

Sex trade involvement and rates of human immunodeficiency virus positivity among young gay and bisexual men

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Background	Susceptibility to human immunodeficiency virus (HIV) infection is of particular concern for marginalized populations. The objective of this study was to determine risk factors associated with sex trade work among young gay and bisexual men. Further, we aimed to compare HIV prevalence and incidence among men involved and not involved in sex trade work.
Methods	The study is based upon data obtained from a prospective cohort study of young gay and bisexual men. Participants had completed a baseline questionnaire which elicited information on demographic information, sexual behaviours, and substance use. Sex trade involvement was defined as the exchange of money, drugs, goods, clothing, shelter or protection for sex within the one year prior to enrolment. Contingency table and multivariate logistic regression analyses were used to identify risk factors associated with involvement in the sex trade.
Results	Of the 761 eligible participants, 126 (16%) reported involvement in sex trade work. Multivariate logistic regression analysis revealed regular alcohol use (Odds Ratio [OR] = 3.6, 95% CI : 1.8–7.2), aboriginal ethnicity (OR = 3.7, 95% CI : 1.6–8.7), unemployment (OR = 3.9, 95% CI : 2.1–7.3), history of residence in a psychiatric ward (OR = 4.2, 95% CI : 1.8–9.8), bisexual activity (OR = 7.0, 95% CI : 3.5–14.1) and the use of crack (OR = 7.4, 95% CI : 3.0–18.7) to be independently associated with sex trade work. Sex trade workers had a significantly higher HIV prevalence at baseline compared with non-sex trade workers (7.3% versus 1.1%, $P < 0.001$). As well, HIV incidence was found to be significantly higher for sex trade workers compared with non-sex trade workers (4.7% versus 0.9%, $P = 0.011$).
Conclusion	Our study reveals that for male sex trade workers in this setting increased vulnerability to HIV infection is related to unfavourable living conditions, substance use and sexual risk behaviour.
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In Canada, gay and bisexual men have been seriously affected by the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic. In 1985, 83% of all reported AIDS cases among adult males occurred in this population. By 1995, the percentage of reported cases in this category had decreased to 74%.¹ Despite a reduction in the

overall proportion of men infected with HIV, gay and bisexual men continue to be greatly affected by the HIV/AIDS epidemic. In the US, gay and bisexual men accounted for 50% of AIDS cases and 43% of non-AIDS cases in 1996.²

Sexual transmission among gay and bisexual men continues to be a major source of new HIV infections in Canada. As is true for other populations, subgroups of men who have sex with men may be at increased risk for HIV infection. Also, they may be less likely to be reached by prevention messages aimed at the broader gay and bisexual community.³ These vulnerable subgroups include men who inject drugs, trade sex for money or drugs and those men who do not self-identify as gay or bisexual.

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It is important to identify whether men who engage in the sex trade are a demographically and behaviourally distinct subgroup of gay and bisexual men in order to develop better and more focused intervention programmes. This analysis aimed to determine risk factors associated with involvement in sex work among young gay and bisexual men in order to have a better profile of their lives. Further, as men involved in sex work have been identified as being at increased risk of HIV infection, we compared HIV prevalence and incidence for men involved and not involved in prostitution.

Methods

The Vanguard Project is an ongoing prospective study of over 900 gay and bisexual men in the Greater Vancouver region. Men were eligible to participate if they were aged 18–30 years, lived in the Greater Vancouver region, had not previously tested HIV-positive, and self-identified as gay or bisexual or reported having sex with other men. Potential participants were recruited through community outreach at gay community events, community health clinics or local physicians, and through the gay and mainstream media.

Study instrument

Since May 1995, participants completed a detailed self-administered questionnaire and provided a blood sample for HIV antibody testing at baseline and annually thereafter. Completed baseline questionnaires provide demographic data as well as information regarding sexual behaviours. Included are aspects of insertive and receptive anal and oral sex with regular partners (men with whom you have sex at least once per month), casual partners (men with whom you have sex less than once per month) and paid partners (sex exchanged for money, drugs, goods, clothing, shelter or protection). Participants are also asked whether they have ever been forced to have sex (any type of sexual activity that you were forced or coerced into against your will), and the age range when this first occurred. Participants completed a seven-item abbreviated version of the Centres for Epidemiologic Studies of Depression (CES-D) scale. Participants were classified as being clinically depressed if their score on the abbreviated CES-D scale was greater than the median value for the cohort. Additionally, participants answered questions about their use of legal and illegal recreational drugs including alcohol, tobacco, nitrite inhalants (poppers), marijuana, cocaine and heroin. Baseline questionnaires were used to assess these characteristics.

Statistical analysis

The analysis presented here is limited to those individuals who had completed a baseline questionnaire and HIV test between May 1995 and January 1999. As noted above, sex trade involvement was defined as the exchange of money, drugs, goods, clothing, shelter or protection for sex. It is important to note that for the purposes of this analysis any man who reported sex trade involvement in the year prior to baseline were included. In order to assess risk factors associated with involvement in the sex trade, we conducted cross-sectional comparative analyses.

Variables of interest in these comparative analyses included: socio-demographic characteristics such as age, ethnicity, income, housing status and education; sexual behaviour

variables including the frequency of receptive and insertive anal intercourse with regular and casual partners; and the frequency of condom use during receptive and insertive anal intercourse. The use of alcohol and other drugs was also assessed. For the purpose of this analysis unstable housing was defined as living in a hotel, boarding house, group home, in the street or having no fixed address.

The HIV prevalence and incidence calculations were also compared for the two groups. The HIV incidence was calculated as the number of new infections divided by the total person-time under observation. Person-time was calculated as the interval between enrolment and the most recent follow-up visit for subjects who did not seroconvert through January 1999. For subjects who became HIV positive, person-time was calculated as the interval between enrolment and the first visit at which an HIV positive test result was detected. The 95% CI for the incidence estimates were calculated based on the Poisson distribution.

Categorical variables were compared between groups using Pearson's χ^2 test. Contingency tables that contained one or more expected counts of less than five were analysed by the Fisher's exact test. Comparisons of continuous variables were carried out using Wilcoxon's rank-sum test. All variables that were found to be significant at $P \leq 0.05$ in the univariate analyses were entered into a stepwise multivariate logistic regression model that was used to identify independent risk factors associated with involvement in the sex trade. Participants with missing data for variables entered into the multivariate model were excluded from the analysis. All reported P -values are two-sided.

Results

Of the 761 eligible participants, 126 (16%) reported that they were involved in sex work. Comparison of sex trade workers versus non-sex trade workers revealed significant differences with respect to socio-demographic characteristics (Table 1). Sex trade workers were younger (median: 23 years versus 26 years, $P < 0.001$), more likely to be Aboriginal (29% versus 6%, $P = 0.001$), and to have less than a high school education (40% versus 12%, $P < 0.001$). Sex trade workers were more likely to report living in unstable housing (45% versus 4%, $P < 0.001$), to have an annual income of less than \$10 000 (58% versus 26%, $P < 0.001$), and to have ever been in a psychiatric ward (32% versus 6%, $P < 0.001$). Further, sex trade workers were found to have a high depression score (82% versus 50%, $P < 0.001$) and to have ever been in jail (54% versus 6%, $P < 0.001$) compared with non-sex trade workers.

Table 2 outlines differences in reported sexual behaviours of sex trade workers and non-sex trade workers. Sex trade workers reported a younger median age at first consensual sex with both men (15 years versus 18 years, $P < 0.001$) and women (14 years versus 17 years, $P < 0.001$). Sex trade workers were found to be significantly more likely to report bisexual activity (48% versus 8%, $P < 0.001$), and to having ever experienced non-consensual sex (49% versus 32%, $P < 0.001$) compared with those men not involved in the sex trade.

With respect to sexual encounters with regular and casual partners, a lower proportion of sex trade workers reported unprotected insertive (50% versus 75%, $P < 0.001$) and receptive (53% versus 75%, $P < 0.001$) oral sex with regular partners. There were no statistical differences in the proportion of people

Table 1 Reported socio-demographic characteristics of male sex trade workers and non-sex trade workers

	Sex trade workers (n = 125)	Non sex trade workers (n = 636)	P-value
Age			
Median	23 years	26 years	<0.001
Interquartile range	21–26 years	23–28 years	
Ethnicity			
Caucasian	72 (58%)	468 (74%)	0.001
Aboriginal	36 (29%)	36 (6%)	
Other	17 (13%)	132 (20%)	
Less than high school education			
Yes	48 (40%)	72 (12%)	<0.001
No	71 (60%)	554 (89%)	
Unstable housing			
Yes	56 (45%)	25 (4%)	<0.001
No	69 (55%)	610 (96%)	
Income <\$10 000/year			
Yes	55 (58%)	154 (26%)	<0.001
No	40 (42%)	437 (74%)	
Ever in psychiatric ward			
Yes	30 (32%)	32 (6%)	<0.001
No	65 (68%)	546 (94%)	
High depression score (CES-D >12)			
Yes	97 (82%)	315 (50%)	<0.001
No	22 (19%)	320 (50%)	
Ever in jail			
Yes	58 (54%)	37 (6%)	<0.001
No	49 (46%)	546 (94%)	

NB: Column totals may not equal total number of subjects due to missing values.

Table 2 Reported sexual experiences of male sex workers and non-sex trade workers

	Sex trade workers (n = 125)	Non sex trade workers (n = 636)	P-value
Age at first sexual experience with:			
MEN	n = 119	n = 617	
Median	15 years	18 years	<0.001
Interquartile range	13–18	15–20	
WOMEN	n = 94	n = 340	
Median	14 years	17 years	<0.001
Interquartile range	12–17	15–19	
Bisexual activity in previous year			
Yes	60 (48%)	49 (8%)	<0.001
No	64 (52%)	578 (92%)	
Non-consensual sex (ever)			
Yes	61 (49%)	197 (32%)	<0.001
No	63 (51%)	424 (68%)	

NB: Column totals may not equal total number of subjects due to missing values.

reporting unprotected anal intercourse with regular partners or unprotected oral sex with casual partners. However, higher levels of unprotected insertive (28% versus 15%, $P = 0.002$) and receptive (20% versus 13%, $P = 0.042$) anal sex were reported with casual partners for sex trade workers compared with non-sex trade workers (Table 3).

Substance use was also found to be higher among the sex trade workers compared with non-sex trade workers (Table 4). Compared with non-sex trade workers, sex trade workers were more likely to consume more than 10 drinks per week (39% versus 13%). As well, a higher proportion of sex trade workers reported the use of poppers (43% versus 28%), cocaine

Table 3 Reported unprotected sexual behaviour with regular and casual partners in the year prior to baseline for male sex trade workers and non-sex trade workers

	Sex trade workers	Non sex trade workers	P-value
Regular partners	n = 74	n = 483	
Oral insertive	59 (50%)	458 (75%)	<0.001
Oral receptive	64 (53%)	459 (75%)	<0.001
Anal insertive	27 (23%)	186 (31%)	0.098
Anal receptive	33 (28%)	190 (31%)	0.493
Casual partners	n = 111	n = 491	
Oral insertive	74 (71%)	429 (72%)	0.843
Oral receptive	79 (75%)	445 (76%)	0.777
Anal insertive	28 (28%)	90 (16%)	0.002
Anal receptive	20 (20%)	73 (13%)	0.042

NB: Column totals may not equal total number of subjects due to missing values.

Table 4 Comparison of substance use in the year prior to baseline for male sex trade workers and non-sex trade workers

	Sex trade workers (n = 125)	Non sex trade workers (n = 636)	P-value
Greater than 10 drinks/week			
Yes	40 (39%)	77 (13%)	<0.001
No	63 (61%)	523 (87%)	
Poppers			
Yes	52 (43%)	171 (28%)	<0.001
No	70 (57%)	448 (72%)	
Cocaine			
Yes	78 (63%)	156 (25%)	<0.001
No	45 (37%)	467 (75%)	
Crack			
Yes	46 (38%)	23 (4%)	<0.001
No	75 (62%)	595 (96%)	
Heroin			
Yes	37 (30%)	20 (3%)	<0.001
No	87 (70%)	600 (97%)	
Injected drugs			
Yes	40 (32%)	23 (4%)	<0.001
No	84 (68%)	607 (96%)	

NB: Column totals may not equal total number of subjects due to missing values.

(63% versus 25%), crack (38% versus 4%), and heroin (30% versus 3%) compared with non-sex trade workers (all $P < 0.001$). Sex trade workers were also more likely to report having injected drugs in the year prior to baseline compared to non-sex trade workers (32% versus 4%, $P < 0.001$).

The results of the logistic regression analysis of independent factors associated with involvement in the sex trade are summarized in Table 5. The regular use of alcohol characterized by having more than 10 drinks per week was associated with a 3.6-fold increase in the likelihood of being involved in sex trade work. Further independent risk factors for involvement in sex trade work were aboriginal ethnicity (Odds Ratio [OR] = 3.7), being unemployed (OR = 3.9), having ever been in a psychiatric ward (OR = 4.2), engaging in sexual relations with both men and women (OR = 7.0) and using crack (OR = 7.4).

Sex trade workers had a significantly higher HIV prevalence at baseline compared with non-sex trade workers (7.3% versus

1.1%, $P < 0.001$). As well, the HIV incidence rate was found to be significantly higher for sex trade workers 4.7/100 person years (pyrs) (95% CI: 0.1–9.4/100 pyrs) compared with non-sex trade workers 0.9/100 person years (95% CI: 0.3–1.5/100 pyrs) ($P = 0.011$).

Discussion

Comparison of male sex trade workers and other young gay and bisexual men revealed many important differences with respect to risk factors associated with sex work. Sex trade workers were more likely to be marginalized as characterized by their younger age, low levels of education, unstable housing and low annual incomes. Aboriginal status was found to be independently associated with sex work. Although the proportion of aboriginal men in our study who were involved in prostitution (20%) was much lower than that recently reported for youth in Canada,⁴

Table 5 Multivariate logistic regression model: Risk factors associated with involvement in the sex trade (n = 521)

	Unadjusted odds ratio	95% CI	Adjusted odds ratio	95% CI
Use of alcohol (>10 versus ≤10 drinks/week)	4.3	2.7–6.9	3.6	1.8–7.2
Aboriginal ethnicity (Aboriginal versus Other)	6.7	4.0–11.3	3.7	1.6–8.7
Unemployed (Yes versus No)	7.8	5.1–12.0	3.9	2.1–7.3
Psychiatric ward (Ever versus Never)	7.9	4.5–13.8	4.2	1.8–9.8
Bisexual activity (Yes versus No)	11.1	7.0–17.5	7.0	3.5–14.1
Use of crack (Yes versus No)	15.9	9.1–27.6	7.4	3.0–18.7

Aboriginal men are over-represented in the sex trade worker population. To date there is little research of male sex trade workers from different ethnic backgrounds. However, Aboriginal men have been found to make up a significant proportion of men involved in prostitution, street youth and injection drug users.^{5,6} Further evidence of the marginalized status of these men include the higher proportion of sex trade workers reporting having ever been in a psychiatric ward, having a high depression score and having ever been incarcerated. Unemployment and a history of residence in a psychiatric ward were found to be independently associated with sex work. These differences are consistent with other studies that have shown sex trade workers to be living in impoverished conditions confounded by mental illness and substance use.^{7–9}

Sex trade workers may be at increased risk of infection with HIV due in part to their sexual and drug using behaviours. Men involved in sex work were on average younger at first consensual sex with both males and females compared with non-sex trade workers. This finding corroborates earlier work by Earls and David¹⁰ that indicated that male prostitutes were significantly younger than the comparison group in terms of the age at first sexual interaction. Younger age at first coitus has been linked to risky sexual behaviour including multiple sexual partners.¹¹ Sex trade workers in our study were found to have lower rates of unprotected oral sex with regular male partners and higher rates of unprotected anal sex with casual male partners. The latter finding may contribute to the significantly higher HIV prevalence and incidence rates found for sex trade workers compared with non-sex trade workers. Reporting of a history of non-consensual sex was higher for sex trade workers compared with the rest of the cohort. These data are consistent with other studies showing a relationship between non-consensual sex and involvement in the sex trade.^{10,12–14} Bisexual activity was found to be independently associated with sex trade involvement. Previous research has suggested that men may self-identify as heterosexual and report female sex partners but engage in sexual activity with other men for profit.^{15–17} A number of studies have suggested that male sex trade workers are a potential link between homosexual and heterosexual transmission of HIV.^{18,19} The danger of HIV infection spreading through homosexual prostitution is very real, but the actual risk depends to a great extent on which sexual practices and precautionary measures are followed.⁸

Prostitution is an economic necessity for many drug users, both male and female.²⁰ Our results indicate that a significantly higher proportion of sex trade workers used both non-injection and injection drugs compared with the rest of the cohort. The proportion of sex trade workers reporting the use of poppers, cocaine, crack and heroin was significantly higher than other gay and bisexual men in this study. People who use injection drugs are at particular risk for HIV infection because they may be exposed to the virus through both unprotected sex and the sharing of injection equipment.^{21,22} de Graff *et al.*⁸ reported that heavily addicted drug users were less discriminating in their choice of clients, and lowered their barriers more easily when it came to performing sexual acts without using condoms. Substance use characterized by the consumption of more than 10 drinks per week and the use of crack was found to be independently associated with sex work. The relationship between substance use and sex work is complex. Studies have shown that in some cases substance use precedes entry into prostitution while in others, sex work is used as a means to earn money to buy drugs.^{10,23} Regardless of the temporal relationship, it is important to recognise the relationship and acknowledge the importance of drug treatment for these men. The use of crack is of further concern because it has been linked with such sexual behaviours as inconsistent condom use and multiple partners that may increase an individual's risk of infection with HIV.^{24–27}

The prevalence of HIV for male sex trade workers was significantly higher than for other gay and bisexual men in this study. However, the prevalence is fourfold lower than the rates reported for male prostitutes in Atlanta, USA.²⁸ The independent risk factors for sex trade involvement highlighted in this study may contribute to increased risk of HIV infection. Minority status and marginalization have been linked with increased HIV prevalence.^{6,7,29} Involvement in bisexual activity may increase the risk of HIV infection due to the relationship between bisexual activity and involvement in sex work.¹⁵ Substance use has been linked with risk of HIV infection because the consumption of alcohol and drugs may interfere with judgement and decision-making thereby potentially increasing unsafe sexual behaviour.³⁰

As is the case with many population-based studies, this is a sample of convenience. Prostitution is a highly heterogeneous activity, with sex being sold in saunas, bars, clubs, public toilets, through escort agencies and contact advertisements, as well as on

the street.³¹ The sex trade workers involved in our study self-identified and were not asked the location from which they sell sex, and so it is difficult to say whether we have adequately represented the male sex worker population in Vancouver. As well, the definition of sex work used in this study is very broad and this must be taken into account when interpreting the results. The issue of temporality must be taken into consideration in the interpretation of the multivariate analysis. It is important to note that we have not examined causation in the analysis. Therefore it is not possible for us to determine whether the associated factors have a predictive or causative effect.

In summary, risk factors for involvement in the sex trade were belonging to a minority, marginalization characterized by unemployment and mental illness. Further, this study demonstrates that men involved in the sex trade are engaging in high-risk behaviours and their relatively high prevalence of HIV puts these men and their sexual partners at an increased risk of transmission of HIV. This study highlights the need for personalized prevention messages in conjunction with intensified realistic and acceptable HIV prevention and intervention efforts.

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