	1052	27.9 (21.7, 34.9)	
Number of clients in the last working day			
1	522	29.5 (19.5, 41.9)	0.166
>1	439	37.1 (28.1, 47.1)	
History of group sex in the last 12 months			
Yes	96	56.3 (44.6, 67.2)	<0.001
No	1131	29.2 (21.8, 37.8)	
Inconsistent condom use during intercourse with client in last 30 days			
Yes	697	38.6 (28.4, 49.9)	0.009
No	341	25.2 (18.5, 33.4)	

Variables	Sexualized substance use in the last 30 days			
	N	% (95% CI)	P-value[¥]	
Substance use-related factors				
Regular[*] alcohol use				
Yes	90	75.6 (63.8, 84.4)	<0.001	
No	1137	27.8 (20.3, 36.7)		
Regular opioid use				
Yes	170	78.8 (57.1, 91.3)		<0.001
No	1057	23.7 (18.2, 30.1)		
Regular stimulant use				
Yes	179	89.4 (74.6, 96.0)	<0.001	
No	1048	21.4 (17.5, 25.8)		
Lifetime drug injection				
Yes	72	45.8 (30.8, 61.7)	0.023	
No	1155	30.4 (22.9, 39.1)		
HIV-related factors				
Sufficient HIV knowledge				
No	819	33.9 (25.6, 43.4)	0.020	
Yes	408	26.0 (18.9, 34.6)		
Self-perceived risk for HIV				
No/low risk	651	24.4 (16.5, 34.5)	0.014	
Moderate/high risk	373	36.5 (28.3, 45.5)		
Self-reported HIV status				
Positive	24	50.0 (32.8, 67.2)	0.084	
Negative	1203	31.0 (23.2, 40.0)		

Notes:

[¥] Measured by Rao-Scott modified chi-square test;

[*] Regular use: using at least once per week.

Table 2:

Factors associated with sexualized substance use among Iranian female sex workers (N=1127)

Variable	Base model		Final model	
	aPR (95% CI)	P-value	aPR (95% CI)	P-value
Model 1: Individual factors				
Age (years)				
18– 24	1.45 (1.00, 2.10)	0.051	1.17 (0.81, 1.68)	0.389
25– 34	1.25 (0.97, 1.61)	0.081	1.08 (0.85, 1.38)	0.486
≥ 35	1		1	
Marital status				
Married	0.85 (0.59, 1.22)	0.360	___	
Divorced/ widowed	1.22 (0.82, 1.81)	0.314	___	
Temporary married	1.07 (0.67, 1.70)	0.774	___	
Single	1		___	
Education level				
Diploma or higher	0.80 (0.59, 1.10)	0.161	___	
Less than diploma	1		___	
Income source other than sex work				
Yes	0.98 (0.63, 1.51)	0.910	___	
No	1		___	
Model 2: Sexual-related factors				
Early sex work				
Yes	1.62 (0.89, 1.58)	0.222	___	
No	1		___	
Using brothels as the primary solicitation venue				
Yes	1.59 (1.17, 2.17)	0.005	0.98 (0.78, 1.23)	0.858
No	1		1	
History of group sex in the last 12 months				
Yes	1.50 (1.04, 2.17)	0.033	1.26 (0.91, 1.76)	0.151
No	1		1	
Number of clients in the last working day				
>1	1.05 (0.79, 1.41)	0.704	___	
1	1		___	
Inconsistent condom use during intercourse with a client in last 30 days				
Yes	1.49 (1.12, 1.97)	0.008	**1.31 (1.01, 1.71)**	**0.046**
No	1		1	
Model 3: Substance use-related factors				

Variable	Base model		Final model	
	aPR (95% CI)	P-value	aPR (95% CI)	P-value
Regular alcohol use				
Yes	2.79 (2.07, 3.75)	<0.001	**2.87 (2.17, 3.80)**	**<0.001**
No	1		1	
Regular opioid use				
Yes	1.84 (1.39, 2.44)	<0.001	**2.09 (1.45, 3.02)**	**<0.001**
No	1		1	
Regular stimulant use				
Yes	2.97 (2.43, 3.63)	<0.001	**2.68 (2.12, 3.39)**	**<0.001**
No	1		1	
Lifetime drug injection				
Yes	1.08 (0.75, 1.54)	0.654	___	
No	1		___	
Model 4: HIV-related factors				
HIV knowledge				
Insufficient	1.22 (0.97, 1.54)	0.086	0.86 (0.69, 1.06)	0.145
Sufficient	1		1	
Self-perceived risk for HIV				
Moderate/ high risk	1.55 (1.16, 2.08)	0.005	1.22 (0.90, 1.64)	0.183
No / low risk	1		1	
Self-reported HIV status				
Negative	0.42 (0.20, 0.88)	0.025	**1.88 (1.14, 3.10)**	**0.016**
Positive	1		1	

Notes: Participants who reported their HIV status as “I do not know” were excluded in the multivariable regression model (N= 100); Factors with p-value<0.15 from the 4 different base models were entered to the final model; Bold fonts indicate statistical significance at α<0.05.