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Multi-level risk factors associated with sex trading among women living with HIV in Kazakhstan: A neglected key population

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Abstract

Little is known about the prevalence and risk factors associated with sex trading among HIV-positive women. A total of 242 HIV-positive women were recruited in five regions in Kazakhstan. These women completed a survey containing items on sociodemographics, HIV stigma, intimate partner violence, and partner risk behaviors. Multivariate regression was used to examine associations between risk factors and sex trading after controlling for sociodemographic factors. Fifty-six (23.1%) women reported trading sex in the past 90 days. Women who reported recent sex trading were more likely than women who did not trade sex in the past 90 days to experience intimate partner violence (adjusted odds ratio [AOR]: 2.25; 95% confidence interval [CI]: 1.08–4.73), to have been homeless in the past 90 days (AOR: 4.12; 95% CI: 1.19–14.29), and to know or suspect a male partner had a sexually transmitted infection (AOR: 2.20; 95% CI: 1.07–4.53), had sex with another partner (AOR: 4.53; 95% CI: 2.25–9.14), or injected drugs in the past year (AOR: 3.31; 95% CI: 1.64–6.65). These findings underscore the need for comprehensive HIV prevention and intervention programs that address the multi-level risk factors associated with sex trading for women infected with HIV.

Keywords

High-risk behavior; HIV; sex workers; women

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Introduction

Kazakhstan has one of the fastest growing HIV epidemics worldwide.¹ It is one of the nine countries where the HIV incidence has increased by 25% or more between 2001 and 2011.^{2,3} Although the epidemic has been driven primarily by injection drug use, sexual transmission accounts for an increasing number of new HIV cases.⁴ Increased sexual transmission of HIV may facilitate the development of a more generalized HIV epidemic in Kazakhstan,^{5,6} thus increasing the number of people who need to be linked to HIV care and making it more challenging for Kazakhstan to achieve the UNAIDS 90-90-90 goals. Nationwide, there are an estimated 19,600 female sex workers in Kazakhstan,⁷ but little is known about the prevalence and risk factors associated with sex trading among HIV-positive women. Additional research is needed among this key population, as sex trading among HIV-positive women could facilitate an increase in HIV transmission to the general population.

This paper is guided by Rhodes' risk environment framework.⁸ This framework was originally developed to illustrate how different spheres of environmental influences (physical, social, economic, and policy) coexist to create drug harms.^{8,9} However, this framework is also relevant when examining sex work. A number of studies have indicated that women who trade sex have many risk factors for HIV acquisition and transmission, including physical, social, economic, and policy risk factors.^{10–13} HIV-positive women who trade sex may be particularly vulnerable to these risk environments and face a number of factors that fuel their engagement in sex trading and increase their risk of HIV transmission.^{14,15} For example, regarding the physical risk environment, research has shown that women who trade sex are more likely than women who have not traded sex to have higher levels of alcohol and substance use and more frequently experience intimate partner violence, which may decrease their ability to engage in safe sex and increase their likelihood of contracting or transmitting HIV.^{16–18} For the economic risk environment, women with HIV often face substantial economic vulnerability and employment discrimination.^{3,19} A lack of financial resources may mean that HIV-positive women are forced to trade sex to obtain basic necessities. For the social risk environment, stigma and discrimination associated with trading sex or being HIV-positive is known to be a barrier to HIV healthcare access.²⁰ Stigma or discrimination from healthcare providers can discourage HIV-positive women from accessing necessary HIV services, including ART treatment. Without obtaining and adhering to ART treatment, HIV-positive women will likely have high viral loads, which increases their likelihood of further transmitting HIV.

The shifting of the HIV epidemic in Kazakhstan from one that is primarily transmitted parenterally through injection drug use to one that is increasingly sexually transmitted may be, in part, driven by survival sex among HIV-positive women. Therefore, it is important to determine the extent to which HIV-positive women are trading sex and to identify risk factors that may drive participation in sex trading among this population. This paper addresses a gap in the literature by examining: (1) the prevalence of recent sex trading among a sample of HIV-positive women in Kazakhstan and (2) the association between physical, social, and economic risk factors and sex trading among HIV-positive women.

Methods

Study setting

We conducted a cross-sectional study of 249 HIV-positive women across five regions of Kazakhstan: Almaty oblast, Pavlodar oblast, Karaganda oblast, South Kazakhstan oblast, and East Kazakhstan oblast. The Kazakhstan Network of Women Living with HIV/AIDS, in partnership with the Columbia University Global Health Research Center of Central Asia, conducted this study between September and December 2013, with funding from the UNAIDS regional office. Institutional review boards at the Kazakhstan School of Public Health and Columbia University approved the study.

Recruitment and eligibility criteria

HIV-positive women were recruited through referrals by HIV-service providers in 10 AIDS Centers and NGOs providing services to people living with HIV (PLWH). Participants who expressed interest in the study were provided with further study information and gave oral informed consent. Women were eligible to participate if they: (1) were identified as female; (2) were 18 years or older; (3) self-reported a positive HIV status; and (4) were a client at one of the recruitment sites.

Data collection

We conducted surveys that contained questions about socio-demographic characteristics, stigma, intimate partner violence, drug and sexual risk behaviors, partner risk behaviors, and access to treatment and care. No participant identifiers were collected at any stage of the recruitment or survey process. Participants were verbally administered surveys and their responses were recorded by research staff on paper. The staff later transferred responses into an online, secure, password-protected database, and paper surveys were stored in a locked cabinet.

Measures

Outcome

Sex trading: Recent sex trading was assessed by asking participants whether they had exchanged sex with any sexual partners in the past 90 days for money, drugs, food, or housing.

Socio-demographic characteristics—Self-reported information was collected about participant socio-demographic characteristics including age, ethnicity, marital status, and education.

Physical risk factors

Substance use: Hazardous alcohol use was measured using the AUDIT-C.²¹ The AUDIT-C comprises three questions, each scored from 0 to 4, for a total summed score of 0–12. A score of 3 or higher indicates hazardous drinking for women. Lifetime drug use was measured by asking participants whether they had ever used drugs and had ever injected drugs.

Intimate partner violence: Intimate partner violence was measured using an abbreviated version of the Revised Conflict Tactics Scale (CTS-2).²² Participants were asked to indicate whether they had ever experienced particular incidents of psychological, physical, and sexual violence by a current or former intimate partner. Items pertaining to severe physical and sexual violence were combined into a single dichotomous variable, based on extant literature on the mechanisms that link intimate partner violence and HIV.²³

Criminal justice history: Criminal justice involvement was assessed using a single item asking whether the participant had ever spent time in jail or prison.

Social risk factors

Perceived partner risk behaviors: Partner risk was assessed using four items pertaining to drug and sexual risk. Specifically, drug risk was assessed by asking participants whether they knew or suspected that a male partner had injected drugs in the past year. Sexual risk was assessed by asking participants whether they knew or suspected that a male partner had had sex with other sexual partners within the past year, whether they knew or suspected that a male partner had an STI in the past year, and whether they knew or suspected that a male partner was HIV-positive.

HIV stigma: HIV-related stigma was assessed using the HIV Stigma Scale.²⁴ We used a mean score for each participant for the total scale, with higher mean scores indicating greater levels of agreement with HIV-related stigma questions.

Economic risk factors

Homelessness: Homelessness was assessed by asking whether participants had a place to sleep every night for the past 90 days.

Food insecurity: Food insecurity was assessed by asking participants if they had enough money to buy food every day in the past 90 days.

Data analysis

We used Pearson's Chi square tests to examine differences in socio-demographic characteristics, and physical, social, and economic risk factors between women who had engaged in sex trading in the past 90 days and those who had not. Fisher's exact tests were used for variables in which one or more expected cell counts in the table was less than 5. For continuous variables, we used t-tests to examine the mean differences between women who did and did not report engaging in recent sex trading. We conducted logistic regression to estimate the unadjusted and adjusted odds ratios and 95% confidence intervals for the association between each risk factor and recent sex trading. The socio-demographic characteristics of age, ethnicity, marital status, and education were controlled for in adjusted analyses. All the analyses were performed in SPSS 22. Of the 249 women in the sample, 242 (97.2%) women reported that they had traded sex in the past 90 days and hence these women were retained for analysis.

Results

Socio-demographic characteristics by participation in sex trading

Of the 242 women in the sample, 56 (23.1%) reported trading sex in the past 90 days. Table 1 presents the overall socio-demographic characteristics of the sample and comparisons between women who reported recent sex trading and those who did not report recent sex trading. Chi square tests revealed no significant differences in socio-demographics by recent sex trading.

Physical risk factors

Substance use—Over one-third of the sample (35.1%) had ever used drugs, just under one-third (29.8%) had ever injected drugs, and roughly one-third (32.6%) met the criteria for hazardous drinking. There were no significant differences in drug and alcohol use between women who had recently traded sex and those who had not.

Severe intimate partner violence—Nearly one quarter (24.2%) of participants reported having experienced at least one incident of severe violence. Women who reported trading sex in the past 90 days were significantly more likely to have ever been a victim of severe physical or sexual intimate partner violence than women who did not trade sex (36.4% vs. 20.9%).

Criminal justice involvement—About one-fifth (20.2%) of women had spent time in jail or prison. There were no significant differences in incarceration history between the two groups.

Social risk factors

Perceived partner risks—Nearly one quarter (22.8%) of participants reported that they suspected or knew at least one of their male partners had an STI in the past year and over one-third (39.2%) reported suspecting or knowing a male partner was HIV-positive. One-third (33.8%) suspected or knew that at least one of their male partners had sex with another partner in the past year and 29.9% reported that they suspected or knew a male partner had injected drugs within the past year. Chi square tests showed that women who had traded sex in the past 90 days were significantly more likely than women who had not traded sex to suspect or know that a male partner had an STI (35.3% vs. 19.0%), had injected drugs (48.0% vs. 24.7%), and had sex with another sexual partner in the past year (58.8% vs. 26.2%). No significant difference was found for partner HIV status.

HIV-related stigma—Women had an average mean score of 2.49 (SD =0.39) on the HIV Stigma Scale, but there were no significant differences in perceived mean stigma scores between the two groups.

Economic risk factors

Housing and food security—Only 5% of women reported being homeless during the past 90 days; however, women who traded sex were significantly more likely to be homeless than women who did not (10.7% vs. 3.2%). Less than one-fifth (16.9%) of women did not

have enough money to buy food every day for the past 90 days, but there were no differences in food insecurity between women who had recently traded sex and those who had not.

Multivariate analysis

After adjusting for age, ethnicity, marital status, and education, multivariate logistic regression analyses (Table 2) revealed that women who had traded sex in the past 90 days were significantly more likely to have ever experienced severe physical or sexual intimate partner violence (AOR: 2.25; 95% CI: 1.08–4.73), to know or suspect a male partner had an STI (AOR: 2.20; 95% CI: 1.07–4.53), to know or suspect a male partner had sex with another sex partner (AOR: 4.53; 95% CI: 2.25–9.14), to know or suspect a male partner had injected drugs in the past year (AOR: 3.31; 95% CI: 1.64–6.65), and to have been homeless in the past 90 days (AOR: 4.12; 95% CI: 1.19–14.29) than women who had not recently traded sex.

Discussion

Little research has been conducted on the factors associated with sex trading among HIV-positive women. Our study extends the existing literature by examining the prevalence of sex trading and multi-level risk factors associated with sex trading among a sample of HIV-positive women in Kazakhstan. We found that sex trading was highly prevalent among this sample. Over one-fifth (23.1%) of women in our study reported trading sex in the past 90 days. These results are higher than the rates of recent sex trading (14.7%) found among HIV-positive women in Russia.²⁵ Since exposing someone to HIV is considered a criminal offence in Kazakhstan, the prevalence of sex trading among this population may have been under-reported and thus, these estimates may be conservative. A high prevalence of sex trading among HIV-positive women in Kazakhstan has important implications for the HIV epidemic in the country. In 2014, it was estimated that about one-third of PLWH were on ART and only 11.2% of those on treatment were virally suppressed.^{26,27} Low levels of viral suppression among PLWH in Kazakhstan and high levels of sex trading among HIV-positive women could serve to further spread the epidemic among the general population.

Our findings indicate that the economic risk factor of being homeless in the past 90 days had a strong association with sex trading. Although homelessness has been associated with sex trading in other studies,^{28,29} this association may be stronger for women who are HIV-positive. HIV-positive women often face high levels of stigma and may lose their employment if their HIV diagnosis is discovered.^{3,19} Likewise, they may not be able to obtain housing if landlords are aware of their HIV status.³⁰ Additionally, HIV-positive women in Kazakhstan are sometimes rejected by their families after their HIV status is known, leaving them with little or no social or economic support.³⁰ All of these factors may contribute to higher rates of homelessness among this population and an increased need to engage in sex trading in order to obtain housing and other basic necessities.

Consistent with other studies, sex trading was found to be significantly associated with the physical risk factor of IPV.^{31–33} Since the data are cross-sectional, we cannot determine the direction of causality between sex trading and intimate partner violence. It may be that women who participate in sex trading are more likely to have partners who perpetrate

intimate partner violence against them. Alternatively, it may be that women who are victims of intimate partner violence have a less stable financial situation and are more likely to engage in sex trading to obtain basic necessities. Regardless of the direction of causality, intimate partner violence is an important factor in HIV prevention. HIV-positive women who experience IPV may be unable to negotiate safe sex practices that would reduce the transmission of HIV. Intimate partner violence is a highly prevalent risk factor in Kazakhstan. Studies have found the lifetime prevalence of IPV among women in Kazakhstan to be as high as one in three.³⁴

Sex trading was also found to be significantly associated with the social risk factor of partner risk behaviors.^{33,35} Previous research has shown how sexual activity between core risk groups, such as women who trade sex, and “bridging” groups, such as their sexual partners, has driven HIV infections in the general heterosexual population.^{36,37} Our results indicate that women who traded sex were more likely to have partners who injected drugs, had an STI, or had multiple sex partners in the past year. If HIV-positive women are not virally suppressed, their partners who engage in high-risk behaviors may serve as a “bridge” population for HIV transmission among the broader population of Kazakhstan.

Our study has several limitations. First, all the women in our sample were HIV-positive women who had received care at the AIDS Center. These women likely differ from HIV-positive women who are not connected to care. However, even though this was a clinic population, the rates of sex trading were still high, and an even greater percentage of women not connected to care may be engaged in sex trading. Second, data were cross-sectional and there was no lifetime measure of sex trading, and hence it was not possible to determine how many of these women had engaged in sex trading before their HIV diagnosis or if their HIV diagnosis resulted in entry into or an increase in sex trading. Third, we did not collect data on current injection drug use, and thus were unable to assess for associations between sex trading and current injection drug use. Finally, sex trading was collected as a grouped variable. We did not separate sex trading into sex for money, drugs, food or housing, which means that we are unable to ascertain whether sex trading is primarily happening among homeless women in exchange for a place to stay or whether sex trading is more generalized.

It should also be noted that we did not limit the study to women who identified as female “sex workers,” but asked women about their engagement in recent sex trading. Although calls have been made to focus on sex workers in order to achieve the UNAIDS 90-90-90 goals, recognition should be given to the fact that not everyone who trades sex identifies as a “sex worker,” and therefore, HIV prevention and intervention programs aimed specifically at “sex workers” may miss a sizable number of women who trade sex. Additional research needs to be conducted to determine how best to reach women who engage in sex trading, but who do not necessarily identify as sex workers.

Conclusion

Multiple physical, social, and economic risk factors were found to be associated with participation in sex trading. In particular, homelessness, intimate partner violence, and partner risk behaviors were associated with engagement in recent sex trading. As the HIV

epidemic in Kazakhstan becomes increasingly sexually transmitted, the development of comprehensive strategies and programs that address the multi-level risk environment faced by HIV-positive women, particularly those engaging in sex trading, will be crucial to reducing the spread of HIV in the country.

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Table 1

Socio-demographics and risk factors for the total sample and by recent sex trading.

	Total^a (n =242)	Did not trade sex in the past 90 days (n =186, 76.9%)	Traded sex in the past 90 days (n =56, 23.1%)
Socio-demographic characteristics			
Age (years)			
30 and below	94 (38.8%)	70 (37.6%)	24 (42.9%)
31 +	148 (61.2%)	116 (62.4%)	32 (57.1%)
Ethnicity			
Kazakh	54 (22.3%)	40 (21.5%)	14 (25.0%)
Russian	136 (56.2%)	110 (59.1%)	26 (46.4%)
Other	52 (21.5%)	36 (19.4%)	16 (28.6%)
Marital Status			
Married	129 (53.3%)	100 (53.8%)	29 (51.8%)
Divorced/separated	71 (29.3%)	55 (29.6%)	16 (28.6%)
Single	42 (17.4%)	31 (16.7%)	11 (19.6%)
Education			
High school or less	100 (41.3%)	78 (41.9%)	22 (39.3%)
More than high school	142 (58.7%)	108 (58.1%)	34 (60.7%)
Physical risk factors			
Substance Use			
Ever used drugs	85 (35.1%)	62 (33.3%)	23 (41.1%)
Ever injected drugs	72 (29.8%)	53 (28.5%)	19 (33.9%)
Hazardous drinking	79 (32.6%) (n =195)	56 (30.1%) (n =152)	23 (41.1%) (n =43)
Intimate partner violence			
Severe physical/sexual IPV ever	50 (24.2%) [*] (n =207)	34 (20.9%) [*] (n =163)	16 (36.4%) [*] (n =44)
Criminal justice history			
Ever spent time in jail/prison	49 (20.2%)	35 (18.8%)	14 (25.0%)
Social risk factors			
Perceived partner risks			
Know or suspect any male partner to have an STI in past year	50 (22.8%) [*] (n =219)	32 (19.0%) [*] (n =168)	18 (35.3%) [*] (n =51)
Know or suspect any male partner to have had sex with another partner in past year	74 (33.8%) ^{**} (n =219)	44 (26.2%) ^{**} (n =168)	30 (58.8%) ^{**} (n =51)
Know or suspect any male partner to be HIV-positive in the past year	87 (39.2%) (n =222)	65 (38.2%) (n =170)	22 (42.3%) (n =52)
Know or suspect any male partner injected drugs in past year	66 (29.9%) ^{**} (n =221)	42 (24.7%) ^{**} (n =171)	24 (48.0%) ^{**} (n =50)
Stigma			
HIV Stigma Scale score (mean, SD)	2.49 (0.39) (n =236)	2.49 (0.36) (n =181)	2.48 (0.47) (n =55)
Economic risk factors			
Homeless in the past 90 days	12 (5.0%) [*]	6 (3.2%) [*]	6 (10.7%) [*]
Food insecurity in the past 90 days	41 (16.9%)	29 (15.6%)	12 (21.4%)

	Total^a (n =242)	Did not trade sex in the past 90 days (n =186, 76.9%)	Traded sex in the past 90 days (n =56, 23.1%)
Income			
Less than \$100	44 (18.2%)	34 (18.3%)	10 (17.9%)
\$100–\$169	26 (10.7%)	20 (10.8%)	6 (10.7%)
\$170–\$349	83 (34.3%)	62 (33.3%)	21 (37.5%)
\$350–\$669	41 (16.9%)	35 (18.8%)	6 (10.7%)
\$670–\$1000	6 (2.5%)	5 (2.7%)	1 (1.8%)
Don't know	42 (17.4%)	30 (16.1%)	12 (21.4%)

^aTotal sample =249; missingness due to non-response on sex trading question.

Data reported based on n =242, unless otherwise noted, where additional missingness occurred due to non-response.

**
p <0.01;

*
p <0.05

Table 2

Bivariate and adjusted odds ratios for recent sex trading and risk factors.

	Unadjusted odds ratio (95% CI)	Adjusted odds ratio ^a (95% CI)
Physical risk factors		
Substance use		
Ever used drugs	1.39 (0.75–2.57)	1.61 (0.83–3.14)
Ever injected drugs	1.29 (0.68–2.44)	1.44 (0.72–2.88)
Hazardous drinking	1.62 (0.87–3.00)	1.78 (0.93–3.40)
Intimate partner violence		
Ever experienced severe physical or sexual violence	2.17 (1.05–4.46) *	2.25 (1.08–4.73) *
Criminal justice history		
Ever spent time in jail/prison	1.44 (0.71–2.92)	1.61 (0.75–3.45)
Social risk factors		
Perceived partner risks		
Know or suspect any male partner has had an STI in past year	2.32 (1.16–4.63) *	2.20 (1.07–4.53) *
Know or suspect any male partner has had sex with another sexual partner in past year	4.03 (2.09–7.75) **	4.53 (2.25–9.14) **
Know or suspect any male partner is HIV-positive	1.19 (0.63–2.23)	1.22 (0.63–2.34)
Know or suspect any male partner has injected drugs in past year	2.84 (1.47–5.46) **	3.31 (1.64–6.65) **
Stigma		
HIV stigma	0.97 (0.45–2.12)	0.82 (0.37–1.84)
Economic risk factors		
Homeless in the past 90 days	3.60 (1.11–11.65) *	4.12 (1.19–14.29) *
Food insecurity in the past 90 days	1.48 (0.70–3.13)	1.47 (0.66–3.28)
Income		
Less than \$100	Ref.	Ref.
\$100–\$169	1.02 (0.32–3.23)	0.88 (0.25–3.07)
\$170–\$349	1.15 (0.49–2.73)	1.13 (0.45–2.83)
\$350–\$669	0.58 (0.19–1.78)	0.52 (0.16–1.68)
\$670–\$1000	0.68 (0.07–6.52)	0.61 (0.06–6.18)
Don't know	1.36 (0.51–3.60)	1.42 (0.50–4.04)

*
 $p < .05$;**
 $p < .01$ ^aAdjusted covariates are age, ethnicity, marital status, and education.