Sexual and Drug-related Vulnerabilities for HIV Infection Among Women Engaged in Survival Sex Work in Vancouver, Canada

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ABSTRACT

Background: Women engaged in survival sex work face multiple sexual and drug-related harms that directly enhance their vulnerability to HIV infection. Although research on injection-drug-using women has explored predictors of sex work and HIV infection, little information currently exists on the complex vulnerabilities to HIV transmission faced by survival sex workers in this setting. This analysis aimed to determine HIV prevalence among women engaged in survival sex work, and explore sexual and drug-related vulnerabilities associated with baseline infection.

Methods: Descriptive and univariate analysis were used to explore associations with baseline HIV infection. Variables found to be associated with baseline infection at the univariate level ($p<0.05$) were entered into a fixed logistic regression model, adjusted for age.

Results: Of a total of 198 women, baseline HIV prevalence was 26%. In multivariate logistic regression, baseline HIV infection was associated with early age of sex work initiation (<18 years) (aOR=1.8, 95% CI: 1.3-2.2), Aboriginal ethnicity (aOR=2.1, 95% CI: 1.4-3.8), daily cocaine injection (aOR=2.2, 95% CI: 1.3-3.5), intensive, daily crack smoking (aOR=2.7, 95% CI: 2.1-3.9), and unprotected sex with an intimate partner (aOR=2.8, 95% CI: 1.9-3.6).

Interpretation: Innovative and evidence-based strategies are urgently needed that address the sexual and drug-related vulnerabilities to HIV infection among survival sex workers and in particular, interventions targeting the precursors to early initiation into sex work.

MeSH terms: Prostitution; HIV infections; harm reduction

La traduction du résumé se trouve à la fin de l'article.

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The term "survival sex work" has been used to describe women who exchange sex for money, drugs, or shelter as a means of daily survival. The social context of survival sex workers' lives presents multiple barriers that place them at heightened risk for HIV transmission, including repeated episodes of violence and sexual assault,[1-4] entrenched poverty, social isolation, mental illness, and substance abuse.[5-8]

The association between survival sex and crack cocaine has been consistently documented,[5-8] and raises significant concern for HIV transmission through dual sexual and drug risk pathways. Studies have also shown increased risk of both parenteral and sexual transmission among women injection drug users (IDU) engaged in sex work.[6,9] In addition, women who exchange sex for money or drugs are significantly more likely to have experienced traumatic experiences during childhood, both physical and sexual abuse,[4,10] and to be victims of violence and sexual assault in adulthood.[1-3] In the United States, a recent longitudinal study found the mortality rate among women actively engaged in sex work to be 17-fold higher than that of the age-matched general population.[11] Suicide, violence, and drug-related deaths were other primary causes of mortality.

In Vancouver, Canada, the disappearance of more than 60 women between 1995 and 2000, the majority of whom were women of First Nations' ancestry engaged in survival sex work, is only one illustration of the ongoing victimization faced by this population.[12,13] In Vancouver, as in the rest of Canada, women of Aboriginal ancestry are over-represented in the HIV epidemic,[14] and constitute the majority of women engaged in visible, street-level sex work.[4,12,15] While the buying or selling of sex is not in itself illegal in Canada, the communication for purposes of transaction, or soliciting to sell or exchange sex in public places is prohibited.[16,17] As a result, and as strolls are moved through displacement and police presence, women are pushed further from social supports, impeding their ability to negotiate their situation.[16,17]

To date, the research on HIV vulnerabilities among survival sex workers in this setting has primarily focused on injection drug use, despite growing evidence of multiple sexual and drug-related harms faced

by women.[18-20] Given earlier evidence suggests that only approximately half of this population inject drugs,[21] the following analysis was undertaken to describe the HIV prevalence of women in survival sex work and to identify sexual and drug-related harms associated with baseline infection.

METHODS

The Maka Project is a community-based research project that was created to explore the HIV-related harms and impact of current HIV prevention and harm reduction strategies among survival sex workers. The first phase of the Maka Project included a baseline questionnaire, HIV diagnostic testing, and pre-/post-test counselling in late 2004. Participants were recruited through targeted sampling at a drop-in centre for women in survival sex work. Participants received $20 remuneration for their participation. The University of British Columbia/Providence Health Research Ethics Board provided approval for this study.

Variables considered in this analysis include age, ethnicity, health status, sexual and drug risk patterns. Drug use behaviours included: frequency of cocaine, heroin, and crystal methamphetamine injection, and crack cocaine smoking. Given the high levels of crack cocaine use, intensity of drug use was defined as smoking greater than ten rocks per day. A recent "bad date" was defined as having been verbally harassed, physically and/or sexually assaulted by a client in the last six months.

Descriptive and univariate analyses were used to determine associations between HIV infection and explanatory variables. Categorical and explanatory variables were analyzed using Pearson X^2, normally distributed continuous variables were analyzed using t-tests for independent variables, and skewed continuous variables were analyzed using Mann-Whitney U tests. Variables found to be associated with HIV infection at the univariate level ($p<0.05$) were entered into a fixed logistic regression model. The model was adjusted for age and all reported p-values are two-sided.

RESULTS

A total of 198 women engaged in survival sex work completed a baseline questionnaire and HIV testing. Descriptive and univariate analyses of characteristics associated with baseline HIV infection are summarized in Tables I and II. The median age was 39 years (interquartile range [IQR] = 34-44) and the median age of sex work initiation was 19 years (IQR=15-26 years). In total, 111 (57%) self-identified as Aboriginal, of which 47% were of First Nations ancestry, 9% Metis, and 1% Inuit. Based on diagnostic testing, 52 (26%) women tested positive for HIV. Women of Aboriginal ancestry had an HIV prevalence of 32% compared to 18% for non-Aboriginal women ($p<0.001$). Of the total, a quarter of women (25%) had experienced harassment, physical and/or sexual assault violations by a client in the last six months, with one fifth reporting sexual assault by a non-sex trade partner in the same time period.

TABLE I

Univariate Associations Between Socio-demographic Characteristics, Health Status, Drug Use Patterns, and HIV Infection Among Female Survival Sex Workers

Characteristic	HIV Infection Positive (n=52) n (%)	HIV Infection Negative (n=146) n (%)	OR (95% CI)	p-value
Age				
Median [IQ range]	39 [32-44]	39 [35-44]		0.277
Age of sex work initiation				
Median [IQ range]	16 [13-20]	20 [15-27]		0.004
<14 years	13 (27)	29 (20)	1.33 (0.78-2.27)	0.313
<16 years	18 (38)	52 (36)	1.10 (0.56-2.19)	0.763
<18 years	30 (58)	63 (43)	2.29 (1.16-4.53)	<0.001
Aboriginal ethnicity	36 (32)	75 (68)	2.34 (1.20-4.55)	<0.001
Non-Aboriginal	16 (18)	71 (82)		
Unstable housing	42 (81)	121 (83)	0.82 (0.60-0.90)	0.488
Homeless/No fixed address	11 (21)	33 (23)	0.92 (0.43-2.18)	0.829
High school education	22 (42)	57 (39)	1.74 (0.90-3.36)	0.097
Recent incarceration	9 (17)	26 (18)	0.97 (0.42-2.23)	0.935
HCV infection	39 (75)	94 (64)	1.57 (1.16-2.29)	0.010
Other recent STI infections (gonorrhoea, syphilis, chlamydia)	5 (10)	15 (10)	1.05 (0.50-2.27)	0.892
Injection drug use	34 (65)	76 (52)	1.74 (0.90-3.36)	0.097
Daily cocaine injection	19 (39)	30 (21)	2.32 (1.64-2.89)	0.006
Daily heroin injection	14 (27)	40 (27)	1.04 (0.86-1.25)	0.686
Intensive, daily crack cocaine smoking (>10 rocks/day)	25 (48)	35 (24)	2.85 (2.19-3.25)	<0.001
Methadone maintenance therapy	23 (44)	37 (25)	1.82 (1.16-2.88)	0.011
Injection binge use	15 (29)	40 (27)	1.07 (0.53-2.20)	0.841
Need help injecting	8 (15)	37 (25)	0.54 (0.23-1.24)	0.141

TABLE II

Univariate Associations Between Sexual and Drug-related Vulnerabilities and HIV Infection Among Female Survival Sex Workers

Characteristic	HIV Infection Positive (n=52) n (%)	HIV Infection Negative (n=146) n (%)	OR (95% CI)	p-value
Unprotected sex with intimate partners*	26 (50)	49 (32)	3.02 (1.87-4.15)	<0.001
Regular partner injects	11 (21)	38 (26)	0.82 (0.46-1.46)	0.482
Regular partner HIV positive	11 (21)	10 (7)	2.26 (1.39-3.68)	0.004
Inconsistent condom use by clients/johns*	23 (42)	42 (29)	2.35 (1.86-3.39)	0.002
Offered more money to not use a condom*	27 (52)	95 (65)	0.72 (0.61-0.88)	0.094
Agreed to more money to not use a condom*	5 (10)	18 (12)	0.81(0.36-1.83)	0.600
Use drugs with clients/johns*	30 (58)	87 (60)	0.89 (0.47-1.71)	0.076
Use injection drugs with clients*	10 (19)	16 (10)	1.25 (0.91-1.71)	0.097
Bad date (harassment/physical/sexual assault)*	15 (29)	35 (24)	1.92 (1.33-4.18)	0.012
Sexual assault by non-sex trade partner*	9 (17)	28 (19)	0.99 (0.81-1.21)	0.888

* Refers to the last 6 months at the time of interview

TABLE III

Logistic Regression Model of Factors Independently Associated with HIV Infection Among Female Survival Sex Workers

Characteristic	AOR	95% CI	p-value
Unprotected sex with intimate partners	2.8	1.9-3.6	0.001
Intensive, daily crack cocaine smoking	2.7	2.1-3.9	0.003
Daily cocaine injection	2.5	1.7-3.1	0.025
Aboriginal ethnicity	2.1	1.4-3.8	0.004
Age of sex work initiation <18 years	1.8	1.3-2.2	0.007

Among mobility patterns, 30% reported working in strolls outside of the Downtown Eastside (DTES) community, while 72% reported having some or all clients from other parts of Vancouver. The majority (82%) lived in unstable living situations, of which 22% had no fixed address or were living on the street.

In multivariate logistic regression analysis (Table III), the adjusted odds ratios for factors independently associated with baseline HIV infection included early age of sex work initiation (<18 years) (aOR=1.8, 95% CI: 1.3-2.2), Aboriginal ethnicity (aOR=2.1, 95% CI: 1.4-3.8), daily cocaine injection (aOR=2.2, 95% CI: 1.3-3.5), intensive, daily crack smoking (aOR=2.7, 95% CI: 2.1-3.9), and unprotected sex with an intimate partner (aOR=2.8, 95% CI: 1.9-3.6).

DISCUSSION

This study documents an HIV prevalence of 26%. Women who were HIV positive at baseline were more likely to report initiation into sex work during youth and/or adolescence, to self-identify as Aboriginal, to report daily cocaine injection, intensive/daily crack cocaine smoking, and unprotected sex with an intimate partner. Although the cross-sectional nature of this study precludes inference of causality, the findings offer important evidence of the vulnerabilities associated with HIV infection that require immediate address in public health and prevention efforts tailored to women in survival sex work.

Of particular concern, initiation into sex work during youth and/or adolescence (less than 18 years of age) was associated with a two-fold increase in baseline HIV infection. The younger age of sex work initiation is striking with a quarter of women less than 14 years of age and over half less than 18 years of age at their first sex work experience. While this study did not explicitly explore predictors for initiation into sex work, numerous investigators have examined the antecedents to sex work initiation, including key lifetime events of childhood violence, sexual abuse, homelessness, engagement in street economy, and drug addiction.[22-26] The findings support a need for enhanced policy and program initiatives targeting factors that contribute to early initiation into sex work and subsequent higher rates of HIV infection. In addition, given the illegalities of youth engaging in sex work, current organizations that offer support services and exit strategies for survival sex workers are exclusively targeted at adult sex work, leaving the most vulnerable population – youth – largely outside of HIV prevention and harm reduction services. More immediate support for health, counseling and outreach services for early sex work initiates needs to be expanded and programs integrated within existing youth services.

While Aboriginal people who inject drugs have been shown to have higher rates of HIV seroconversion than their non-Aboriginal counterparts, particularly women[20] and youth,[27] this study shows Aboriginal women engaged in sex work to be twice as likely to be HIV positive at baseline, independent of their injection status. Currently people of Aboriginal ancestry represent approximately 3% of the total population of Canada,[28] and 23% of new HIV positive cases between 1998 and 2003.[14] Of the female Aboriginal reports with exposure category information, 66.9% were attributed to IDU and 31.5% to heterosexual transmission.[14] In this study, Aboriginal women account for 57% of the study population and the majority of HIV baseline infections among survival sex workers. The particularly complex vulnerabilities facing women of Aboriginal ancestry, stemming from the multigenerational effects of discrimination, social dislocation, entrenched poverty and the residential school system,[4,12,29,30] demand more immediate action at both local and national levels. Among Indigenous women in Canada and elsewhere, growing evidence highlights the need for public health strategies that facilitate community ownership and indigenous healing to help mitigate the matrix of lifetime trauma, substance abuse, and HIV vulnerability.[30-32]

While the role of cocaine injection in driving the HIV epidemic among IDUs has been previously described,[33] it should be noted that only 56% of women in our study were injection drug users compared with 90% active crack cocaine smokers. Further, daily use of both injection and oral cocaine use were among the strongest associations with HIV infection in this study with nearly a threefold higher HIV prevalence. The synergistic correlation between survival sex and smokeable crack cocaine suggests a particularly alarming concern,[6-8] given the high reported rates of intensive, daily crack smoking and drug sharing with clients. Addiction to crack cocaine has been suggested to progress more rapidly than addiction to other opiates or alternate forms of cocaine,[7] and has been previously associated with heightened violence, crime, and exploitation of women through exchanging of sex to sustain their drug habit.[7] Survival sex workers who smoke crack are placed in vulnerable situations and lack control in working conditions,[5] and have been shown to have decreased ability to insist on condom use.[34]

The finding that unprotected sex with regular partners is associated with a threefold increase in HIV infection is consistent with previous work that suggests sexual transmission among survival sex workers is more reflective of unprotected sexual encounters with intimate partners rather than clients.[18,35,36] However the notably high level of inconsistent condom use by clients/johns (32%) may be cause for caution when interpreting these findings. In particular, given sex work in this population serves as a means of daily survival and sustaining one's drug habit, the prevalence of clients offering more money for unprotected sex (61%) suggests an important need for public health efforts that enhance access to low-threshold employment and transitioning strategies out of "survival" sex work, as well as addictions treatments and harm reduction strategies among women. Finally, the high rates of harassment, physical and/or sexual assault violations by both clients and non-sex trade partners, coupled with previous evidence of violence in decreasing women's ability to insist on condom use,[2] highlight the urgent need for violence prevention for both working and intimate relationships as part of HIV prevention strategies for this population. As well, interventions targeting potential sexual transmission and safe sex negotiation need to be incorporated within the context of gender-focused harm reduction initiatives.

Several limitations of this analysis should be considered. First, the results are derived from a cross-sectional survey and thus the direction or causality of associations cannot be determined. Further follow-up will allow for prospective analysis of the causal

relationship between explanatory variables and HIV infection, and determine temporality. Second, all behavioural variables are self-reported and thus may be subject to social desirability bias. Previous studies have provided validation of self-reported information among drug user populations.[37] Third, although interviews were conducted offsite, all women were initially contacted through a low-threshold drop-in centre and thus this study may have failed to access the most marginalized women. However, given the hard-to-reach nature, illegal constructs of sex work, and ongoing challenges of trust and confidentiality among this hidden population, contact through a low-threshold community group is likely to have removed some of the barriers and facilitated connection with many high-risk women. Further participatory research and mapping will help to ensure that an increasing number of sex workers are reached. Finally, interviews were restricted to women in survival sex work, and thus results may not be generalizable to other levels of commercial sex work.

Innovative and evidence-based strategies are urgently needed that address the sexual and drug-related vulnerabilities to HIV infection among survival sex workers. In particular, given that initiation into sex work during adolescence was associated with close to a two-fold increase in likelihood of baseline HIV infection, interventions are desperately needed to target the multiple precursors to early initiation into sex work.

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RÉSUMÉ

Contexte : Les femmes qui dépendent du commerce du sexe pour leur survie sont exposées à de nombreuses pratiques risquées, liées au sexe et à la drogue, qui augmentent directement leur vulnérabilité aux infections à VIH. Des études sur les utilisateurs de drogue injectable se sont penchées sur les variables prédictives du travail du sexe et de l'infection à VIH, mais on en sait encore très peu sur les risques complexes de transmission du VIH auxquels s'exposent les femmes qui dépendent du commerce du sexe pour leur survie. Dans le présent article, nous cherchons à déterminer la prévalence du VIH chez ces femmes et nous analysons les pratiques risquées, liées au sexe et à la drogue, associées à la primo-infection.

Méthode : L'association de diverses variables à la primo-infection à VIH a été étudiée au moyen d'analyses descriptives et univariées. Les variables jugées significatives selon les analyses univariées ($p<0,05$) ont été entrées dans un modèle de régression logistique fixe ajusté selon l'âge.

Résultats : Sur 198 femmes, 26 % étaient séropositives pour le VIH au départ. Selon l'analyse de régression logistique multivariée, la primo-infection à VIH était associée à l'initiation précoce (avant 18 ans) au travail du sexe (RCa=1,8; IC de 95 % = 1,3-2,2), à l'appartenance ethnique autochtone (RCa=2,1; IC de 95 % = 1,4-3,8), à l'injection quotidienne de cocaïne (RCa=2,2; IC de 95 % = 1,3-3,5), à l'habitude quotidienne et intensive de fumer du crack (RCa=2,7; IC de 95 % = 2,1-3,9) et aux relations sexuelles non protégées avec un partenaire intime (RCa=2,8; IC de 95 % = 1,9-3,6).

Interprétation : Il existe un urgent besoin d'instaurer des stratégies novatrices fondées sur les preuves pour combattre les pratiques risquées, liées au sexe et à la drogue, qui augmentent la vulnérabilité aux infections à VIH chez les femmes qui dépendent du commerce du sexe pour leur survie – et en particulier, des mesures d'intervention qui ciblent les précurseurs de l'initiation précoce au travail du sexe.

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