Published in final edited form as:

Am J Addict. 2016 June ; 25(4): 275–282. doi:10.1111/ajad.12380.

SEEKING PRESCRIPTION OPIOIDS FROM PHYSICIANS FOR NONMEDICAL USE AMONG PEOPLE WHO INJECT DRUGS IN A CANADIAN SETTING

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Abstract

Background and Objectives—Despite the high prevalence of prescription opioid (PO) misuse, little is known about the phenomenon of seeking POs for nonmedical use among high-risk populations, such as people who inject drugs (PWID). We therefore sought to examine the prevalence and correlates of seeking POs from a physician for nonmedical use among PWID in Vancouver, Canada.

Methods—Cross-sectional data from two open prospective cohort studies of PWID in Vancouver were collected between June 2013 and May 2014 ($n = 1252$). Multivariable logistic regression was used to identify factors associated with seeking POs from physicians for nonmedical use.

Results—Of 1252 participants, 458 individuals (36.6%) reported ever trying to get a PO prescription from a physician for nonmedical use and, of these, 343 (74.9%, comprising 27.4% of the total sample) reported ever being successful. Variables independently and positively associated with PO-seeking behavior included older age (adjusted odds ratio [AOR] = 1.02), Caucasian ethnicity (AOR = 1.38), having ever overdosed (AOR = 1.32), having ever participated in methadone maintenance therapy (AOR = 1.90), having ever dealt drugs (AOR = 1.65), and having ever been refused a prescription for pain medication (AOR = 2.02) (all $p < .05$).

Discussion and Conclusions—We observed that PO-seeking behavior was common among this sample of PWID and associated with several markers of higher intensity drug use.

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

Scientific Significance—Our findings highlight the need to identify evidence-based public health and clinical strategies to mitigate PO misuse among PWID without compromising care for PWID with legitimate medical concerns.

INTRODUCTION

Since the mid-1990s, prescription opioid (PO) misuse has increased at an alarming rate in North America, fueling a rapidly escalating public health crisis. Individuals in Canada and the United States (US) currently consume roughly 80% of the global PO supply.[1] In the US, POs are now the most-commonly used class of prescription drug, with one in seven residents aged 12 and older reporting past nonmedical PO use.[2] In Canada, PO consumption has tripled over the last decade, and Canada is now the world's second largest per-capita consumer of POs after the US.[3]

This escalating trend of PO misuse has been paralleled by a rise in PO-associated morbidity and mortality. For example, in 2009, nonmedical PO use accounted for more than 500,000 emergency department visits in the US, approximately double the number of visits in 2004.[4] There have also been substantial increases in accidental overdose rates, prompting the US Centers for Disease Control and Prevention to declare deaths from PO overdoses a public health epidemic in 2011.[5] These trends also hold in Canada. For example, between 2009 and 2014, there was a dramatic increase in deaths involving fentanyl in Canada's four largest provinces, ranging from a near doubling in Quebec to a 20-fold increase in Alberta.[6] Further, PO misuse has been linked to adverse outcomes such as mood and anxiety disorders, dependence, and respiratory distress,[7, 8] while some evidence suggests that it may promote transition into heroin use and injecting, thereby drastically increasing the risk of drug-related harms, including infection with HIV and Hepatitis C virus (HCV) and fatal and nonfatal overdose.[9, 10]

In light of these consequences, a growing body of research in both Canada and the US has examined physician prescribing as a source of POs for nonmedical use.[11–13] Among general populations, only a small proportion of nonmedical PO users are thought to rely on physicians as direct PO sources. In the 2006 US National Survey on Drug Use and Health, approximately 12% of nonmedical PO users aged 12 and older reported obtaining POs directly from one or more physicians.[11] Conversely, physicians are thought to be a key direct source of POs among street-involved and high-risk illicit drug-using populations. In a study of 568 street-involved drug users in New York City, 38% of those using POs non-medically reported sourcing POs from physicians.[13] Similarly, in a study of substance abuse treatment patients in Delaware, the majority of nonmedical PO users reported obtaining POs from four or more physicians.[14]

Despite these advances in understanding of physician PO prescribing patterns, important knowledge gaps remain. To our knowledge, no studies have examined PO-seeking behavior among people who inject drugs (PWID). PWID are known to commonly use POs for various reasons, including euphoria, pain relief, and management of withdrawal symptoms.[15, 16] Previous research suggests that PWID may be at a heightened risk of PO-related harms, including overdose[17] and infectious diseases such as HCV and HIV.[18, 19] Greater

insight into the individual and social factors associated with seeking POs from physicians for nonmedical use may help to identify subpopulations of PWID who are at particularly high risk of PO-related harms, providing critical knowledge to inform clinical and policy responses to PO misuse among this vulnerable population. Indeed, previous research of general and illicit drug-using populations suggests that those who obtain POs from physicians are more likely to be opioid dependent,[20] and have a greater risk of overdose[21] and opioid-related death.[22] Therefore, using data from two community-recruited prospective cohorts of PWID in Vancouver, Canada, we sought to examine the prevalence and correlates of seeking POs from physicians for nonmedical use.

METHODS

Data for this study were derived from two prospective cohorts involving people who use drugs in Vancouver, Canada: the Vancouver Injection Drug Users Study (VIDUS) and the AIDS Care Cohort to Evaluate access to Survival Services (ACCESS). The methods for these studies have been described in detail previously.[23, 24] In brief, since May 1996, participants have been recruited through self-referral, snowball sampling, as well as street outreach from the open drug scene, single-room occupancy hotels, health and social service venues, and other areas in Vancouver. VIDUS is a cohort of HIV-negative adult PWID who have injected illicit drugs at least once in the month prior to enrollment. ACCESS is a cohort of HIV-positive adult drug users who have used illicit drugs other than or in addition to cannabis in the previous month at baseline. VIDUS participants who seroconvert to HIV following recruitment are transferred into the ACCESS study. The two studies employ harmonized data collection and follow-up procedures to allow for combined analyses. Specifically, at baseline visit and semi-annually thereafter, participants complete a harmonized interviewer-administered questionnaire and provide blood samples for serologic testing and HIV disease monitoring. The questionnaire elicits information about socio-demographic characteristics, drug use and other behavioral patterns, engagement with medical and addiction treatment services, and experiences with the criminal justice system. At each study visit, participants are provided with an honorarium (\$30 CAD). All participants have private interviews and are offered both pre- and post- counseling with trained nurses. The studies have received ethics approval from the University of British Columbia/Providence Health Care Research Ethics Board.

The present cross-sectional analyses were restricted to participants who reported ever injecting drugs and were seen between June 2013 (when questions about seeking POs for nonmedical use were first added to the questionnaire) and May 2014. We opted not to restrict the analytic sample to participants who reported previous PO use so as to not to exclude users of other substances, including illicit opioids such as heroin, who may also engage in PO-seeking behavior. The primary outcome for this analysis was response to the question, “Have you ever tried to get a prescription from a doctor for any prescription opioid drugs when you did not have an injury or a health condition, but primarily for the experience or feeling they caused?” (yes vs. no). This question was modeled after questionnaire items included in the United States National Survey of Drug Use and Health, which defines nonmedical use as use “for the experience or feeling the drugs cause”[8] among individuals who have been directly prescribed opioids. This item was successfully pilot tested during

questionnaire development. We a priori selected a range social, demographic, and behavioral variables that were considered as explanatory variables on the basis of previous literature on PO-seeking behavior and misuse.[13, 15, 21, 25, 26] Variables considered included: age (per year older), gender (men vs. women), education (high school diploma vs. <high school diploma), ethnicity (Caucasian vs. other), ever homeless (yes vs. no), HIV status (positive vs. negative), daily PO use, including injection or non-injection use (yes vs. no), daily non-injection crack use (yes vs. no), daily injection heroin use (yes vs. no), daily injection cocaine use (yes vs. no), daily injection methamphetamine use (yes vs. no), daily cannabis use (yes vs. no), heavy alcohol use (yes vs. no), ever overdosed (yes vs. no), ever participated in methadone maintenance therapy (MMT) (yes vs. no), ever dealt drugs (yes vs. no), ever involved in sex work (yes vs. no), ever incarcerated (yes vs. no), pain/discomfort (extreme to moderate vs. none), disability (yes vs. no), and ever refused pain medication (yes vs. no). Heavy alcohol use was defined according to the National Institute on Alcohol Abuse and Alcoholism (NIAAA) criteria for “heavy” or “at-risk” drinking: average of >3 alcoholic drinks per occasion or >7 drinks per week in the past 6 months for women, and an average of >4 alcoholic drinks per occasion or >14 drinks in total per week in the past 6 months for men.[27] Pain/discomfort was measured with the standardized Euroqol EQ-5D health utility instrument, which has been shown to be a valid and reliable measure among substance-using populations.[28] Having ever been refused pain medication includes refusals of pain medications requested for either medical or non-medical purposes and was defined as a positive response to the questions: “Have you ever requested a prescription for pain medication?” and, “If yes, were you ever refused a prescription?” All variables refer to the 6 months preceding the interview date unless otherwise indicated.

Bivariable statistics were used to determine factors associated with seeking a prescription for POs from a physician for nonmedical use. Categorical explanatory variables were analyzed using Pearson’s chi-square test or Fisher’s exact test when one or more cells contained expected values less than or equal to five. Continuous variables were analyzed using the Mann-Whitney test. We then applied an a priori-defined statistical protocol to construct an explanatory multivariable logistic regression model. First, we constructed a full model including variables that were significant at the level of $p = 0.10$ in bivariable analyses; this set of variables was then subjected to a backward selection procedure based on the Akaike information criterion (AIC) and Type III p-values.[29] Each variable with the highest p-value was removed sequentially, with the final model including the set of variables associated with the lowest AIC. This procedure balances model selection on finding the best explanatory model with best model fit, as described previously.[29] As a subanalysis, we used descriptive statistics to analyze responses to the questions, “Have you ever been successful in getting a prescription from a doctor for any prescription opioid drugs when you did not have an injury or a health condition, but primarily for the experience or feeling they caused?” We conducted all statistical analyses with SAS version 9.3 (SAS Institute Inc., Cary, NC), and all p-values are two-sided.

RESULTS

Of the 1,252 participants eligible for the present analyses, 444 (35.5%) were female, 714 (57.2%) were Caucasian, and the median age was 49 (interquartile range [IQR] = 42–54). In

total, 458 participants (36.6%) reported ever trying to get a PO prescription from a physician for nonmedical use and, of these, 343 (74.9%, comprising 27.4% of the total sample) reported having ever successfully received a PO prescription from a physician for nonmedical use.

The results of the bivariable analyses are shown in Table 1. Factors that were significantly and positively associated with seeking a prescription for POs for nonmedical use included: age (odds ratio [OR] = 1.02; 95% confidence interval [CI] = 1.00, 1.03); Caucasian ethnicity (OR = 1.61; 95%CI = 1.27, 2.04); having a history of overdose (OR = 1.58; 95%CI = 1.24, 2.02); having a history of MMT (OR = 2.36; 95%CI = 1.79, 3.12); having a history of drug dealing (OR = 1.99; 95%CI = 1.48, 2.69); having a history of incarceration (OR = 1.47; 95%CI = 1.16, 1.85); moderate to extreme pain (OR = 1.38; 95%CI = 1.09, 1.74); having a disability (OR = 1.27; 95%CI = 1.01, 1.61); and having a history of being refused pain medication (OR = 2.41; 95%CI = 1.90, 3.05). HIV infection was significantly and negatively associated with the outcome (OR = 0.77; 95%CI = 0.61, 0.97).

As shown in Table 2, in multivariable analyses, factors that remained significantly and positively associated with seeking POs from a physician for nonmedical use included: age (adjusted odds ratio [AOR] = 1.02; 95%CI = 1.00, 1.03); Caucasian ethnicity (AOR = 1.38; 95%CI = 1.07, 1.78); having a history of overdose (AOR = 1.32; 95%CI = 1.02, 1.72); having a history of participation in MMT (AOR = 1.90; 95%CI = 1.41, 2.55); having a history of drug dealing (AOR = 1.65; 95%CI = 1.19, 2.28); and having a history of being refused a prescription for pain medication (AOR = 2.02; 95%CI = 1.58, 2.59).

DISCUSSION

In the present analyses, we found that 37% of participants in a community-recruited sample of PWID reported ever trying to obtain a PO prescription from a physician for nonmedical use, the majority of whom (75%, comprising 27% of the total sample) had ever successfully done so. Older age, Caucasian ethnicity, having a history of overdose, drug dealing, MMT, and being refused pain medication were all independently and positively associated with seeking POs from a physician for nonmedical use.

The observed prevalence of PO-seeking behavior among participants in the current study is similar to that observed in a previous study of street-involved drug users in New York City, which found that 38% of those using Oxycontin for nonmedical purposes reported obtaining it from physicians or pharmacies.[13] However, to our knowledge, ours is the first study to examine factors associated with seeking a PO prescription from a physician for nonmedical use among a community-recruited sample of PWID.

Our finding of an association between non-fatal overdose and PO-seeking behavior is largely consistent with a previous study that identified a positive association between drug seeking and fatal overdose among young heroin users.[21] The underlying explanation for this association requires further investigation. In particular, future research should examine the extent to which PO-seeking behavior predicts riskier drug use practices that may increase the risk of overdose, such as polysubstance use,[17] whether overdose predicts greater

physician contact and PO-seeking behavior or whether this association is explained by shared underlying risk factors for both PO-seeking and overdose.[21]

While the observed association between drug dealing and PO-seeking behavior is open to multiple interpretations, it may imply that some of those who seek POs for nonmedical use may also divert a portion of POs for illicit resale. This explanation is consistent with a previous study, which found that approximately 40% of street-involved drug users reported a history of selling POs and that diverters who also misused POs were most likely to obtain POs from a doctor or pharmacy.[13] However, it may be that those who engage in drug dealing are simply higher intensity drug users,[30] and are therefore more likely to pursue POs from healthcare providers.

Our finding that MMT is associated with seeking POs from a physician for nonmedical use is not surprising in light of previous research reporting a high prevalence of PO use among MMT patients,[25] who may supplement or substitute methadone with POs to avoid withdrawal symptoms[31] or self-manage pain.[32] Additionally, factors that may hinder adherence to MMT, including limited, if any, euphoria experienced by opioid-dependent individuals when methadone is taken[33] as well as MMT-specific systemic and programmatic barriers,[34] may plausibly account for this observed association. However, these interpretations cannot be concluded from the present cross-sectional study and further examination of these issues is necessary.

We also found that PO-seeking behavior was associated with a history of being refused a prescription for pain medication. This suggests that although most participants who had ever tried to obtain a prescription from a physician for nonmedical use had ever successfully done so, many also had a history of being denied a PO prescription. This association may be explained by physicians refusing PO prescriptions because they suspected that these individuals were seeking POs for nonmedical use. This finding expands on the results of a previous local study, which found that almost two-thirds of PWID with chronic pain reported ever being denied a prescription for pain analgesia, despite their legitimate medical concerns.[16] Thus, denial of POs appears to be relatively common among PWID regardless of whether or not they are seeking POs for medical or nonmedical use. Indeed, the present study found that almost two-fifths of those who had not sought POs for nonmedical use had a history of being refused pain medication. Given past work showing an association between self-management of pain and being denied pain medication,[35] future research should continue to explore the relationship between undertreated pain, self-management of pain, and eventual PO misuse and dependence.

Collectively, these findings have a number of implications for policy and prevention efforts. To date, a key strategy to address PO misuse and related harms in the United States has been the expansion of laws and regulations that restrict PO prescribing and accessibility. While our finding of a high prevalence of PO seeking among PWID may appear to support this strategy, the efficacy of such measures remains largely unknown. For example, there has been a lack of rigorous evaluation of restrictive regulatory policies, including the rescheduling of PO substances, establishment of limits on PO prescribing at pain management clinics, and implementation of PO dosage thresholds for general practitioners.

[36] Thus, little is known about the effectiveness of such efforts in mitigating PO-seeking behaviors, diversion, misuse, and associated harms.[36] There is, however, evidence to suggest that tightened regulatory control measures may have unintended adverse consequences, which may be particularly pronounced among substance-using populations. Notably, restrictions on prescribing may contribute to the under-treatment of pain by impeding legitimate access to POs for individuals with pain concerns.[37] This is especially concerning given the high prevalence of pain among PWID and that, as previously noted, denial of POs is common among PWID with pain, often because they are falsely perceived as drug seeking by prescribers.[16] Additionally, prescribing restrictions may further compromise patient care through a “substitution effect,”[38] whereby reductions in the prescription of regulated POs are coupled with a co-occurring increase in the prescription of lesser-controlled POs that may be inferior in terms of effectiveness and/or side effects.[38, 39] For example, after the delisting of slow-release oxycodone formulations in most Canadian provinces in 2012, there was an increase in the dispensation of strong POs, including fentanyl and hydromorphone, while oxycodone dispensing decreased.[39] A further concern is that individuals who are unable to obtain POs through legitimate means may substitute with diverted POs or illicit opioids, such as heroin,[16, 40] and engage in high-risk methods of use, including taking higher doses and using drugs by injection,[40] thereby increasing the risk of harms such as overdose and transmission of blood-borne pathogens.[41] Given these potential adverse consequences and the limited empirical support for regulatory PO control policies, it is premature to consider the expansion of regulatory measures as a robust solution for PO misuse and further research is needed to rigorously evaluate the long-term impacts of such efforts. Instead, health and policy responses to PO seeking and misuse among PWID should involve evidence-based interventions that consider complicating factors that affect substance-using populations, such as comorbid pain and opioid dependence, and which seek to address inappropriate PO prescribing, abuse and diversion, without compromising care for individuals with legitimate medical concerns. First, there is a critical need to develop evidence-based clinical guidelines for pain management among individuals with a history of substance abuse.[42] Given the complex challenges of providing care for these individuals, particularly those with concurrent pain and substance use disorders, and the primary focus on non-drug using populations in current pain management guidelines,[42] the current state of guidance for clinicians in this area is inadequate. Clinical guidelines should indicate the limited utility of POs for chronic noncancer pain, include current best practices on initial prescription and subsequent monitoring of opioid treatment for individuals with a history of substance abuse, and be supplemented with ongoing educational opportunities for clinicians to ensure they receive up-to-date information on the latest advances in pain management research and practice.[43]

A second recommendation is the further evaluation of prescription drug monitoring programs (PDMPs). PDMPs, which utilize centralized electronic databases to identify potentially inappropriate prescribing, dispensing, and use of controlled substances, have proliferated in Canada and the United States over the last decade.[44] However, studies of PDMPs to date have produced conflicting findings regarding the effectiveness of such programs in mitigating inappropriate opioid prescribing, misuse, and associated harms.[44–

49] Many of these studies have suffered from methodological limitations, including reliance on ecological data. Thus, further research is needed to rigorously evaluate the role and impacts of PDMPs in response to inappropriate PO prescribing practices and misuse.

Opioid stewardship programs are another form of intervention that warrant greater research attention. Opioid stewardship programs, modeled after antibiotic stewardship programs, aim to optimize clinical outcomes of PO prescribing through ongoing guidance and education of prescribers.[50, 51] This often involves a designated individual or team of pain specialists whose responsibilities may include pain medication reconciliation, educating healthcare providers on best practices in pain management, and collaborating with healthcare providers to plan pain management for complex cases, including patients with a history of substance abuse.[50, 51] Recent evidence suggests that opioid stewardship programs have the potential to lower costs, as well as improve patient outcomes and satisfaction with care.[50] However, further research is needed to formally evaluate the appropriateness and effectiveness of such programs in response to inappropriate PO prescribing as well as PO-seeking behavior and misuse.

Finally, there is a need for further research examining the relationship between access and adherence to treatment for opioid dependence and PO-seeking behavior. For instance, MMT programmatic restrictions in Canada, including necessary daily attendance at a single pharmacy or clinic for witnessed ingestion and stringent eligibility criteria for take-home doses, may present barriers to MMT adherence that may promote PO-seeking and misuse.[34] Access to methadone is even more restricted in the U.S, where outpatient MMT is only available through federally regulated drug treatment centers.[34] There is evidence to suggest that relaxing such restrictions may promote MMT accessibility and adherence,[34, 52] which may reduce PO-seeking behavior and misuse. However, additional research is needed to confirm potential benefits among PWID and ensure that such adjustments do not increase methadone diversion. Additionally, research should continue to investigate the potential benefits of expanding access to alternative pharmacotherapies to MMT for opioid-dependent individuals. For example, buprenorphine-naloxone, administered in thrice-weekly doses, may address some of the adherence issues encountered with daily MMT and has comparatively lower potential for abuse and diversion.[53, 54] For those who have failed traditional opioid agonist therapies, another alternative is injectable diacetylmorphine (the active ingredient in heroin), which has been found to be highly effective in treating severely opioid-dependent individuals.[55] Currently, these alternatives to MMT are either not widely prescribed (buprenorphine-naloxone) or extremely restricted (diacetylmorphine) in Canada. Nonetheless, such alternatives warrant further consideration, as they may meet the treatment needs of a broader population of opioid-dependent patients.

A number of limitations common to observational studies apply to the current analysis. First, because of the cross-sectional design, the temporal relationship between the outcome and independent variables could not be ascertained. Future prospective studies are needed to more fully investigate the temporality of associations observed herein. Second, both VIDUS and ACCESS cohorts are community-recruited, nonrandomized samples, and therefore our findings may not be generalizable to PWID in local or other settings. Lastly, this study relied

on self-reported information concerning stigmatized behaviors, including the outcome of PO-seeking behavior, which may have been underreported due to social desirability bias.

In summary, over one-third of PWID in the present study reported a history of seeking a PO prescription from a physician for nonmedical use. We found that PWID who reported PO-seeking behavior were more likely to be older, be of Caucasian ethnicity, and to have a history of overdose, MMT, drug dealing, and being refused pain medication. Our findings suggest the need for novel efforts to address PO-seeking behavior among this population, including the development of clinical guidelines for pain management among substance-using populations and further development and evaluation of opioid stewardship programs. Ultimately, these efforts may serve to mitigate PO-seeking behavior, misuse, and related harms without compromising care for PWID with legitimate medical concerns.

Acknowledgments

The study was supported by the United States (US) National Institutes of Health (U01DA038886 and R01DA021525). This research was undertaken, in part, thanks to funding from the Canada Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine, which supports Dr. Evan Wood. Dr. Kanna Hayashi is supported by the Canadian Institutes of Health Research. Mary Clare Kennedy is supported by a Mitacs Award through the Mitacs Accelerate Program. Dr. M-J Milloy is supported in part by the US National Institutes of Health (R01DA021525). Dr. Kora DeBeck is supported by a MSFHR/St. Paul's Hospital-Providence Health Care Career Scholar Award and a Canadian Institutes of Health Research New Investigator Award.

The authors thank the study participants for their contribution to the research, as well as current and past researchers and staff.

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Table 1

Bivariable analyses of factors associated with ever seeking a prescription for prescription opioids from a physician for nonmedical use among 1252 people who inject drugs in Vancouver, Canada (2013–2014)

Characteristic	Yes <i>n</i> (%) <i>n</i> = 458	No <i>n</i> (%) <i>n</i> = 794	Odds ratio (95%CI)	<i>p</i> -value
Age				
Median [IQR]	49 (43–55)	48 (40–54)	1.02 (1.00–1.03)	<.001
Gender				
Men	304 (66.4)	504 (63.5)	1.14 (.89–1.45)	.302
Women	154 (33.6)	290 (36.5)		
Education				
High school diploma	234 (51.1)	364 (45.8)	1.21 (.96–1.52)	.115
<High school diploma	217 (47.4)	407 (51.3)		
Ethnicity				
Caucasian	292 (64.6)	422 (53.1)	1.61 (1.27–2.04)	<.001
Other	162 (35.4)	372 (46.9)		
Homeless (ever)				
Yes	420 (91.7)	712 (89.7)	1.27 (.85–1.90)	.240
No	38 (8.3)	82 (10.3)		
HIV serostatus				
Positive	177 (38.6)	358 (45.1)	0.77 (.61–0.97)	.026
Negative	281 (61.4)	436 (54.9)		
Daily prescription opioid use (injection or non-injection) *				
Yes	20 (4.4)	31 (3.9)	1.12 (.63–2.00)	.690
No	438 (95.6)	763 (96.1)		
Daily non-injection crack use *				
Yes	58 (12.7)	117 (14.7)	0.84 (.60–1.18)	.309
No	400 (87.3)	677 (85.3)		
Daily injection heroin use *				
Yes	72 (15.7)	128 (16.1)	0.97 (.71–1.33)	.845
No	386 (84.3)	665 (83.8)		
Daily injection cocaine use *				
Yes	30 (6.6)	43 (5.4)	1.22 (.76–1.98)	.409
No	428 (93.4)	751 (94.6)		
Daily injection methamphetamine use *				
Yes	33 (7.2)	46 (5.8)	1.26 (.79–2.01)	.322
No	425 (92.8)	748 (94.2)		
Daily cannabis use *				
Yes	115 (25.1)	169 (21.3)	1.24 (.95–1.63)	.120
No	343 (74.9)	625 (78.7)		
Heavy alcohol use *				
Yes	70 (15.3)	134 (16.9)	0.89 (.65–1.22)	.462

Characteristic	Yes <i>n</i> (%) <i>n</i> = 458	No <i>n</i> (%) <i>n</i> = 794	Odds ratio (95%CI)	<i>p</i> -value
No	388 (84.7)	660 (83.1)		
Overdose (ever)				
Yes	319 (69.7)	470 (59.2)	1.58 (1.24–2.02)	<.001
No	139 (30.3)	324 (40.8)		
Methadone maintenance therapy (ever)				
Yes	374 (81.7)	518 (65.2)	2.36 (1.79–3.12)	<.001
No	84 (18.3)	275 (34.6)		
Drug dealing (ever)				
Yes	388 (84.7)	584 (73.6)	1.99 (1.48–2.69)	<.001
No	70 (15.3)	210 (26.4)		
Sex work (ever)				
Yes	255 (55.7)	442 (55.7)	1.00 (.79–1.26)	.997
No	203 (44.3)	352 (44.3)		
Incarceration (ever)				
Yes	204 (44.5)	281 (35.4)	1.47 (1.16–1.85)	.001
No	254 (55.5)	513 (64.6)		
Pain/discomfort *				
Extreme/moderate	252 (55.0)	374 (47.1)	1.38 (1.09–1.74)	.007
None	202 (44.1)	413 (52.0)		
Disability *				
Yes	233 (50.9)	360 (45.3)	1.27 (1.01–1.61)	.041
No	218 (47.6)	429 (54.0)		
Refused pain medication (ever)				
Yes	275 (60.0)	305 (38.4)	2.41 (1.90–3.05)	<.001
No	181 (39.5)	484 (61.0)		

* Refers to activities in the last 6 months

Table 2

Multivariable logistic regression analysis of factors associated with seeking a prescription for prescription opioids from a physician for nonmedical use among 1252 people who inject drugs in Vancouver, Canada (2013–2014)

Variable	Adjusted odds ratio (AOR)	95% Confidence interval (CI)	p-value
Age			
Per year older	1.02	(1.00–1.03)	.039
Ethnicity			
Caucasian vs. other	1.38	(1.07–1.78)	.013
Overdose (ever)			
Yes vs. no	1.32	(1.02–1.72)	.034
Methadone maintenance therapy (ever)			
Yes vs. no	1.90	(1.41–2.55)	<.001
Drug dealing (ever)			
Yes vs. no	1.65	(1.19–2.28)	.003
Incarceration (ever)			
Yes vs. no	1.29	(1.00–1.67)	.054
Refused pain medication (ever)			
Yes vs. no	2.02	(1.58–2.59)	<.001