Harm Reduction Journal

RESEARCH

Open Access

Denial of prescription pain medication among people who use drugs in Vancouver, Canada

Evelyne Marie Piret[1,2], M.-J. Milloy[1,3], Pauline Voon[1], JinCheol Choi[1], Kora DeBeck[1,4], Kanna Hayashi[1,5] and Thomas Kerr[1,3*]

Abstract

Background People who use drugs experience pain at two to three times the rate of the general population and yet continue to face substantial barriers to accessing appropriate and adequate treatment for pain. In light of the overdose crisis and revised opioid prescribing guidelines, we sought to identify factors associated with being denied pain medication and longitudinally investigate denial rates among people who use drugs.

Methods We used multivariable generalized estimating equations analyses to investigate factors associated with being denied pain medication among people who use drugs reporting pain in three prospective cohort studies in Vancouver, Canada. Analyses were restricted to study periods in which participants requested a prescription for pain from a healthcare provider. Descriptive statistics detail denial rates and actions taken by participants after being denied.

Results Among 1168 participants who requested a prescription for pain between December 2012 and March 2020, the median age was 47 years and 63.0% were male. Among 4,179 six-month observation periods, 907 (21.7%) included a report of being denied requested pain medication. In multivariable analyses, age was negatively associated with prescription denial (adjusted odds ratio [AOR] = 0.98, 95% confidence interval [CI]:0.97–0.99), while self-managing pain (AOR = 2.48, 95%CI:2.04–3.00), experiencing a non-fatal overdose (AOR = 1.51, 95%CI:1.22–1.88), engagement in opioid agonist therapy (AOR = 1.32, 95%CI:1.09–1.61), and daily use of heroin or other unregulated opioids (AOR = 1.32, 95%CI:1.05–1.66) were positively associated with being denied. Common actions taken ($n = 895$) after denial were accessing the unregulated drug supply (53.5%), doing nothing (30.6%), and going to a different doctor/emergency room (6.1%). The period following the introduction of new prescribing guidelines was not associated with a change in denial rates.

Conclusions A substantial proportion of people who use drugs continue to be denied prescriptions for pain, with such denial associated with important substance use-related harms, including non-fatal overdose. Guidelines specific to the pharmaceutical management of pain among people who use drugs are needed.

Keywords Pain, Pain management, Prescription denial, People who use drugs, Prescribing guidelines

*Correspondence:
Thomas Kerr
bccsu-tk@bccsu.ubc.ca
Full list of author information is available at the end of the article

Background

Pain is a leading cause of years lived with disability worldwide and a major driver of healthcare engagement in North America [1–3]. People who use drugs (PWUD) experience disproportionately high rates of pain, with an estimated 48 to 60% of people who use prescription opioids non-medically reporting chronic pain compared to 15 to 21% of the general Canadian population [4–6]. In addition to the negative impacts of chronic and acute pain on health, function, and quality of life [5, 7], PWUD experience other unique consequences of pain. Recent evidence from cohorts of Medicaid recipients in the United States suggests that both chronic and acute pain are negatively associated with substance use treatment initiation and retention following a substance use disorder diagnosis or a non-fatal overdose [8, 9]. The risks associated with self-management of pain via the unregulated drug supply and increased tolerance to opioids are especially concerning given the ongoing overdose crisis across the United States and Canada [7, 10, 11]. In the Canadian province of British Columbia (BC), over 11,000 suspected illicit drug toxicity deaths have been recorded since a public health emergency was declared in April 2016, with 2293 lives lost in 2022 alone, driven by illicitly manufactured fentanyl, fentanyl analogues, and other contaminants in the unregulated drug supply [12, 13].

Canadians have been among the highest consumers of medical opioids over the last decade [14]. However, recent guidelines have sought to reduce the prescribing of medical opioids in light of the ongoing overdose crisis, the limited evidence supporting opioids as an appropriate treatment for chronic non-cancer pain compared to available alternatives, and the serious risks associated with long-term opioid use [11, 15–17]. In June 2016, the College of Physicians and Surgeons of British Columbia released new guidelines and enforceable standards to curtail the prescribing of opioids, sedatives, and stimulants [18]. Endorsing the United States' Centers for Disease Control and Prevention's 2016 Guideline for Prescribing Opioids for Chronic Pain, the document recommended against prescribing long-term opioid treatments to patients with substance use disorders and established stricter standards around the dosing of opioids [18–20]. Canadian federal guidelines for the prescription of opioids were released in June 2017 with comparable recommendations [21]. Early assessments of the provincial policy change found that opioid prescribing in BC continued to decline moderately following the policy's introduction, as had been the trend prior to the policy's implementation [22, 23]. However, there is evidence that the Canadian national guidelines are not effectively translating into practice with studies highlighting limitations regarding physicians' understanding of, and adherence to the opioid prescribing guidelines [24, 25].

Though legitimate concerns exist around the risks of escalating or relapsing substance use, diversion, lessening efficacy, and hyperalgesia when prescribing opioids for long-term pain management [17], alternative licit therapies to manage pain are not accessible to many PWUD [26]. Existing literature highlights how PWUD suffering from acute and chronic pain experience unique and overlapping barriers to accessing care, including stigma, distrust, and discrimination within healthcare settings [26, 27]. Medication requests are often labelled as drug-seeking and illegitimate, leading to the undertreatment of pain and deterioration of patient-provider relationships [27–33]. These outcomes may be exacerbated for people who experience intersecting marginalization, including Indigenous peoples and other racialized people who face institutional and interpersonal racism [34–37]. In addition to the challenges in accessing pharmacological therapies, alternative pain management strategies such as psychotherapeutic care and physical therapy remain unattainable to many people living with persistent pain due to affordability, accessibility, and availability barriers [38]. Indeed, Dassieu, Kabore et al. (2020) describes how the daily challenges faced by PWUD experiencing numerous comorbidities and socio-economic marginalization can relegate pain and pain management to the periphery [39]. The negative consequences of unmanaged pain on socio-economic conditions and substance use among PWUD reinforce many of these barriers, creating a cycle of harm that limits opportunities for care [28, 39].

In 2010, the International Pain Summit declared that access to pain management is a fundamental human right [40]. Despite experiencing disproportionate rates of pain, PWUD face critical barriers to licit pain management, negatively affecting health and wellbeing. We sought to assess access to pharmaceutical pain therapies among structurally marginalized PWUD amidst reforms to opioid prescribing guidelines in the context of the ongoing public health emergency and heightened attention around opioid prescribing. We longitudinally examine the factors associated with PWUD being denied a prescription for pain medication and explore the actions taken after being denied. Additionally, we investigate whether the toxic drug supply and evolving policy landscape have affected the rates of denial for requested prescription pain medication by PWUD over time.

Methods

Study design

Data for this study were drawn from three open, ongoing, and harmonized prospective cohort studies of PWUD in Vancouver, Canada: the Vancouver Injection Drug

Users Study (VIDUS), the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS), and the At-Risk Youth Study (ARYS). These cohorts have previously been described in detail [41–43]. Briefly, these cohorts have been recruiting participants since 2005 through community-based methods including street outreach, word of mouth, and self-referral. Recruitment and follow-up activities for VIDUS and ACCESS largely focus on Vancouver's Downtown Eastside, an urban neighbourhood with high levels of substance use, criminalization, and marginalization, while ARYS operates in the Downtown South, a similar neighbourhood with a substantial population of street-involved youth. VIDUS includes adults at risk of human immunodeficiency virus (HIV) who injected drugs in the month prior to enrolment, and ACCESS includes people living with HIV who used unregulated drugs (other than or in addition to cannabis) in the month prior to enrolment. ARYS includes street-involved youth aged 14 to 26 at risk of HIV who used unregulated drugs in the month prior to enrolment. VIDUS and ARYS participants who seroconvert to HIV-positive status during follow-up are transferred to the ACCESS cohort. All eligible participants provided written informed consent at enrolment.

At baseline and every six months thereafter, participants are invited to complete interviewer-administered questionnaires that cover a range of topics including socio-demographic characteristics, substance use practices, social-structural exposures, sexual behaviours, and harm reduction and addiction care utilization. Nurse-administered questionnaires on health status and services use are also conducted at each visit. Nurses collect urine samples for drug screening and blood samples for HIV and hepatitis C virus (HCV) serology testing or monitoring. Participants receive a $40 (CAD) honorarium at each study visit. All three cohorts have received annual approval from the University of British Columbia/Providence Health Care Research Ethics Board.

Study sample

The present analysis was restricted to study visits occurring between December 1, 2012 and March 17, 2020, when all in-person research activities were suspended because of the COVID-19 pandemic. We included all study periods in which a participant reported pain or discomfort and having requested a prescription for pain medication in the previous six months. Beginning in June 2014, the inclusion criteria were revised to include individuals who had requested or continued a prescription for pain medication in the previous six months. Pain was assessed using the EuroQol EQ-5D-3L instrument, which asks respondents to indicate whether they have no, moderate, or extreme pain or discomfort on the day of the interview [44]. This standardized measure has been validated among people with chronic pain and PWUD [45–47].

Study variables

The primary outcome of interest was self-reporting being denied a request for prescription pain medication during the previous six months, collected as a binary variable (yes vs. no). All potential explanatory variables considered were selected based on previous research on pain among PWUD and our extensive experience in the study setting [48, 49]. Sociodemographic characteristics included: sex assigned at birth (male vs. female); age (continuous, per year older); ethnicity/ancestry (Indigenous vs. person of colour [POC]/other vs. White); and education level ($\geq$ vs. $<$ completed high school). Other variables considered at each six-month study visit included: living with HIV (serological testing; yes vs. no); HCV status (serological testing; seropositive vs. seronegative); physical disability that limits mobility (yes vs. no); housing status (defined as living in a single room occupancy hotel, shelter, transitional housing, or the street versus in an apartment or house; unstable vs. stable); Downtown Eastside residency (yes vs. no); recently incarcerated (including detention, prison, or jail; yes vs. no); engaged in opioid agonist therapy (yes vs. no); non-fatal overdose (yes vs. no); and self-management of pain (defined as having managed their pain on their own; yes vs. no). Substance use variables referring to patterns of use in the previous six months included: heavy alcohol use (defined according to the United States' National Institute on Alcohol Abuse and Alcoholism [50] criteria as averaging >4 drinks/day or >14/week for males and >3 drinks/day or >7drinks/week for females; yes vs. no); daily cannabis use (yes vs. no); daily use of any stimulant (including cocaine, crystal methamphetamine, and crack; yes vs. no); daily use of heroin or other unregulated opioid (yes vs. no); any injection drug use (yes vs. no); and any daily non-medical prescription opioid use (yes vs. no). Finally, a variable assessing a potential period effect was included to evaluate whether a change in reported denial rates for prescription pain medication occurred. The period variable was divided as before (2012 to 2015; reference level) versus after (2016 to 2020) given BC's major increase in overdose deaths in 2016, the declaration of a public health emergency in April 2016, and the changes to BC prescribing guidelines in June 2016.

Statistical analysis

Self-reported pain intensity among the sample was explored using descriptive statistics. Baseline characteristics, stratified by prescription pain medication denial in the last six months, were assessed using Mann–Whitney

test for continuous variable and Pearson's Chi-square test for categorical and binary variables. The proportion of participants that reported being denied a requested prescription was calculated for each six-month study interview period. Since participants could provide new observations every six months, there may be some correlation in participants denied across time periods, though reports of medication requests and denials are unique to each follow-up period. As of June 2013, follow-up visits asked about the type of prescription requested and a separate denial rate was calculated for requests that included an opioid, requests for drugs that did not include an opioid, and requests for non-specified drugs. A bivariate generalized estimating equations (GEE) with logit link function was used to test for differences between the groups' denial rates. Analyses of factors potentially associated with prescription pain medication denial included serial measures from participants, with observations from the same person likely to be correlated. To account for within-subject correlations, we used GEE with logit link function and an exchangeable correlation structure. Therefore, data from every participant follow-up observation that met the inclusion criteria were considered in the analysis. We conducted bivariate GEE analyses to determine factors associated with being denied a requested prescription pain medication and a multivariable model using GEE was fit with all explanatory variables that reached a significance level of 0.10 in the bivariate analyses. In subanalyses, we used descriptive statistics to characterize the types of pain medication participants requested, ways participants self-managed pain, and responses to the question "what did you do after you were refused?" among those denied medications. Responses were manually categorized by the first author. All analyses were performed using R (Version 4.2.2, R Foundation for Statistical Computing, Vienna, Austria). All p-values are two-sided and considered significant at $p < 0.05$ unless otherwise stated.

Results

From December 2012 to March 2020, among 2446 participants interviewed, 1168 (47.8%) participants reported having pain and having requested a prescription for pain medication in at least one six-month study period. The median number of included visits per participant was 2 (interquartile range [IQR]: 1–5), with a total of 4,179 study interviews included in the analysis. The median age at baseline was 47 years (IQR: 37–54), 736 (63.0%) were male, 658 (56.3%) identified as White and 450 (38.5%) as Indigenous. Of all observations included, 3,206 (76.7%) involved a report of moderate pain/discomfort and the balance ($n = 973$, 23.3%) involved a report of extreme pain/discomfort.

In total, 569 participants (48.7%) reported ever being denied pain medication during the study period. Of the 3,847 observations that specified the type of prescription requested, a majority included a request for opioids ($n = 2534$, 65.9%), followed by non-opioids ($n = 925$, 24.0%), and non-specified medications ($n = 388$, 10.1%). Multiple types of pain medication were often requested within one observation. Of note, approximately one third ($n = 752$) of the requests for opioids were seeking Tylenol 3, i.e., codeine, caffeine and acetaminophen tablets. Most of the requests for non-opioid medications included over-the-counter medications ($n = 628$) and gabapentin ($n = 534$), with muscle relaxants ($n = 99$) and cannabinoids ($n = 49$) present in less than 4% of all requests. Of the 3,032 observations that reported self-managing pain, a majority ($n = 1824$, 60.2%) characterized it as involving the use of unregulated drugs or diverted pharmaceutical medications (i.e., excluding licit pharmaceutical medications, cannabis, over-the-counter medications, and alcohol/ethanol). Table 1 presents the baseline characteristics of the sample, stratified by having been denied a prescription at study baseline, i.e., the first included observation for each participant. Here, being denied a requested prescription for pain medication was negatively associated with age and living with HIV, and positively associated with unstable housing, incarceration, opioid agonist therapy, non-fatal overdose, self-management of pain, daily stimulant use, daily heroin/unregulated opioid use, any injection drug use, and daily non-medical prescription opioid use.

Figure 1 depicts the proportion of requests for prescription pain medications that were denied at each interview period. The overall denial rate is provided alongside differentiated denial rates for requests that included an opioid, requests that did not include an opioid, and requests that did not specify at the time of data collection (i.e., "anything for the pain"). In total, 21.7% of observations involved a denial of a request for pain medication, with the overall denial rates ranging from 12.7 to 29.3%. With respect to denial rates and ranges differentiated by type of medications requested, we observe that opioid requests had a 20.6% denial rate (range: 13.2–30.7%), non-opioid requests had a 9.3% denial rate (1.7–27.2%), and non-specified medication requests had the highest denial rate at 54.9% (23.5–81.5%). Observations with non-specified requests were significantly ($p < 0.001$) more likely to report being denied pain medication compared to observation where requests were specified (i.e., requested opioids or non-opioids).

Table 2 presents the results of the bivariate and multivariable GEE analyses, investigating factors associated with being denied a requested prescription. As shown, in bivariate GEE analyses, factors significantly and

Table 1 Baseline characteristics stratified by pain medication denial among people who use drugs in Vancouver, Canada

Characteristic	Total, $n=1168$ (100%)	Denied medication, $n=294$ (25.2%)	Not denied medication, $n=874$ (74.8%)	p – value
Age (median, IQR)	47.0 (36.6–53.7)	43.7 (32.4–51.7)	47.8 (38.3–54.5)	< 0.001
Sex				
Male	736 (63.0)	194 (66.0)	542 (62.0)	0.25
Female	432 (37.0)	100 (34.0)	332 (38.0)	
Ethnicity/Ancestry				
Indigenous	450 (38.5)	104 (35.4)	346 (39.6)	0.42
POC/other	49 (4.2)	12 (4.1)	37 (4.2)	
White	658 (56.3)	175 (59.5)	483 (55.3)	
Education completed				
≥ High school	610 (52.2)	160 (54.4)	450 (51.5)	0.312
< High school	537 (46.0)	126 (42.9)	411 (47.0)	
Living with HIV				
Yes	459 (39.3)	96 (32.65)	363 (41.5)	0.009
No	709 (60.7)	198 (67.35)	511 (58.5)	
HCV status				
Seropositive	901 (77.1)	226 (76.9)	675 (77.2)	1
Seronegative	265 (22.7)	67 (22.8)	198 (22.7)	
Physical disability				
Yes	792 (67.8)	201 (68.4)	591 (67.6)	0.811
No	375 (32.1)	92 (31.3)	283 (32.4)	
*Housing status**				
Unstable	731 (62.6)	206 (70.1)	525 (60.1)	0.002
Stable	426 (36.5)	85 (28.9)	341 (39.0)	
*Downtown Eastside residency**				
Yes	646 (55.3)	170 (57.8)	476 (54.5)	0.35
No	522 (44.7)	124 (42.2)	398 (45.5)	
*Incarceration**				
Yes	88 (7.5)	43 (14.6)	45 (5.2)	< 0.001
No	1078 (92.3)	250 (85.0)	828 (94.7)	
*Opioid agonist therapy**				
Yes	653 (55.9)	181 (61.6)	472 (54.0)	0.028
No	515 (44.1)	113 (38.4)	402 (46.0)	
*Non-fatal overdose**				
Yes	128 (11.0)	50 (17.0)	78 (8.9)	< 0.001
No	1040 (89.0)	244 (83.0)	796 (91.1)	
*Self-manage pain**				
Yes	830 (71.1)	264 (89.8)	566 (64.8)	< 0.001
No	337 (28.9)	30 (10.2)	307 (35.1)	
*Heavy alcohol use**				
Yes	166 (14.2)	44 (15.0)	122 (14.0)	0.746
No	1001 (85.7)	250 (85.0)	751 (85.9)	
*Daily cannabis use**				
Yes	320 (27.4)	81 (27.6)	239 (27.4)	0.998
No	845 (72.4)	212 (72.1)	633 (72.4)	
Daily stimulant use,†*				
Yes	298 (25.5)	95 (32.3)	203 (23.2)	0.002
No	866 (74.1)	197 (67.0)	669 (76.5)	

Table 1 (continued)

Characteristic	Total, $n=1168$ (100%)	Denied medication, $n=294$ (25.2%)	Not denied medication, $n=874$ (74.8%)	p – value
*Daily heroin/unregulated opioid use**				
Yes	204 (17.5)	79 (26.9)	125 (14.3)	< 0.001
No	960 (82.2)	213 (72.5)	747 (85.5)	
*Any injection drug use**				
Yes	707 (60.5)	210 (71.4)	497 (56.9)	< 0.001
No	460 (39.4)	83 (28.2)	377 (43.1)	
*Daily non-medical prescription opioid use**				
Yes	64 (5.5)	27 (9.2)	37 (4.2)	0.002
No	1102 (94.4)	266 (90.5)	836 (95.7)	

P-values were calculated by a simple logistic regression for the continuous variable age, and by normal approximation and Chi-square test for categorical and binary variables, respectively

IQR interquartile range, *POC* person of colour, *HIV* human immunodeficiency virus, *HCV* hepatitis C virus

* in the six months prior to the interview date

† Defined as daily cocaine, crack, or meth use

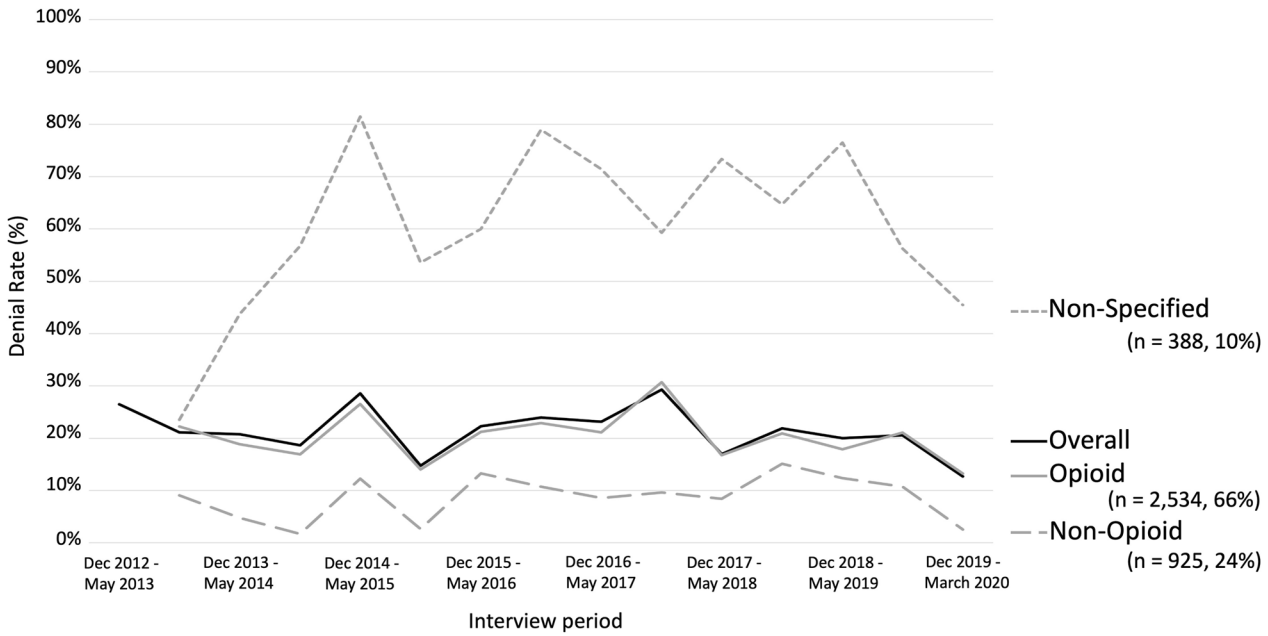

Fig. 1 Prescription denial rates, overall and stratified by analgesic type, Vancouver, Canada, December 2012–March 2020. Prescription denial rates among 4179 participant interviews reporting pain and denial of prescription for analgesics by six-month reporting period, Vancouver, Canada, December 2012 to March 2020. * Participants were asked what pain medication they requested in June 2013 onwards, meaning these data are not available for the first interview period (n = 332). † Non-specified refers to participants who did not specify what pain medication they requested at the time of the interview (e.g., 'anything for my back pain,''something stronger than over-the-counter medication')

positively associated with prescription denial included: unstable housing (odds ratio [OR] = 1.26, 95% confidence interval [CI]: 1.06–1.49), incarceration (OR = 2.00, 95%CI: 1.44–2.76), engaging in opioid agonist therapy (OR = 1.38, 95%CI: 1.15–1.66), experiencing a non-fatal overdose (OR = 1.86, 95%CI: 1.52–2.28), self-managing pain (OR = 2.74, 95%CI: 2.30–3.26), daily stimulant use (OR = 1.39, 95%CI: 1.16–1.66), daily heroin/unregulated opioid use (OR = 1.91, 95%CI: 1.55–2.35), any injection drug use (OR = 1.61, 95%CI: 1.36–1.92), and daily non-medical prescription opioid use (OR = 1.36, 95%CI: 1.02–1.82). Older age (OR = 0.97, 95%CI: 0.96–0.98) and living with HIV (OR = 0.64, 95%CI: 0.53–0.79) were negatively associated with being denied a request for pain

Table 2 Factors longitudinally associated with pain medication denial among people who use drugs in Vancouver, Canada

	Unadjusted ($n=4179$)		Adjusted ($n=4134$**)	
Characteristic	**Odds Ratio (95% CI)**	***p* – value**	**Odds Ratio (95% CI)**	***p* – value**
Age				
Per year older	0.97 (0.96–0.98)	< 0.001	0.98 (0.97–0.99))	< 0.001
Sex				
Male vs. female	1.06 (0.85–1.30)	0.616		
Ethnicity/Ancestry				
Indigenous vs. White	0.92 (0.75–1.13)	0.439		
POC/other vs. White	0.71 (0.41–1.25)	0.237		
Education completed				
≥ High school vs < High school	1.08 (0.88–1.33)	0.442		
Living with HIV				
Yes vs. no	0.64 (0.53–0.79)	< 0.001	0.83 (0.67–1.03)	0.088
HCV status				
Seropositive vs. seronegative	0.86 (0.67–1.10)	0.223		
Physical disability				
Yes vs. no	1.07 (0.89–1.28)	0.474		
*Housing status**				
Unstable vs. stable	1.26 (1.06–1.49)	0.008	1.11 (0.92–1.33)	0.274
*Downtown Eastside residency**				
Yes vs. no	1.12 (0.94–1.35)	0.208		
*Incarceration**				
Yes vs. no	2.00 (1.44–2.76)	< 0.001	1.39 (0.98–1.96)	0.066
*Opioid agonist therapy**				
Yes vs. no	1.38 (1.15–1.66)	0.001	1.32 (1.09–1.61)	0.005
*Non-fatal overdose**				
Yes vs. no	1.86 (1.52–2.28)	< 0.001	1.51 (1.22–1.88)	< 0.001
*Self-manage pain**				
Yes vs. no	2.74 (2.30–3.26)	< 0.001	2.48 (2.04–3.00)	< 0.001
*Heavy alcohol use**				
Yes vs. no	1.15 (0.93–1.43)	0.191		
*Daily cannabis use**				
Yes vs. no	1.16 (0.97–1.40)	0.11		
Daily stimulant use,†*				
Yes vs. no	1.39 (1.16–1.66)	< 0.001	1.12 (0.92–1.36)	0.251
*Daily heroin/unregulated opioid use**				
Yes vs. no	1.91 (1.55–2.35)	< 0.001	1.32 (1.05–1.66)	0.018
*Any injection drug use**				
Yes vs. no	1.61 (1.36–1.92)	< 0.001	1.12 (0.91–1.38)	0.302
*Daily non-medical prescription opioid use**				
Yes vs. no	1.36 (1.02–1.82)	0.034	1.24 (0.91–1.69)	0.177
Period				
2016–2020 vs. 2012–2015	1.05 (0.90–1.23)	0.509		

GEE generalized estimating equations, *CI* confidence interval, *POC* person of colour, *HIV* human immunodeficiency virus, *HCV* hepatitis C virus

* in the six months prior to the interview date

† Defined as daily cocaine, crack, or meth use

** 45 observations were removed from the final model due to missing data

medication. The variable assessing a potential period effect was non-significant in bivariate GEE analyses, suggesting that the period after the emergency declaration and implementation of new prescribing guidelines in 2016 was not associated with a change in denial rates.

In multivariable GEE analyses, factors that remained independently and significantly associated with being denied pain medication included: age (adjusted odds ratio [AOR] = 0.98, 95%CI: 0.97–0.99), self-managing pain (AOR = 2.48, 95%CI: 2.04–3.00), experiencing a non-fatal overdose (AOR = 1.51, 95%CI: 1.22–1.88), engaging in opioid agonist therapy (AOR = 1.32, 95%CI: 1.09–1.61), and daily heroin/unregulated opioid use (AOR = 1.32, 95%CI: 1.05–1.66).

Of the 908 participant observations that were denied a requested prescription, 895 (98.6%) reported on actions taken after being denied medication. Participants could provide more than one answer. The most common actions were accessing the unregulated drug market (n = 479, 53.5%), doing nothing (n = 274, 30.6%), and going to a different doctor/specialist/emergency room (n = 55, 6.1%). All other categories were reported by less than 4% of observations, and included using over-the-counter medication, alcohol or ethanol, cannabis, or someone else's medications.

Discussion

In our longitudinal investigation, almost half (48.7%) of the PWUD in the analytic sample reported being denied prescription pain medication at least once during the seven-year study period. Participants who were denied a prescription for pain medication were more likely to be younger and engaged in opioid agonist therapy (OAT), as well as more likely to report high-risk substance use-related characteristics, including the self-management of pain, experiencing a non-fatal overdose, and daily heroin/unregulated opioid use. Following the denial of pain medications, a majority of participants reported accessing the unregulated drug supply, a third reported doing nothing, and 6% turned to a different healthcare provider. Overall, no period effect was observed for the denial rate of requested prescriptions pain medications following changes to prescribing guidelines and the declaration of the overdose crisis, with the proportion of requests denied from 2012 to 2020 fluctuating between 13 and 29%.

Two previous studies investigating prescription pain medication denial among PWUD reported cross-sectional denial rates that fell within the range we observed, with 22.7% (34/150) and 29.2% (7/24) of participants reporting being denied [52, 53]. A third study previously conducted with the ACCESS and VIDUS cohorts prior to the current overdose crisis reported a denial rate of 66.5% (307/462) [48]. This notably higher denial rate is likely due to differences in methodological approaches and eligibility criteria, including the sample having been restricted to people engaged in active injection drug use. Although existing studies among the general population are limited and do not detail substance use patterns, one study from a family medicine clinic in California, United States reported a 18.1% (49/271) denial rate for prescription pain medication [54]. Future research is needed to further characterize denial rates among the general population, with consideration of key variables such as the type of medication requested and participants' ability to access alternative non-pharmaceutical therapies.

In our study, people denied prescription pain medication were 2.5 times more likely to report self-managing pain, which a majority described as unregulated or diverted substance use. Self-management of pain via the unregulated drug supply is a common practice among PWUD experiencing pain [55, 56], and was reported as a direct consequence of denial by 53% of participants denied in our study. Fibbi, Silva et al. (2012) reported that among the 34 youth denied opioids for pain in their study, 18 (52.9%) reported self-managing their pain with non-medical prescription opioids or heroin [52]. Kaboré, Dassieu et al. (2020) reported that 32.1% (60/187) of their sample used non-prescription substances for pain management, though this increased to 71.4% (5/7) when restricted to those denied a prescription [53]. Though substance use is by definition common to all PWUD, there is evidence that pain increases the intensity of substance use, such as increased rates of daily substance use and injection drug use [56]. Our analysis suggests that this pattern may be heightened for PWUD who are denied pain medication, with such denial being associated with increased likelihood of daily heroin/unregulated opioid use and non-fatal overdose. Qualitative investigations of PWUD's self-management of pain with substances reveal the complexity of the practice, with substance use carefully considered and managed to perform multiple simultaneous roles: relieving pain, intoxication, avoiding withdrawal symptoms, and managing other physical and mental conditions [28, 57, 58]. Given the obvious concerns associated with accessing the unregulated toxic drug supply during an overdose crisis, it is important that appropriate pain management be made available within healthcare settings to reduce the risks associated with PWUD self-managing their pain.

Our findings suggest that people receiving OAT may be more likely to be denied pain medication. These findings are especially concerning given the high prevalence of chronic pain among people receiving OAT, which a recent meta-synthesis estimated to be approximately 45% [59]. Concerns around moderate-to-severe acute pain

management with opioids are also important as people maintained on opioids, including OAT, may have tolerance levels that requires an additional dosage to reach analgesia. There are many factors that may be contributing to the increased denial rate among this sub-sample of PWUD. Healthcare providers' stigma and distrust towards PWUD regarding their pain may be magnified when patients have a formal opioid use disorder diagnosis. Further, physicians may be reluctant to prescribe additional medications for pain given that OAT can be optimized for pain management [60–63]. A previous investigation of these cohort studies found that 23% of participants who were enrolled in methadone maintenance therapy at the time of their request for prescription pain medication were told that they were denied because their methadone maintenance therapy was sufficient [48]. Physicians may also have concerns about co-prescribing other drugs, especially opioids, that may interfere with or not work alongside OAT. Finally, OAT clinics in this setting are often siloed and do not provide treatment deemed beyond the scope of OAT care, thus perpetuating a perceived dichotomization between pain treatment and substance use disorder treatment [26, 28, 48, 63, 64]. This is despite evidence that OAT can provide pain relief when carefully dispensed with concurrent treatment in mind, such as with different dosing schedules and amounts [60–63]. Given the high prevalence of chronic pain among PWUD engaged in OAT, future research should continue to investigate how best to deploy OAT, alongside other therapies, to manage pain while simultaneously supporting OAT treatment outcomes. For example, while there is strong evidence supporting the use of cannabinoids for pain relief [65], there is preliminary evidence that cannabis use might also support improved outcomes from OAT, including better retention and lower rates of exposure to the unregulated drug supply [66, 67].

Although there is some literature and province-specific practice recommendations on the topic [63, 68, 69], there are no clinical practice guidelines specific to the concurrent management of pain and substance use disorders in Canada, and none identified internationally [70]. Existing guidelines focus either on the treatment of pain or the treatment of substance use disorders, with only short sections dedicated to concurrent treatment consideration [21, 71–74]. The lack of clear, evidence-based guidelines can lead to some notable consequences. First, without guidelines for the management of pain among PWUD specifically, prescribers are left to individually adapt guidelines that are made on risk–benefit considerations that may not be relevant to PWUD. For example, the risk of dependence, overdose, and death from prescribed opioids may be considered differently for a patient with active unregulated opioid use who will rely on the unregulated supply for pain management if not supported in-clinic, as we see is common within our analysis. Second, unique considerations arise around contraindications between prescription pain medications and unregulated drugs or substance use disorder treatments. Such considerations include medications that affect the central nervous system (e.g., benzodiazepines, antipsychotics, anticonvulsants, and opioids including methadone) and can lead to potentially fatal respiratory depression [75]. Third, the lack of guidelines individualizes care to a greater degree, leaving PWUD seeking pain treatment to the preferences and competency level of their attending physician to a greater extent. As previously outlined, PWUD may face stigma, discrimination, and treatment refusal from healthcare providers when accessing treatment for pain, which can lead to consequences such as disengagement from care and self-management of pain [26, 28, 29, 76]. Our findings suggest that younger PWUD may experience greater barriers in accessing pharmaceutical pain management, evidenced by a 2% decrease in the odds of being denied medication per year older. This may be due to the types of acute and chronic pain more likely to be experienced by younger people, or it may be a result of the greater prevalence and subsequent normalization of chronic pain among older individuals. Further research is needed to understand this association. Fourth, the lack of guidelines specific to PWUD has left many healthcare providers hesitant and reticent when providing pain care to this complex patient population, restricted by a lack of confidence in what the best practices are [77]. This apprehension is further induced by physicians' fear of potential repercussions from medical regulatory colleges if identified as overprescribing opioids [77, 78]. Future research among healthcare providers should investigate the role of psychosocial and structural factors in enabling or complicating the provision of analgesia. Finally, current guidelines suggest providing referrals to (or getting guidance from) addiction medicine specialists experienced in pain when treating patients with concurrent substance use disorder and acute or chronic pain [74]. This not only creates an additional step in accessing care which may act as a barrier to many PWUD, but also assumes an unrealistic capacity of addiction medicine specialists for conditions that could be treated in primary care if guidance was available [77]. Further, a recent review of multidisciplinary pain treatment facilities across Canada found that almost one in three centers actively exclude patients with a substance use disorder [79]. While guidelines highlight the importance of clinical judgement and shared decision making when deciding on therapeutic pathways [72], there is evidently a gap in clinical and patient resources for the management of pain amidst substance use.

We found that the denial rate of pain medications among PWUD was reasonably stable over time, with no significant change despite important contextual shifts including BC's rapid increase in overdose deaths and new opioid prescribing guidelines in 2016 and 2017. In particular, the absence of a lasting increase in the opioid denial rate as of 2016 suggests that the guidelines may be mismatched with the realities of PWUD and their prescribers (e.g., minimal access to alternative non-pharmaceutical therapies, socio-economic marginalization, complex comorbidities) and are not sufficient to support the treatment of pain among PWUD [78]. Guidelines specific to the concurrent management of pain and substance use are needed to support those denied requested medications for pain and outline best practices among people receiving pain medications. Such guidelines may be especially helpful in treating patients who do not know what medications alleviate their pain. As seen in Fig. 1, participants whose pain medication requests were not specified at the time of data collection had the highest denial rate and would likely benefit from the existence of guidelines that would assist physicians in creating a treatment plan in collaboration with their patient. Further, given that the reported denial rate among participants who requested opioids was only 21%, it may be inferred that a substantial proportion received opioid prescriptions for pain despite the current restrictive guidelines that are based on evidence of limited comparative efficacy and serious harms associated with long-term use [18, 21, 72]. Revised guidelines will need to pay special attention to support best practices and informed clinical judgment regarding the appropriate use of opioids and other drugs at risk of misuse for PWUD experiencing pain. Opioid-specific considerations include how to discuss the risks and benefits of prescription opioids for pain with PWUD; approaches to the tapering or discontinuation of opioids; acute prescribing considerations for people with different types of substance use; how to minimize the effects of hyperalgesia; information on drug interactions and contraindications between opioids and other prescribed and unregulated drugs; and best standards around optimizing OAT for the concurrent management of pain and opioid use disorder. Finally, though beyond the scope of this analysis, research and guidance is also needed regarding non-pharmaceutical therapies to address the complexity of pain among PWUD.

This analysis has several limitations to consider. First, as this is an observational study, causation cannot be inferred. Second, there is potential for unmeasured confounding in our model. Potential confounders that could not be assessed include participants' underlying health conditions, the clinical setting of the request (i.e., emergency doctor, primary doctor, community practitioner), and features of the pain for which a prescription was sought, such as the intensity or duration of the pain. Third, participants in the cohorts are not selected at random, with the community-based sampling methods limiting generalizability to broader populations of PWUD and other settings. Fourth, apart from HIV and HCV serostatus, our analysis relies on self-reported data which introduces the potential of recall and social desirability bias. However, research has shown self-reported data among PWUD to be reliable and valid [80–82]. Fifth, though we aimed to be inclusive of both chronic and acute pain experiences, our inclusion criteria of moderate or extreme pain or discomfort at the time of interview may have underestimated the participants who experienced acute pain during the follow-up period that resolved prior to their study visit, biasing the sample towards people with persistent pain. Further, we were not able to account for participants who may have requested pain medication multiple times within the study period, which may lead to a misestimation of the denial rate. Finally, in cases where requests included multiple types of medications, which medication may have triggered a denial could not be determined. To account for this, denial rates were further grouped by type of prescription requested (opioid, non-opioid, and non-specified requests).

Conclusions

PWUD continue to report high rates of pain and, in our seven-year longitudinal study, a substantial proportion continue to be denied pain medication, with denial associated with various risks, including high-intensity heroin/unregulated opioid use, self-management of pain, and non-fatal overdose. Blanket recommendations against the use of opioids and other medications for pain management are insufficient and are mismatched with the realities of PWUD. Guidelines specific to the pharmaceutical management of pain among PWUD are needed to support the provision of appropriate and effective analgesia.

Abbreviations

PWUD	People who use drugs
BC	British Columbia
VIDUS	The Vancouver injection drug users study
ACCESS	The AIDS care cohort to evaluate exposure to survival services
ARYS	The at-risk youth study
HIV	Human immunodeficiency virus
HCV	Hepatitis C virus
CAD	Canadian dollar
POC	Person of colour
GEE	Generalized estimating equations
IQR	Interquartile range
OR	Odds ratio
CI	Confidence interval
AOR	Adjusted odds ratio
OAT	Opioid agonist therapy

Acknowledgements
This research was conducted on the unceded traditional territories of the Coast Salish Peoples, including the xʷməθkwəy̓əm (Musqueam), Sḵwxwú7mesh (Squamish) and Səlilwətaɬ (Tsleil-Waututh) Nations. The authors thank the study participants for their contribution to the research, as well as current and past researchers and staff.

Author contributions
TK, KH, KD, and MJM designed and oversaw the cohort studies from which the data were derived. EP and TK designed the analyses, and EP drafted the manuscript and prepared the figure with significant support from TK. JC conducted the statistical data analyses. All authors reviewed the manuscript, offering comments and edits, and provided final approval for publication.

Funding
The study was supported by the US National Institutes of Health (NIH) (U01DA038886, U01DA021525 and U24DA044554). This research was undertaken, in part, thanks to funding from the Canadian Institutes of Health Research (CIHR) Canadian Research Initiative on Substance Misuse (SMN-139148). EP is supported in part by the Patrick David Campbell Graduate Fellowship, the Faculty Women's Club 100 Year Legacy Graduate Scholarship, the Jean MacDonald Graduate Fellowship, and Canada's Graduate Scholarship Master's Award. MJM reports financial support from the US NIH (U01-DA0251525); he is the Canopy Growth professor of cannabis science at the University of British Columbia, a position established through arms-length gifts to the university from Canopy Growth, a licensed producer of cannabis, and the Government of British Columbia's ministry of mental health and addictions. KH holds the St. Paul's Hospital Chair in Substance Use Research and is supported in part by the NIH (U01DA038886), a Michael Smith Foundation for Health Research (MSFHR) Scholar Award, and the St. Paul's Foundation.

Availability of data and materials
Assurances of strict confidentiality given to participants during the consenting process preclude public sharing of datasets.

Declarations

Ethics approval and consent to participate
All participants provided written informed consent at enrolment and all three cohorts have received annual approval from the University of British Columbia/Providence Health Care Research Ethics Board.

Consent for publication
Not applicable.

Competing interests
MJM is the Canopy Growth professor of cannabis science at the University of British Columbia, a position created by unstructured gifts to the university from Canopy Growth, a licensed producer of cannabis, and the Government of British Columbia's Ministry of Mental Health and Addictions. These funders do not have any role in study design; collection, analysis, and interpretation of data; writing the report; or the decision to submit the report for publication. The authors declare no other competing interests.

Author details
[1]British Columbia Centre On Substance Use, 1045 Howe Street, Vancouver, BC V6Z 2A9, Canada. [2]School of Population and Public Health, University of British Columbia, 5804 Fairview Avenue, Vancouver, BC V6T 1Z3, Canada. [3]Division of Social Medicine, Department of Medicine, University of British Columbia, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC V6Z 1Y6, Canada. [4]School of Public Policy, Simon Fraser University, 515 West Hastings St, Vancouver, BC V6B 5K3, Canada. [5]Faculty of Health Sciences, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada.

Received: 7 December 2023 Accepted: 3 February 2024
Published online: 28 March 2024

References

1. Sauver JL, Warner DO, Yawn BP, Jacobson DJ, McGree ME, Pankratz JJ, et al. Why patients visit their doctors: assessing the most prevalent conditions in a defined American population. Mayo Clin Proc. 2013;88(1):56–67.
2. James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet. 2018;392:1789–858.
3. Canadian Institute for Health Information. Opioid Prescribing in Canada: How Are Practices Changing? Ottawa, ON: CIHI. 2019. https://www.cihi.ca/sites/default/files/document/opioid-prescribing-canada-trends-en-web.pdf. Accessed July 2023
4. Reitsma ML, Tranmer JE, Buchanan DM, Vandenkerkhof EG. The prevalence of chronic pain and pain-related interference in the Canadian population from 1994 to 2008. Chronic Dis Injur Canada. 2011;31(4):157–64.
5. Voon P, Karamouzian M, Kerr T. Chronic pain and opioid misuse: a review of reviews. Subst Abuse Treat Prev Policy. 2017;12:36.
6. Voon P, Buxton JA, Wood E, Montaner JS, Kerr T. Dose-response relationship between functional pain interference and nonmedical analgesic use: findings from a nationally representative Canadian survey. Can J Pain. 2018;2(1):103–12.
7. Eyler EC. Chronic and acute pain and pain management for patients in methadone maintenance treatment. Am J Addict. 2013;22(1):75–83.
8. Lind BK, McCarty D, Gu Y, Baker R, McConnell KJ. Predictors of substance use treatment initiation and engagement among adult and adolescent Medicaid recipients. Substance abuse. 2019;40(3):285–91.
9. Macmadu A, Paull K, Youssef R, Batthala S, Wilson KH, Samuels EA, et al. Predictors of enrollment in opioid agonist therapy after opioid overdose or diagnosis with opioid use disorder: a cohort study. Drug Alcohol Depend. 2021;226: 108890.
10. Behar E, Bagnulo R, Knight K, Santos GM, Coffin PO. "Chasing the pain relief, not the high": experiences managing pain after opioid reductions among patients with HIV and a history of substance use. PLoS ONE. 2020;15(3): e0230408.
11. Donroe JH, Socias ME, Marshall BD. The deepening opioid crisis in North America: historical context and current solutions. Curr Addict Rep. 2018;5:454–63.
12. British Columbia Coroners Service. Illicit drug toxicity deaths in BC, January 1, 2016 - December 31, 2022. Burnaby, BC: Office of the Chief Coroner. https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/bccs_illicit_drug_summary_infographic_2016-2022_infographic.pdf. Accessed March 2023
13. British Columbia Ministry of Health. Provincial health officer declares public health emergency. 2016. https://news.gov.bc.ca/releases/2016HLTH0026-000568. Accessed March 2023
14. Jayawardana S, Forman R, Johnston-Webber C, Campbell A, Berterame S, de Joncheere C, et al. Global consumption of prescription opioid analgesics between 2009–2019: a country-level observational study. EClinicalMedicine. 2021;42: 101198.
15. Manchikanti L, Ailinani H, Koyyalagunta D, Datta S, Singh V, Eriator I, et al. A systematic review of randomized trials of long-term opioid management for chronic non-cancer pain. Pain Phys. 2011;14(2):91–121.
16. Chou R, Turner JA, Devine EB, Hansen RN, Sullivan SD, Blazina I, et al. The effectiveness and risks of long-term opioid therapy for chronic pain: a systematic review for a national institutes of health pathways to prevention workshop. Ann Intern Med. 2015;162(4):276–86.
17. Busse JW, Wang L, Kamaleldin M, Craigie S, Riva JJ, Montoya L, et al. Opioids for chronic noncancer pain: a systematic review and meta-analysis. JAMA. 2018;320(23):2448–60.
18. College of Physicians and Surgeons of British Columbia. Professional Standards and Guidelines: Safe Prescribing of Drugs with Potential for Misuse/Diversion. 2016. Accessed January 2023
19. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain — United States, 2016. MMWR Recommendations and Reports. 2016;65(1):1–49.
20. Oetter H. Clarification from the college of physicians and surgeons of BC on commentary about limitations of the CDC guideline for prescribing opioids. CMAJ. 2017;189(13):E508.
21. Busse JW, Guyatt GH, Carrasco A, Akl E, Agoritsas T, da Costa B, et al. The 2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain. 2017

22. Crabtree A, Rose C, Chong M, Smolina K. Effects of the new prescribing standards in British Columbia on consumption of opioids and benzodiazepines and z drugs. Can Fam Phys. 2019;65(5):e231–7.
23. Morrow RL, Bassett K, Wright JM, Carney G, Dormuth CR. Influence of opioid prescribing standards on drug use among patients with long-term opioid use: a longitudinal cohort study. CMAJ Open. 2019;7(3):E484–91.
24. Furlan AD, Diaz S, Carol A, MacDougall P, Allen M. Self-reported practices in opioid management of chronic noncancer pain: an updated survey of Canadian family physicians. J Clin Med. 2020;9(10):3304.
25. Busse JW, Douglas J, Chauhan TS, Kobeissi B, Blackmer J. Perceptions and impact of the 2017 Canadian guideline for opioid therapy and chronic noncancer pain: a cross-sectional study of Canadian physicians. Pain Research and Management. 2020.
26. Dassieu L, Kabore JL, Choiniere M, Arruda N, Roy E. Chronic pain management among people who use drugs: a health policy challenge in the context of the opioid crisis. Int J Drug Policy. 2019;71:150–6.
27. McNeil R, Small W, Wood E, Kerr T. Hospitals as a 'risk environment': an ethno-epidemiological study of voluntary and involuntary discharge from hospital against medical advice among people who inject drugs. Soc Sci Med. 2014;105:59–66.
28. Voon P, Greer AM, Amlani A, Newman C, Burmeister C, Buxton JA. Pain as a risk factor for substance use: a qualitative study of people who use drugs in British Columbia, Canada. Harm Reduct J. 2018;15(1):35.
29. Chan Carusone S, Guta A, Robinson S, Tan DH, Cooper C, O'Leary B, et al. "Maybe if I stop the drugs, then maybe they'd care?"-hospital care experiences of people who use drugs. Harm Reduct J. 2019;16(1):16.
30. McCradden MD, Vasileva D, Orchanian-Cheff A, Buchman DZ. Ambiguous identities of drugs and people: a scoping review of opioid-related stigma. Int J Drug Policy. 2019;74:205–15.
31. Chayama KL, Ng C, Small W, Ivsins A, McNeil R. "It's a burden, it's a nuisance. I wish I didn't have these other ailments": a qualitative exploration of comorbidities management among older people living with HIV who use drugs in Vancouver, British Columbia. J Int AIDS Soc. 2021;24(10):e25785.
32. Dassieu L, Heino A, Develay E, Kabore JL, Page MG, Moor G, et al. "They think you're trying to get the drug": qualitative investigation of chronic pain patients' health care experiences during the opioid overdose epidemic in Canada. Can J Pain. 2021;5(1):66–80.
33. Goodwin J, Kirkland S. Barriers and facilitators encountered by family physicians prescribing opioids for chronic non-cancer pain: a qualitative study. Health Promot Chronic Dis Prev Can. 2021;41(6):182–9.
34. Singhal A, Tien Y-Y, Hsia RY. Racial-ethnic disparities in opioid prescriptions at emergency department visits for conditions commonly associated with prescription drug abuse. PLoS ONE. 2016;11(8): e0159224.
35. Lee P, Le Saux M, Siegel R, Goyal M, Chen C, Ma Y, et al. Racial and ethnic disparities in the management of acute pain in US emergency departments: meta-analysis and systematic review. Am J Emerg Med. 2019;37(9):1770–7.
36. Shavers VL, Bakos A, Sheppard VB. Race, ethnicity, and pain among the US adult population. J Health Care Poor and Underserved. 2010;21(1):177–220.
37. Goodman A, Fleming K, Markwick N, Morrison T, Lagimodiere L, Kerr T, et al. "They treated me like crap and I know it was because I was Native": The healthcare experiences of Aboriginal peoples living in Vancouver's inner city. Soc Sci Med. 2017;178:87–94.
38. Provincial Health Services Authority, British Columbia Centre for Disease Control. BC Overdose Action Exchange 2. 2017. http://www.bccdc.ca/resource-gallery/documents/bccdc-overdose-action-screen.pdf. Accessed March 2023.
39. Dassieu L, Kabore JL, Choiniere M, Arruda N, Roy E. Painful lives: Chronic pain experience among people who use illicit drugs in Montreal (Canada). Soc Sci Med. 2020;246: 112734.
40. Cousins MJ, Lynch ME. The Declaration Montreal: access to pain management is a fundamental human right. Pain. 2011;152(12):2673–4.
41. Strathdee SA, Patrick DM, Currie SL, Cornelisse PG, Rekart ML, Montaner JS, et al. Needle exchange is not enough: lessons from the Vancouver injecting drug use study. AIDS. 1997;11(8):F59–65.
42. Strathdee SA, Palepu A, Cornelisse PG, Yip B, O'Shaughnessy MV, Montaner JS, et al. Barriers to use of free antiretroviral therapy in injection drug users. JAMA. 1998;280(6):547–9.
43. Wood E, Stoltz J-A, Montaner JS, Kerr T. Evaluating methamphetamine use and risks of injection initiation among street youth: the ARYS study. Harm Reduct J. 2006;3:1–6.
44. The EuroQol Group. EuroQol-a new facility for the measurement of health-related quality of life. Health Policy. 1990;16(3):199–208.
45. Hurst NP, Kind P, Ruta D, Hunter M, Stubbings A. Measuring health-related quality of life in rheumatoid arthritis: validity, responsiveness and reliability of EuroQol (EQ-5D). Br J Rheumatol. 1997;36:551–9.
46. van der Zanden BP, Dijkgraaf MG, Blanken P, de Borgie CA, van Ree JM, van den Brink W. Validity of the EQ-5D as a generic health outcome instrument in a heroin-dependent population. Drug Alcohol Depend. 2006;82(2):111–8.
47. Obradovic M, Lal A, Liedgens H. Validity and responsiveness of EuroQol-5 dimension (EQ-5D) versus short form-6 dimension (SF-6D) questionnaire in chronic pain. Health Qual Life Outcomes. 2013;11:1–9.
48. Voon P, Callon C, Nguyen P, Dobrer S, Montaner JS, Wood E, et al. Denial of prescription analgesia among people who inject drugs in a Canadian setting. Drug Alcohol Rev. 2015;34(2):221–8.
49. Loh J, Buxton J, Kaida A, Voon P, Grant C, Milloy M. Estimating the prevalence and correlates of pain among people living with HIV who use unregulated drugs in a Canadian setting. J Opioid Manag. 2023;19(3):225–37.
50. National Institute on Alcohol Abuse and Alcoholism. Rethinking drinking: Alcohol and Your Health. NIH Publication No. 21-AA-3770. 2022
51. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/. 2022
52. Fibbi M, Silva K, Johnson K, Langer D, Lankenau SE. Denial of prescription opioids among young adults with histories of opioid misuse. Pain Med. 2012;13(8):1040–8.
53. Kaboré J-L, Dassieu L, Roy É, Jutras-Aswad D, Bruneau J, Pagé MG, et al. Prevalence, characteristics, and management of chronic noncancer pain among people who use drugs: a cross-sectional study. Pain Med. 2020;21(11):3205–14.
54. Jerant A, Fenton JJ, Kravitz RL, Tancredi DJ, Magnan E, Bertakis KD, et al. Association of clinician denial of patient requests with patient satisfaction. JAMA Intern Med. 2018;178(1):85–91.
55. Bicket MC, Park JN, Torrie A, Allen ST, Weir BW, Sherman SG. Factors associated with chronic pain and non-medical opioid use among people who inject drugs. Addict Behav. 2020;102: 106172.
56. Vogel M, Choi F, Westenberg JN, Cabanis M, Nikoo N, Nikoo M, et al. Chronic pain among individuals experiencing homelessness and its interdependence with opioid and other substance use and mental illness. Int J Environ Res Public Health. 2021;19(1):5.
57. Dassieu L, Kabore JL, Choiniere M, Arruda N, Roy E. Understanding the link between substance use and chronic pain: a qualitative study among people who use illicit drugs in Montreal. Canada Drug Alcohol Depend. 2019;202:50–5.
58. Boucher LM, Shoemaker ES, Liddy CE, Leonard L, MacPherson PA, Presseau J, et al. "The drug use unfortunately isn't all bad": chronic disease self-management complexity and strategy among marginalized people who use drugs. Qual Health Res. 2022;32(6):871–86.
59. Delorme J, Kerckhove N, Authier N, Pereira B, Bertin C, Chenaf C. Systematic review and meta-analysis of the prevalence of chronic pain among patients with opioid use disorder and receiving opioid substitution therapy. J Pain. 2023;24(2):192–203.
60. Lazaridou A, Paschali M, Edwards RR, Gilligan C. Is buprenorphine effective for chronic pain? A systematic review and meta-analysis. Pain Med. 2020;21(12):3691–9.
61. Eilender P, Ketchen B, Maremmani I, Saenger M, Fareed A. Treatment approaches for patients with opioid use disorder and chronic noncancer pain: a literature review. Addict Disord Treat. 2016;15(2):85–98.
62. Pade PA, Cardon KE, Hoffman RM, Geppert CM. Prescription opioid abuse, chronic pain, and primary care: a co-occurring disorders clinic in the chronic disease model. J Subst Abuse Treat. 2012;43(4):446–50.
63. Taveros MC, Chuang EJ. Pain management strategies for patients on methadone maintenance therapy: a systematic review of the literature. BMJ Support Palliat Care. 2017;7(4):383–9.
64. Berg KM, Arnsten JH, Sacajiu G, Karasz A. Providers' experiences treating chronic pain among opioid-dependent drug users. J Gen Intern Med. 2009;24(4):482–8.

65. National Academies of Sciences, Engineering, and Medicine. The health effects of cannabis and cannabinoids: the current state of evidence and recommendations for research. 2017
66. Socias ME, Wood E, Lake S, Nolan S, Fairbairn N, Hayashi K, et al. High-intensity cannabis use is associated with retention in opioid agonist treatment: a longitudinal analysis. Addiction. 2018;113(12):2250–8.
67. Socias ME, Choi J, Lake S, Wood E, Valleriani J, Hayashi K, et al. Cannabis use is associated with reduced risk of exposure to fentanyl among people on opioid agonist therapy during a community-wide overdose crisis. Drug Alcohol Depend. 2021;219: 108420.
68. Heinzerling KG. Applying best practice guidelines on chronic pain in clinical practice—treating patients who suffer from pain and addiction. In: Danovitch I, Mooney LJ, editors. The Assessment and Treatment of Addiction. Elsevier; 2019. p. 137–56.
69. The College of Physicians & Surgeons of Manitoba Opioid Agonist Therapy Recommended Practice Working Group. Manitoba Opioid Agonist Therapy Recommended Practice Manual. 2023. https://cpsm.mb.ca/assets/PrescribingPracticesProgram/OATManual/Manitoba%20OAT%20Recommended%20Practice%20Manual.pdf. Accessed July 2023.
70. Rice D, Wolfe D, Hersi M, Esmaeilisaraji L, Butler C, Hamel C, et al. A rapid review of best practice guidance of the management of chronic pain and concurrent mental illness and/or substance use disorders. Drug Safety and Effectiveness Network. 2021
71. British Columbia Centre on Substance Use, British Columbia Ministry of Health. A Guideline for the Clinical Management of Opioid Use Disorder. 2017.
72. Guidelines and Protocols Advisory Committee. Managing Patients with Pain in Primary Care – Part 1. British Columbia Ministry of Health. 2022. https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/managing_pain_part1_2022.pdf. Accessed June 2023
73. Centre for Addiction and Mental Health. Opioid Agonist Therapy: A Synthesis of Canadian Guidelines for Treating Opioid Use Disorder. 2021. https://www.camh.ca/-/media/files/professionals/canadian-opioid-use-disorder-guideline2021-pdf.pdf. Accessed March 2023
74. Guidelines and Protocols Advisory Committee. Managing Patients with Pain in Primary Care – Part 2. British Columbia Ministry of Health. 2022. https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/managing_pain_part2_2022_v2.pdf. Accessed June 2023
75. National Disability Insurance Scheme – Quality and Safeguards Commission. Practice Alert – Medications that can cause respiratory depression. 2022. https://www.ndiscommission.gov.au/sites/default/files/2022-06/Practice%20Alert%20-%20Medications%20that%20can%20cause%20respiratory%20depression.pdf. Accessed June 2023
76. Isenberg SR, Maragh-Bass AC, Ridgeway K, Beach MC, Knowlton AR. A qualitative exploration of chronic pain and opioid treatment among HIV patients with drug use disorders. J Opioid Manag. 2017;13(1):5–16.
77. Health Canada. Best Brains Exchange report: Treatment of chronic pain and complex concurrent mental health and substance use conditions. 2023. https://www.canada.ca/content/dam/hc-sc/documents/services/publications/healthy-living/best-brains-exchange-report-2023/best-brains-exchange-report-2023.pdf. Accessed October 2023
78. Comer L. The social organization of opioid policies and their implications for people with chronic pain and clinicians: An institutional ethnography. Int J Drug Policy. 2023;120: 104173.
79. Dassieu L, Choinière M, Saint-Jean L, Webster F, Peng P, Buckley N, et al. Frequency and characteristics of patient exclusion criteria in Canadian multidisciplinary pain treatment facilities: a cross-sectional study. Canadian J Anesthesia/J canadien d'anesthésie. 2022;69(7):849–58.
80. Darke S. Self-report among injecting drug users: a review. Drug Alcohol Depend. 1998;51(3):253–63.
81. Mensch BS, Kandel DB. Underreporting of substance use in a national longitudinal youth cohort: individual and interviewer effects. Public Opin Q. 1988;52(1):100–24.
82. Napper LE, Fisher DG, Johnson ME, Wood MM. The reliability and validity of drug users' self reports of amphetamine use among primarily heroin and cocaine users. Addict Behav. 2010;35(4):350–4.

Publisher's Note