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Potential Uptake and Correlates of Willingness to Use a Supervised Smoking Facility for Noninjection Illicit Drug Use

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ABSTRACT *Many cities are experiencing infectious disease epidemics and substantial community harms as a result of illicit drug use. Although medically supervised smoking facilities (SSFs) remain untested in North America, local health officials in Vancouver are considering to prepare a submission to Health Canada for an exemption to open Canada's first SSF for evaluation. Reluctance of health policymakers to initiate a pilot study of SSFs may be due in part to outstanding questions regarding the potential uptake and community impacts of the intervention. This study was conducted to evaluate the prevalence and correlates of willingness to use an SSF among illicit drug smokers who are enrolled in the Vancouver Injection Drug Users Study. Participants who reported actively smoking cocaine, heroin, or methamphetamine who returned for follow-up between June 2002 and December 2002 were eligible for these analyses. Those who reported willingness to use an SSF were compared with those who were unwilling to use an SSF by using logistic regression analyses. Four hundred and forty-three participants were eligible for this study. Among respondents, 124 (27.99%) expressed willingness to attend an SSF. Variables that were independently associated with willingness to attend an SSF in multivariate analyses included sex-trade work (adjusted odds ratio [AOR] =1.85), crack pipe sharing (AOR =2.24), and residing in the city's HIV epicentre (AOR =1.64). We found that participants who demonstrated a willingness to attend an SSF were more likely to be involved in the sex trade and share crack pipes. Although the impact of SSFs in North America can only be quantified by scientific evaluation, these data indicate a potential for public health and community benefits if SSFs were to become available.*

KEYWORDS *Harm reduction, HCV, HIV, Supervised smoking facilities.*

INTRODUCTION

Many cities internationally are experiencing human immunodeficiency virus (HIV) and hepatitis C virus (HCV) epidemics as well as substantial community harms

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resulting from illicit injection drug use.[1,2] However, despite what is known about HCV transmission and the identified risk factors for infection, such as syringe sharing[3–8] and sharing of injecting paraphernalia,[5,8,9] a considerable number of cases exist in which the infected individual reports no history of injection drug use or other traditional risk factors for HCV infection. This is especially true for noninjecting drug users.[10,11] Studies have shown that the prevalence of HCV is substantially higher for users of heroin, crack, and/or cocaine who report no injection drug use than it is for the general population in North America.[10] Sharing of noninjection drug-use equipment as a route of HCV transmission may provide an explanation for the elevated HCV prevalence in this population.[10,12–15]

In Europe, Australia, and Canada, medically supervised injection facilities (SIFs) have been implemented in an effort to reduce the community and public health impacts of illicit drug use.[16] In several European settings, supervised smoking facilities (SSFs) have been established in addition to SIFs.[17] SSFs are indoor spaces where preobtained illicit drugs can be smoked under the supervision of medical staff who are able to respond in the event of emergency. These facilities have been implemented in an effort to reduce public drug use, improve contact between illicit drug users and the medical system, decrease sharing of drug-use equipment, and improve opportunities to respond to emergency situations such as overdose. Although little published information about SSFs is presently available, preliminary reports suggest that these facilities have improved public order and led to increased contact between drug users and health and social services.[17]

In Vancouver, the scientific evaluation of the city's pilot SIF has indicated major successes in terms of high service uptake and improved public order within the target community.[18] This trial was initiated after a number of feasibility studies demonstrated the potential benefits of such a program.[19–21] Although public order benefits have recently been reported as a result of the Vancouver SIF, the city is still dealing with major public order and public health concerns stemming from public drug use.[22] Much of this activity is among drug users smoking crack cocaine and crystal methamphetamine. As such, local community organizations and the region's health authority are considering a submission to Health Canada for an exemption to open an SSF for evaluation.[23] Because no feasibility work has been done to examine the potential uptake of an SSF, this study was conducted to examine prevalence and correlates of willingness to use an SSF among drug users.

METHODS

Beginning in May 1996, persons who had injected illicit drugs in the previous month were recruited into the Vancouver Injection Drug User Study (VIDUS), a community recruited prospective cohort study that has been described in detail previously.[24,25] The VIDUS cohort is based on a snowball sampling technique, and persons were eligible for the study if they had injected illicit drugs at least once in the previous month, resided in the greater Vancouver region and provided written informed consent. At baseline and semiannually, subjects provided blood samples and completed an interviewer-administered questionnaire. The questionnaire elicits demographic data as well as information about drug use, HIV-risk behaviour, and drug treatment. This analysis is restricted to those participants who reported smoking crack cocaine, heroin, or methamphetamine at least once during the 6 months before their most recent follow-up visit during the period between June 2002 and December 2002.

Demographic characteristics such as age, gender, and ethnic background were derived from the baseline questionnaire. Current drug-use behaviours as well as health-related characteristics such as HIV serostatus was derived from the follow-up during the period June 2002 to December 2002.

Univariate and multivariate statistical techniques were applied to determine factors associated with willingness to attend an SSF. Willingness was based on the question: "If a supervised smoking site was available for people who smoke crack, would you use it?" Those who responded "yes" were compared with those who said "no," or "unsure."

Sociodemographic characteristics considered in the analyses included gender, age, homelessness, HIV serostatus, aboriginal status, and residence in the Downtown East Side, which is the city's HIV epicentre. Behavioural variables regarding activities engaged in during the previous 6 months included involvement in addiction treatment and the sex trade. Drug-use related variables considered in the analyses included frequency of cocaine injection, syringe borrowing, syringe lending, crack cocaine bingeing, and crack pipe sharing during the previous 6 months. As we have previously reported,[21,26,27] persons who reported injecting cocaine or heroin once or more per day were defined as frequent cocaine and heroin users respectively. The above variables were selected because of our interest in determining drug-use characteristics and HIV-risk behaviours that may be associated with willingness. In addition, we considered age, gender, and location of home to adjust for potential confounding factors due to neighborhood or sociodemographic characteristics.

Statistical analyses were applied to compare participants who expressed willingness to attend SSFs with those unwilling or unsure. Categorical explanatory variables were analysed using Pearson's Chi-square test, and continuous variables were analysed using the Wilcoxon rank sum test. We then fit a logistic model considering all variables that were statistically significant at the 0.05 cutoff. All reported *P*-values are two-sided.

RESULTS

Since the study's inception, 239 participants have died (48 of HIV/AIDS, 62 of an overdose, and 129 of other causes including hepatitis C and suicides). Seven hundred and thirty-two participants completed a follow-up during the study period. Of these, 289 participants were excluded from the analysis because they were not smoking cocaine, heroin, or methamphetamine. Therefore, 443 participants were eligible for this study. Among this population, 275 (62.1%) reported crack smoking, 5 (1.1%) reported heroin smoking, and 6 (1.4%) reported methamphetamine smoking. Overall, 124 (27.99%) expressed willingness to attend an SSF, whereas 298 (72.01%) said they would not attend or that they were unsure.

The univariate analysis of sociodemographic and behavioural characteristics is shown in Table 1. As shown here, sociodemographic characteristics that were associated with willingness to attend SSFs include female gender (OR = 1.71) and residency in the HIV epicentre (OR = 1.88). Sex-trade work (OR = 2.46) was positively associated with willingness to attend SSF. Neither involvement in addiction treatment nor HIV serostatus were associated with willingness to attend an SSF. The univariate analysis of drug-use related variables indicated that sharing of crack pipes (OR = 1.88) and crack binges (OR = 1.69) during the previous 6 months were associated with willingness to attend an SSF. Although not achieving statistical significance, there was some evidence that borrowing used syringes was negatively

TABLE 1. Demographic characteristics

Characteristic	Would use SSF n(%)	Would not use SSF n(%)	Unadjusted odds ratio	95% Confidence interval	*P* value
Age					
Median (IQR)	40 (34–47)	38 (31–46)	0.98	0.96–1.00	0.05
Gender					
Female	65 (52.42)	125 (39.18)	1.71	1.13–2.60	0.01
Male	59 (47.58)	194 (60.82)	—	—	—
HIV positive					
Yes	51 (41.13)	106 (33.23)	1.40	0.92–2.15	0.12
No	73 (58.87)	213 (66.77)	—	—	—
Live in HIV epicentre					
Yes	93 (75.00)	196 (61.44)	1.88	1.18–3.00	0.01
No	31 (25.00)	123 (38.56)	—	—	—
Sex-trade work					
Yes	33 (26.61)	41 (12.85)	2.46	1.47–4.12	< 0.001
No	91 (73.39)	278 (87.15)	—	—	—
In treatment					
Yes	67 (54.03)	175 (54.86)	0.97	0.64–1.47	0.88
No	57 (45.97)	144 (45.14)	—	—	—
Crack binge					
Yes	58 (46.77)	109 (34.17)	1.69	1.11–2.58	0.01
No	66 (53.23)	210 (65.83)	—	—	—
Share crack pipe					
Yes	92 (74.19)	193 (60.50)	1.88	1.18–2.98	0.01
No	32 (25.81)	126 (39.50)	—	—	—
Lent syringe					
Yes	6 (4.84)	14 (4.39)	1.11	0.42–2.95	0.84
No	118 (95.16)	305 (95.61)	—	—	—
Borrowed syringe					
Yes	3 (2.42)	21 (6.58)	0.35	0.10–1.20	0.08
No	121 (97.58)	298 (93.42)	—	—	—
Homeless					
Yes	135 (42.3)	44 (35.5)	1.33	0.87–2.05	0.19
No	184 (57.7)	80 (64.5)	—	—	—

associated with willingness to attend an SSF. Lending of used syringes and homelessness were not significantly associated with willingness to attend an SSF.

The multivariate analysis of factors associated with willingness to attend an SSF is presented in Table 2. As shown here, sex-trade work (adjusted odds ratio [AOR] = 2.24 [95% CI 1.32–3.80]), sharing of crack pipes, (AOR = 1.64 [95% CI 1.02–2.64]) and residing in the HIV epicentre (AOR = 1.85 [95% CI 1.14–2.97] were positively associated with willingness to attend an SSF. The model was also adjusted for reporting a crack cocaine binge in the last 6 months, which remained marginally associated with willingness to use an SSF (AOR = 1.48).

DISCUSSION

In this study we found that 28% of injection drug users (IDUs) who smoked crack, heroin, and/or methamphetamine expressed willingness to attend an SSF. Variables

TABLE 2. Multivariate analysis of factors associated with willingness to attend a safe smoking facility should one be made available

Variable	Adjusted odds ratio	95% Confidence interval	*P*-value
Reside in HIV epicentre			
Yes versus no	1.85	1.14–2.97	0.011
Sex-trade work			
Yes versus No	2.24	1.32–3.80	0.003
Crack binge			
Yes versus no	1.48	0.95–2.26	0.081
Share crack pipe			
Yes versus no	1.64	1.02–2.64	0.042

that were independently associated with willingness to attend an SIF included residing in the HIV epicentre, involvement in the sex trade, and sharing of crack cocaine pipes during the previous 6 months. Involvement in the sex trade[21,28,29] has previously been associated with HIV/HCV risk behaviour in our setting. Recently, it has been suggested that a potential source of blood-borne disease transmission, especially HCV infection among noninjection drug users, is shared noninjection drug-use implements, which include crack pipes.[10,12–15] Our data suggest that subjects who are at risk for HIV/HCV infection and other blood-borne disease transmission may likely use SSFs. In addition, these subjects would likely benefit from primary services that would be provided at the SSF, which include sterile drug-use equipment, a clean and safe place in which to use preobtained illicit drugs, and education about possible health risks associated with smoking illicit drugs.[17, 30-32]

With regard to a public health and community concern, sex-trade work was found to be independently associated with willingness to attend an SSF.[28] A positive association between smoking crack cocaine and sex-trade involvement has been previously identified.[29] The uptake of SSFs by sex-trade workers, as with the uptake of SIFs, may be particularly important in Vancouver where over 50 women, many of whom were drug users involved in the sex trade, have gone missing from the Downtown East Side during the last decade.[33] In addition, female drug users who participate in sex-trade work are known to be at elevated sexual and parenteral risk of contracting a blood-borne illness.[29] Many studies in the United States have indicated that participation in the sex trade is independently associated with HIV infection,[34,35] although a recent study of female IDU sex-trade workers residing in Vancouver and Montreal, Canada contradicts these findings.[29] It is also noteworthy that sex-trade involvement has been identified as a barrier to addiction treatment among drug users,[36] and the willingness of sex-trade workers in this study to attend SSFs suggest that SSFs should be evaluated as a means of reducing harm and potentially increasing uptake of drug treatment among this population.

Studies have shown that the HCV prevalence is substantially higher among heroin,[37–39] crack, and cocaine users who report no injection drug use, compared with the general North American population.[10] Sharing of noninjection drug-use equipment, such as crack pipes, as a route of HCV transmission, may provide an explanation for the elevated HCV prevalence in this population.[10,12–15] This equipment may become contaminated with blood or other bodily fluids from the mouths of crack smokers, which may lead to HCV transmission and infection from other pathogens.[13] Crack smokers often experience oral lesions including blisters, sores,

and cuts on their lips and oral cavities.[37–39] These sores are sustained from contact of the mouth and lips with hot smoke, hot glass, or metal pipe stems, steel wool used as stem filters or the sharp edges of glass pipe stems.[37–39] This is of particular concern for HCV because of the virus' ability to maintain its infectivity in the environment and the high prevalence of HCV among illicit drug users.[40] It is noteworthy that oral lesions are also common among HIV-infected individuals.[41,42] A study of female drug users with no history of injections found that having a history of sharing both oral and intranasal noninjection drug-use implements was a significant and an independent predictor of HCV infection after accounting for other known routes of transmission.[12] The investigators suggested that prevention programs need to address noninjection drug-use implement sharing as a potential risk factor for HCV transmission. SSFs could potentially play a critical role in addressing this public health concern.

Recent studies of drug treatment programs have indicated that crack smokers are less responsive to interventions than other drug users and have pointed to the continuing need to develop and target effective interventions to this particular sub group of high-risk individuals.[30] SSFs have the potential to improve access to health care and uptake of addiction treatment for crack smokers by getting users near the health care system, including primary care services. This may be particularly relevant to this population, given the high incidence of cocaine-induced psychosis,[31] and over-reliance on emergency services among this population.[32]

It must be stressed that this study only provides evidence of the potential uptake of an SSF and the client population that would likely use such a facility. The real impact of such facilities can only be quantified through evaluation of the actual service. In addition, it should be noted that the estimate of prevalence of willingness to use an SSF is only representative of illicit drug smokers who are also injection drug users, and a part of VIDUS, and willingness may vary from the prevalence among specific populations. For example, noninjection drug users with no history of injection drug use were not included in this study. A further limitation of this study is that crack smokers were asked about their willingness to participate in a program that does not yet exist, and therefore some drug users may have been unsure about what an actual SSF would entail. Consequently, there may have been some uncertainty about the actual nature of the proposed SSF and hence willingness to attend. In addition, this study relies on self-report of drug users and is hence susceptible to socially desirable reporting. With regard to this concern, the data were collected as part of an ongoing HIV incidence study and not as part of an SSF feasibility study, and the one question regarding willingness to attend SSFs was included towards the end of a questionnaire approximately 45 minutes in duration. Hence, the associations between willingness to attend SSFs and behaviours identified in this study are unlikely to be the result of interviewer bias or socially desirable reporting. Finally, because the data for this study were collected as a small part of another study designed for injection drug users, the information collected was limited. Specifically, there are no questions on the VIDUS survey regarding disposal of noninjection drug-use equipment, or smoking crack in public, and therefore the potential public order benefits of an SSF could not be evaluated in this preliminary investigation.

In this study, we found that 28% of IDUs surveyed expressed willingness to attend an SSF. Variables that were independently associated with willingness to attend an SSF included residing in the HIV epicentre, sex-trade involvement, and sharing of crack pipes. It is noteworthy that these variables have recently been associated with increased risk of blood-borne diseases and limited access to health care

and other social services in our setting. Although a scientific evaluation of SSFs will be required to fully evaluate the impact of SSF provision in Canada, these data suggest that there is high potential for immediate community and health benefits where SSFs are made available.

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