Factors associated with the use of supervised consumption facilities among women who inject drugs in a Canadian setting

Sarah Ickowicz[1,2], **Cameron Grant**[1], **Ekaterina Nosova**[1], **Jade Boyd**[1], **Rupinder Brar**[1,2], **M-J Milloy**[1,2], **Kanna Hayashi**[1,3], **Seonaid Nolan**[1,2]

[1.]British Columbia Centre on Substance Use, St. Paul's Hospital, Vancouver, BC, CANADA

[2.]Department of Medicine, University of British Columbia, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC, CANADA

[3.]Faculty of Health Sciences, Simon Fraser University, Vancouver, BC, CANADA

Abstract

Background: Supervised consumption facilities (SCFs) are evidence-based harm reduction interventions that have been shown to reduce the risk of social and health-related harms associated with injection drug use. Previous qualitative studies have highlighted important motivations for SCF use among women who use drugs. However, factors associated with SCF use among women have not previously been evaluated.

Methods: Data were obtained from two longitudinal community-recruited cohorts of people who use drugs in Vancouver, Canada between 2003 and 2017. Multivariable generalized estimating equations were used to calculate the odds of SCF use associated with social and structural risk factors for drug-related harm among women who reported injection drug use in the preceding six-months.

Results: A total of 795 participants were included in the study, contributing to 6302 interviews, with 602 participants (76%) reporting SCF use in at least one interview. Multivariable analysis demonstrated daily heroin and crystal methamphetamine injection (Adjusted Odds Ratio [AOR]=1.32 and 1.65 respectively), injecting in public (AOR=1.77), binge injection (AOR =1.22) and lack of housing (AOR=1.74) to be associated with SCF use.

Conclusions: The current study demonstrates higher intensity patterns of drug use, including daily heroin and crystal methamphetamine injection, injecting in public and binge injection, as well as homelessness to be associated with SCF use among women. Future research should identify barriers to SCF use among women to minimize the risk of overdose and other drug-related harms.

Keywords

harm reduction; supervised consumption facility; injection drug use; women

Send correspondence to: Seonaid Nolan, Clinical Researcher, B.C. Centre on Substance Use, 553B-1081 Burrard Street, Vancouver, B.C., V6Z 1Y6, Canada, Tel: 604-682-2344 ext 62360, Fax: 604-806-9467, seonaid.nolan@bccsu.ubc.ca.

INTRODUCTION

The opioid overdose crisis is now a leading cause of death in the United States and Canada[1]. In recent years, increases in overdose deaths have been driven in large part by the introduction of fentanyl and fentanyl analogues into the illicit drug supply[2]. In British Columbia, fentanyl was detected in 87% of overdose deaths in 2018, with 80% of overdose deaths occurring among males[3]. The disproportionate burden of death among men has led to the overdose crisis being labeled in the media as a men's health crisis[4]. However, epidemiologic evidence suggests that women are increasingly at risk of harm. Overall, women are more likely to be prescribed opioids and to be co-prescribed medications that increase overdose risk, including benzodiazepines[5]. Women progress more rapidly from initiation of substance use to development of substance use disorder and are more likely to experience adverse mental health, medical, and employment outcomes[6]. The proportional rate of overdose is also increasing more rapidly for women. In the United States between 1999 and 2010, the rate of overdose death related to prescription opioids increased fivefold for women versus 3.6 times for men[7]. More recently, a report from the United States Centers for Disease Control and Prevention showed that overdose deaths among women had increased 260% from 1999 to 2017, including deaths from prescription opioids, synthetic opioids, heroin, and benzodiazepines[8]. It is worth noting as well that socioeconomic status and race also significantly impact overdose rates for women. For example, Indigenous women in British Columbia are overdosing at rates almost equal to the rate Indigenous men[9].

Women who inject drugs possess a complex set of risk factors and challenges that can lead to increased drug-related harms. Women who inject drugs are at increased risk of HIV and hepatitis C virus acquisition, injection related complications, mental health issues, violence, and heightened stigma and discrimination[10]. Previous qualitative studies have described the role of gender dynamics as a contributor to increased harms among women who use drugs. Expectations of women's subordinate role extend into street-based drug scenes, often resulting in increased long-term risk to reduce immediate dangers and allow for daily survival[11], including being 'second on the needle' during assisted injection, and negotiating dangerous situations such as intimate partner violence or risky sexual or injection practices[12–16]. Despite this, the majority of available treatment and harm reduction services are not tailored to women, and may inadvertently exclude women due to issues of stigma, childcare, and absence of gender-specific and culturally-sensitive programs[17,18].

Supervised consumption facilities (SCFs) are a type of harm reduction intervention that provide safe spaces for substance use with availability of clean injection supplies and staff trained in safer substance use and overdose response and often access to ancillary services (e.g., referral to healthcare services including detox). Previous studies have consistently shown that SCFs contribute to reductions in rates of overdose death as well as improved injection behaviours and better access to health services[19–21]. However, previous studies have revealed that women may have reduced willingness to access SCFs[22]. Although SCFs can increase autonomy over substance use for women[23], they are often described as male-dominated spaces and are frequently located in areas where some women choose not to frequent due to previous experiences of violence[12].

The previously characterized Downtown Eastside (DTES) neighbourhood in Vancouver, Canada is a neighbourhood with high levels of injection drug use, poverty and homelessness[24,25]. The DTES has been disproportionately affected by a high level of overdose death in the context of an overdose crisis that has been ongoing in British Columbia since 2016[3,26]. North America's first SCF, Insite, has been in operation in the DTES since 2003. More recently, a number of peer-run SCFs have opened in this setting in response to the overdose crisis. Therefore, the purpose of this study was to identify factors associated with SCF use among women who inject drugs in Vancouver.

METHODS

Data were obtained from the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS) and the Vancouver Injection Drug Users Study (VIDUS), both of which are ongoing open prospective cohort studies of people who use drugs in Vancouver, Canada. Participants are recruited through self-referral, word-of-mouth and street outreach. These studies are described in detail elsewhere[27,28]. Participants are eligible for recruitment if they are at least 18 years of age, reside in Greater Vancouver, and have used illicit drugs other than cannabis (which was illegal during the study period) in the 30 days prior to baseline interview. For enrollment in VIDUS, participants must also report injection drug use in the past 30 days, and be HIV negative at baseline. All participants provide written consent at the time of enrollment. Following recruitment and semiannually thereafter, participants complete an interviewer-administered questionnaire to elicit information including substance use patterns, socio-demographic information, and other exposures. ACCESS and VIDUS use a harmonized questionnaire that is continually adjusted to address emerging issues. The ACCESS and VIDUS studies have been approved by the University of British Columbia/ Providence Health Care Research Ethics Board. For the current study, participants were eligible if they were recruited between December 1, 2003 and May 31, 2017, self-identified as female gender, and reported injection drug use within the preceding six months.

The variables chosen for this analysis were identified as factors that would potentially increase the desire to use a SCF or increase overdose risk. In previous studies that did not stratify by gender, daily drug use, public injection, previous overdose, and homelessness were associated with SCF use[22,29]. Incarceration, binge injection, sex work, and assisted injection have been previously associated with overdose in non-gender-stratified studies[30]. We postulated that methadone treatment could be a marker of engagement with care, increasing probability of using the SCF, and that previous experiences of violence could make the SCF more desirable as a safe place to inject. In addition, we postulated that DTES residence would make SCF use more likely due to proximity.

For these analyses, the primary outcome of interest was self-reported SCF use in the preceding six months. Explanatory variables of interest included year of interview (per year increase), age (per year older), self-reported race (white vs. other), level of education (high school diploma vs. <high school diploma), DTES residence (yes vs. no), daily heroin injection (yes vs. no), daily crystal methamphetamine injection (yes vs. no), daily cocaine injection (yes vs. no), injecting in public (yes vs. no), binge injection, defined in response to the following question: In the past six months, did you go on runs or binges (that is, when

you used drugs more than usual)? (yes vs. no), enrollment in methadone program (yes vs. no), self-reported overdose (yes vs. no), assisted injection (yes vs. no), lack of housing (yes vs. no), sex work (yes vs. no), incarceration (yes vs. no), being stopped by police, defined as being stopped by police to be questioned or searched (yes vs. no), and experiencing violence defined as having been attacked, assaulted, or suffered physical or sexual violence (yes vs. no). All behavioural variables referred to the six-month period prior to each interview and were treated as time-updated covariates. In the current study, a majority of participants (71.6%) reported Downtown Eastside residence. Though information regarding neighbourhood of residence was collected in this cohort study, counts are low for neighbourhoods other than the DTES. Therefore, neighbourhood of residence was analysed as DTES vs. all others. Information regarding frequency of injections done at the SCF was collected based on responses to the following question at baseline interview, "In the last six months, how often have you used Insite to inject?" Insite was the only supervised consumption site available in our setting during the time period that baseline interviews were conducted for all participants in this study.

First, a descriptive analysis of the study sample was conducted using Pearson's chi-square test for categorical variables and the Mann-Whitney test for continuous variables. Characteristics for participants who reported accessing a SCF within the preceding six months were measured at their baseline interview. Second, to analyze factors associated accessing the SCFs generalized estimating equation (GEE) analyses were performed. An exchangeable correlation structure was used in the GEE model. The sandwich estimator was used for standard error calculations. Variables significant in the bivariate analyses at $p < 0.05$ were considered for a full multivariate model. An explanatory model based on year at baseline interview did not result in any changes to the significant associations in the multivariable GEE analysis. To account for potential confounding, we used a multivariate model using an a priori modeling strategy suggested by Greenland et. al.[31]. This technique has been used successfully by several authors to estimate the independent relationship between an outcome of interest and a selected explanatory variable[32,33] by retaining secondary covariates with greater relative influence on the relationship between the outcome and the primary explanatory variable.

RESULTS

Between December 1, 2003 and June 1, 2017, a total of 793 participants who met all eligibility criteria were followed, contributing 6302 interviews. A total of 453 participants (57%) reported SCF use within the previous six months of baseline interview, and 602 (76%) reported SCF use in at least one baseline or follow-up interview.

Table 1 presents the baseline characteristics of the sample population stratified by self-reported SCF use (yes vs. no). Participants who reported SCF use were more likely to reside within the DTES (p<0.001), to report daily heroin injection (p<0.001), to report public injection (p<0.001) and binge injection (p<0.001), to have overdosed in the preceding six months (p=0.004), to be homeless (p<0.001), and to have experienced physical violence (p<0.001).

Table 2 shows the multivariable analysis of factors associated with SCF use. In multivariable analyses, DTES residence (Adjusted Odds Ratio [AOR] = 1.35, 95% CI: 1.15 – 1.59), daily heroin (AOR = 1.32, 95% CI: 1.15 – 1.51) and crystal methamphetamine (AOR = 1.65, 95% CI: 1.26 – 2.14) injection, public (AOR 1.77, 95% CI: 1.56 – 2.02) and binge (AOR 1.22, 95% CI: 1.09 – 1.36) injection, lack of housing (AOR 1.74, 95% CI: 1.50 – 2.01), and being stopped by police (AOR 1.21, 95% CI: 1.04 – 1.41) remained significantly associated with SCF use.

Figure 1 shows the frequency of injections done at Insite in the preceding six months. Among all participants in this study, 350 (44%) had not used Insite in the preceding six months. Among the 424 participants who had used the SCF, 169 (40%) used Insite more than weekly. Among those who had used Insite, 84 (19.8%) used Insite daily, 71 (16.7%) used Insite every couple of days, and 14 (3.3%) used Insite more than daily.

DISCUSSION

In the present study, we observed that a substantial percentage (76%) of women within Vancouver have accessed a SCF at least once. Following adjustment, higher intensity patterns of drug use (including daily heroin and crystal methamphetamine injection, public injection and binge injection) as well as homelessness and being stopped by police remained significantly associated with SCF use. Based on responses at baseline interview, a large percentage of participants (44%) had not used the SCF in the preceding six months. Among those who had used the SCF in the preceding six months, a large percentage (40%) used the SCF more than once per week. Further work is needed to better understand SCF usage patterns among women, and to identify both predictors of and barriers to repeat visits.

Our findings are consistent with previous studies of factors associated with SCF use. Previous literature has demonstrated SCF use among both men and women to be associated with daily heroin and crystal methamphetamine injection[22,29,34] and public injection[22,34,35]. Homelessness has also been associated with increased willingness to use a SCF in previous studies[22,29]. In addition, binge injection has been associated with higher risk of non-fatal overdose in previous studies[36], which when taken with the results of the current study may suggest that women at highest risk of harm are also potentially most likely to access the SCF. Recent evidence also suggests that SCFs have higher retention for at risk groups, including those who report binge injection, public injection, and previous overdose[37]. Associations between female gender and willingness to use a SCF are inconsistent across previous studies. In a previous study of people who smoke crack cocaine in public, female gender was associated with increased willingness to use a SCF[38], while a previous study of people who inject drugs revealed female gender to be negatively associated with willingness to use a SCF[22]. Given that the bulk of existing studies report a majority of male participants, the current study further builds on the existing literature with a female- focused lens.

As described above, studies from our setting and others have associated public injection with higher intensity drug use and homelessness, and have shown a connection between public injection and accessing a SCF. To our knowledge, there are no quantitative studies that have specifically looked at risks associated with public injecting among women. A previous

qualitative study in our setting revealed that injecting in public increased vulnerability to physical and sexual violence among women during periods of intoxication, and the use of a SCF reduced this risk[12]. The authors postulate that women in our setting who have experienced harms related to injecting in public may be more likely to view the SCF as a safer place to inject. In addition, previous studies have shown that public injection is associated with rushed injection and concerns about being seen by police[39]. Though police presence in close proximity to the SCF may pose a barrier to its use[17], the SCF can also be perceived as a safer place to inject without needing to rush or avoid police[40,41].

The authors postulate that assisted injection was not associated with SCF access due to restrictions around assisted injection at these sites. For the majority of the study period, the only SCF available would have been the Insite safe injection site, where assisted injection is not allowed. Previous qualitative studies have shown there is a desire for spaces that allow for assisted injection[14,42]. In addition, inability to do assisted injection has been previously identified as a barrier to SCF use, primarily among youth and women[27]. Within the context of the overdose crisis in Vancouver, a brief period of allowance of assisted injection at an unsanctioned overdose prevention site revealed how the risks associated with assisted injecting, including violence, overdose and HIV acquisition, were mitigated within the setting of the SCF[43,44].

Interestingly, the current study did not reveal an association between SCF use and previous experiences of violence. There are several possible explanations for this. Previous experiences of violence were pervasive in this cohort, with 74% of participants reporting experiencing physical violence within the preceding six months. Normalization of violence within this setting may reduce the extent to which it affects daily decisions such as SCF use. In addition, women who choose to avoid the SCF due to fear of violence may also be less likely to frequent the DTES[45] and may therefore be underrepresented in the current cohort. This study does not detract from previous important research that has identified the potential in SCFs to provide a safe space away from injection-related violence and to reduce gender-related harms by shifting power dynamics for women who inject drugs[12,23,44]. Though experiencing violence was not independently associated with SCF use in the current study, a significant body of evidence suggests that violence is an important risk factor in a complex system of priorities that women who inject drugs navigate on a daily basis[11,46]. In addition, it is possible that our study lacked power to detect an association.

This study has some limitations. Childcare issues can pose a significant barrier to accessing services for women who inject drugs, though unfortunately this information is not available within the context of this study. Lesbian, gay, bisexual, transgender, queer, and two-spirit participants who self-identified as female were included, but were not analysed as a specific subgroup due to low numbers. It is important to note as well that Indigenous women have been disproportionately affected by the overdose crisis, and although Indigenous women are represented in this cohort, they were not analysed as a separate subgroup due to low numbers within the cohort. The self-reported nature of the selected variables makes them potentially subject to reporting bias. Due to the number of patient and consult level characteristics being explored, the possibility of Type I errors is increased through the

problem of multiple testing. In addition, this analysis may be difficult to translate to other settings where housing instability or injection drug use are less common.

A growing body of evidence now suggests that women are increasingly at risk of overdose and other drug-related harms. However, it is important to recognize that women who use drugs are not a homogeneous group, and that levels of risk and need for harm reduction services will vary across diverse settings. The current study has revealed that rates of SCF access are high among women who use drugs in our setting, with the participants in the current study representing a particularly marginalized group at high risk of drug-related harms including overdose. Previous studies have revealed that women who inject drugs are exposed to a complex set of risk factors on a daily basis that can affect the way that they access services. Further work across a variety of settings is needed to understand how women access harm reduction services and how needs may vary among women who inject drugs.

ACKNOWLEGEMENTS

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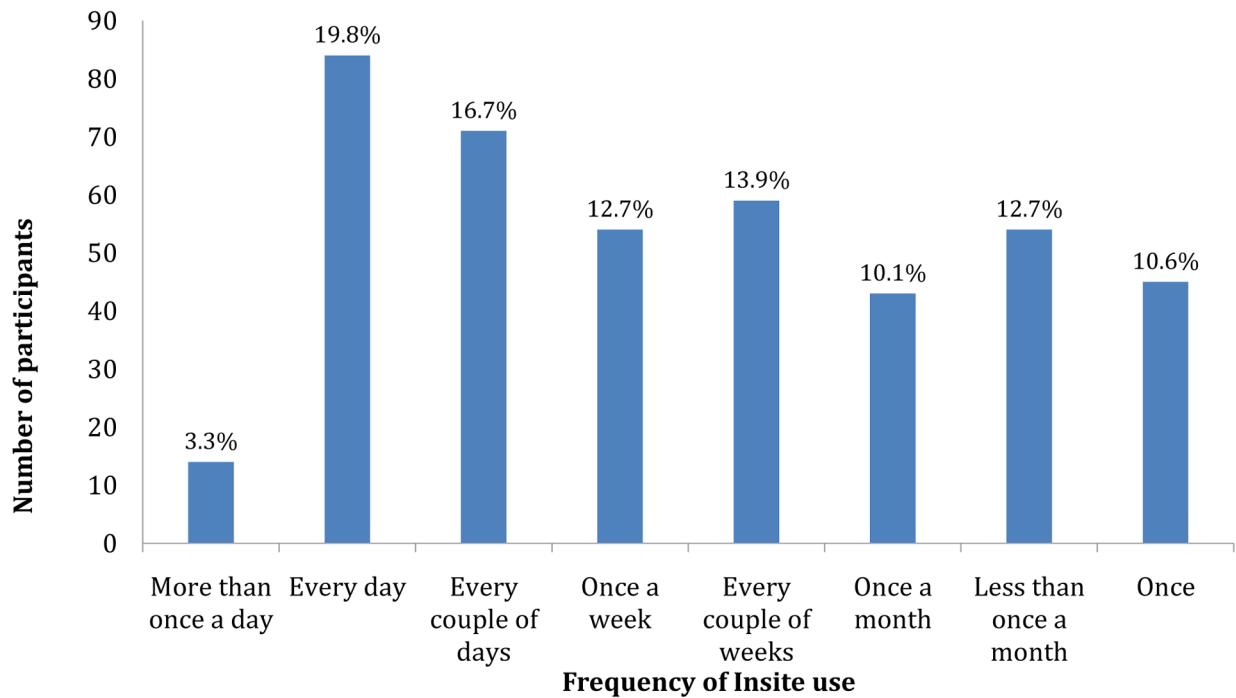
Figure 1.
Self-reported frequency of injections at Insite among women who had reported using Insite in the previous six months, Vancouver, Canada, 2003–2017 (n = 793).

Table 1:

Baseline characteristics of women (n = 793) who inject drug stratified by use of a supervised consumption facility (SCF) in the previous six months, Vancouver, Canada, 2003-2017

Characteristic[*]	SCF use n = 453 (57%)	No SCF use n = 340 (43%)	p - value
Race			
White	224 (49.4)	165 (48.5)	0.861
Other	229 (50.6)	173 (50.9)	
Education			
high school diploma	234 (51.7)	179 (52.6)	0.806
< high school diploma	214 (47.2)	158 (46.50)	
DTES Residence			
yes	365 (80.6)	203 (59.7)	<0.001
no	88 (19.4)	137 (40.3)	
Daily heroin injection			
yes	237 (52.3)	97 (28.5)	<0.001
no	216 (47.7)	1.5)	
Daily cocaine injection			
yes	82 (18.1)	57 (16.8)	0.627
no	370 (81.7)	282 (82.9)	
Daily crystal methamphetamine injection			
yes	47 (10.4)	12 (3.5)	<0.001
no	405 (89.4)	328 (96.5)	
Public injection			
yes	272 (60.0)	89 (26.2)	<0.001
no	181 (40.0)	249 (73.2)	
Binge injection			
yes	151 (33.3)	72 (21.2)	<0.001
no	301 (66.4)	264 (77.6)	
Methadone maintenance treatment			
yes	213 (47.0)	166 (48.8)	0.553
no	239 (52.8)	171 (50.3)	
Non-fatal overdose			
yes	65 (14.3)	21 (6.2)	0.004
no	387 (85.4)	317 (93.2)	
Assisted injection			
yes	182 (40.2)	102 (30.0)	0.004
no	271 (50.8)	236 (69.4)	
Homeless			
yes	191 (42.2)	68 (20.0)	<0.001
no	258 (57.0)	271 (79.7)	
Sex work			
yes	227 (50.1)	130 (38.2)	0.001

Characteristic[*]	SCF use n = 453 (57%)	No SCF use n = 340 (43%)	p - value
no	223 (49.2)	209 (61.5)	
Incarceration			
yes	76 (16.8)	32 (9.4)	0.003
no	376 (83.0)	306 (90.0)	
Stopped by police			
yes	164 (36.2)	70 (20.6)	<0.001
no	286 (63.1)	168 (78.8)	
Violence			
yes	143 (31.6)	53 (15.6)	<0.001
no	306 (67.5)	282 (82.9)	

[*] All variables (except race and education) refer to the six months prior to interview. DTES = downtown eastside neighbourhood.

Table 2.

Bivariable and multivariable GEE analysis of factors associated with SCF use among women, Vancouver, Canada, 2003–2017 (n = 793).

Characteristic	Unadjusted Odds Ratio (95% CI)	p - value	Adjusted Odds Ratio (95% CI)	p - value
Interview year				
(per year later)	0.93 (0.92 – 0.95)	<0.001	0.96 (0.94 – 0.99)	0.001
Age				
(yes vs. no)	0.95 (0.93 – 0.96)	<0.001	0.99 (0.98 – 1.00)	0.032
Race				
(white vs. other)	1.04 (0.83 – 1.31)	0.727		
Education (High school diploma)				
(yes vs. no)	1.08 (0.87 – 1.33)	0.496		
DTES residence				
(yes vs. no)	1.52 (1.30 – 1.77)	<0.001	1.35 (1.15 – 1.59)	<0.001
Daily heroin injection				
(yes vs. no)	1.74 (1.54 – 1.97)	<0.001	1.32 (1.15 – 1.51)	<0.001
Daily cocaine injection				
(yes vs. no)	1.32 (1.14 – 1.53)	<0.001	1.07 (0.91 – 1.24)	0.417
Daily crystal methamphetamine injection				
(yes vs. no)	1.53 (1.20 – 1.95)	0.001	1.65 (1.26 – 2.14)	<0.001
Public injection				
(yes vs. no)	2.45 (2.16 – 2.77)	<0.001	1.77 (1.56 – 2.02)	<0.001
Binge injection				
(yes vs. no)	1.29 (1.16 – 1.43)	<0.001	1.22 (1.09 – 1.36)	<0.001
Methadone maintenance treatment				
(yes vs. no)	0.72 (0.64 – 0.82)	<0.001	0.90 (0.78 – 1.03)	0.116
Non-fatal overdose				
(yes vs. no)	1.25 (1.06 – 1.47)	0.008	1.15 (0.96 – 1.37)	0.142
Assisted injection				
(yes vs. no)	1.33 (1.18 – 1.52)	<0.001	1.01 (0.88 – 1.16)	0.862
Homeless				
(yes vs. no)	2.46 (2.14 – 2.83)	<0.001	1.74 (1.50 – 2.01)	<0.001
Sex work				
(yes vs. no)	1.52 (1.33 – 1.75)	<0.001	1.13 (0.99 – 1.29)	0.080
Incarceration				
(yes vs. no)	1.67 (1.35 – 2.06)	<0.001	1.09 (0.86 – 1.37)	0.479
Stopped by police				
(yes vs. no)	1.75 (1.51 – 2.03)	<0.001	1.21 (1.04 – 1.41)	0.014
Violence				
(yes vs. no)	1.40 (1.23 – 1.60)	<0.001	1.10 (0.95 – 1.27)	0.220

All variables (except race and education) refer to the six months prior to interview. GEE = generalized estimating equation; CI = confidence interval; DTES = downtown eastside neighbourhood