RESEARCH

Assessing support for substance use policies among the general public and policy influencers in two Canadian provinces

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Abstract

Background Examining support for substance use policies, including those for harm reduction, among the general public and policy influencers is a fundamental step to map the current policy landscape and leverage policy opportunities. Yet, this is a knowledge gap in Canada. Our paper identifies the level of support for substance use policies in two provinces in Canada and describes how the level of support is associated with intrusiveness and sociodemographic variables.

Methods Data came from the 2019 Chronic Disease Prevention Survey. The representative sample included members of the general public (Alberta $n=1648$, Manitoba $n=1770$) as well as policy influencers (Alberta $n=204$, Manitoba $n=98$). We measured the level of support for 22 public policies concerning substance use through a 4-point Likert-scale. The Nuffield Council on Bioethics Intervention Ladder framework was applied to assess intrusiveness. We used cumulative link models to run ordinal regressions for identification of explanatory sociodemographic variables.

Results Overall, there was generally strong support for the policies assessed. The general public in Manitoba was significantly more supportive of policies than its Alberta counterpart. Some differences were found between provinces and samples. For certain substance use policies, there was stronger support among women than men and among those with higher education than those with less education.

Conclusions The results highlight areas where efforts are needed to increase support from both policy influencers and general public for adoption, implementation, and scaling of substance use policies. Socio-demographic variables related to support for substance use policies may be useful in informing strategies such as knowledge mobilization to advance the policy landscape in Western Canada.

Keywords Health policy, Substance use, Substance disorder, Harm reduction, Public opinion, Knowledge, attitudes, and beliefs, Nuffield intervention ladder, Survey research, Canada, Cumulative link modeling

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Background

Drug use is responsible for 1.3% of the total global burden of disease, and accounts for nearly 500,000 deaths per year (including blood borne infections, road traffic injuries, and suicides related to substance use) [1]. Substance use disorders and problematic substance use are very costly due to greater health care utilization, but also through the criminal justice system (policing, courts, corrections) [2]. Lost productivity due to substance use-related premature death, long-term disability, and absenteeism was estimated at $22.4 billion CAD in 2020 [3]. For example, opioid use disorder has been of substantial concern in Canada [4, 5], particularly as the number of patients seeking treatment for opioid dependence continues to grow [6–8].

With the rising number of overdose deaths and other harms related to substance use [9], there is a clear need for the implementation of evidence-informed policies in Canada. While provinces such as British Columbia have implemented progressive, evidence-informed policy on substance use despite some challenges (e.g., access to safe drug supply) [10], provincial death rates related to substance use indicate that more efforts are needed across all jurisdictions in Canada [11, 12]. Despite the promising evidence of health and social benefits of some initiatives (e.g., safer opioid supply programs [13, 14] and safe consumption facilities [15]), implementation of progressive policy on substance use can be impeded by stigma [6], apparent lack of consensus on the scope of the issue, and the fragmented, contrasting ideas on possible solutions coming from law enforcement, community, public health, and health policy, leaving gaps between research and policy ideas [6]. Furthermore, the short political terms of government in Canada (3-5-year cycles) make the work required for policy change difficult, as these issues compete for space with campaign promises on increasingly tighter budgets and timelines [16].

Historically, society has framed people who use drugs (or other substances) as having moral shortcomings [17–19], bad habits [20, 21], or engaging in criminal activity [22, 23]. These pervasive and stigmatizing typecasts contribute to a morality policy environment (characterized by conflicts over core values regarding what is part of the legitimate scope of service provision for people who use substances [20, 24–28]). There is also a lack of government spending on substance use programs and policy actions with some research identifying as much as a 3:1 imbalance in the ratio between disease burden from substance use, mental/neurological disorders, self-harm, and spending allocated to these conditions [29]. This lopsided focus on individual character and behaviour obscures societal responsibility for creating and perpetuating the structural and systemic conditions that contribute to substance-related harm.

Researchers and policy experts in Canada and the United States have identified that many substance use policies are rooted in stigma and are reactionary proposals to appeal to the masses rather than evidence-informed, effective, and compassionate policy options aimed at reducing harms associated with substance use or promoting accessible treatment [6, 30, 31]. Harm reduction encompasses strategies and some treatments (i.e., policies, programs, or practices) aimed at addressing the negative health, social, and legal effects associated with drug use [32], including death, disease, violent victimization, and unstable housing and poverty [17, 23, 33–35]. Harm reduction philosophy and practices are pragmatic and humanistic, acknowledging that substance use and associated harm lie on a continuum and that abstinence may not be possible or desirable for all people who use substances [17, 19, 20, 36, 37]. Since the 1980s, during the HIV/AIDS epidemic, diverse harm reduction policies and programs targeting an array of drug types and specific groups of people who use opioids have been introduced globally and have shown strong evidence of effectiveness in reducing cost and negative societal impacts of substance use [17, 19, 20, 37–39]. Some examples of more common harm reduction interventions include syringe services programs, naloxone provision, supervised consumption sites, peer outreach, drug checking, and distribution of safer inhalation supplies. Importantly, researchers have called for the recognition and expansion of harm reduction approaches that are intersectional and address the structural, political, and socio-cultural causes of substance-related harm [40].

Despite the evidence of effectiveness, harm reduction policy stigma and negative public perceptions constitute some of the largest obstacles facing harm reduction initiatives [19, 20, 39, 41]. Some fear that harm reduction services, such as supervised injection sites, condone drug use and contribute to social disorder [36, 41, 42]. Others argue that people who use drugs are intentionally engaging in high-risk behaviours and are not deserving of health or social care; rather, criminalization should be used to prosecute drug dealers and users [19, 20, 43, 44]. These perspectives result in policies generated based on moral beliefs and, in many cases, can impede the implementation of effective policies and initiatives that can prevent death and reduce other harms associated with substance use. While the policies assessed in this paper cover both those considered harm reduction (e.g., supervised consumption sites) and those not generally considered harm reduction (e.g., addiction medicine care in hospital facilities), the coexistence of harm reduction policy with policies related to education or treatment can

create an agile policy environment better suited to meet the diverse needs of people who use substances [31].

Opinions about and support for substance use policies: study rationale and purpose

Among the myriad of factors impeding the design and implementation of substance use policies, one critical barrier is low levels of support for these policies from the general public and actors who directly influence policy (i.e., policy influencers) [45]. For example, one United States study found that only 39% of those surveyed supported increasing spending on substance use disorder treatment [46]. As shown in previous studies on support for harm reduction policies and programs [47, 48], the opinions of policy influencers and the general public shape political agendas [45, 49], thus hindering or supporting the adoption and implementation of effective population-level policies [50]. As determinants of policy-making, policy influencers and public opinion interact in diverse ways. For instance, the opinion of government policy influencers are affected by those of their voters [45] and lobbyists, including activists [51]. Public opinion, in turn, may be influenced by the policy narratives created and reinforced through policy influencers in the media sector [52]. Additionally, the opinions of policy influencers and the general public may be influenced by how restrictive they think the policy will be. More specifically, substance use policies may be situated on a scale of less to more intrusive interventions [53](e.g., substance use awareness campaigns versus limiting public funding for high-dose opioid prescriptions). Identifying policy influencers and general public opinions on evidence-informed substance use policies of varying degrees of intrusiveness can help describe the current policy landscape and identify policy change opportunities [54, 55]. However, to our best knowledge, this remains a knowledge gap in the literature, particularly in Canada.

This paper aims to contribute to the incipient but growing literature assessing support for substance use policy in Canada [47, 48, 56]. Thus, the purpose of this paper is threefold. First, we aim to examine support for selected policies concerning substance use (legal and illegal) among the general public and policy influencers in Alberta and Manitoba, which have historically different political leanings, to explore varying policy types related to many substances. Second, we aim to understand how the intrusiveness of a policy – as measured using the Nuffield Council on Bioethics (NCB) Intervention Ladder [53] – may be related to levels of policy support among policy influencers. Finally, we use modeling techniques to understand the relationship between sociodemographic factors and policy support, with the hope of providing advocates and policy actors with data on how to target their efforts better.

Methods

This study is a secondary analysis of the 2019 wave of the Chronic Disease Prevention Survey (CDPS) led by researchers in Alberta, which collected responses from November 14, 2019 to February 3, 2020 in Alberta and Manitoba. In addition to the existing research collaborations between project investigators from both provinces and their relationships with local end-users, Manitoba was chosen as a good comparator to Alberta given their demographic (e.g., age distribution of population [57]) and geographic similarity but sociopolitical differences. Despite equally strong rural constituencies, conservatism dominates the political leanings in Alberta, whereas party elites follow a more progressive centre agenda in Manitoba's provincial government [58]). Since the first CDPS in 2009, both provinces have been included in the 2011, 2017 and 2019 waves to allow for longitudinal analysis [59]. Of note, at the time of the 2019 CDPS, both provinces were governed by progressive conservative political parties.

The CDPS examined knowledge, attitudes, and beliefs of the general public and policy influencers on public policies related to chronic disease prevention at the population level. Six modifiable risk areas were targeted: alcohol consumption, tobacco use, healthy eating, physical activity, substance use, and mental health. Survey methods were developed and piloted prior to the formal data collection period. The University of Alberta Research Ethics Board approved this study (Pro00081566). Informed consent was provided by all participants before completing the survey.

Participants

The recruitment of survey participants from the general public ($n = 3701$) occurred through a random sample of the contracted survey company's proprietary General Population Random Sample. This sample comprised individuals who previously accepted an invitation to participate in public sector studies. Recruitment occurred via telephone or voicemail. Participants received a link to the online survey via SMS or email. The target sample size was 1537 respondents per province, considering a two-sided 95% confidence interval (CI) with a width of 0.05 and a sample proportion of 0.5. The stratified sampling approach was designed to collect data that could be generalized to provincial estimates of the general public in Alberta and Manitoba. Participants in Manitoba ($n = 1909$) and Alberta ($n = 1792$) were community-dwelling adults aged 18 or older. The overall response rate was 23.9% in Manitoba and 28.3% in Alberta.

Individuals in the policy influencer sample ($n=420$) were recruited from Alberta ($n=291$) and Manitoba ($n=129$) within three domains of influence: government representatives (municipal and provincial), non-governmental leaders (e.g., school board members and managers in large workplaces), and media professionals. For the CDPS project, policy refers a set of principles, values, expectations as well as plans for action, programs, and/or initiatives to address a specific issue in any government or non-government organization. Policy influence refers to any direct or indirect capacity one may have to shape decision-making in government and non-government policies [52].

The final sample frame was defined by the research team who collected email addresses available online for these stakeholders. A link was emailed to individuals in these sample frames for them to fill out the survey questionnaire, with up to five email reminders also being sent. The overall response rate was 13.7% and 12.5% in Manitoba and Alberta, respectively. In total, the general public sample included 1648 participants from Alberta and 1770 from Manitoba; the policy influencer sample comprised 204 participants from Alberta and 98 from Manitoba. No incentives were provided to survey participants. Table 1 presents the demographic characteristics of these samples, after removal of blank observations and stratified by province.

Measures

A literature review supported the development of survey questions pertaining to substance use. Experts in substance use policy and the practice and care for people with substance use disorders then reviewed and refined the questionnaire. Within each key topic area, the survey questions were randomly ordered. All survey items included a 'prefer not to say' option and were presented on individual pages.

Healthy public policy on substance use and related coding

The survey included 22 policies related to substance use. Policies included those supporting specific interventions to policies targeting specific populations, such as Indigenous peoples, school-aged children, and incarcerated individuals. The full list of policies can be seen in Table 2. The general public sample received a subset of questions ($n=6$). Policy influencer respondents received the full survey, which included the same questions as the general public survey. Support for policy options was measured using a 4-point Likert-style scale (1="Strongly Oppose", 2="Somewhat Oppose", 3="Somewhat Support", and 4="Strongly Support").

The Nuffield Council on Bioethics' Intervention Ladder [53] was used as a framework to assess intrusiveness for the policy influencer sample. There are eight levels of the ladder: (1) "do nothing or simply monitor the current situation", (2) "provide information", (3) "enable choice", (4) "guide choices through changing the default policy", (5) "guide choices through incentives", (6) "guide choices through disincentives", (7) "restrict choice", and (8) "eliminate choice". This ladder presents an ethical framework for public health interventions by articulating that the more intrusive the policies are, stronger justifications are required for them to be publicly acceptable. Gathering public support might facilitate their implementation, since policy justifications need to strike a balance between reducing individual liberty and achieving collective benefits [53]. This framework was useful for our analysis as it allowed us to examine whether respondents may consider the loss of individual liberty as a deterrent to supporting a given policy.

The policy questions were coded and assigned a level as per the NCB Intervention Ladder [53] by two coders. For consistency, we used a codebook we had previously developed specifically for public health related policy options [60] to support interpretation of the rungs of the ladder [61]. The approach taken throughout the coding process focused on the potential impacts of the policies on the liberties of the general public (i.e., the freedom of civilians) instead of on industry or government. The first round of coding was completed individually, after which the two coders met to review and reach a consensus on the final codes.

Sociodemographic variables

Our analysis included close-ended sociodemographic questions on self-reported: gender; physical health status; mental health; educational attainment; visible minority identity; Indigenous identity; immigration status; and gross annual household income. The question on age was open-ended. We used an 11-point scale for responses to the question about participants' political views (from left/liberal to right/conservative) (Additional file 1). There were a very small number of gender diverse and other respondents; these observations were removed to create a binary category that preserved sample size and degrees of freedom.

Data analysis
Hypotheses

We had four hypotheses: (1) compared to the Manitoba sample, general public and policy influencers in Alberta would have a lower levels of support on all policy options due to their political conservatism; (2) support for substance use policy among policy influencers would decrease with increased intrusiveness according to the NCB Intervention Ladder [62]; (3) policies

Table 1 Sociodemographic characteristics of the general public and policy influencers from Alberta and Manitoba respondents to the 2019 chronic disease prevention survey, % (*n*)

Sociodemographic Characteristics	Alberta		Manitoba	
	General Public *n* = 1648 *n* (%)	Policy Influencers *n* = 204 *n* (%)	General Public *n* = 1770 *n* (%)	Policy Influencers *n* = 98 *n* (%)
Age (Mean (SD)) [*, b, c, d]	47.67 (16.06)	58.01 (9.94)	48.23 (16.59)	54.90 (10.57)
Gender [*, b, c]				
Men	799 (48.5)	129 (63.2)	831 (46.9)	47 (48.0)
Women	849 (51.5)	75 (36.8)	939 (53.1)	51 (52.0)
Self-Reported Physical Health [*]				
Excellent	163 (9.9)	22 (10.8)	145 (8.2)	5 (5.1)
Very Good	555 (33.7)	66 (32.4)	580 (33.0)	29 (29.6)
Good	591 (35.9)	83 (40.7)	685 (39.0)	43 (43.9)
Fair	264 (16.0)	32 (15.7)	267 (15.2)	19 (19.4)
Poor	73 (4.4)	1 (0.5)	81 (4.6)	2 (2.0)
Self-Reported Mental Health [*,c]				
Excellent	262 (16.0)	40 (19.6)	272 (15.5)	18 (18.6)
Very Good	598 (36.4)	93 (45.6)	614 (35.0)	38 (39.2)
Good	521 (31.7)	57 (27.9)	553 (31.5)	32 (33.0)
Fair	206 (12.5)	11 (5.4)	241 (13.7)	8 (8.2)
Poor	55 (3.3)	3 (1.5)	74 (4.2)	1 (1.0)
Education [*,a, c, d]				
High School Incomplete	34 (2.1)	3 (1.5)	49 (2.8)	0 (0.0)
High School Complete	171 (10.5)	13 (6.4)	235 (13.4)	9 (9.2)
University Undergraduate Certificate, Diploma, or Degree	381 (23.3)	33 (16.2)	351 (20.0)	21 (21.4)
University Professional or Graduate Complete	356 (21.8)	97 (47.5)	453 (25.8)	40 (40.8)
College/Technical/University Incomplete	311 (19.0)	24 (11.8)	315 (17.9)	9 (9.2)
College or Technical School Complete	292 (17.8)	27 (13.2)	299 (17.0)	16 (16.3)
Trade School Complete	91 (5.6)	7 (3.4)	53 (3.0)	3 (3.1)
Ethnic Minority Identity [*,c]				
Yes	261 (16.7)	13 (6.5)	287 (17.2)	10 (10.5)
No	1306 (83.3)	186 (93.5)	1384 (82.8)	85 (89.5)
Indigenous Identity [*,a]				
Yes	48 (3.0)	9 (4.5)	121 (7.1)	6 (6.2)
No	1561 (97.0)	190 (95.5)	1593 (92.9)	90 (93.8)
Immigration Status [*,c, d]				
Born in Canada	1340 (81.6)	192 (95.0)	1470 (83.6)	91 (92.9)
Immigrated	302 (18.4)	10 (5.0)	289 (16.4)	7 (7.1)
Gross Household Income [*,a, c, d]				
Under $20,000	59 (4.2)	0 (0.0)	79 (5.2)	0 (0.0)
$20,000 to < $40,000	144 (10.2)	6 (3.4)	197 (13.0)	1 (1.2)
$40,000 to < $70,000	271 (19.3)	23 (13.1)	355 (23.4)	21 (24.4)
$70,000 to < $100,000	274 (19.5)	36 (20.5)	342 (22.5)	16 (18.6)
$100,000 to < $125,000	215 (15.3)	18 (10.2)	219 (14.4)	13 (15.1)
$125,000 +	444 (31.6)	93 (52.8)	326 (21.5)	35 (40.7)
Political Views [*,a, b, c]				
Extreme Left	43 (2.8)	1 (0.5)	56 (3.4)	1 (1.1)
2	35 (2.3)	2 (1.1)	51 (3.1)	3 (3.4)
3	147 (9.5)	5 (2.7)	211 (12.8)	6 (6.7)
4	201 (13.0)	19 (10.4)	261 (15.8)	12 (13.5)
5	250 (16.1)	32 (17.5)	272 (16.4)	26 (29.2)

Table 1 (continued)

Sociodemographic Characteristics	Alberta		Manitoba	
	General Public *n* = 1648 *n* (%)	Policy Influencers *n* = 204 *n* (%)	General Public *n* = 1770 *n* (%)	Policy Influencers *n* = 98 *n* (%)
6	291 (18.8)	53 (29.0)	301 (18.2)	13 (14.6)
7	224 (14.5)	29 (15.8)	166 (10.0)	10 (11.2)
8	182 (11.7)	31 (16.9)	153 (9.3)	9 (10.1)
9	75 (4.8)	6 (3.3)	87 (5.3)	4 (4.5)
10	35 (2.3)	2 (1.1)	36 (2.2)	4 (4.5)
Extreme Right	67 (4.3)	3 (1.6)	60 (3.6)	1 (1.1)

* Percent missing for each variable: Age – 4.2%; Gender – 0%; Self-Reported Physical Health – 0.4%; Self-Reported Mental Health – 0.6%; Education – 0.7%; Ethnic Minority Identity – 5.1%; Indigenous Identity – 2.7%; Immigration Status – 0.5%; Household Income – 14.3%; Political Views – 6.6%

[a] indicates statistically significant differences between the General Public samples of each province (a = 0.05)

[b] indicates statistically significant differences between the Policy Influencer samples of each province (a = 0.05)

[c] indicates statistically significant differences between the Policy Influencer and General Public samples within Alberta (a = 0.05)

[d] indicates statistically significant differences between the Policy Influencer and General Public samples within Manitoba (a = 0.05)

focused explicitly on harm reduction (e.g., implementing or increasing access to supervised consumption services, supportive housing, and needle exchange programs) would have less support because of stigma related to continued drug use and morality policy implementation [24, 27] women, people with more education, and those politically leaning left would be more supportive of the harm reduction policies [47, 63]

Missing data and imputation
We used R version 3.6.0 using the RStudio IDE [64] to analyze the data. Of the original total of 4100 observations, 380 were removed for missing responses to all questions (either Prefer not to say, left blank, or No response). After removing blank observations, missingness for each demographic variable was examined and roughly 5% or less of all responses to each demographic question were missing in the general public sample, except for household income (14.42% missing). Missingness for sociodemographic variables was also low in the policy influencer sample, except for age (9.27% missing), household income (13.25% missing), and political alignment (13.25% missing). A visual inspection of the data did not indicate any patterns to the missingness. Concluding that data were likely missing at random (MAR), we deemed multiple imputation was appropriate [65]. For data imputation, we used multivariate imputation by chained equations method through the *mice* package in R. We used the predictive mean matching for age and logistic regression for binary variables. For unordered categorical variables (*n* > 2 categories) and ordered categorical variables, we used polytomous logistic regression and proportional odds modeling, respectively. To be conservative, we used 25 iterations and 30 imputations for this process. We used more iterations and two-times the percentage of missing income data as a guide. Following Rubin's rules, we estimated the probabilities for all models. The models were fitted on each imputed data set. To obtain the final estimates, we averaged the predictive probabilities across all imputed data sets.

Variable selection and modeling
After the coding of policy questions by the NCB Intervention Ladder levels [53], we applied paired, two-sided t-tests with an alpha of 0.05 to compare the mean percentage of respondents at each of the four levels of the Likert scale. We also ran ordinal regression procedures using cumulative link models for each question separately to better assess differences in levels of responses to the singular constructs in each survey question. There is little established evidence and literature to support an a priori variable selection process that is typical of explanatory modeling. Variable selection was therefore done using data-driven approaches, but interpretation was informed theoretically by the NCB Intervention Ladder. Particularly, we examined posterior probability of sociodemographic variables being non-zero from a Bayesian regression process; scanning one-term deletions from complete models to systematically identify explanatory variables; and manually investigating all possible models for coefficient changes. The coefficients from the final models are on the log scale, and so were converted into odds ratio estimates with 95% confidence intervals. Adjustments for multiple testing were done applying Holm's Sequential Bonferroni Procedure to p-values generated for each coefficient in the models. Imputation and analysis were only performed on questions posed to all groups, as the policy influencer sample was small

Table 2 Proportion of support and opposition responses for policy options for substance use grouped by modified Nuffield Council on Bioethics Intervention Ladder categories for policy influencers and the general public in the 2019 Chronic Disease Prevention Survey, *n* (%)

Nuffield Intervention Ladder category	Policy and Level of Support Strongly Oppose: StO Somewhat Oppose: SoO Somewhat Support: SoS Strongly Support: StS	Alberta		Manitoba	
		General Public *n*=1648	Policy Influencers *n*=204	General Public *n*=1770	Policy Influencers *n*=98
Rung 2 – Provide Information	Dedicate more funding for substance use education and prevention programs and updated curricula in elementary and high schools (Q54.2)	NA	StO: 2 (1) SoO: 11 (5.7) SoS: 77 (39.7) StS:104 (53.6)	NA	3 (3.2) 2 (2.1) 38 (40.4) 51 (54.3)
	Develop public information campaigns on evidence-based treatment options for people living with substance use disorders (Q54.5)	NA	StO: 4 (2.1) SoO: 9 (4.7) SoS: 89 (46.1) StS: 91 (47.2)	NA	3 (3.4) 2 (2.2) 35 (39.3) 49 (55.1)
Rung 3 – Enable Choice	Develop medical school curricula, medical association guidelines, and professional development programs to train health care practitioners about their responsibility to counteract stigma towards people who use drugs (Q54.1)	NA	StO: 12 (6.4) SoO: 13 (7) SoS: 84 (44.9) StS: 78 (41.7)	NA	5 (5.3) 6 (6.3) 33 (34.7) 51 (53.7)
	Develop screening tools and interventions to identify and assist students at risk of developing substance use disorders or experiencing substance-related harm (Q54.4)	NA	StO: 1 (0.5) SoO: 8 (4.1) SoS: 86 (43.9) StS:101 (51.5)	NA	3 (3.3) 1 (1.1) 39 (42.9) 48 (52.7)
	Implement specialized inpatient and outpatient addiction medicine care in hospital facilities(Q54.7) [a, b]	StO: 109 (7.1) SoO: 156 (10.2) SoS: 641 (41.8) StS: 628 (40.9)	5 (2.6) 15 (7.8) 94 (48.7) 79 (40.9)	65 (3.9) 107 (6.4) 650 (39) 844 (50.7)	3 (3.3) 6 (6.7) 44 (48.9) 37 (41.1)
	Facilitate access to substance use services for children and adults involved with the criminal justice system (Q54.8)	NA	StO: 9 (4.8) SoO: 13 (6.9) SoS: 79 (41.8) StS: 88 (46.6)	NA	7 (7.4) 2 (2.1) 39 (41.5) 46 (48.9)
	Implement harm reduction interventions like sterile syringe distribution and supervised consumption services in correctional facilities (Q54.9)	NA	StO: 42 (22) SoO: 22 (11.5) SoS: 75 (39.3) StS: 52 (27.2)	NA	13 (14.8) 14 (15.9) 26 (29.5) 35 (39.8)
	Create publicly-funded permanent supportive housing units for those living with severe substance use disorders (Q54.10) [a]	StO: 259 (16.9) SoO: 273 (17.8) SoS: 537 (35) StS: 464 (30.3)	31 (16.8) 28 (15.1) 78 (42.2) 48 (25.9)	180 (10.9) 271 (16.4) 602 (36.5) 598 (36.2)	9 (10.1) 12 (13.5) 35 (39.3) 33 (37.1)
	Create more social supports (e.g., child care) for women that are accessing substance use services (Q54.11)	NA	StO: 7 (3.7) SoO: 16 (8.5) SoS: 71 (37.6) StS: 95 (50.3)	NA	3 (3.2) 4 (4.3) 35 (37.6) 51 (54.8)
	Increase the number of harm reduction services (e.g., needle exchange programs, substitution therapies, supervised consumption sites) (Q54.12)	NA	StO: 33 (17.6) SoO: 27 (14.4) SoS: 69 (36.9) StS: 58 (31)	NA	8 (9.2) 12 (13.8) 33 (37.9) 34 (39.1)
	Expand the scope of practice for pharmacists to take on a larger role in providing medications for treating opioid addiction for patients (Q54.13)	NA	StO: 7 (4) SoO: 19 (10.7) SoS: 88 (49.7) StS: 63 (35.6)	NA	3 (3.4) 12 (13.8) 40 (46) 32 (36.8)

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Table 2 (continued)

Nuffield Intervention Ladder category	Policy and Level of Support Strongly Oppose: StO Somewhat Oppose: SoO Somewhat Support: SoS Strongly Support: StS	Alberta		Manitoba	
		General Public n = 1648	Policy Influencers n = 204	General Public n = 1770	Policy Influencers n = 98
	Increase access to injectable medications for treating opioid addiction (e.g. hydromorphone) for people with severe opioid use disorders (Q54.14) [a, b]	StO: 244 (16.5) SoO: 210 (14.2) SoS: 511 (34.5) StS: 515 (34.8)	21 (11.3) 23 (12.4) 85 (45.7) 57 (30.6)	157 (9.9) 185 (11.6) 619 (38.9) 630 (39.6)	6 (7.1) 9 (10.6) 45 (52.9) 25 (29.4)
	Support qualified physicians to prescribe limited quantities of prescription opioids as a harm reduction measure for people dependent on street-sourced illegal fentanyl or other opioids (Q54.15)	NA	StO: 17 (9.8) SoO: 27 (15.6) SoS: 64 (37) StS: 65 (37.6)	NA	8 (9.3) 7 (8.1) 41 (47.7) 30 (34.9)
	Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities (Q54.16) [a, b]	StO: 324 (22.9) SoO: 242 (17.1) SoS: 390 (27.6) StS: 458 (32.4)	33 (19.4) 50 (29.4) 54 (31.8) 33 (19.4)	246 (16.6) 259 (17.5) 405 (27.4) 569 (38.5)	14 (18.7) 14 (18.7) 26 (34.7) 21 (28)
	Promote the practice of Screening, Brief Intervention, and Referral to Treatment in primary care settings (i.e., early intervention protocol to assess severity of substance use and appropriate level of treatment) (Q54.17) [a]	StO: 45 (3) SoO: 81 (5.4) SoS: 640 (42.9) StS: 727 (48.7)	3 (1.6) 8 (4.3) 95 (50.5) 82 (43.6)	29 (1.8) 72 (4.4) 675 (41.4) 853 (52.4)	0 (0) 3 (3.4) 40 (44.9) 46 (51.7)
	Improve access to medications for treating opioid addiction in provincial correctional facilities (Q54.18)	NA	StO: 24 (12.5) SoO: 8 (4.2) SoS: 86 (44.8) StS: 74 (38.5)	NA	6 (6.8) 7 (8) 33 (37.5) 42 (47.7)
	Allocate more public funding for pharmacotherapies to treat people with substance use disorders (e.g., methadone, buprenorphine) (Q54.19) [a]	StO: 207 (13.7) SoO: 249 (16.5) SoS: 571 (37.8) StS: 484 (32)	17 (9.6) 29 (16.4) 79 (44.6) 52 (29.4)	124 (7.5) 231 (14) 683 (41.5) 609 (37)	6 (7) 11 (12.8) 41 (47.7) 28 (32.6)
	Increase access to harm reduction services (e.g. sterile syringe distribution, supervised consumption services, peer outreach) for people who are not ready or able to access treatment (Q54.20)	NA	StO: 33 (17.7) SoO: 22 (11.8) SoS: 70 (37.6) StS: 61 (32.8)	NA	7 (7.7) 9 (9.9) 40 (44) 35 (38.5)
	Improve integration of medications for treating opioid addiction and other pharmacotherapies for substance use disorders within primary care (Q54.21)	NA	StO: 7 (3.8) SoO: 8 (4.3) SoS: 78 (42.2) StS: 92 (49.7)	NA	3 (3.4) 6 (6.9) 43 (49.4) 35 (40.2)
Rung 4 - Guide Choices by Changing the Default Policy	Develop programs for teachers to connect students who violate school substance use policies with prevention and treatment services (Q54.3)	NA	StO: 4 (2) SoO: 8 (4) SoS: 79 (39.9) StS: 107 (54)	NA	4 (4.1) 1 (1) 32 (33) 60 (61.9)
	Create funding for First Nations, Métis, Inuit, and urban Aboriginal communities to ensure culturally appropriate and community-driven programming and resources (Q54.22)	NA	StO: 26 (13.4) SoO: 23 (11.9) SoS: 74 (38.1) StS: 71 (36.6)	NA	7 (7.5) 7 (7.5) 41 (44.1) 38 (40.9)

Table 2 (continued)

Nuffield Intervention Ladder category	Policy and Level of Support Strongly Oppose: StO Somewhat Oppose: SoO Somewhat Support: SoS Strongly Support: StS	Alberta		Manitoba	
		General Public $n = 1648$	Policy Influencers $n = 204$	General Public $n = 1770$	Policy Influencers $n = 98$
Rung 7 - Restrict Choice	Limit or cap the amount of publicly funded drug coverage for high dose opioid prescriptions (Q54.6)	NA	StO: 14 (8.3) SoO: 30 (17.9) SoS: 71 (42.3) StS: 53 (31.5)	NA	5 (6.2) 16 (19.8) 30 (37) 30 (37)

No statistically significant (a = 0.05) differences in support were found between the policy influencers of the two provinces, or between the policy influencer and general public samples in Manitoba

StO strongly oppose, *SoO* somewhat oppose, *SoS* somewhat support, *StS* strongly support

*Percent missing for each variable: Q54.2 – 4.64%; Q54.4 – 4.97%; Q54.1 – 6.62%; Q54.5 – 6.62%; Q54.7 – 6.37%; Q54.8 – 6.29%; Q54.9 – 7.62%; Q54.10 – 7.04%; Q54.11 – 6.62%; Q54.12 – 9.27%; Q54.13 – 12.58%; Q54.14 – 10.16%; Q54.15 – 14.24%; Q54.16 – 15.65%; Q54.17 – 8.63%; Q54.18 – 7.28%; Q54.19 – 8.04%; Q54.20 – 8.28%; Q54.21 – 9.93%; Q54.3 – 2.32%; Q54.22 – 4.97%; Q54.6 – 17.55%

[a] indicates statistically significant differences between the General Public samples of each province (a = 0.05)

[b] indicates statistically significant differences between the Policy Influencer and General Public samples within Alberta (a = 0.05)

and unsuitable for imputation. The imputation process was validated through visual examination of the imputed data and strip plots in line with current best-practices [66]. The proportional odds assumption was tested for all models using Harrell's graphical methods [67] and a likelihood ratio test, which also included testing whether variables should be included in the model as nominal or scale effects. Likelihood ratio tests were used when there were too few respondents in a category, namely Indigenous identity and the more extreme ends of political alignment. The R packages used in data analysis were: *tidyr, plyr, ggplot2, foreign, dplyr, mice, Hmisc, tableone, naniar, BMA, MASS, reshape2, MPDiR, jtools, lme4,* and *ordinal.*

Results

Substance use policy support by province and sample type
Table 2 displays an overview of respondents' support for all policies, organized by NCB ladder and stratified by province and sample type. Overall, support for all policies was high across samples with approximately two thirds or more of all respondents either somewhat or strongly supporting all policies. The only exception was for "Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities," which only 51.2% (Alberta policy influencers) to 62.7% (Manitoba policy influencers) of respondents supported overall. The policy with the most support was "Develop screening tools and interventions to identify and assist students at risk of developing substance use disorders or experiencing substance-related harm" with over 95% of respondents

(all policy influencers) stating they either somewhat or strongly supported it.

No statistically significant differences in support were found between the policy influencers of the two provinces, nor between the policy influencer and general public samples in Manitoba. For all six policy questions asked of the general public that were coded as "enable choice", the Manitoba general public sample was significantly more supportive than their Alberta counterpart, often by a magnitude of 5–10%. There were also three questions on which the Alberta general public sample and the Alberta policy influencer sample significantly differed. For the questions "Implement specialized inpatient and outpatient addiction medicine care in hospital facilities" and "Increase access to injectable medications for treating opioid addiction (e.g., hydromorphone) for people with severe opioid use disorders", policy influencers were significantly more supportive than the general public. For the policy "Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities", however, the general public sample was more supportive than the policy influencer sample.

Support for substance use policies by NCB intrusiveness levels among policy influencers
The NCB ladder coding for all policy options are reported in Table 2. Of the 22 policy options, two were coded as "provide information", 17 as "enable choice", 2 as "guide choices by changing the default policy", and 1 as "restrict choice". The overall mean percent of "Strongly Support" responses from the policy influencer sample was 51.8%

for "provide information", 38.8% for "enable choice", 47.4% for "guide choices", and 33.3% for "restrict choice". Likewise, the mean percent of "Somewhat Support" responses from policy influencers was 41.9% for "provide information", 42.3% for "enable choice", 38.8% for "guide choices", and 40.6% for "restrict choice". For opposition, the overall percent of policy influencers who responded "Somewhat Oppose" was 4.2% for "provide information", 10.1% for "enable choice", 6.7% for "guide choices", and 18.5% for "restrict choice". Lastly, the overall mean percent of policy influencers who responded "Strongly Oppose" was 2.1% for "provide information", 8.7% for "enable choice", 7.0% for "guide choices", and 7.6% for "restrict choice" [data not shown].

Socio-demographic relationships to substance use policy support

Table 3 presents the results from the cumulative link models. Only the odds ratios and confidence intervals for covariates that were significant at the 0.05 level are reported, along with those for province and sample.

Compared to Alberta, Manitoba had higher odds of supporting three of the six policy options: "Implement specialized inpatient and outpatient addiction medicine care in hospital facilities" (OR: 1.39; 95% IC 1.21, 1.6); "Create publicly-funded permanent supportive housing units for those living with severe substance use disorders" (OR: 1.22; 95% IC 1.08, 1.36); and "Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities" (OR: 1.21; 95% IC 1.06,1.38). Differences between the policy influencer and general public samples were not significant across all models.

In the model for "Implement specialized inpatient and outpatient addiction medicine care in hospital facilities", women were more likely to support this policy option than men (OR: 1.54; 95% IC 1.34, 1.78). In turn, people with lower levels of education than complete university, professional, or graduate degree were less likely to support this policy option compared to their more educated counterparts. All other model covariates (age, immigration status, Indigenous identity, and political alignment) were not significant. Immigration status and political alignment were also included in the model as scale effects.

In the model for the policy "Create publicly-funded permanent supportive housing units for those living with severe substance use disorders", age and visible minority identity were included as scale effects. The covariates gender, education, and political alignment were significant: women (OR: 1.22 (95% IC 1.09, 1.37), people with complete university, professional, or graduate degree (compared to those with less education), and people

situated themselves on the left of the political spectrum (compared to the center) were more likely to support this policy option. Other model covariates (age, visible minority identity, physical health, and household income) were not statistically significant.

For the policy "Increase access to injectable medications for treating opioid addiction (e.g., hydromorphone) for people with severe opioid use disorders", the model used education, household income, political alignment, province, and sample as covariates, with political alignment also included as a scale effect, and age included as a nominal effect. Of these, only education was significant; those with complete university, professional, or graduate degree (compared to those with less education) showed significantly more support.

Modeling for "Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities" used age, gender, immigration status, political alignment, province, and sample as covariates, with age and political alignment also included as scale effects. Of these, only gender (women versus men – OR: 1.2 (95% IC 1.05, 1.36)) and having immigrated to Canada (yes versus no – OR: 1.54 (95% IC 1.27, 1.87)) were significant.

In the model for the policy "Promote the practice of Screening, Brief Intervention, and Referral to Treatment in primary care settings (i.e., early intervention protocol to assess severity of substance use and appropriate level of treatment)", only gender (women versus men – OR: 1.43 (95% IC 1.25,1.64)) was found to be significant. Other model covariates used here were political alignment, province, and sample, of which political alignment was also included as a scale effect.

Lastly, the model for "Allocate more public funding for pharmacotherapies to treat people with substance use disorders (e.g., methadone, buprenorphine)" used age, gender, visible minority identity, Indigenous identity, education, political alignment, province, and sample as covariates, with age, visible minority identity, Indigenous identity, political alignment, and province also included as scale effects. Of these, Indigenous identity (yes versus no – OR: 1.29 (95% IC 1.00,1.67)) and education (those with more education showed more support).

Discussion
Our findings describe the substance use policy landscape in Alberta and Manitoba by examining support for specific policy options among policy influencers and the general public.

Substance use policy support by province and sample type
Overall, there was a large amount of support for most of the policies queried. The policy influencers in each

Table 3 Results of the cumulative link models on support for policy options for substance use by sociodemographic variables in the 2019 chronic disease prevention survey

Policy	Model Covariates	Nominal & Scale Effects	Odds Ratios for Province and Sample Type (95% Confidence Interval)	Significant Variables	Odds Ratio (95% Confidence Interval)
Implement specialized inpatient and outpatient addiction medicine care in hospital facilities (Q54.7)	Age, Gender, Education, Immigration Status, Indigenous Identity, Political Alignment, Province, Sample	Scale Effects: Immigration Status, Political Alignment Nominal Effects: NA	Manitoba: 1.39 (1.21–1.6) Policy Influencer: 1.13 (0.88–1.44)	Gender (versus man) Education (versus University, Professional or Graduate Degree Complete)	Gender – Woman 1.54 (1.34–1.78) Education – High school Incomplete 0.66 (0.52–0.85) Education – High school Complete 0.52 (0.32–0.84) Education - Trade School Complete 0.47 (0.33–0.67) Education - College/Technical/University Incomplete 0.72 (0.58–0.89) Education – College or Technical School Complete 0.66 (0.53–0.82)
Create publicly-funded permanent supportive housing units for those living with severe substance use disorders (Q54.10)	Age, Visible Minority Identity, Gender, Physical Health, Education, Household Income, Political Alignment, Province, Sample	Scale Effects: Age, Visible Minority Identity Nominal Effects: NA	Manitoba: 1.22 (1.08–1.36) Policy Influencer: 1.03 (0.84–1.27)	Gender (versus man) Education (versus University Professional or Graduate Degree Complete) Political Alignment (versus centre (6))	Gender – Woman 1.22 (1.09–1.37) Education – High school Complete 0.78 (0.63–0.96) Education - Trade School Complete 0.57 (0.42–0.77) Education - College/Technical/University Incomplete 0.75 (0.62–0.89) Education – College or Technical School Complete 0.75 (0.62–0.9) Political Alignment – Extreme Left 5.13 (3.16–8.31) Political Alignment – 2 4.93 (3.01–8.05) Political Alignment – 3 2.92 (2.23–3.84) Political Alignment – 4 2.05 (1.62–2.59) Political Alignment – 5 1.38 (1.14–1.67) Political Alignment – 7 0.62 (0.5–0.77) Political Alignment – 8 0.53 (0.42–0.66) Political Alignment – 9 0.46 (0.34–0.63) Political Alignment – 10 0.49 (0.33–0.74) Political Alignment – Extreme Right 0.5 (0.35–0.71)

Table 3 (continued)

Policy	Model Covariates	Nominal & Scale Effects	Odds Ratios for Province and Sample Type (95% Confidence Interval)	Significant Variables	Odds Ratio (95% Confidence Interval)
Increase access to injectable medications for treating opioid addiction (e.g. hydromorphone) for people with severe opioid use disorders (Q54.14)	Education, Household Income, Political Alignment, Province, Sample	Scale Effects: Political Alignment Nominal Effects: Age	Manitoba: 3.57 (0.44–28.97) Policy Influencer: 2.07 (0.43–9.94)	Education (versus University Professional or Graduate Degree Complete)	Education – High school Incomplete 0.42 (0.33–0.54) Education – High school Complete 0.39 (0.24–0.64) Education - Trade School Complete 0.33 (0.23–0.47) Education - College/Technical/University Incomplete 0.59 (0.48–0.73) Education – College or Technical School Complete 0.54 (0.44–0.67)
Prohibit exclusionary zoning policies that prevent sterile needle exchange programs or supervised injection facilities within municipalities (Q54.16)	Age, Gender, Immigration Status, Political Alignment, Province, Sample	Scale Effects: Age, Political Alignment, Sample Nominal Effects: NA	Manitoba: 1.21 (1.06–1.38) Policy Influencer: 0.88 (0.71–1.08)	Gender (versus man) Immigrant (versus no)	Gender – Woman 1.2 (1.05–1.36) Immigrant - Yes 1.54 (1.27–1.87)
Promote the practice of Screening, Brief Intervention, and Referral to Treatment in primary care settings (i.e., early intervention protocol to assess severity of substance use and appropriate level of treatment) (Q54.17)	Gender, Political Alignment, Province, Sample	Scale Effects: Political Alignment Nominal Effects: NA	Manitoba: 1.09 (0.96–1.25) Policy Influencer: 1.11 (0.88–1.4)	Gender (versus man)	Gender – Woman 1.43 (1.25–1.64)
Allocate more public funding for pharmacotherapies to treat people with substance use disorders (e.g., methadone, buprenorphine) (Q54.19)	Age, Gender, Visible Minority Identity, Indigenous Identity, Education, Political Alignment, Province, Sample	Scale Effects: Age, Visible Minority Identity, Indigenous Identity, Political Alignment, Province	Manitoba: 1.02 (0.81–1.27) Policy Influencer: 1.01 (0.84–1.21)	Indigenous Identity (versus no) Education (versus University Professional or Graduate Degree Complete)	Indigenous Identity – Yes 1.29 (1–1.67) Education – High school Incomplete 0.83 (0.69–1) Education – High school Complete 0.62 (0.43–0.89) Education – Trade School Complete 0.54 (0.41–0.72) Education - College/Technical/University Incomplete 0.78 (0.66–0.91) Education – College or Technical School Complete 0.77 (0.66–0.91)

province demonstrated similar levels of support, while the general public in Manitoba tended to be more supportive compared to Alberta. The policy option of prohibiting exclusionary municipal zoning practices that prevent sterile needle exchange programs or supervised injection facilities received the least amount of support across samples (~ 30%). Despite Canada's reputation as a leader in harm reduction policy, this result was expected because of the core values that collide in Canadian policymaking about providing harm reduction services to people who use substances, referred to as morality policy [24, 27, 41]. This clash of values is particularly prominent in Alberta, which is considered the most politically conservative Canadian province [68]. For example, United Conservative Party governments in Alberta have been criticized for ignoring evidence supporting harm reduction such as safe supply and supervised injection sites and promoting abstinence as well as for shaping negative public perceptions of these services [69]. This morality policy and political landscape may explain why the general public in Alberta were less supportive of most policies than in Manitoba.

Interestingly, the Alberta general public were more supportive of preventing exclusionary zoning for supervised injection facilities compared to Alberta policy influencers. Advocacy may have played a role here, where harm reduction efforts such as safe injection sites were heavily campaigned for by organizations such as "Moms Stop the Harm" using social media platforms and news outlets to share stories of the ongoing drug poisoning crisis and advocate for policy change [70]. On the other side, the conservative provincial government in 2019 introduced plans to increase regulation of safe injection sites, which gathered attention from media and general public because they resulted in restricted access to such services and were accompanied by inflammatory narratives about the dangers of these services to communities. The media spotlight on this topic, despite the polarized debate, may have encouraged the general public to consider the need for such facilities and favour policies that would promote more supervised injection facilities in general.

Support for substance use policies by NCB intrusiveness levels among policy influencers

While differences among the rungs of the ladder were small, there was a slight trend of increased opposition by intervention ladder rung in the policy influencer sample. The policy options that 'provide information' were generally well supported, while those that restrict choice were among the least strongly supported.

The policy options that 'enable choice', however, were less supported than the ones that 'guide choices by changing the default policy' for policy influencers; an

unexpected finding considering the relative intrusiveness of these rungs. This may be due to a number of items with more relative opposition such as those related to supervised consumption services, which are very fiscally-demanding policies that have historically garnered resistance in Canada [12, 71]. Policy influencer support might not be a matter of intrusiveness per se as respondents to the survey, and larger society, may engage in 'othering' of people who use substances [72]. In this social discourse, people who use drugs are reduced to a set of narrow and skewed characteristics perpetrated by media and neoliberal notions of a healthy, productive citizen. These discourses reinforce stigma by blaming individuals and ignore the structural, policy, and systemic roots of substance use disorders [72]. More "strong opposition" was found for policies intended to support people with severe substance use disorders, and needle exchange/ sterile syringe programs that largely affect low socioeconomic status and racialized people [73–77]. For example, these biases are exacerbated by Canadian media representations of people who use opioids, which emphasize White middle-class youth as victims and ignore the stories of Indigenous people who use substances who are painted as "addicts" [74] as well as the broader heterogeneity of people who use drugs.

Socio-demographic relationships to substance use policy support

Our results show gender, education, political alignment, immigration status and Indigenous identity as factors affecting opinions about substance use policy. These findings align with previous research on stigma toward people with substance use disorders. For example, research on substance use disorders and mental illness in the United States found that college education, male gender, and higher income was related to stigmatizing attitudes for substance use and mental illness [63]. In another study from the United States assessing stigmatizing beliefs towards people with opioid use disorder and people who misuse opioids, less stigmatizing beliefs were found among those who were younger, Black (vs. non-Hispanic Whites) and had less than a high school education (vs. those with the equivalent of a high school diploma) while those earning higher incomes and those with Asian identities were more likely to support stigmatizing beliefs [78]. Another study conducted in Alberta and another Canadian province (Saskatchewan) found that those who situated themselves on the left of the political spectrum and those with a professional or graduate degree were both more likely to support safe supply programs [47]. We found that women were more supportive of several policies compared to men including specialized addiction health care, supportive housing,

needle exchange/ supervised injection facilities, and Screening, Brief Intervention and Referral to Treatment (SBIRT) interventions in primary care. Other research [79] also demonstrated that women supported more intrusive policy interventions related to tobacco misuse, alcohol use, and physical activity compared to men.

Another study with a large sample of adults in the United States found that those who were older, women, non-white, liberal, less educated, less wealthy, and less healthy were more likely to recognize the role of social determinants of health and equate social and health policy [80]. Social determinants of health describe the social and structural conditions of people's lives such as where they are born, access to health care and education, and environments in which they work and play. These conditions are determined by inequities in the distribution of power, income, goods, and services [81]. Stigma, however, may have a larger role in opinions on substance use policy compared to other health-promoting policies. In a different American sample, those who had greater stigma towards opioid use disorder were less likely to support substance use policy like increased government spending or naloxone availability [82]. In our sample, those with less than a university or graduate degree were less likely to support specialized addiction care, supportive housing, access to injectable medications, and public funding for pharmacotherapies. The role of stigma in policy support may be stronger than some political or educational factors contributing to recognizing the role of social determinants of health. Future work examining substance use policy should also examine stigma as an intersecting factor.

Our study showed that those who were politically left were more likely to support permanent housing for those with substance use disorders (vs. center), and those who were politically right were less likely to support permanent housing (vs. center). Research has shown that those who are more right-leaning or conservative favour policies focusing on individual responsibility for health, such as education or providing more information, for example, in the form of nutrition labels [62]. There appears to be similarities across Canada-United States borders for political affiliations and policy support. In America, researchers found that Democratic affiliation (similar to left or more liberal affiliation in Canada) was associated with stronger support for opioid policies (e.g., Medicaid expansion, naloxone availability) after controlling for stigma and racial attitudes [82]. This same study found that non-Hispanic White participants showed more support for some opioid policies compared to Black, Hispanic, and Asian-American respondents [82]. These results are less comparable to a Canadian context, as evidenced by our results showing immigrants were more likely to support zoning policies for sterile needle exchange or supervised injection facilities (vs. non-immigrants). Additionally, Indigenous respondents were more likely to support public funding for pharmacotherapies like methadone compared to non-Indigenous respondents. While there is no research explaining why immigrants or Indigenous people in Canada are supportive of these policies, their support could be leveraged and direct advocacy efforts. Based on our findings, efforts to promote effective harm reduction policy could be targeted at non-Indigenous, non-immigrant Canadians, those who are politically right-leaning, men, and those with less education. These findings mirror results on potential groups to focus on for non-criminal justice interventions for opioid use disorders in the United States [78].

Implications for policy

Our study has demonstrated generally high support for evidence-informed substance use policies in two socio-politically different Canadian provinces and some nuanced targets for refining advocacy efforts. Recent research from the United States demonstrated a generally low level of reported stigma towards people with opioid use disorder [78]; however, stigma and morality policy continue to reduce care access and quality while influencing which policies are enacted to reduce harms [27, 83]. Observationally, our findings show that, as policy intrusiveness increases, we see more "strongly oppose" and fewer "strongly support" responses while the numbers of "somewhat support/oppose" responses stay more constant, thus demonstrating the polarization of the more intrusive options.

More restrictive policies (i.e., policies that are higher on the NCB Intervention Ladder) and policies related to harm reduction (e.g., supervised consumption, supportive housing) garnered less support and could be more difficult to implement despite their potential for improving outcomes for those who use substances. These policies are examples of morality policy in which debates about the correct way of living take precedence over empirical evidence for policy effectiveness [84]. Changing attitudes toward these policies may require a broader cultural shift [24, 25, 71, 84]. Media campaigns and demonstrations of effective policy implementation may contribute to these cultural shifts. As cultural shifts towards policy reform take time, pragmatic responses to community needs have resulted in non-policy solutions such as take-home naloxone programs [48]. Such solutions and their relationship to policy are likely dependent on the political climate and appetite for more intrusive policies in each province. Left-leaning political parties tend to be more liberal on morality policy issues, and their influence in historically conservative (right-leaning) provinces could

influence which policies are favoured [84]. Additionally, mobilization of policy support for morality policies may depend on resources of interest groups, and how well they can influence and advocate for change [85]. Overall, simply demonstrating policy effectiveness is insufficient to promote effective substance use policy (whether targeting illegal or legal substances or harm reduction or non-harm reduction policies). Policy support must also be contextualized in the morality policymaking arena.

Strengths and limitations
To date, few studies have modeled and quantified the level of support of general public and policy influencers on policies related to substance use. This study helps to address that gap by presenting what policies are most supported by each group in two Canadian provinces and describing support relative to the intrusiveness of the policies. Further, findings on relationships between sociodemographic factors and policy support provide insights for health advocates to tailor their strategies, leverage the current policy appetite, and (re)define priorities for advocacy. Our findings also reinforce the relevance of qualitative evidence on underlying sociocultural and structural factors influencing the level of support for policy options [56] to better contextualize quantitative evidence. Another strength of this study is the inclusion of a variety of factors such as political views and demographics (e.g., race and gender).

This study has some limitations. While the missing data was overall low for the socio-demographic questions, 9–14% of observations were missing for household income in policy influencer and general public samples, as well as for age and political alignment in the policy influencer sample in both provinces. After a visual analysis suggesting the missing data was at random, multivariate imputation was used to increase the power of analyses. The CDPS did not collect information on the respondents' lived, living, or family experiences of substance use, or their stigmatized beliefs, which may have influenced their level of support for related policy options. Social desirability bias may have influenced survey responses including the subjective measures of health status and level of policy support [86]. Despite the questionnaire covering gender diversity, the small number of participants self-identifying themselves in the gender diverse and other categories led to removing their responses. Estimates of odds ratios may not be accurate because the models did not account for interactions, and similarly the intersections of sociodemographic factors were not examined. Future work using an intersectionality approach may enrich this exploratory analysis. Finally, despite the wide range of critical policy options related to substance use included in this study, they represent a

fraction of the health policy landscape and reflect policies deemed relevant in Alberta and Manitoba, Canada at the time of the study. The relatively small sample of policy influencers may not have captured the full range of responses in this category. The length of the CDPS resulted in fewer policy options presented to the general public sample; therefore, only options related to 'enable choice' were assessed in this study making it impossible to compare this sample across rungs.

Conclusions
The high, growing health and societal costs of substance use problems and disorders require effective policy responses. Our study contributes to the evidence on the levels of support for substance use-related policy options among policy influencers and the general public by examining survey responses from two provinces in Canada, Alberta and Manitoba. For the policy influencers, we also presented the associations between level of support and intrusiveness and sociodemographic variables, which is critical for informing policymaking and advocacy.

Our findings indicated the need for socio-demographic and regionally targeted knowledge translation activities that raise awareness of the social determinants of substance use problems and disorders and provide detailed information on the benefits and risks of each substance use policy option, particularly for those that showed significant findings. These efforts may be particularly relevant for non-Indigenous, non-immigrant Canadians, those who are politically right-leaning, men, and those with more education. Strategies that combine evidence on effectiveness of compassionate, humanistic approaches with supportive evidence on the structural causes of substance use problems and disorders may contribute to advancing the policy landscape, although may be insufficient without broader societal support in the context of morality policies. Finally, policy analysis, better understandings of the role of stigma, and in-depth, nuanced qualitative research may further clarify the role of intrusiveness in substance use policy support.

Supplementary Information
The online version contains supplementary material available at https://doi.org/10.1186/s13011-024-00622-w.

Supplementary Material 1.

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the intervention ladder. We are also grateful to Bernice Lee for her help with citations and references.

Availability of data and materials
The dataset from the 2019 Chronic Disease Prevention Survey analyzed during the current study is not publicly available due to ethics requirements. However, the dataset is available from the corresponding authors upon reasonable request.

Data availability
Datasets were analyzed during the current study.

Declarations

Ethics approval and consent to participate
The University of Alberta Research Ethics Board approved this study (Pro00081566). Verbal informed consent prior to the interviews were obtained from all participants.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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