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Socio-economic marginalization in the structural production of vulnerability to violence among people who use illicit drugs

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Abstract

Objective—Many people who use illicit drugs (PWUD) face challenges to their financial stability. Resulting activities that PWUD undertake to generate income may increase their vulnerability to violence. We therefore examined the relationship between income generation and exposure to violence across a wide range of income generating activities among HIV-positive and HIV-negative PWUD living in Vancouver, Canada.

Methods—Data were derived from cohorts of HIV-seropositive and HIV-seronegative PWUD (n=1876) between December 2005 and November 2012. We estimated the relationship between different types of income generation and suffering any kind of violence using bivariate and multivariate generalized estimating equations (GEE), as well as the characteristics of violent interactions.

Results—Exposure to violence was reported among 977 (52%) study participants over the study period. In multivariate models controlling for socio-demographic characteristics, mental health status, and drug use patterns, violence was independently and positively associated with participation in street-based income generation activities (i.e., recycling, squeegeeing, and panhandling; adjusted odds ratio [AOR]=1.39, 95% confidence interval [CI]=1.23–1.57), sex work (AOR=1.23, 95% CI=1.00–1.50), drug dealing (AOR=1.63, 95% CI=1.44–1.84), and theft and other acquisitive criminal activity (AOR=1.51, 95% CI=1.27–1.80). Engagement in regular, self or

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Contributorship statement

LR, CL, KD and TK conceptualized and designed the study. TK and EW led the establishment of the study cohorts. CL managed the literature searches and PN conducted statistical analyses. LR and CL prepared the first draft of the manuscript. All authors contributed to the main content of the manuscript and provided critical comments on the final draft, and have read and approved the text as submitted to the *Journal of Epidemiology and Community Health*.

Competing interests statement

All authors declare they have no conflicts of interest.

temporary employment was not associated with being exposed to violence. Strangers were the most common perpetrators of violence (46.7%) and beatings the most common type of exposure (70.8%).

Conclusions—These results suggest that economic activities expose individuals to contexts associated with social and structural vulnerability to violence. The creation of safe economic opportunities that minimize vulnerability to violence among PWUD is therefore urgently required.

Keywords

Income generation; violence; illicit drug use; drug dealing; sex work

Introduction

Many people who use illicit drugs (PWUD) experience disproportionately high levels of unemployment and face challenges in achieving and maintaining financial stability.¹ Limited opportunities and significant barriers to adequate and safe employment create pressures for PWUD to undertake a range of prohibited activities to generate income.² Sources of income include drug dealing, sex work, and theft, many of which have been linked to various health and social harms, including infectious disease and incarceration.^{3–5} Within these income generating contexts, which include drug and sex work markets, physical violence often functions as an instrument of regulation and punishment, and can become amplified by police enforcement efforts.^{6,7} Additionally, street-based income generation activities, such as panhandling (i.e., requesting money from pedestrians on the street), informal recycling (i.e., “binning” or collecting empty bottles and other discarded items for refund or resale) and car window washing (i.e., “squeegeeing” car windshields in traffic), are often publicly visible and a target of policing.^{8,9} The need to generate income is often further exacerbated by the high cost of illicit drugs¹⁰ and policies that increasingly exclude PWUD from mainstream opportunities and institutions, intensifying their reliance on alternative economies.

While most PWUD possess jobs, high intensity and poly-drug use has been associated with lower employment rates.¹ For example, previous research in the current study setting found that less than a third of participants reported ever having a regular job.¹¹ Barriers to employment over and above impairment, such as employer discrimination, workplace drug testing, having a criminal record, possessing limited formal education or employment skills and chronic homelessness exclude many from desired employment opportunities in the formal workforce.¹² Research further suggests that more than half of inner-city PWUD who live in Vancouver, Canada engage in prohibited income generation activities.² Another common source of income for PWUD is social assistance. However, levels of social assistance are often cited as insufficient and impose earning restrictions.⁷ As such, there is a lack of adequate, licit income generating opportunities for marginalized PWUD in the formal economy.¹³ Connected to broader economic and social processes and embedded in relationships of disadvantage,¹⁴ inequality in earnings opportunities have significant impacts on individual and population health.¹⁵ These broader processes influence individual opportunities, are linked to localized experiences of economic marginalization and may precede and strongly influence individual risk taking.^{16,17}

Alongside socio-economic marginalization and barriers to licit income generation, PWUD often experience elevated levels of exposure to physical violence, with severe implications for individual health and well-being. Exposure to physical violence is a major cause of morbidity and mortality among PWUD,¹⁸ and has been linked to mood and anxiety disorders, suicidal ideation, posttraumatic stress disorder, eating disorders and high-risk drug use, including needle sharing, accidental overdose and substance dependence.^{19,20} In addition, exposure to physical violence in early age has been associated with entry into sex work and drug dealing, both of which propagate further risks of violence.²¹

Given the far-reaching impacts of exposure to physical violence alongside significant pressures toward informal or restricted forms of income generation among PWUD, there is a crucial need to understand how exposure and vulnerability to violence may be structured by economic activities among marginalized populations. While previous ethnographic work has identified sex work and drug dealing as sources of violent encounters,^{6,7,22} the relationship between income generation activity and exposure to violence is not fully understood across the breadth of economic opportunities and activities that PWUD rely on to generate income, and few studies have examined the impact of income generation on exposure to violence quantitatively. We therefore sought to examine the relationship between a range of income generation activities and self-reported exposure to physical and sexual violence (as opposed to verbal or emotional violence) as well as the characteristics of violent encounters among prospective cohorts of HIV-positive and HIV-negative PWUD living in Vancouver, Canada.

Methods

The Vancouver Injection Drug User Study (VIDUS) and AIDS Care Cohort to Evaluate access to Survival Services (ACCESS) are open, community-recruited prospective cohort studies of HIV-seronegative individuals who inject (VIDUS) or HIV-seropositive individuals who use (ACCESS) illicit drugs, which began enrolment through self-referral and street outreach in May 1996. The two cohorts have been described in detail previously.²³ In brief, an individual was eligible if they lived in Greater Vancouver at the time of enrolment, injected (VIDUS) or used (ACCESS) illicit drugs other than cannabis in the previous month, and provided written informed consent. At baseline and semi-annually thereafter, participants completed an interviewer-administered questionnaire and provided a blood sample for HIV and hepatitis C serologic testing. Participants received an honorarium of \$30 CAD at each study visit. VIDUS and ACCESS have received ethics approval from Providence Health Care/University of British Columbia's Research Ethics Board.

The current analyses include all baseline and semi-annual follow up visits from 1 December 2005 to 31 November 2012. Reports of exposure to violence were derived from the question: "Have you been attacked, assaulted (including sexual assault), or suffered any kind of violence in the last six months?" Information regarding income generation was obtained from a single question asking: "Over the last six months, what have been your sources of income?" For the current analysis, response options were grouped into six categories: employment (regular job, temporary work and self-employed); social assistance (welfare assistance, income assistance, Canadian Pension Plan and employment insurance); street-based activities (recycling, squeegeeing, and panhandling); sex work; drug dealing; and theft

and other criminal activities (theft, robbing, stealing or other). For participants who reported having experienced violence in the previous six months, information regarding perpetrator and type of attacks was obtained from the questions: “Who has attacked you?” and “What type of attack was it?” Response options for attack perpetrators included stranger, partner (husband/wife, boyfriend/girlfriend, or partner), friend, police or security guard, drug dealer, sex worker, casual or regular sex partner, and acquaintance or other. Response options for attack types included beating, sexual assault/rape, attacked with weapons, strangled, attacked or threatened with a gun, robbery and other.

Covariates were selected based on previous theoretical and empirical research on exposure to violence and drug-related risk.^{17,24} To account for potential differences in socio-demographic characteristics, we considered age, gender (female vs. male), and Caucasian ethnicity (yes vs. no). Drug use patterns and related practices we considered refer to the six months prior to interview and included binary indicators of: daily heroin injection; daily cocaine injection; daily crystal methamphetamine use; daily crack smoking; heavy alcohol use, defined as having more than four drinks a day on average; binge injection drug use, defined as a period of using injection drugs more often than usual, and public injection, defined as having injected in a street, bathroom, park, or parking lot. In addition, we considered homelessness and incarceration in the six months prior to interview, the latter defined as having been in detention, prison, or jail, overnight or longer, as well as a time-updated measure of mental illness, defined as having ever been diagnosed with a mental illness. We also considered residency in the Downtown Eastside neighbourhood of Vancouver (DTES), which has been characterized by high levels of economic stagnation, unemployment, open drug use, street-based drug dealing, sex work, homelessness, mental illness, and police activity. (25)

As a first step, we assessed the descriptive characteristics of the study sample and the prevalence of violence over the study period. We examined differences in socio-demographic characteristics, drug use patterns, mental health and income generation activities between those who did and did not report exposure to violence at baseline using Pearson’s chi-square analyses for dichotomous and categorical variables and the Mann-Whitney test for continuous variables. Second, we employed generalized estimating equations (GEE) for binary outcomes using a logit link to examine associations with self-reported exposure to violence, accounting for the within-subject correlation across repeated measures over the study period using a two-stage model building approach. In the first stage, we conducted bivariate analyses to identify potential covariates. Only variables that were significant at $p < 0.10$ in bivariate analysis were considered for inclusion in the development of the multivariate model at the second stage. The quaslikelihood under independence model criterion (QIC) with a backward model selection procedure was used to select the multivariate model with the best overall fit as indicated by the lowest QIC value.²⁶ Finally, in sub-analysis, we descriptively assessed the perpetrators and characteristics of violent encounters. All statistical analyses were performed using SAS software version 9.3 (SAS, Cary, NC). All p -values are two-sided.

Results

From December 2005 to November 2012, a total of 1876 participants completed at least one study interview. The median number of study visits was 7 (Interquartile range [IQR]=4–11), yielding 13,902 study observations, with a median follow up rate of 67.6% (IQR 62.3% – 70.2%) per six-month follow-up. At baseline, the median age was 42 (IQR=35–48), 620 (33%) participants were female, 1131 (60%) were Caucasian, and 418 (22%) reported experiencing violence in the six months prior to interview. From December 2005 to November 2012, levels of reported violence per follow up decreased from 176 (23%) to 88 (9%). Nevertheless, over the study period, 977 (52%) participants reported at least one exposure to violence and a total of 2197 exposures to violence were recorded. Of those participants who reported at least one incident of violence, the median number of reports of violence over the study period was 2 (IQR=1–3).

Baseline characteristics of the study sample stratified by self-reported exposure to violence are shown in Table 1. Individuals reporting exposure to violence were more likely to be younger; Caucasian; homeless or a resident of the DTES; recently incarcerated; receiving social assistance; engaged in street-based income generation activities, sex work, drug dealing or theft or other acquisitive criminal activity; diagnosed with a mental health illness; engaged in daily or greater use of injection heroin or crack-cocaine use; be heavy users of alcohol or report public injecting in the six months prior to baseline interview (all $p < 0.05$).

In multivariate GEE analysis (Table 2), participation in street-based income generation activities (adjusted odds ratio [AOR]=1.39, 95% confidence interval [CI]: 1.23–1.57), sex work (AOR=1.23, 95% CI: 1.00–1.50), drug dealing (AOR=1.63, 95% CI: 1.44–1.84), and theft and other acquisitive criminal activities (AOR=1.51, 95% CI: 1.27–1.80) were all significantly and positively associated with exposure to violence. Caucasian ethnicity (AOR=1.27, 95% CI: 1.09–1.47), homelessness (AOR=1.26, 95% CI: 1.12–1.43), living in the DTES (AOR=1.22, 95% CI: 1.07–1.39), incarceration (AOR=1.53, 95% CI: 1.32–1.78), having a mental health diagnosis (AOR=1.47, 95% CI: 1.28–1.69), daily crack smoking (AOR=1.27, 95% CI: 1.12–1.43), heavy alcohol use (AOR=1.71, 95% CI: 1.35–2.16), and public injecting (AOR=1.44, 95% CI: 1.26–1.66) were positively and significantly associated with exposure to violence. Older age (AOR=0.99, 95% CI: 0.98–1.00) and female gender (AOR=0.74, 95% CI: 0.62–0.89) were negatively and significantly associated with exposure to violence. Characteristics of the 2197 violent incidents are presented in Table 3. Strangers were the most common perpetrators of violence (46.7%) and beatings were the most common types of violence (70.8%).

Discussion

In our examination of the relationship between income generation and exposure to violence we found that among people who use illicit drugs living in Vancouver, Canada, reports of exposure to violence were high but decreased over the seven-year study period. In a longitudinal multivariate analysis, the odds of exposure to violence were significantly higher across all prohibited and illegal income generation activities, including theft and other acquisitive criminal activity, drug dealing, street-based income generation (i.e., window

washing, informal recycling and panhandling) and sex work. These associations remained following considerable adjustment for socio-demographic characteristics; environmental exposures including residency in Vancouver's Downtown Eastside, housing instability and incarceration; possessing a diagnosis of mental illness; engaging in high-intensity drug or alcohol use, and injecting publicly. Beatings accounted for more than two-thirds of attacks, followed by attacks with a weapon and sexual assault, and strangers were the most common perpetrators of attacks.

That people who use illicit drugs experience high levels of violence—whether as a result of law enforcement or as an outcome of engaging in high risk activities, such as drug dealing and sex work—has been well documented.^{18,27,28} However, the results of the current study examine violence among individuals engaged in a broader range of income generation strategies, and allow for the assessment of their relative contribution to increased risk of exposure to violence. The present study therefore reinforces how economic activities may significantly impact individual exposure and vulnerability to violence, emphasizing the need to relate individual experiences of violence to wider constellations of power, including the structural violence of social exclusion and poverty; the everyday violence of pervasive invisible social suffering; and the symbolic violence through which specific configurations of social inequality are legitimized.^{17,29} This study underscores how socio-economic marginalization elevates the likelihood of engaging in prohibited and illegal income generation and how structural vulnerability to violence may be reproduced through engagement in such activity.^{17,29} Our finding that prohibited income generating activities were independently associated with increased exposure to violence suggests that reliance on these sources of income may compromise individual capacities to avoid violence and entrench physical and economic vulnerability.¹⁷ Furthermore, risk taking associated with unsafe income generation is often played out against multiple other risks (e.g., drug withdrawal, homelessness, hunger, incarceration, and “bad dates,” during which a sex worker experiences emotional harassment, fear and/or physical or sexual violence³⁰) and in the context of broader power relations such as gender- and ethnicity-based inequities.^{7,17,31} That prohibited income generation practices are so heavily implicated in exposure to violence points to the need for measures to reduce socio-economic vulnerability (e.g., low-threshold employment opportunities, improved social assistance) and consequent reliance on prohibited income generating activity.

Consistent with previous research, substance use was an inconsistent predictor of exposure to violence.²⁴ In multivariate models, daily crack smoking and heavy alcohol use remained significantly associated with exposure to violence, while daily heroin injection, daily cocaine injection and daily methamphetamine use did not. Previous studies have also found a robust association between frequent crack smoking and violence,^{24,32} and between alcohol use and violence among drug using and non-drug using populations.³³ Prior research has also demonstrated a mutually reinforcing relationship between high intensity drug use and participation in drug dealing and sex work.^{2,3,7} As such, the observed decline in the level of reports of violence from 23% to 9% from December 2005 to November 2012 may be explained by decreases in drug use and increases in addiction treatment uptake which have been previously observed in the study setting.²³ The mutual reinforcement of high-intensity drug use and prohibited income generation may further embed PWUD in environments of

elevated vulnerability to violence, and based on the findings of the current study, the nexus between drug use intensity, income generation and violence warrants further examination. Specifically, research examining the degree to which high-intensity drug use motivates involvement in prohibited income generation and subsequent exposure to physical violence would be clarifying in this regard.

Our finding that exposure to violence was significantly and positively associated with several indicators of social, environmental and structural vulnerability, including Downtown Eastside residency, homelessness and public injecting, is consistent with previous studies that have identified linkages between spatial and contextual vulnerability and increased socio-economic disadvantage.³⁴ While the nature of these relationships is not examined in detail here, the robustness of their relationship with violence may be further indication of the impacts of complex configurations of disadvantage and structural vulnerability. For example, the linkage between homelessness and violence may be the direct result of a loss of protective shelter, which could have otherwise prevented exposure to potential perpetrators. Homelessness may also intensify individual reliance on street-based income generation activities with their attendant increase in risk of exposure to violence.³⁵ Furthermore, in the context of the Downtown Eastside, homelessness may increase levels of public injecting,³⁶ exposing individuals to the drug markets and settings where prohibited income generation activities take place, further increasing their exposure to violence.³⁷ In this study context, InSite, Vancouver's supervised injection facility, as an indoor protected space in which individuals can avoid the harms associated with public injecting, is a critical health facility contributing to reduced exposure to physical violence.

Nevertheless, additional efforts to reduce socio-economic drivers of exposure to violence are urgently required. This study provides empirical evidence supporting the need for interventions that increase and improve the safety of economic opportunities for PWUD. Although we did not find an inverse association between regular employment and exposure to violence, previous studies suggest that regular employment has the potential to act as a stabilizing force and has been linked to reduced drug use and crime.^{13,38} Further development and expansion of easily accessible and flexible alternative income generation options should therefore be a policy and programmatic priority. This is particularly the case given almost 50% of individuals reporting prohibited income generation who express willingness to reduce their involvement in such activities if given opportunities for low-threshold employment that do not require abstinence.³⁹ In addition, there is a dearth of empirical research on the impacts of low-threshold employment models and further inquiry in this area is required.¹³ In order to reduce vulnerability to violence, activities aimed at expanding economic opportunities would ideally be supported by interventions addressing other important drivers of vulnerability (e.g., social housing, mental health support, addiction treatment, and safe spaces for drug use) so as to account for the multiple exclusions experienced by socio-economically marginalized PWUD.¹⁷

There are several limitations to the current study. First, findings are based on a non-random sample and as such, may not be readily generalizable to other populations of PWUD. Nevertheless, previous studies suggest that this sample is reflective of the Vancouver drug using population.²³ Second, the data used in this study were self-reported and are therefore

subject to potential recall and response biases. However, as in previous research, in the current study it is likely that violence and prohibited income generation activities may be underreported.⁴⁰ We therefore note that estimates of both may be conservative in this instance, potentially resulting in an underestimation of the correlation between income generation and violence. For example, normalized expressions of violence that are considered common or inevitable may not readily be captured by our measure of violence. Similarly, our measures of income generation may not capture the full spectrum of strategies employed by people who use illicit drugs and do not account for non-monetary transactions. Finally, VIDUS and ACCESS do not differentiate between unemployment and labour force inactivity. The significance of not having employment for those who are able to and want work may therefore be additionally underestimated.

In sum, our findings suggest that, among people who use illicit drugs, income generation activities constitute and condition susceptibility to violence in significant ways. Efforts aimed at minimizing and understanding violence therefore need to account for the social, structural, and physical production of violence, of which the inequitable distribution of safe and sufficient income generation opportunities is, reinforced by our findings, an important contributor.¹⁷ These results underscore the need for more comprehensive social support and appropriate and accessible income generation opportunities for PWUD in order to address complex configurations of disadvantage that elevate exposure to violence.

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Thumbnail Sketch

What is already known on this subject?

- Many people who use illicit drugs engage in illegal and prohibited forms of income generation, which often carry risk of health and social harms.
- Previous studies have examined violence associated with specific types of income generation, such as drug dealing and sex work.

What does this study add?

- We examined the extent of exposure to violence among people who use illicit drugs and the comparative likelihood of exposure to violence across a breadth of income generation activities.
- Results identified increased likelihood of exposure to violence for individuals engaged in all illegal and prohibited forms of income generation, which persisted after adjustment for drug use and other social-structural drivers of violence.
- This research provides empirical evidence supporting the need for interventions that will improve the adequacy and safety of economic opportunities for people who use illicit drugs, such as low-threshold employment.

Table 1

Baseline characteristics of people who use illicit drugs in Vancouver, Canada, stratified by exposure to violence at baseline ($n = 1876$)

Characteristic	Total (%) ($n = 1878$)	Exposure to Violence		<i>p</i> - value
		Yes (%) ($n = 418$)	No (%) ($n = 1458$)	
Socio-demographic				
Age (med, IQR ^a)	42 (35–48)	41 (35–46)	42 (35–48)	0.025
Female gender	620 (33.1)	125 (29.9)	495 (34.0)	0.121
Caucasian ethnicity	1131 (60.3)	270 (64.6)	861 (59.1)	0.041
Homelessness ^b	649 (34.6)	187 (44.7)	462 (31.7)	<0.001
DTES Residency ^{b d}	1227 (65.4)	306 (73.2)	921 (63.2)	<0.001
Incarceration ^b	315 (16.8)	93 (22.3)	222 (15.2)	0.001
Income generation				
Regular employment ^{b e}	448 (23.9)	89 (21.3)	359 (24.6)	0.159
Social assistance ^b	1583 (84.4)	366 (87.6)	1217 (83.5)	0.042
Street-based activities ^{b f}	443 (23.6)	135 (32.3)	308 (21.1)	<0.001
Sex work ^b	234 (12.5)	67 (16.0)	167(11.5)	0.013
Drug dealing ^b	623 (33.2)	190 (45.5)	433 (29.7)	<0.001
Theft and other criminal activity ^{b g}	240 (12.8)	84 (20.1)	156 (10.7)	<0.001
Health				
Mental health diagnosis ^c	892 (47.6)	234 (56.0)	658 (45.1)	<0.001
Drug use				
Daily heroin injection ^b	466 (24.8)	136 (32.5)	330 (22.6)	<0.001
Daily cocaine injection ^b	172 (9.2)	38 (9.1)	134 (9.2)	0.958
Daily crystal methamphetamine injection ^b	58 (3.1)	19 (4.6)	39 (2.7)	0.051
Daily crack smoking ^b	732 (39.0)	199 (47.6)	533 (36.6)	<0.001
Heavy alcohol use ^b	71 (3.8)	23 (5.5)	48 (3.3)	0.035
Binge drug use ^b	368 (19.6)	92 (22.0)	276 (18.9)	0.164
Public Injecting ^b	617 (32.9)	185 (44.3)	432 (29.6)	<0.001

^aIQR: interquartile range;

^bDenotes activities in the previous 6 months;

^cDenotes lifetime history;

^dDTES: Downtown Eastside

Table 2

Bivariate and multivariate GEE^a of factors associated with exposure to violence among people who use illicit drugs in Vancouver, Canada, 2005 – 2012

Characteristic	Unadjusted		Adjusted	
	Odds Ratio (95% CI) ^b	<i>p</i> - value	Odds Ratio (95% CI) ^b	<i>p</i> - value
Income Generation Activities				
Regular employment ^{c g} (yes vs. no)	0.89(0.79–1.00)	0.050	1.06(0.93–1.21)	0.379
Social assistance ^c (yes vs. no)	0.98(0.82–1.16)	0.804		
Street-based income generation ^{c h} (yes vs. no)	1.61 (1.44–1.80)	<0.001	1.39(1.23–1.57)	<0.001
Sex work ^c (yes vs. no)	1.45(1.23–1.72)	<0.001	1.23(1.00–1.50)	0.048
Drug dealing ^c (yes vs. no)	2.19(1.96–2.45)	<0.001	1.63(1.44–1.84)	<0.001
Theft and other criminal activities ^{c i} (yes vs. no)	2.45(2.07–2.89)	<0.001	1.51 (1.27–1.80)	<0.001
Socio-demographic variables				
Age (per year older)	0.97(0.96–0.98)	<0.001	0.99(0.98–1.00)	0.005
Female gender (yes vs. no)	0.83(0.71–0.96)	0.013	0.74(0.62–0.89)	0.001
Caucasian ethnicity (yes vs. no)	1.30(1.13–1.50)	<0.001	1.27(1.09–1.47)	0.002
Social, structural and health exposures				
Homelessness ^c (yes vs. no)	1.90(1.70–2.11)	<0.001	1.26(1.12–1.43)	<0.001
DTES residency ^{c, e} (yes vs. no)	1.51 (1.34–1.71)	<0.001	1.22(1.07–1.39)	0.003
Incarceration ^c (yes vs. no)	2.22(1.93–2.55)	<0.001	1.53(1.32–1.78)	<0.001
Mental health diagnosis ^{d i} (yes vs. no)	1.23(1.07–1.40)	0.003	1.47(1.28–1.69)	<0.001
Drug use variables				
Daily heroin injection ^c (yes vs. no)	1.48(1.31–1.68)	<0.001	0.89(0.77–1.03)	0.125
Daily cocaine injection ^c (yes vs. no)	1.17(0.97–1.41)	0.093	0.86(0.71–1.05)	0.141
Daily crystal methamphetamine injection ^c (yes vs. no)	1.58(1.18–2.12)	0.002	1.32(0.97–1.79)	0.074
Daily crack smoking ^c (yes vs. no)	1.75(1.57–1.96)	<0.001	1.27(1.12–1.43)	<0.001
Heavy alcohol use ^c (yes vs. no)	1.73(1.37–2.17)	<0.001	1.71 (1.35–2.16)	<0.001
Binge drug use ^c (yes vs. no)	1.20(1.06–1.34)	0.003		
Public injecting ^c (yes vs. no)	2.18(1.94–2.44)	<0.001	1.44(1.26–1.66)	<0.001

^aGEE: generalized estimating equations;

^bCI: confidence interval;

^cDenotes activities in the previous 6 months;

^dDenotes lifetime history;

^eDTES: Downtown Eastside;

Table 3

Characteristics of experiences of violence among people who use illicit drugs in Vancouver, Canada (N = 2197)^a

Characteristic	Number of violent incidents (% ^b)
Perpetrator of attack	
Stranger	1020 (46.4)
Partner	146 (6.6)
Police	303 (13.8)
Dealer	181 (8.2)
Sex worker	12 (0.6)
Sex partner	27 (1.2)
Friend	110 (5.0)
Acquaintance or other	587 (26.7)
Type of attack	
Beating	1555 (70.8)
Attacked with weapons	475 (21.6)
Strangled	50 (2.3)
Attacked with a gun	24 (1.1)
Robbery	267 (12.2)
Sexual assault/rape	402 (18.3)
Other	261 (11.9)

^aTotal number of reports of violence over follow-up period

^bTotal percentage exceeds 100 as participants were able to select multiple response options