

Exploring housing instability through a gender lens among people who inject drugs in Montreal, Canada

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Abstract

Introduction: Housing instability contributes to harm among people who inject drugs (PWID). We examined determinants of varying levels of housing instability and explored gender differences in housing instability and associated determinants among PWID.

Method: We used baseline data from HEPCO, a community-based cohort of PWID in Montreal, Canada (2011–2022). Housing (past 3 months) was categorised as stable, precarious (i.e., temporary accommodation) or unsheltered. Multinomial logistic regression was used to assess relationships between sociodemographic factors, recent drug use, and housing instability. A multivariable model was constructed using the full sample. Gender differences were explored via stratified and unadjusted analyses given the relatively small number of women.

Results: A total of 911 PWID (748 men and 163 women) were included. In the multivariable model, not living in a marriage-like relationship, recent incarceration, and not reporting recent heroin use were associated with both precarious housing and being unsheltered, relative to stable housing. Employment, consumption of cocaine, amphetamines, and other opioids were only associated with being unsheltered. In stratified analyses, precarious and unsheltered housing was reported by 14.1% and 23.3% of women and 20.9% and 30.9% of men. Sociodemographic factors and drug use patterns also differed by gender. Although most associations with housing instability were in similar directions for men and women, several estimates differed in magnitude, denoting some signals of gender differences.

Discussion and Conclusion: Almost half the sample was unsheltered or precariously housed. Studies with larger samples of women should formally examine the relevance of developing gender-specific responses to housing instability.

KEYWORDS

gender, homelessness, people who inject drugs

Key Points

- Almost half of this sample of people who inject drugs were either precariously housed or unsheltered.
- Women were more likely than men to be stably housed.
- Living in a marriage-like relationship and recent heroin use were negatively associated with being precariously housed and unsheltered, while recent incarceration was positively associated with both unstable housing categories.
- Although associations with housing instability were similar in direction between men and women, the magnitude of some associations differed.

1 | INTRODUCTION

Housing instability is an ongoing crisis across Canada [1, 2]. In the province of Québec, more than half of the homeless population is located in Montreal [3] and this has increased recently [4]. The ratio of housing price to income in Canada is among the highest in the world [5] and although Montreal has been among the more affordable Canadian cities, more recently the annual rent of a one-bedroom apartment has reached approximately 50% of the income for a single person [4].

Housing is an important determinant of health and contributes to drug-related harms among people who inject drugs (PWID). Globally, it is estimated that one-quarter of PWID have recently experienced housing instability [6] defined broadly as being on the verge of losing housing or living in housing conditions not appropriate for human habitation [7]. Drug injection has been independently associated with the first episode of homelessness among PWID, reflecting how active drug use might lead to difficulties in accessing and maintaining housing [8, 9]. Furthermore, various drug-related practices and harms, including frequency of injection, drug equipment sharing, and risk of blood-borne virus infection and mortality [6, 10–13] have been linked to housing instability in this population. As an example, housing instability may contribute to a greater risk of overdose even at lower doses among PWID as a result of drug injection in new or unfamiliar physical environments [14]. Housing instability may also affect alcohol consumption patterns (e.g., binge drinking, acute withdrawal and public drinking) among this population as a coping mechanism to deal with extreme living conditions or to get a sense of belonging and socialisation [15]. Drug-related stigmatisation may also be higher among those experiencing housing instability, contributing to further limitation in access to services and deteriorating health outcomes [16, 17].

The existing literature indicates that macro-level factors (e.g., unaffordable rental housing, gentrification), as well as individual-level characteristics (e.g. age, gender, employment, income, incarceration,

and sexual partnership status), shape housing instability in the PWID population; however, individual studies often use binary definitions of this construct (e.g., yes/no or stable/unstable) [18–20].

One approach to improving our understanding of the role of housing among PWID may be to add greater nuance to empirical definitions of housing instability [21]. For instance, the experiences of those living on the street or in emergency shelters likely differ from those of individuals living in less risky, but nevertheless precarious conditions, such as apartments/hotels rented on a daily, weekly, or monthly basis, or temporarily sheltered by friends [22–27]. The Canadian Observatory on Homelessness (COH) categorises unstable housing into four categories: unsheltered (living in public spaces or places not intended for long-term human habitation), emergency sheltered (emergency overnight shelters for homeless people, those who are suffering from violence, or experiencing a natural disaster or destruction of their accommodations), provisionally accommodated (living in interim housing, living temporarily with others, short-term rentals and institutional facilities) and at risk of homelessness (e.g., due to precarious employment or living in accommodations deemed inadequate, unaffordable or unsuitable) [28]. Identifying nuanced differences in risk exposure and needs based on varying degrees of housing instability among PWID may allow public health measures to effectively address housing issues in the context of drug use and integrate collective approaches to provide an enabling environment that precludes further risks attributed to drug use [29, 30].

Gender is another area that has not received much attention in the literature on housing instability among people who inject drugs [31, 32]. Prior studies suggest women who inject drugs experience gendered social and contextual vulnerabilities including poverty, criminalisation, lower social status, and experiences of stigma and discrimination [33, 34]. These vulnerabilities, which have been documented as barriers to participating in harm-reduction programs [32, 35–38] may further extend to accessing housing. The consequences of housing instability may also differ among women who inject drugs, who tend

to rely on informal sources of support (such as their partners and couch surfing) to avoid being unsheltered [39–41]. Housing instability among women who inject drugs might, for instance, lead to gender-based violence, or women may generally struggle to feel safe in male-dominated spaces, leading to negative health outcomes [42–44].

Examining housing instability using more nuanced definitions, as well as an awareness that factors associated with housing instability may vary by gender, may further our understanding of this phenomenon among PWID, allowing for more targeted responses. We therefore aimed to describe degrees of housing instability among PWID in Montreal, identify factors associated with different degrees of housing instability, and explore gender differences in these areas.

2 | METHODS

2.1 | Data source

This cross-sectional study was conducted using baseline data from the Hepatitis Cohort (HEPCO), an open longitudinal cohort study of PWID in Montréal, Canada. Eligibility criteria for cohort enrolment were being at least 18 years of age, living in Montréal, and having injected drugs at least once during the past 6 months. Participants were referred from community-based programs and via word-of-mouth, posters, and information cards. Follow-up interviews were scheduled every 3 months. At each visit, participants provided written informed consent and completed a comprehensive interviewer-administered questionnaire that included questions on sociodemographic characteristics, drug use, mental health, major life events, and sexual and injecting behaviours. Blood draws for hepatitis C virus and HIV infections were performed, and counselling and referral options were provided to participants with positive results. Participants were reimbursed 20–30 CAD for their time. This analysis used baseline data from participants enrolled between March 2011 and September 2022 (68.4% were first interviewed in 2011–2014, 18.3% in 2015–2018, and 13.3% in 2019–2022). The study protocol was approved by the Ethics Review Board of Centre Hospitalier de l'Université de Montréal.

2.2 | Measures

2.2.1 | Housing instability

Participants were asked to report the type of place they had lived in longest during the past 3 months, which were coded by interviewers into one of 14 response

options, including 'other'. We recategorised these responses into a three-level variable informed by the COH classification of unstable housing. Unsheltered was defined as living mostly in the street or emergency shelters, corresponding to the COH categories of unsheltered and emergency sheltered. Precariously housed was defined as living mostly in mid- and long-term shelters, rooming and boarding houses, with a family member (other than a parent) or friend, jail/prison, halfway houses, rehabilitation/detox centres, psychiatric institutions, hotels/motels, or other transitional housing, corresponding to the COH categories of provisionally accommodated and at risk of homelessness. Stably housed participants were those living in their own apartment or house, or with their parents.

2.2.2 | Covariates

Covariates were selected with reference to prior studies of housing instability among PWID [20, 45–47]. These included: age (in years), education (less than high school vs. high school completion or more), employment in the past 3 months (unemployed or occasional work vs. part-time or full-time employment), average monthly income in the past 3 months (dichotomised at 722 CAD based on the monthly benefit amount for one adult under Quebec's Social Assistance Program [48]), living in a marriage-like relationship (defined as currently living with a boyfriend/girlfriend/significant other with at least 3 months of cohabitation and as if it was a marriage; yes/no), the total number of injection times in the past month (≤ 30 vs. > 30), having been incarcerated during the past 3 months (yes/no), sexual orientation (dichotomised as heterosexual and non-heterosexual), engagement in sex work in the past 3 months (yes/no), treatment for an alcohol or drug problem in the past 3 months (yes/no), and use of alcohol or any of the following drugs in the past 3 months, by any route of administration: cocaine, heroin, other opioids (e.g., pharmaceutical opioids) or amphetamines.

2.2.3 | Gender

Gender was recorded at baseline by asking, 'What gender do you identify yourself as?' with response options of man, woman or a different gender identity.

2.3 | Analysis

Descriptive statistics were computed for the total sample, as well as among men and women. The small number of

participants who identified as ‘a different gender identity’ ($n = 3$) did not allow for data analysis of this group, and they were excluded from the analysis. Univariable and multivariable multinomial logistic regression analyses were then performed to estimate associations between covariates and housing instability in the total sample. Stably housed was the reference category in all models. Before proceeding to multivariable analysis, we confirmed that no pair of covariates exhibited a high degree of intercorrelation (Phi coefficient for all pairs <0.30). The multivariable model was then built using a purposeful selection approach [49]. First, all covariates of the housing instability categories ($p < 0.25$) in the univariable analyses were selected for inclusion in an initial multivariable model. Covariates that were not statistically significant ($p < 0.10$) and did not behave as confounders (i.e., other point estimates did not change by $>15\%$ – 20% after removing the variable) were then removed from the model one at a time [50]. Age, gender and sex work were considered relevant *a priori* and forced into the model.

To explore possible gender differences in associations with housing instability, we stratified the data by gender and re-estimated the univariable multinomial logistic regression models within each stratum. The small sample size of women precluded multivariable analysis. Descriptive analyses were performed in SPSS (version 28) and regression analyses in R.

3 | RESULTS

3.1 | General characteristics of participants

A total of 911 PWID completed a baseline interview between March 2011 and September 2022 and were included in the analysis. Table 1 presents participant characteristics, overall and stratified by gender. A total of 748 individuals (82%) were men and 163 (18%) were women. The median age was 41 (interquartile range 33–49) and the majority (89%) were White. Half of participants (51%) were stably housed, 20% were precariously housed and 29% were unsheltered.

3.2 | Gender-specific characteristics

Women were more likely than men to report being stably housed (63% vs. 48%). Precarious housing was reported by 14% of women and 21% of men, while 23% of women and 31% of men were unsheltered. Women tended to be younger than men (median age 36 (interquartile range 28.5–43.5) vs. 42 (interquartile range 34–50)) and were

less likely to report recent incarceration (8.0% vs. 15%). Women were more likely to be in a marriage-like relationship (24% vs. 9%), to report recent sex work (21% vs. 3%), and to report recent treatment for alcohol or drug problems (56% vs. 45%).

3.3 | Associations with housing instability

Table 2 presents crude and adjusted associations between covariates and housing instability in the total sample. In univariable models, female gender, education, employment, and living in a marriage-like relationship were inversely associated with both the odds of being precariously housed and the odds of being unsheltered, relative to stably housed. Recent incarceration was positively associated with both categories of housing instability. Consuming cocaine, opioids other than heroin, and amphetamines was positively associated with being unsheltered, but not precariously housed. Meanwhile, income and heroin consumption were inversely associated (and frequent injection positively associated) with being precariously housed, but not unsheltered.

In the multivariable model, living in a marriage-like relationship and heroin consumption were inversely associated with both the odds of being precariously housed and the odds of being unsheltered, relative to stably housed, while recent incarceration was positively associated with both degrees of housing instability. In general, point estimates were more pronounced for being unsheltered compared to being precariously housed. Employment was inversely associated with being unsheltered, while consuming cocaine, other opioids, and amphetamines was positively associated with the odds of being unsheltered but not with the odds of being precariously housed. Frequent injection was also associated with precarious housing. Although there was no evidence of an association between frequent injection and being unsheltered, the confidence interval was borderline.

3.4 | Gender-specific associations

Table 3 presents gender-stratified analyses. Although the directions of associations were consistent between men and women, and confidence intervals often overlapped, point estimates nevertheless indicated that some factors may be more strongly associated with housing instability in one gender than the other.

Among women compared to men, education and employment were more strongly protective against being unsheltered (odds ratio [OR] 0.29 vs. 0.86, and 0.12

TABLE 1 Characteristics of the total study population and men and women who inject drugs.

Variable	Total (N = 911), n (%) or median (IQR)	Men (N = 748), n (%) or median (IQR)	Women (N = 163), n (%) or median (IQR)	p-value
Housing status ^a				0.004
Stably housed	463 (50.8)	361 (48.3)	102 (62.6)	
Precariously housed	179 (19.6)	156 (20.9)	23 (14.1)	
Unsheltered	269 (29.5)	231 (30.9)	38 (23.3)	
Age, years	41 (33–49)	42 (34–50)	36 (28.5–43.5)	<0.001
Highest level of education				0.011
Less than high school	366 (40.2)	315 (42.1)	51 (31.3)	
High school or more	545 (59.8)	433 (57.9)	112 (68.7)	
Enrollment year in HEP CO				0.768
Before March 2020	810 (88.9)	664 (88.8)	146 (89.6)	
After March 2020	101 (11.1)	84 (11.2)	17 (10.4)	
Income ^a				0.935
≤722 CAD per month	209 (22.9)	172 (23.0)	37 (22.7)	
>722 CAD per month	702 (77.1)	576 (77.0)	126 (77.3)	
Ethnicity				0.295
White	813 (89.2)	672 (89.8)	141 (87.0)	
Other	97 (10.6)	76 (10.2)	21 (13.0)	
Currently living with someone like a marriage				
Yes	108 (11.9)	69 (9.2)	39 (23.9)	
No	803 (88.1)	679 (90.6)	124 (76.1)	<0.001
Employment ^a				0.440
Unemployed or occasional work	770 (84.5)	629 (84.1)	141 (86.5)	
Part-time or full-time employment	141 (15.5)	119 (15.9)	22 (13.5)	
Incarceration ^a				0.019
Yes	125 (13.7)	112 (15.0)	13 (8.0)	
No	786 (86.1)	636 (85.0)	150 (92.0)	
Sexual orientation				<0.001
Heterosexual	783 (85.9)	676 (90.4)	107 (65.6)	
Non-heterosexual	128 (14.1)	72 (9.6)	56 (34.4)	
Involvement in sex work ^a				<0.001
Yes	56 (6.1)	21 (2.8)	35 (21.5)	
No	855 (93.6)	727 (97.2)	128 (78.5)	
Alcohol consumption ^a				0.575
Yes	615 (67.5)	508 (67.9)	107 (65.6)	
No	296 (32.5)	240 (32.1)	56 (34.4)	
Frequency of injection ^b				0.201
≤30/month	505 (55.4)	422 (56.4)	83 (50.9)	
>30/month	406 (44.6)	326 (43.6)	80 (49.1)	
Cocaine use ^a				0.026
Yes	703 (77.0)	588 (78.6)	115 (70.6)	
No	208 (22.8)	160 (21.4)	48 (29.4)	

(Continues)

TABLE 1 (Continued)

Variable	Total (N = 911), n (%) or median (IQR)	Men (N = 748), n (%) or median (IQR)	Women (N = 163), n (%) or median (IQR)	p-value
Other opioid use ^a				0.410
Yes	415 (45.5)	336 (44.9)	79 (48.5)	
No	496 (54.3)	412 (55.1)	84 (51.5)	
Heroin use ^a				0.005
Yes	347 (38.2)	269 (36.0)	78 (47.9)	
No	564 (61.8)	479 (64.0)	85 (52.1)	
Amphetamine use ^a				0.191
Yes	312 (34.2)	249 (33.3)	63 (38.7)	
No	599 (65.6)	499 (66.7)	100 (61.3)	
Been in treatment for alcohol or drug problems ^a				0.013
Yes	428 (47.0)	337 (45.1)	91 (55.8)	
No	483 (53.0)	411 (54.9)	72 (44.2)	

Note: Mann–Whitney U test was used to compare continuous variables, and the Chi-square test results were reported for categorical variables. Statistically significant *p*-values (*p* < 0.05) are bolded.

Abbreviation: IQR, interquartile range.

^aPast 3 months.

^bPast month.

vs. 0.25, respectively). Additionally, consuming cocaine (OR 6.64 vs. 2.02), opioids other than heroin (OR 2.49 vs. 1.52), or amphetamine (OR 2.96 vs. 1.61) was more strongly associated with being unsheltered. There was also a stronger association between recent incarceration and being precariously housed (OR 6.87 vs. 4.59) or being unsheltered (OR 6.12 vs. 3.04) among women compared to men.

Among men compared to women, living in a marriage-like relationship was more strongly protective against being precariously housed (OR 0.42 vs. 0.72) and being unsheltered (OR 0.07 vs. 0.40).

4 | DISCUSSION

This cross-sectional study examined factors associated with housing instability and explored gender differences in these associations using a three-level variable to distinguish differing degrees of housing instability. We found that almost half of this sample of PWID was either precariously housed or unsheltered. We identified several correlates of housing instability and generally observed a gradient in the strength of associations with increasing housing instability. This suggests distinctions between PWID living in precarious conditions and transitional housing compared to those who are unsheltered and may point to precarious housing being a stepping stone between stable and unsheltered statuses. Some studies

addressing residence in single-room occupancies (as an example of precarious housing) suggest some supportive measures (e.g., increasing affordability, safety and providing syringe services programs) are required to make precarious housing more efficient in improving housing [51–53]. Therefore, public health measures might consider precariously housed individuals as a potential target for interventions to either prevent homelessness (i.e., being unsheltered) or to aid in securing stable accommodations. Future studies should employ more nuanced definitions of housing instability to guide the implementation of programs.

Regarding specific risk and protective factors associated with the degree of housing instability, our findings indicated that employment and living in a marriage-like relationship were inversely associated with being unsheltered. It could be plausible that gaining employment is easier when people are not unsheltered and, conversely, that employed people are more likely to be able to afford accommodation [54]. Employment may thus be a stabilising factor among PWID, and programs providing employment or skill development opportunities may favour housing stability in this population [24, 55, 56]. Nevertheless, PWID face some challenging physical, social, and structural barriers to employment (e.g., criminalisation, stigma), thus limiting the effectiveness of conventional approaches [24, 57]. Stable housing may facilitate living in a marriage-like relationship [58] but it may also be plausible that people in

TABLE 2 Univariable and multivariable associations with housing instability in the total sample (N = 911); results of multinomial logistic regression.

Variables	Univariable		Multivariable	
	Precariously housed versus stably housed	Unsheltered versus stably housed	Precariously housed versus stably housed	Unsheltered versus stably housed
	OR (95% CI)	OR (95% CI)	aOR (95% CI)	aOR (95% CI)
Age, years	1.004 (0.98, 1.02)	1.006 (0.97, 1.007)	0.99 (0.97, 1.01)	1.006 (0.98, 1.02)
Female gender	0.52 (0.31, 0.85)	0.58 (0.38, 0.87)	0.62 (0.35, 1.07)	0.69 (0.42, 1.12)
High school education or more	0.69 (0.49, 0.99)	0.71 (0.52, 0.96)	–	–
Income >722 ^a	0.61 (0.41, 0.90)	0.88 (0.61, 1.26)	–	–
Part-time or full-time employment ^a	0.59 (0.37, 0.96)	0.24 (0.14, 0.42)	0.72 (0.43, 1.19)	0.31 (0.17, 0.54)
Currently living with someone like a marriage	0.44 (0.25, 0.78)	0.14 (0.06, 0.29)	0.44 (0.24, 0.82)	0.14 (0.06, 0.30)
Non-White ethnicity	1.08 (0.61, 1.94)	1.51 (0.94, 2.42)	–	–
Non-heterosexual orientation	0.81 (0.48, 1.36)	0.95 (0.62, 1.46)	–	–
Sex work ^a	0.99 (0.46, 2.10)	1.35 (0.73, 2.47)	1.33 (0.58, 3.07)	1.50 (0.74, 3.03)
Incarceration ^a	5.01 (3.02, 8.31)	3.42 (2.06, 5.67)	5.46 (3.20, 9.32)	3.50 (2.07, 5.91)
Alcohol consumption ^a	0.73 (0.50, 1.05)	0.88 (0.63, 1.23)	–	–
Injection >30/month ^b	1.42 (1.00, 2.00)	1.11 (0.82, 1.50)	1.69 (1.16, 2.45)	1.38 (0.99, 1.94)
Cocaine consumption ^a	1.14 (0.94, 2.13)	2.46 (1.64, 3.68)	1.53 (0.97, 2.39)	2.31 (1.49, 3.58)
Other opioids consumption ^a	0.89 (0.62, 1.26)	1.62 (1.19, 2.19)	1.14 (0.76, 1.71)	1.77 (1.24, 2.55)
Heroin consumption ^a	0.48 (0.33, 0.71)	0.79 (0.58, 1.08)	0.44 (0.28, 0.67)	0.67 (0.46, 0.97)
Amphetamine consumption ^a	0.86 (0.59, 1.26)	1.75 (1.28, 2.39)	0.82 (0.54, 1.25)	1.47 (1.03, 2.09)
Being in treatment for alcohol or drug problem ^a	0.99 (0.69, 1.41)	0.78 (0.57, 1.93)	–	–

Note: Statistically significant estimates (p value <0.05) are bolded.

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

^aPast 3 months.

^bPast month.

relationships have greater purchasing power compared to those who are not, which may affect their housing status [59]. Measures to prevent homelessness may therefore be particularly helpful for single PWID, though the exact mechanisms of this association should be examined further.

Consistent with previous studies, recent incarceration was associated both with being precariously housed and being unsheltered [60]. Our findings suggest the potential importance of considering recently incarcerated PWID in homelessness prevention measures; facilitating housing may be particularly critical during the reintegration

TABLE 3 Unadjusted associations between characteristics and housing categories in gender-stratified data and using multinomial logistic regression.

Variables	Precariously housed versus stably housed		Unsheltered versus stably housed	
	Men, OR (95% CI)	Women, OR (95% CI)	Men, OR (95% CI)	Women, OR (95% CI)
Age, years	1.001 (0.98, 1.02)	0.98 (0.94, 1.03)	1.004 (0.98, 1.02)	0.99 (0.96, 1.034)
High school education or more	0.79 (0.54, 1.16)	0.45 (0.17, 1.17)	0.86 (0.62, 1.21)	0.29 (0.13, 0.63)
Income >722 CAD ^a	0.58 (0.38, 0.90)	0.70 (0.25, 1.90)	0.78 (0.52, 1.16)	1.64 (0.61, 4.39)
Part-time or full-time employment ^a	0.56 (0.33, 0.94)	0.70 (0.18, 2.60)	0.25 (0.14, 0.45)	0.12 (0.01, 0.98)
Currently living with someone like a marriage	0.42 (0.21, 0.82)	0.72 (0.24, 2.13)	0.07 (0.02, 0.23)	0.40 (0.14, 1.15)
Non-White ethnicity	0.97 (0.50, 1.88)	1.91 (0.54, 6.75)	1.43 (0.84, 2.43)	2.05 (0.72, 5.86)
Incarceration ^a	4.59 (2.69, 7.84)	6.87 (1.42, 33.23)	3.04 (1.81, 5.11)	6.12 (1.44, 25.90)
Non-heterosexual orientation	0.96 (0.50, 1.81)	0.95 (0.35, 2.55)	0.90 (0.51, 1.58)	1.77 (0.82, 3.80)
Sex work ^a	1.02 (0.53, 3.70)	1.74 (0.60, 5.06)	1.40 (0.53, 3.70)	2.28 (0.96, 5.38)
Alcohol consumption ^a	0.82 (0.09, 4.78)	0.36 (0.13, 0.93)	0.94 (0.65, 1.36)	0.63 (0.28, 1.44)
Injection >30/month ^b	1.35 (0.92, 1.97)	2.28 (0.88, 5.85)	1.11 (0.79, 1.55)	1.21 (0.57, 2.56)
Cocaine consumption ^a	1.41 (0.89, 2.24)	1.06 (0.41, 2.75)	2.02 (1.31, 3.13)	6.64 (1.90, 23.09)
Other opioids consumption ^a	0.90 (0.25, 0.55)	0.83 (0.33, 2.10)	1.52 (1.09, 2.12)	2.49 (1.14, 5.41)
Heroin consumption ^a	0.51 (0.33, 0.77)	0.48 (0.18, 1.23)	0.84 (0.59, 1.18)	0.73 (0.34, 1.55)
Amphetamine consumption ^a	0.82 (0.54, 1.26)	1.15 (0.44, 2.98)	1.61 (1.14, 2.27)	2.96 (1.37, 6.39)
Being in treatment for alcohol or drug problems ^a	0.94 (0.64, 1.40)	1.59 (0.59, 4.23)	0.77 (0.54, 1.10)	1.01 (0.49, 2.54)

Note: Statistically significant estimates (p value <0.05) are bolded.

Abbreviations: CI, confidence interval; OR, odds ratio.

^aPast 3 months.

^bPast month.

phase following release from prison [61]. This could be done by considering both short-term (e.g., landing spot or temporary accommodation) and long-term (e.g., adequate and permanent accommodation) housing needs among this population. Such housing assistance may also be personalised considering sociodemographic factors, individuals' employment history, and physical and mental disabilities [62–64].

Consuming heroin was associated with lower odds of being precariously housed or unsheltered, which is not

surprising in our context. Given the widespread use of cocaine and evidence that there has been a gradual shift in the illicit drug market in Montreal from heroin to other opioids [65–67], heroin use may be a marker of older PWID with longer drug use histories and more stable drug use patterns. These individuals may also be more likely to be on opioid agonist treatment, widely available in Quebec [68], or have better access to resources and social networks than other PWID, consequently favouring housing stability [69–71].

Consumption of drugs other than heroin was associated with being unsheltered but not precariously housed. Future studies on drug use patterns among the unstably housed PWID and integration of harm reduction measures within shelters may provide a broader picture of required drug-related considerations among unstably housed PWID.

Regarding gender differences, we found that almost half of the men were either precariously housed or unsheltered, while three-fifths of the women were stably housed. This is in line with the findings of another national cohort study among people who use drugs in three Canadian cities [72]. Although women are more likely than men to be stably housed, there is still a need to consider their specific needs and circumstances in this area. Literature suggests that women who are unstably housed may be exposed to higher risk than men, and they may rely on other sources to not be homeless [73, 74]. For instance, a common alternative, housing secured in the context of romantic/sexual relationships, could have adverse impacts on women who inject drugs, many of whom are vulnerable to intimate partner violence [75, 76]. In Montreal, there are fewer shelters reserved for women, and mixed-gender shelters can increase women's exposure to violence and stigma. This leaves women with few options [77, 78]. Research on the role of interpersonal relationships should be considered in both harm reduction and homelessness prevention efforts for women who inject drugs.

In the total population, being female was inversely associated with precarious housing and being unsheltered in univariable analysis but not in the multivariable model, possibly due to the relatively small sample size compared to men, leading us to undertake a stratified analysis (rather than employing gender as an interaction term, for example). Although correlates of housing instability were broadly comparable between men and women, we also identified some signals of gender differences warranting further investigation. For instance, living in a marriage-like relationship was fourfold more protective for being unsheltered among men than women, and women who consumed stimulants (cocaine or amphetamine) had higher odds of being unsheltered relative to men who consumed stimulants. In interpreting estimates, it is important to consider that the prevalence of individual-level characteristics (e.g., recent incarceration, living in a marriage-like relationship and drug use patterns) often differed between men and women in our study; these should be considered when aiming to identify possible avenues for intervention. For instance, although incarceration was associated with greater odds of being unsheltered among women, about half as many women as men reported being recently incarcerated.

Consequently, specific interventions to prevent being unsheltered upon release from prison (e.g., through access to social housing) would have a greater population-level impact among men despite potentially being less impactful on an individual-level basis.

Finally, although falling outside the scope of this study, macro-level and contextual factors, such as the availability and affordability of lodging, gentrification, and criminalisation of drug use, are likely to affect housing stability among PWID [79–81]. Given that housing is a universal human right, government policies are crucial in providing access to housing and related determinants (e.g., employment, income). Since PWID may be more affected by stigma and contextual factors such as poverty [82, 83] that affect their housing, they need to receive specific considerations in policy reforms to these domains.

4.1 | Limitations

HEPCO comprises a convenience sample of mostly older, White, cisgender PWID and may not be representative of younger, racially- and gender-diverse PWID. Our definition of precarious housing included people living with family members other than their parents; as following the COH definition, we assumed that these arrangements were temporary and therefore within the category of 'provisionally accommodated'; it may be that for some of these individuals, this was a stable arrangement. Residual confounding of adjusted associations cannot be ruled out, despite our inclusion of various known or hypothesised confounding variables. The sample included relatively few women, which hampered the power to formally test for interactions and adjust gender-specific estimates. People who reported their gender as 'a different gender identity' were not considered in gender-specific analysis, and we had no information on the frequency of particular gender identities in this group. Our housing variable was based on the most common housing type in the reference period; however, housing is dynamic among PWID, who often stay in multiple forms of accommodation within short periods. Participants included in this analysis were recruited between 2011 and 2022; during this time, changes in housing conditions occurred (e.g., changes in rent-income ratios in Montreal), such that the strengths of some of the associations that we studied may have changed over time.

5 | CONCLUSION

Precarious housing and being unsheltered are very common among PWID in Montreal, and there are gender

differences in housing stability and related factors. The provision of temporary accommodations and transitional housing options may help prevent homelessness or serve as a stepping stone towards stable housing in this population. The relevance of this approach needs to be further studied given the dearth of studies using nuanced definitions of housing instability among PWID. Correlates of housing stability identified in this study, and the application of a gender lens to this issue, may inform avenues for public health research and intervention.

AUTHOR CONTRIBUTIONS

Each author certifies that their contributions to this work meet the standards of the International Committee of Medical Journal Editors.

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CONFLICT OF INTEREST STATEMENT

Bruneau has received advisory board fees from Gilead Sciences, unrelated to the present work. Martel-Laferrière has received grant funding from Gilead and Merck and consultation fees from Abbvie, unrelated to the present work. Larney has received advisory board fees from Gilead Sciences, unrelated to the present work.

DATA AVAILABILITY STATEMENT

Research data are not shared.

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