Canadians' Opioid Awareness: An Analysis Across Multiple Demographics

A Thesis

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Abstract

Canada is currently experiencing an opioid crisis that leads to many Canadian deaths each year. The present study is a quantitative analysis of data collected through Statistics Canada's Survey on Opioid Awareness (2017). Participants (N= 5,116) answered questions related to their awareness of several topics including: the opioid issue in Canada, their personal opioid use, appropriate overdose response, sharing opioids, harm reduction services, and general information related to opioid use. These topics have been divided into 2 main scales: Awareness of Safe Opioid Use and Awareness of General Information Related to Opioid Use (6 items; r = 0.87). Factor analysis revealed 3 subscales within the first scale, Awareness of Safe Opioid Use. These subscales are Awareness of Appropriate Overdose Response (4 items; r = 0.75), Awareness of Related to Sharing Opioids (3 items; r = 0.63), and Awareness of Harm Reduction Services (3 items; r = 0.69). 3 in 10 participants reported using opioids in the past five years. The majority of those who used opioids were female (57.10% female vs. 42.90% male). Women also report being more aware of appropriate overdose response (54.41% female vs. 45.59% male). 80% of participants reported being at least somewhat aware that there is currently an opioid issue in Canada. Participants over the age of 80 are significantly less aware of general information related to opioid use and appropriate overdose response than most age groups. Residents of Quebec report significantly less opioid use in last five years as well as lower levels of awareness of general information related to opioid use than most provinces. Residents of British Columbia reported being significantly more aware of general information related to opioid use and appropriate overdose response. These findings provide insight into which Canadian populations have the greatest need for information related to opioid use and overdose.

Keywords: Opioid, opioid awareness, opioid knowledge, opioid literacy, overdose

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I would also like to give a final thanks to Rebekah Corpuz and her patience with many questions asked through emails and while working at the RDC.

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The Opioid Crisis in Canada

In the first six months of 2023, approximately 22 Canadian deaths related to opioid use occurred each day (SAC, 2023a). Should this pattern continue, Canada will see an increase in total opioid-related deaths (8030) at the end of 2023 compared to the 7483 deaths that occurred in 2022. Opioids are natural, semi-synthetic, and synthetic medications that are intended to treat acute and chronic pain (Health Canada, 2023b). When the body contains a higher dosage of an opioid than it can handle, this is referred to as an overdose (Health Canada, 2023d). A person experiencing an overdose can experience slowed breathing, unconsciousness, and death (Health Canada, 2023d). A death that involves one or more opioids is classified as an opioid-related death (SAC, 2023a). Similarly, a person who experiences an overdose and is successfully resuscitated in a healthcare setting is classified as an opioid-related hospitalization (SAC, 2023b). The increased number of opioid-related deaths and hospitalizations in Canada since the 1980s suggests that Canada is experiencing an opioid crisis (Belzak & Halverson, 2018).

The opioid crisis has led to Canada's emergency and economic systems being strained by an overwhelming number of opioid-related deaths and hospitalizations (Hatt, 2022; Health Canada, 2023b). In 2017, the opioid crisis cost Canada $5.9 billion due to low productivity, criminal justice cases, research and harm reduction programs, as well as the use of emergency services in cases of opioid-related deaths and hospitalizations (Hatt, 2022). Furthermore, Canada's healthcare system is being impacted not only by those admitted to healthcare facilities after experiencing an opioid-related overdose but also by those who experience infections and injuries related to using opioids (Chen et al., 2020).

The opioid crisis in Canada is being driven by the consumption of both prescription and illicit opioids (Belzak & Halverson, 2018). Prescription opioids are opioids that are prescribed to a patient by a healthcare professional (Belzak & Halverson, 2018). In contrast, illicit opioids are opioids that one obtains from nonmedical sources such as; the internet, a relative, or a dealer of illicit substances (Health Canada, 2023b). Canada is the world's second-largest consumer of prescription opioids (Belzak & Halverson, 2018). Lee et al. (2023), claim that regions with more opioid prescriptions written by healthcare professionals are observed to also experience higher rates of opioid-related deaths. Furthermore, healthcare professionals being too generous with their prescriptions has led to opioids being distributed for nonmedical use and has facilitated growth in the illicit opioid market (Fowler et al., 2020; Neilson et al., 2020).

A growing market for illicit opioids has made it difficult to control the purity of these substances and therefore, Canada has seen an increase in the toxicity of opioids obtained from nonmedical sources (DelVillano et al., 2019). Prescription opioids and other prescription medications being sold as illicit opioids are at risk of being combined with more potent opioids, decreasing the purity of these substances and increasing their potential toxicity (Belzak & Halverson, 2018). An increase in toxicity is associated with an increase in opioid-related deaths and hospitalizations (DelVillano et al., 2019).

Fentanyl is a synthetic opioid that can be found in illicit variations of medications that are intended for pain relief (Belzak & Halverson, 2018). It is becoming increasingly common to see fentanyl combined with illicit variations of prescribed medications as fentanyl is an inexpensive substance whose presence is difficult to be proven at the time of purchase, making it an ideal choice for a drug dealer looking to make more product for a lesser cost (Health Canada, 2023a). Furthermore, fentanyl is much stronger than many of the opioid and non-opioid medications with

which fentanyl is commonly mixed (Health Canada, 2023a). When one ingests a substance that contains fentanyl, they are at much higher risk for overdose regardless of whether the presence of fentanyl is known to the one using the substance or not, as fentanyl drastically decreases the amount of product necessary to experience an overdose (Health Canada, 2023d). In 2022, over 80 percent of opioid-related deaths and 30 percent of opioid-related hospitalizations in Canada, involved the presence of fentanyl (SAC, 2023a; SAC, 2023b). Thus, fentanyl is commonly cited as a driving factor of the opioid crisis in Canada (Belzak & Halverson, 2018; Health Canada, 2023a).

Opioid Misuse

Opioid misuse occurs when a person does not take an opioid prescribed to them by a healthcare professional exactly as they were intended to be taken (Health Canada, 2023b). Examples of opioid misuse include: taking a larger dose than prescribed, obtaining opioids through prescription forgery, taking opioids that were prescribed to someone else, and taking opioids obtained from a non-medical source (Belzak & Halverson, 2018; Health Canada, 2023b). A commonly cited reason for misusing opioids is to feel the euphoric high that is a side effect of taking the strong pain reliever (Health Canada, 2023b; Neilson et al., 2020). When someone consistently misuses opioids, they are considered a candidate for substance use disorder (Chen et al., 2020). Substance use disorder is the term clinicians use to describe the treatable condition where substance use has altered one's mind and body to crave a particular substance despite the harm it does to that person (Health Canada, 2023c). Those who experience substance use disorder pertaining to opioids are at a higher risk for accidental death and hospitalization related to opioids than those who only occasionally misuse opioids (Health Canada, 2023d).

At-Risk Populations

Certain demographics are at a higher risk for opioid-related death and hospitalization. Men seem to have the highest risk of overdose as evidence suggests they are more likely than women to experience opioid-related death at any stage of life (Belzak & Halverson, 2018; SAC, 2023a). In 2022, Canadian men accounted for 74 percent of all unintentional opioid-related deaths (SACa 2023). In the same year, men also made up the larger proportion of unintentional opioid-related hospitalizations at 65 percent (SAC, 2023b). It is unclear why men have higher rates of opioid-related deaths and hospitalizations but one possible explanation suggests that men are more likely to use illicit opioids and as mentioned previously, it is difficult to ascertain the strength of illicit opioids and the effect they may have on the body (NIDA, 2023).

A person's geographic location can also put them at higher risk for opioid-related death and hospitalization in Canada (SACa 2023). In 2022, British Columbia, Alberta, and Ontario made up 86 percent of all unintentional opioid-related deaths (SACa 2023). These same provinces make up 88 percent of all opioid-related hospitalizations in Canada (SAC, 2023b). Members of communities with smaller populations are at higher risk for mortality related to opioid usage than people who use opioids in urban settings (SACa 2023). This may be related to a decrease in access to emergency services and healthcare resources in smaller communities.

Age is another demographic worth discussing when one is observing the risk of opioid-related overdose across demographics. Those in their 30s are at a higher risk for overdose than any other age group (Belzak & Halverson, 2018; SAC, 2023a). In 2022, the largest proportion (28 percent) of accidental opioid-related deaths in Canada occurred in people in their 30s (Hatt, 2022; SAC, 2023a). Additionally, a person's age changes what opioid they may be using and those who are in their 30s are most likely to use an illicit opioid that has been mixed with fentanyl (Belzak & Halverson, 2018; SAC 2023a). However, when one is looking specifically at

medically prescribed opioid use, Canadians over the age of 65 have higher rates of accidental opioid-related hospitalizations than any other age group (Dunn et al., 2016; see also Hatt, 2022; SAC, 2023b). Thus, one can observe that the risk of opioid-related overdose varies across ages.

Opioid Literacy

Bergeria and colleagues (2019), suggest that providing people with information about safe opioid use, overdose prevention, and overdose response decreases the risky behaviours that contribute to elevated rates of accidental opioid-related deaths and hospitalizations. Lee and colleagues (2023), coin the term *opioid literacy*, which suggests that equipping the general public with knowledge or general awareness related to the proper use and misuse of opioids is a credible intervention against the misuse of opioids and promotion of appropriate use. Unfortunately, individuals who are prescribed opioids are provided with little to no information regarding safe opioid use by the healthcare professionals providing the prescription and the pharmacists who are filling the prescription (Lee et al., 2023). Individuals who have higher levels of opioid literacy have lower susceptibility to accidental opioid-related deaths and hospitalizations that result from uninformed opioid misuse (Lee et al., 2023). Individuals with lower opioid literacy are at an increased risk for accidental opioid-related deaths than those with moderate or higher levels of opioid literacy (Lee et al., 2023). Thus, accidental overdoses that lead to opioid-related death or hospitalization are more concerning as they may be easily preventable by the distribution of information related to safer opioid use.

While there is evidence to support that higher opioid literacy leads to lower rates of accidental opioid-related deaths and hospitalizations, the research surrounding who would benefit most from opioid awareness is sparse (Bergeria et al., 2019; Lee et al., 2023). There is research that discusses opioid-related awareness in those who provide opioid prescriptions such

as physicians and surgeons (Fowler et al., 2020). However, if these healthcare professionals are not relaying this knowledge to those who are using the prescription, the person taking the prescription is at risk of misusing the opioid prescription as well as risk of overdose. Lee et al. (2023), look at opioid literacy amongst the specific population of those living in rural Alabama who identify as African American. While some of the findings by Lee and colleagues (2023), may generalize to larger populations, the study does not report any differences in awareness across demographics such as sex or age. As mentioned previously, sex and age play a role in one's susceptibility to opioid misuse (Belzak & Halverson, 2018; Hatt, 2022).

Dunn et al. (2016), published a questionnaire that can be used to assess a person's knowledge of opioid overdose. The Brief Opioid Overdose Knowledge (BOOK) questionnaire provides a quicker way to assess multiple areas of opioid-related knowledge than previously available assessments. The areas assessed by the BOOK questionnaire are as follows: knowledge of general knowledge of opioids, behaviours of someone who is at risk of an overdose, and appropriate overdose response. The proposed study will use similar areas to the BOOK questionnaire. These categories include awareness of appropriate overdose response, awareness of sharing opioids, awareness of harm reduction services, and general awareness related to opioid use. For further discussion of these categories see **Variables**.

In addition, a report in *The Daily January 9* (2018), reviews a survey that gathered information on Canadians' awareness of opioids, opioid use, and the opioid crisis. This survey, The Survey on Opioid Awareness (SOA), is a questionnaire created by Statistics Canada that circulated in 2017 (The Daily January 9, 2018). The report on this survey discusses awareness of the opioid crisis for Canada as a whole and the awareness of each province (The Daily January 9, 2018). British Columbia was reported as being the most aware while also consistently having the

highest rates of opioid-related deaths (The Daily January 9, 2018). However, the report neglects to discuss any of the other demographic variables that were used in the SOA such as age or sex, which as previously discussed, are telling of one's risk for opioid-related death and hospitalization (Statistics Canada, 2017). In addition, the report neglects to make any further comparisons across the provinces using any of the variables on the SOA that do not pertain to one's awareness of the opioid crisis (The Daily January 9, 2018). Therefore, the present study will analyze Canadians' awareness of opioids and opioid use across multiple demographics using the SOA.

Method

Design

The current study is a quantitative analysis of data collected in 2017 when the SOA was administered. The proposed study will attempt to answer the following research questions:

A. In terms of the demographic of sex, how aware is each sex when it comes to each knowledge category?
B. In terms of the demographic of age, is age correlated with awareness of opioid use and misuse?
C. Does awareness of opioid use and misuse vary across different geographic regions of Canada?

Participants

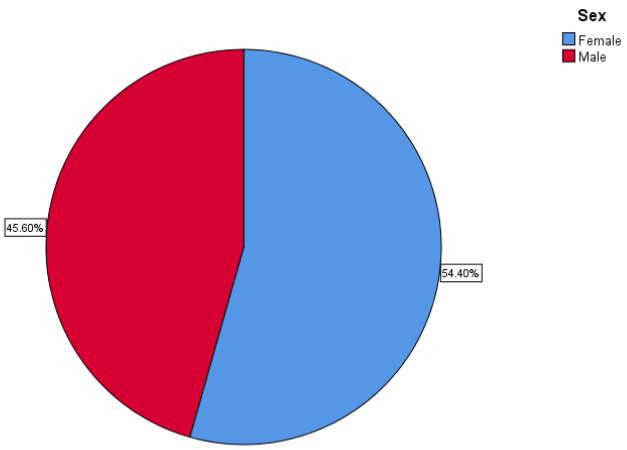
The participants included in the SOA are recruited by Statistics Canada, are over the age of 18, and reside in one of Canada's 10 provinces (Statistics Canada, 2017). Exclusion criteria included those who are institutionalized or reside in one of Canada's three northern territories.

Statistics Canada had 5,116 Canadians participate in their survey. 54.40% of respondents to this survey are female (N = 2,783) and 45.60% of respondents are male (N = 2,333) as displayed in Figure 1.

Table 1.

Sex at birth	Freq.	Percent	Cum.
Male	2,333	45.60	45.60
Female	2,783	54.40	100.00
Total	5,116	100.00	

Figure 1.

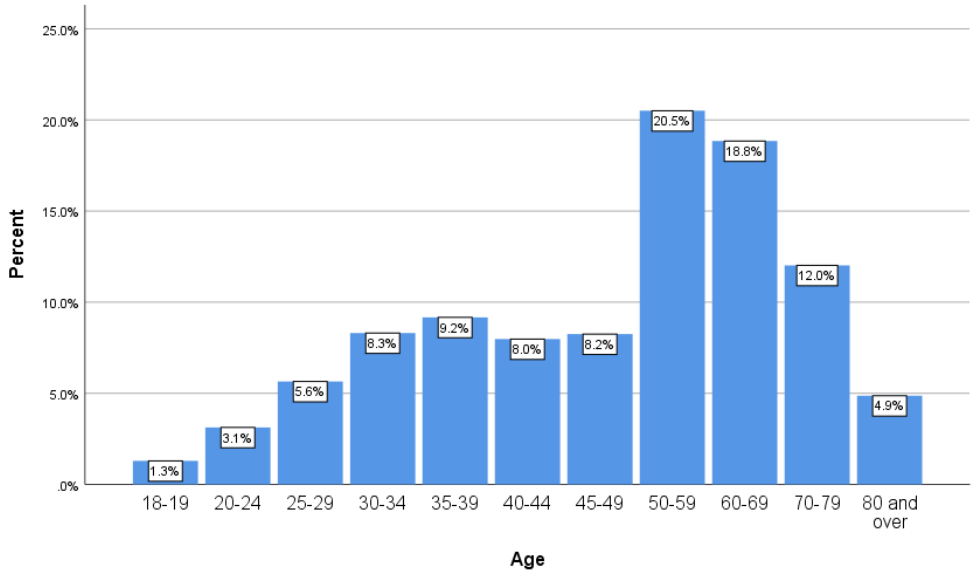


The ages of participants range from 18 to over 80, with the majority of participants (20.5%) being between the ages of 50 and 59 (N =1,049) as shown in Figure 2. This age group and the following group (60-69) are more heavily sampled as they represent the baby boomer generation. A larger sample of these age groups has been collected in order to ensure the results are more representative of the Canadian population.

Table 2.

Age group	Freq.	Percent	Cum.
18-19	66	1.29	1.29
20-24	160	3.13	4.42
25-29	289	5.65	10.07
30-34	425	8.31	18.37
35-39	469	9.17	27.54
40-44	408	7.97	35.52
45-49	422	8.25	43.76
50-59	1,049	20.50	64.27
60-69	964	18.84	83.11
70-79	615	12.02	95.13
80 and over	249	4.87	100.00
Total	5,116	100.00	

Figure 2.

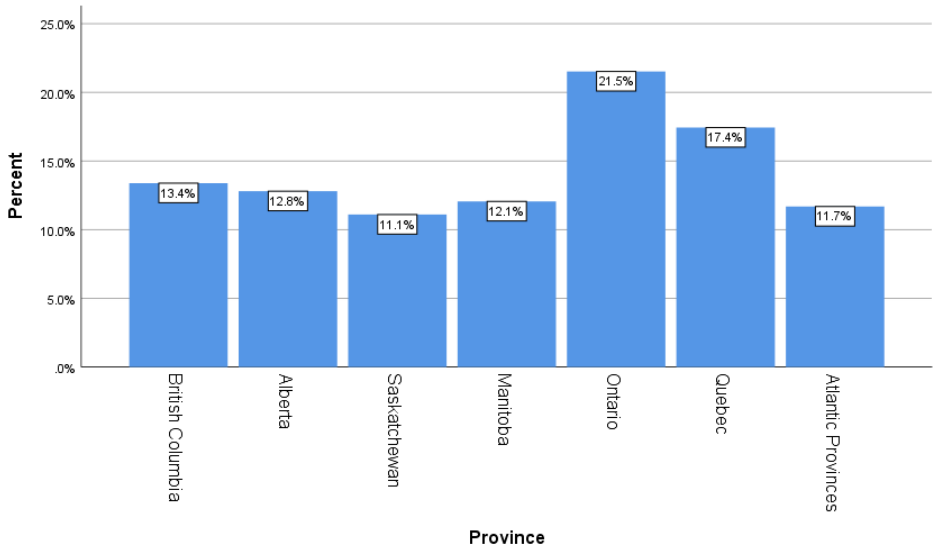


In terms of geographic location, the majority of participants resided in Ontario (21.52%) at the time of the survey (N =1,101). The minority of participants resided in Saskatchewan (11.10%) while the SOA was circulating (N = 568).

Table 3.

Province of residence - Grouped	Freq.	Percent	Cum.
Atlantic Provinces	598	11.69	11.69
Quebec	892	17.44	29.12
Ontario	1,101	21.52	50.65
Manitoba	617	12.06	62.71
Saskatchewan	568	11.10	73.81
Alberta	655	12.80	86.61
British Columbia	685	13.39	100.00
Total	5,116	100.00	

Figure 3.



Measure

The present study uses Statistics Canada's SOA. The SOA is a cross-sectional survey created following discussions with Canada Health, Public Health Agency of Canada, and Public Safety Canada (Statistics Canada, 2017). The SOA was administered through computerized

telephone interviews and an online questionnaire in 2017 by a third-party company. Items in the SOA are divided into two categories, Demographics and Opioid Content. In order to further analyze the results of the SOA, the variables used in the Opioid Content portion of the survey have been divided into several categories which, will be discussed further in ***Variables***. Items have been reverse-keyed in order to minimize response bias in the data and enhance the measure's reliability.

Variables

The study examines demographic variables as well as variables that pertain to participants' personal opioid use and awareness of concepts related to opioid use and overdose. Demographic variables include a participant's sex, age, and geographic location. The Opioid Content portion of the SOA examines many areas related to opioid use and overdose. It first uses two items that discuss awareness of the opioid issue in Canada and personal opioid use. These are analyzed as stand-alone items. Awareness of the opioid issue in Canada simply asks participants if they are aware that Canada is currently experiencing an issue with opioids. Personal opioid use asks participants to report whether they have used opioids in the past five years. The remaining items are divided into two categories Awareness of Safe Opioid Use and Awareness of General Information Related to Safe Opioid Use. This division of items was decided as items in Awareness of Safe Opioid Use have response options for participants to agree or disagree with the statement of the item. Whereas items in Awareness of General Information Related to Safe Opioid Use have response options of 'very aware', 'somewhat aware', and 'not at all aware'. During the analysis of Awareness of Safe Opioid Use, 3 subscales were formed from this cluster of items. The first subscale, Awareness of Appropriate Overdose Response, includes items that aim to determine if participants can identify and appropriately respond when

witnessing an overdose. The second subscale, Awareness Related to Sharing Opioids, includes items pertaining to participants' awareness that sharing opioids with others is unsafe. The final subscale, Awareness of Harm Reduction Services includes items that determine participants' awareness of harm reduction services within their community.

Awareness of General Information Related to Opioid Use was not divided any further. This scale of items aims to identify the degree to which participants are aware of general information related to opioid use. For example, one item asks participants to report their level of awareness that mixing opioids with alcohol can increase one's risk of overdose. The demographic variables act as independent variables for the present study while the variables related to opioid content act as dependent variables.

Data Analyses

Analyses for this study were carried out using STATA and SPSS software available through the RDC on campus at the University of Regina. Analyses included descriptive statistics to examine demographic information while multivariate analyses were used to analyze the reliability of the measure. Descriptive statistics include an independent samples t-test to analyze the variable of sex and one-way ANOVAs to analyze age and geographic location. Age has been analyzed using a one-way ANOVA as age is reported as a categorical variable in the SOA. Multivariate analyses have been used to analyze the measure's reliability and factor structure. These analyses are Cronbach's alpha and Principal Component Analysis respectively. Reliability analysis is used to test the internal consistency of responses while Principal Components Analysis will be used to test factor structure. These are analyzed in order to decipher whether each item measured what it was intended to measure when the SOA was circulating. There are not a lot of variables in the dataset, limiting the types of analyses that can be done. We created an

overall aggregate score in terms of the subcategories in order to enhance reliability. Both statistical significance ($p < .05$) and reliability coefficient ($r < .70$) are used while interpreting results.

Results

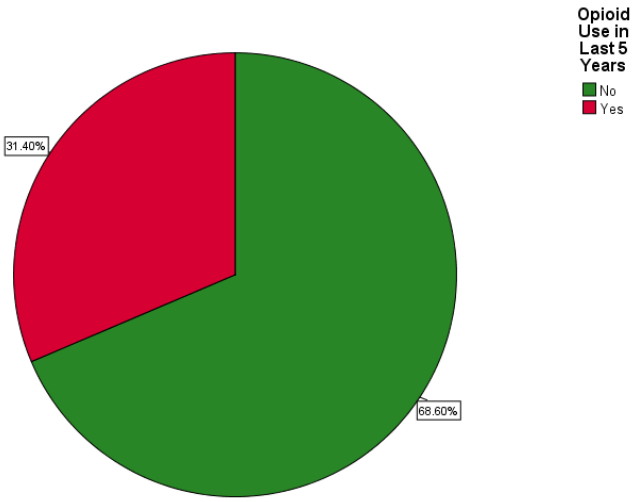
Opioid Use. Participants were given a list of opioids and were asked to report if they had used any of the following in the past 5 years: codeine, oxycodone, OxyContin, hydromorphone, morphine, fentanyl, methadone, Tylenol 3, naloxone, Percocet, Percodan, Tylox, and heroin. We found that 31.4% of participants have used opioids for medical or recreational purposes in the past five years as shown in Table 4.

Table 4.

In past 5 yrs, used opioids for medical or recreational purposes	Freq.	Percent	Cum.
Yes	1,563	31.40	31.40
No	3,415	68.60	100.00
Total	4,978	100.00	

Figure 4.

Proportion of participants that reported using opioids in the last 5 years.



Opioid use over the past five years was further analyzed to determine opioid usage by sex using cross-tabulation and chi-square as shown in Table 5. The results show that more females (57.1%) have used opioids in the last five years than males (42.9%). Figure 5 displays these results row-wise.

Table 5.

Proportion of participants who reported using opioid in the last 5 years by sex.

Sex at birth	In past 5 yrs, used opioids for medical or recreational purposes: Yes	No	Total
Male	671	1,594	2,265
	711.2	1,553.8	2,265.0
	2.3	1.0	3.3
	29.62	70.38	100.00
Female	892	1,821	2,713
	851.8	1,861.2	2,713.0
	1.9	0.9	2.8
	32.88	67.12	100.00

```
-----------+----------------------+----------
     Total |      1,563      3,415 |     4,978
           |    1,563.0    3,415.0 |    4,978.0
           |       4.2        1.9 |       6.1
           |     31.40      68.60 |    100.00

          Pearson chi2(1) =   6.0682   Pr = 0.014
               Cramér's V =  -0.0349
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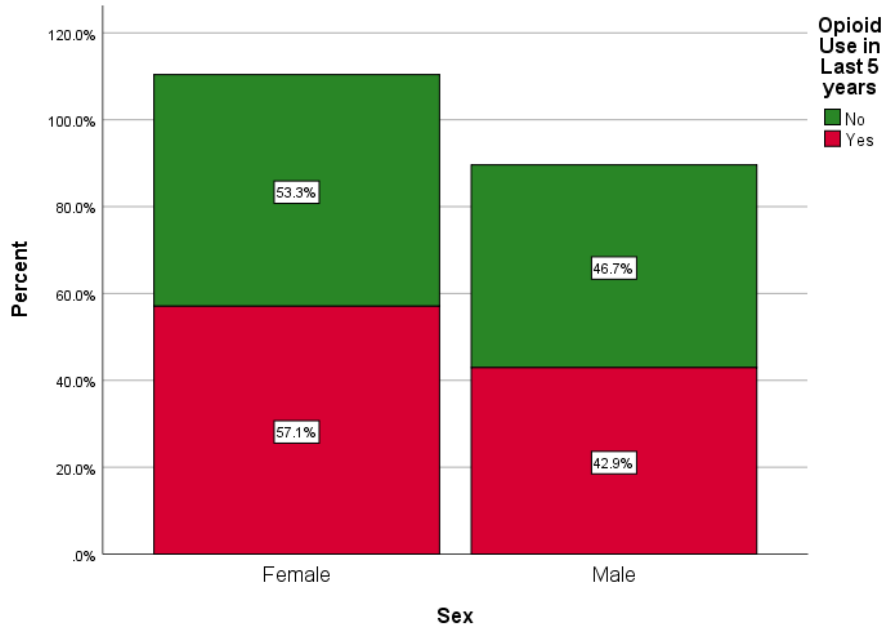
Figure 5.

Proportion of participants who reported using opioid in the last 5 years by sex (percentages are displayed row-wise).



Opioid use was further analyzed across provinces to detect differences in opioid use in the past five years. Results show Quebec is the province with the lowest level of opioid use (20.90%) while Manitoba reports being the province with the highest level of opioid use (37.40%) in the past five years.

Table 6.

Proportion of participants who reported using opioid in the last 5 years by province.

Province of residence - Grouped	In past 5 yrs, used opioids for medical or recreational purposes: Yes	No	Total
Atlantic Provinces	169	420	589
	184.9	404.1	589.0
	1.4	0.6	2.0
	28.69	71.31	100.00
Quebec	181	685	866
	271.9	594.1	866.0
	30.4	13.9	44.3
	20.90	79.10	100.00
Ontario	345	710	1,055
	331.3	723.7	1,055.0
	0.6	0.3	0.8
	32.70	67.30	100.00
Manitoba	227	380	607
	190.6	416.4	607.0
	7.0	3.2	10.1
	37.40	62.60	100.00
Saskatchewan	180	375	555
	174.3	380.7	555.0
	0.2	0.1	0.3
	32.43	67.57	100.00
Alberta	234	402	636
	199.7	436.3	636.0
	5.9	2.7	8.6
	36.79	63.21	100.00
British Columbia	227	443	670
	210.4	459.6	670.0
	1.3	0.6	1.9
	33.88	66.12	100.00
Total	1,563	3,415	4,978
	1,563.0	3,415.0	4,978.0
	46.7	21.4	68.1
	31.40	68.60	100.00

Pearson chi2(6) = 68.0633 Pr = 0.000
Cramér's V = 0.1169

Based on the results of the cross-tabulation, a one-way ANOVA was conducted to analyze significant differences in opioid use across geographic locations. Quebec was determined to have significantly lower levels of opioid use than Ontario (p = 0.000), Manitoba (p = 0.000), Saskatchewan (p = 0.002), Alberta (p = 0.000), and Ontario (p = 0.000).

Table 7.

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	14.6606495	6	2.44344158	11.48	0.0000
Within groups	1057.58624	4971	.212751204		
Total	1072.24689	4977	.215440403		

Bartlett's test for equal variances: chi2(6) = 33.0372 Prob>chi2 = 0.000

Table 8.
Comparison of in past 5 years, used opioids for medical or recreational purposes by Province of residence – Grouped (Scheffe)

Row Mean- Col Mean	Quebec
ON	-.118007
	0.000
MB	-.164963
	0.000
SK	-.115317
	0.002
AB	-.158918
	0.000
BC	-.129799
	0.000

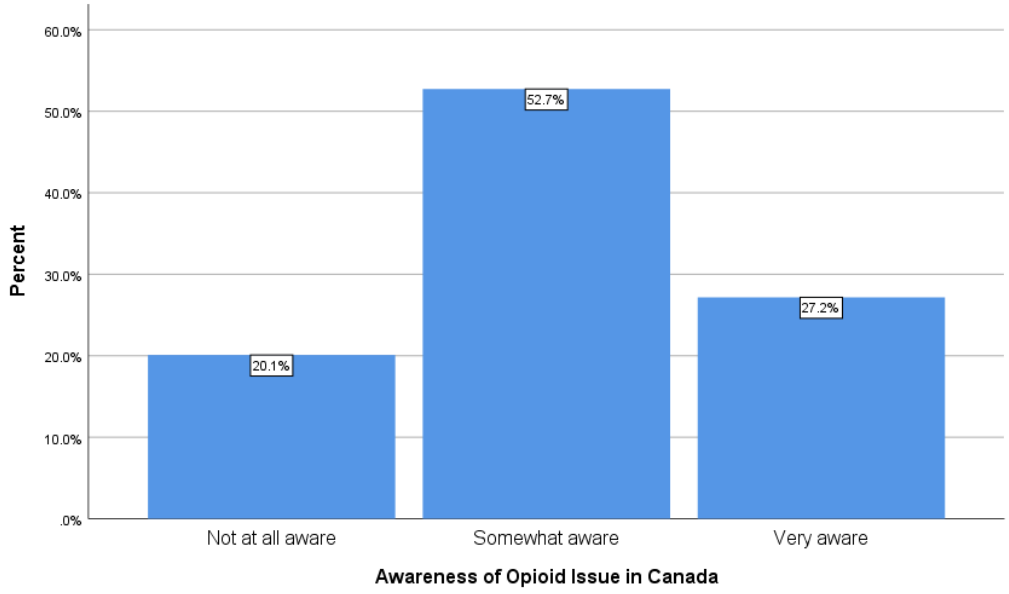
Level of Awareness About the Opioid Issue in Canada. Results of cross-tabulation show that the majority of participants (52.74%) report being somewhat aware of the opioid issue as displayed in Table 9 and Figure 6. The number of participants who report being somewhat

aware and very aware suggests that 79.91% of participants are at least somewhat aware of the opioid issue in Canada.

Table 9.

Level of awareness about the opioid issue in Canada	Freq.	Percent	Cum.
Very aware	1,390	27.17	27.17
Somewhat aware	2,698	52.74	79.91
Not at all aware	1,028	20.09	100.00
Total	5,116	100.00	

Figure 6.



Awareness of Safe Opioid Use. Principal Component analysis was performed to analyze the factor structure in Awareness of Safe Opioid Use. Results concluded that Awareness of Safe Opioid Use contained three main components. Thus, Awareness of Safe Opioid Use was divided into three subscales in order to increase the reliability of the analyses. Principal component

analysis suggested combining items, OPI_45A and OPI_45C-OPI_45E to create Awareness of Appropriate Opioid Response. A second subscale was suggested by Principal Component Analysis using items OPI_40A-OPI_40C, Awareness Related to Sharing Opioids. The final suggested subscale, Awareness of Harm Reduction Services, was created using items OPI_50A-OPI_50C.

Figure 7.

Scree Plot depicting 3 components found through Principal Component Analysis for Safe Opioid Use

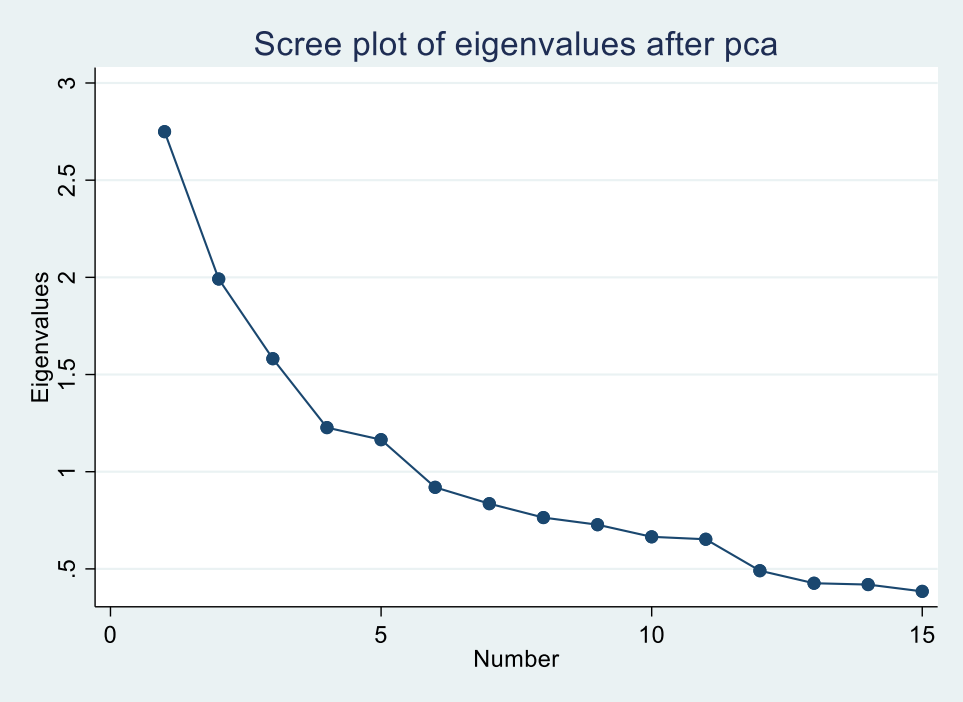


Table 10.

```
Principal components/correlation         Number of obs    =      4,768

Principal components (eigenvectors)

    ----------------------------------------------------------
        Variable |    Comp1     Comp2     Comp3 | Unexplained
    -------------+------------------------------+-------------
         OPI_40A |  -0.0024    0.4562    0.2613 |       .4775
         OPI_40B |  -0.0443    0.5551    0.2161 |       .3071
         OPI_40C |  -0.0254    0.5230    0.1597 |       .4132
         OPI_40D |  -0.0445    0.0819    0.1425 |       .9491
         OPI_40E |   0.0304   -0.0101    0.3147 |       .8406
         OPI_40F |   0.0929   -0.2064    0.2493 |       .7932
         OPI_40G |   0.0885   -0.2012    0.1330 |       .8698
         OPI_45A |   0.3666    0.1000   -0.2511 |       .5108
         OPI_45B |   0.1193   -0.1457    0.0886 |       .9062
         OPI_45C |   0.3862    0.1382   -0.2838 |       .4244
         OPI_45D |   0.4163    0.1198   -0.2118 |        .424
         OPI_45E |   0.4113    0.1448   -0.2648 |        .382
         OPI_50A |   0.3497   -0.0698    0.3630 |       .4457
         OPI_50B |   0.3547   -0.1007    0.3757 |       .4106
         OPI_50C |   0.2994   -0.1404    0.3478 |        .523
    ----------------------------------------------------------
```

Awareness of Overdose Response Mean = 2.51 SD = 0.57 Alpha = .7641

OPI_45A I would recognize the signs of an opioid overdose	.3667
OPI_45C I would know what to do if I was witnessing a suspected opioid overdose	.3862
OPI_45D I would know how to obtain Naloxone	.4163
OPI_45E I would know how to administer Naloxone	.4113

Awareness Related to Sharing Opioids Alpha = .6321

OPI_40A I would share my opioids to relieve the pain of a family member or friend	.4562
OPI_40B I would share my opioids to help stressed friends or family	.5551
OPI_40C I would share my opioids for non-medicinal or recreational use	.5230

Awareness Related to Harm Reduction Alpha = .6981

OPI_50A Harm Reduction Services are available in my community	.3630
OPI_50B Treatment options for opioid use are available in my community	.3757
OPI_50C Harm reduction services have public health benefits	.3478

Awareness of Appropriate Overdose Response. A reliability test was conducted using the subscale Awareness of Appropriate Overdose Response. Results show a coefficient of r=

0.7461. Thus, we performed an independent samples t-test to look for a potential relationship between Awareness of Appropriate Overdose Response and sex. Results of the t-test show that female participants are significantly more aware of how to appropriately respond to an overdose ($p = 0.0012$). Three cases are lost from the t-test due to nonresponse.

Table 11.

Two-sample t test with equal variances - sex by Awareness of Appropriate Overdose Response (reverse-keyed)

```
                                                Number of obs   =      5,113

------------------------------------------------------------------------------
   Group |  Obs       Mean      Std. Err.    Std. Dev.    [95% Conf. Interval]
---------+--------------------------------------------------------------------
    Male | 2,331   2.532533    .0114038      .5505794       2.51017  2.554895
  Female | 2,782   2.483675    .0112525      .5935082      2.461611  2.505739
---------+--------------------------------------------------------------------
combined | 5,113   2.505949    .0080385      .5747952       2.49019  2.521708
---------+--------------------------------------------------------------------
    diff |        .0488577      .016127                     .0172418 .0804736
------------------------------------------------------------------------------
    diff = mean(Male) - mean(Female)                              t =   3.0296
Ho: diff = 0                                     degrees of freedom =     5111

                                                      Ha: diff > 0
                                                   Pr(T > t) = 0.0012
```

A one-way ANOVA was performed in order to determine variations in Awareness of Appropriate Overdose response across age groups. The over 80 age group differed significantly in their Awareness of Appropriate Overdose Response compared to the 20-25 (p = 0.001), 25-29 (p = 0.000), 30-34 (p = 0.000), 35-39 (p = 0.000), 40-44 (p = 0.000), 44-49 (p = 0.000), 50-59 (p = 0.000), and 60-69 (p= 0.000) age groups suggesting that participants over the age of 80 are less aware regarding appropriate overdose response than participants 20-69. Participants in the 70-79 age group also reported being less aware than participants 40-44 (p = 0.009).

Table 12.

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	29.3845786	10	2.93845786	9.03	0.0000
Within groups	1659.56642	5102	.325277621		
Total	1688.951	5112	.330389476		

Bartlett's test for equal variances: chi2(10) = 99.8242 Prob>chi2 = 0.000

Table 13.

Comparison of Awareness of Appropriate Overdose Response by Age group (reverse-keyed) (Scheffe)

Row Mean- Col Mean	20-24	25-29	30-34	35-39	40-44	45-49	50-59	60-69
70-79					.176613			
					0.009			
80+	.311981	.312212	.291981	.295066	.325993	.28807	.240072	.223312
	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000

A second one-way ANOVA was performed in order to determine Awareness of Appropriate Overdose Response across provinces. British Columbia is the only province that differed significantly from other provinces. The level of awareness of appropriate overdose response in British Columbia was determined to be significantly higher than the levels of

awareness in the Atlantic Provinces (p = 0.000), Quebec (p = 0.002), Ontario (p = 0.001), Manitoba (p = 0.001), Saskatchewan (p = 0.000), and Alberta (0.006).

Table 14.

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	15.6993962	6	2.61656604	7.98	0.0000
Within groups	1673.2516	5106	.327703017		
Total	1688.951	5112	.330389476		

Bartlett's test for equal variances: chi2(6) = 34.5878 Prob>chi2 = 0.000

Table 15.

Comparison of Awareness of Appropriate Overdose Response by Province of residence – Grouped (reverse keyed) (Scheffe)

Row Mean- Col Mean	Atlantic	Quebec	Ontario	Manitoba	Saskatch	Alberta
BC	-.201891	-.13421	-.13447	-.155732	-.162162	-.132501
	0.000	0.002	0.001	0.001	0.000	0.006

Awareness Related to Sharing Opioids. A second reliability test was performed to assess the reliability of subscale Awareness Related to Sharing Opioids. The result was less than the desired r > .70 (r =.63). Therefore, no further tests were performed using this subscale.

Awareness of Harm Reduction Services. A third reliability test was performed to assess the reliability of the items. The result, r =.698, was determined to be less than the desired .70 and therefore, was deemed unacceptable. No further tests were performed on items in this subscale.

Awareness of General Information Related to Opioid Use. A second Principal Component Analysis was performed using items OPI_55A-OPI_55G. Factors OPI_55A-OPI_55F loaded on the first component as displayed in Table 16. Therefore, these six items were

used as one scale, Awareness of General Information Related to Opioid Use, for further analyses. 91 cases are missing from the Principal Component Analysis due to nonresponse.

Figure 8.

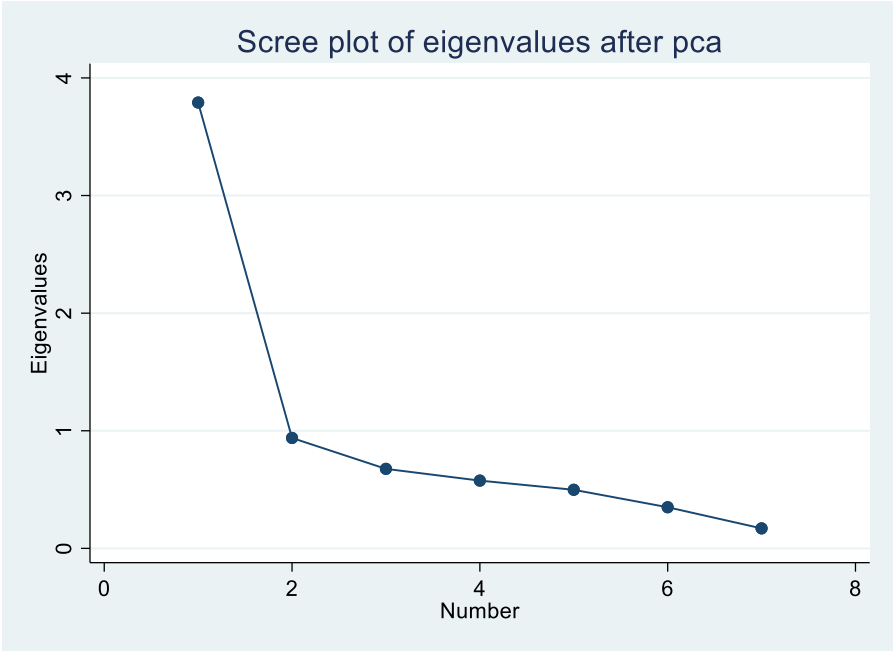


Table 16.

Number of obs = 5,025

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Unexplained
OPI_55A	0.3912	-0.0997	0.0012	-0.1218	0.8777	0.2275	0.0065	0
OPI_55B	0.3231	0.1190	0.9250	0.0480	-0.1407	0.0604	-0.0115	0
OPI_55C	0.4302	-0.1321	-0.0740	0.0692	0.0328	-0.8866	-0.0024	0
OPI_55D	0.4434	-0.1581	-0.1719	-0.3208	-0.3207	0.2143	0.7051	0
OPI_55E	0.4444	-0.1448	-0.1904	-0.3147	-0.3095	0.2190	-0.7089	0
OPI_55F	0.3664	0.0806	-0.2141	0.8617	-0.0984	0.2473	0.0075	0
OPI_55G	0.1705	0.9518	-0.1652	-0.1832	0.0221	-0.0588	0.0104	0

Awareness of General Information Related to Opioid Use Mean = 1.38 Alpha = .8659

OPI _55A Using opioids, even for medicinal purposes, can impair driving a motor vehicle	.3912
OPI_55B Left-over opioids should be returned to a pharmacy for disposal	.3231
OPI_55C Problematic use of opioids can lead to an overdose or death	.4302
OPI_55D Mixing opioids with alcohol can magnify adverse effects	.4434
OPI_55E Mixing opioids with other medications can magnify adverse effects	.4444
OPI_55F Drugs obtained illegally have the potential to contain fentanyl	.3664

Based on the results of the Principal Component Analysis a second independent samples t-test was performed to compare the scale, Awareness of General Information Related to Opioid Use by sex. T-test output shows that females report significantly higher levels of awareness of general information related to opioid use (p=.00001). One case has been lost due to nonresponse.

Table 17.

```
                                                Number of obs   =      5,115


Two-sample t test with unequal variances - sex x Awareness of General
Information Related to Opioid Use (reverse-keyed)
------------------------------------------------------------------------
   Group |   Obs   Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------
    Male | 2,332  1.42818   .0112243    .5420279     1.40617  1.450191
  Female | 2,783  1.341388  .0095295    .5027208     1.322703 1.360074
---------+--------------------------------------------------------------
combined | 5,115  1.380958  .0073092    .5227484     1.366629 1.395287
---------+--------------------------------------------------------------
    diff |         .0867922 .014724                  .0579265 .1156579
------------------------------------------------------------------------
diff = mean(Male) - mean(Female)                              t =   5.8946
Ho: diff = 0                     Satterthwaite's degrees of freedom =     4809

                                                      Ha: diff > 0
                                                 Pr(T > t) = 0.0000
```

Two one-way ANOVAs were performed following the results of the Principal Component Analysis in order to compare Awareness of General Information Related to Opioid Use to the demographic variables age and geographic location. The first one-way ANOVA compares Awareness of General Information Related to Opioid Use across age categories. The 80+ age group was found to be the only group that differed significantly from age groups 25-29 (p = 0.010), 30-34 (p = 0.020), 35-39 (p = 0.000), 40-44 (p = 0.004), 45-49 (p = 0.000), 50-59 (p = 0.000), 60-69 (p = 0.000), and 70-79 (p= 0.027). Thus, the ANOVA shows that the 80+ age group is significantly less aware of general information related to opioid use than the 25-29, 30-39, 40-44, 45-49, 50-59, 60-69, and 70-79 age groups.

Table 18.

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	17.2045875	10	1.72045875	6.36	0.0000
Within groups	1380.2774	5104	.270430524		
Total	1397.48198	5114	.273265933		

Bartlett's test for equal variances: chi2(10) = 65.8084 Prob>chi2 = 0.000

Table 19.

Comparison of Awareness of General Information Related to Opioid Use by Age group (reverse-keyed) (Scheffe)

Row Mean- Col Mean	25-29	30-34	35-39	40-44	45-49	50-59	60-69	70-79
80+	.216331	.191348	.231094	.211544	.254505	.214558	.244306	.175778
	0.010	0.020	0.000	0.004	0.000	0.000	0.000	0.027

The second one-way ANOVA compares Awareness of General Information Related to Opioid Use across geographic regions of Canada. The first significant result is that Quebec differs significantly from the Atlantic Provinces (p = 0.000), Ontario (p = 0.000), Manitoba (p =

0.000), Saskatchewan (p = 0.000), Alberta (p = 0.000), and British Columbia (0.000). Thus, the ANOVA displays Quebec's awareness level of general information related to opioid use is lower than any other province. This ANOVA yielded a second significant result. British Columbia differs significantly from Quebec, Ontario, and Manitoba. This demonstrates that British Columbia has more awareness of general information related to opioid use than these provinces.

Table 20.

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	38.2703434	6	6.37839056	23.97	0.0000
Within groups	1359.21164	5108	.266094683		
Total	1397.48198	5114	.273265933		

Bartlett's test for equal variances: chi2(6) = 125.2256 Prob>chi2 = 0.000

Table 21.

Comparison of Awareness of General Information Related to Opioid Use by Geographic Region – Grouped (reverse-keyed) (Scheffe)

Row Mean- Col Mean	Atlantic	QC	ON	MB
QC	.197164 0.000			
ON		-.151101 0.000		
MB		-.175414 0.000		
SK		-.21033 0.000		
AB		-.226973 0.000		
BC		-.282293 0.000	-.131192 0.000	-.106878 0.031

Discussion

With rates of opioid-related deaths and hospitalizations rising each year, finding ways to prevent overdose should be a high priority for researchers and healthcare professionals (Belzak & Halverson, 2018). 31.40% of respondents report having used opioids for medical or recreational purposes in the past five years. This sample was selected by a third-party company to be representative of Canada's population. Therefore, the results of the cross-tabulation suggest that one in three Canadians has used an opioid in the last five years. The many ways people in this subset of Canadians may misuse opioids such as; sharing them, selling them, and taking too many at a time is fueling Canada's opioid crisis.

Furthermore, the results of our analysis show that females are using opioids more than males. In our primary review of literature related to opioid use in Canada, we were not made aware that women are using opioids more often than men. Further review of the literature shows many studies that suggest women use opioids more than men (Turner et al., 2023). Painful conditions such as fibromyalgia, migraines, and arthritis are more common in women and may explain why women are prescribed and use opioids more often than men (Casale et al., 2021). Another possible explanation for higher rates of opioid use in women is that women are more likely to visit a healthcare professional than men (Bertakis, 2000). Thus, they are more likely to receive treatment, including prescriptions for opioids, for their health conditions. However, despite using opioids less, men are still experiencing opioid-related death at a higher rate than women (SAC, 2023a). 42.9% of men are using opioids compared to 57.1% of women, yet the rate of opioid-related death in men was nearly triple the rate of opioid-related death in women (SAC, 2023a). We also found that women report being more aware of how to appropriately respond to signs of an overdose and general information related to opioid use. Therefore, it is

possible that men's lack of awareness regarding general information related to opioid use and how to appropriately respond to an overdose are related to their increased rate of opioid-related death and hospitalization.

In terms of the demographic age, Canadians over the age of 80 report being significantly less aware of how to recognize and appropriately respond to an overdose than Canadians 20-69. Canadians over the age of 80 were also determined to be less aware of general information related to opioid use than Canadians 25-79. This lack of awareness may contribute to people over the age of 65 having higher rates of opioid-related hospitalization than any other age group (SAC, 2023b). As previously mentioned, populations with more opioid prescriptions experience higher rates of overdose (Lee et al., 2023). Those over the age of 80 are more likely to be prescribed opioids for chronic pain management than any other age group (Gazelka et al., 2020). It is also unfortunately common for those who are prescribed opioids to receive little to no information regarding safe opioid use and appropriate overdose response (Lee et al., 2023). Therefore, people over 80 are experiencing more pain, are being prescribed more opioids, and are being given inadequate information on how to appropriately handle the opioids. Thus, opioid misuse related to lack of awareness is potentially a driving factor in the high rates of opioid-related hospitalization in Canadians over the age of 80.

We also determined that awareness of general information related to opioid use does vary by province. Quebec displays significantly lower awareness than every other province. Despite having double the population of both British Columbia and Alberta, Quebec has a fraction of the opioid-related deaths in comparison to either province (SAC, 2023a; Statistics Canada, 2022). In contrast, we found that British Columbia is significantly more aware of general information related to opioid use than Quebec, Ontario, and Manitoba. We also determined that British

Columbia is more aware than every other province in terms of recognizing and appropriately responding to an overdose. It is possible that media coverage is a contributing factor to Quebec's lack of awareness compared to British Columbia. British Columbia experiences more opioid-related deaths per 100,000 residents than any other province (SAC, 2023a). Thus, we can assume that the opioid crisis has a heavier presence in British Columbia's media than in provinces like Quebec which experiences lower rates of opioid-related death (SAC, 2023a). Another possible explanation for Quebec's lack of awareness is that Quebec is not using opioids at the same rate as other provinces. We determined that 20.9% of respondents from Quebec report using opioids, significantly less than every province west of Quebec.

Using multivariate analyses, portions of the SOA that we refer to as Awareness of Appropriate Overdose Response and Awareness of General Information Related to Opioid Use were determined to be reliable. Therefore, we can feel confident that items in Awareness of Appropriate Overdose Response and Awareness of General Information Related to Opioid Use are accurately measuring their respective areas of awareness. Furthermore, we can feel justified that should the SOA be administered a second time, our results would be comparable to the results of the survey's second circulation.

Limitations & Future Directions

One notable strength of this study is that there has not been much research into opioid use let alone awareness related to opioid use on a national level. However, this study was constrained due to a few limitations. One constraint was the lack of variables available in the SOA. The report in *The Daily January 9* (2018), suggested the SOA contained items related to Indigenous identity and comorbid drug use. However, the dataset that was released for us to analyze contained no more items than what was available through the publicly available version of the

survey. Furthermore, age was reported as a categorical variable in the dataset, limiting the analyses that could be done using age. Another limitation we faced with this dataset is that data was not collected from any Canadians living in the territories or on Indigenous reserves. Therefore, we cannot say that the findings generalize to all Canadians.

Future research should focus on addressing these limitations in order to make the results useful for all Canadians. We would suggest that a third-party company is not used in order to ensure a sample that is representative of the Canadian population is collected which, includes the territories and Canadians of all backgrounds. With a sample more representative of the Canadian population we can have a more accurate picture of which Canadians are lacking awareness related to opioids. Furthermore, some items in the survey should be broken down and more items should be added in order to increase reliability and the number of analyses that can be done. For example, item OPI_40G was eliminated using Principal Component Analysis as it did not work with the items around it. This item is as follows, I would feel comfortable seeking help or treatment for an opioid dependency or an opioid use disorder. This item could be separated into two items. I would feel comfortable seeking help for an opioid use disorder and I would feel treatment for an opioid dependency. Another example is the demographic item related to age. The age groups listed could be broken down into individual ages in order to more accurately pinpoint where the disparities in awareness occur.

Conclusion

When we understand who is lacking information related to opioid use and overdose; materials and programs can be created as a preventative measure to better inform and address these issues. Priority should be placed on getting this information to men, people over the age of 80, and residents of Quebec. These are demographics we have determined to be lacking

information. Further emphasis should also be placed on getting information to men and people over the age of 80 as these are demographics who also show high rates of opioid-related death and hospitalization respectively. Subsequent studies on opioid awareness should include the territories and people living on Indigenous reserves in order to create a more accurate picture of which demographics of Canadians are lacking information related to opioids. It is our hope that the distribution of information can be used as a preventative measure against opioid overdoses in an effort to relieve some of the pressure Canada's opioid crisis has created for our emergency and healthcare services.

References

Belzak, L. & Halverson, J. (2018). Evidence synthesis - The opioid crisis in Canada: a national perspective. *Health Promotion and Chronic Disease Prevention in Canada*, 38(6), 224-233. http://10.24095/hpcdp.38.6.02

Bertakis, K. D., Azari, R., Helms, L. J., Callahan, E. J., & Robbins, J. A. (2000). Gender differences in the utilization of health care services. *The Journal of Family Practice*, *49*(2), 147–152. https://go-gale-com.libproxy.uregina.ca/ps/i.do?p=EAIM&u=ureginalib&id=GALE|A60039859&v=2.1&it=r

Casale, R., Atzeni, F., Bazzichi, L., Beretta, G., Costantini, E., Sacerdote, P., & Tassorelli, C. (2021). Pain in women: A perspective review on a relevant clinical issue that deserves prioritization. *Pain and Therapy*, *10*(1), 287–314. https://doi.org/10.1007/s40122-021-00244-1

Chen, Y., Wang, Y., Nielsen, S., Kuhn, L., & Lam, T. (2020). A systematic review of opioid overdose interventions delivered within emergency departments. *Drug and Alcohol Dependence*, *213*, 108009–108009. https://doi.org/10.1016/j.drugalcdep.2020.108009

DelVillano, S., de Groh, M., Morrison, H., & Do, M. T. (2019). At-a-glance - Supervised Injection Services: a community-based response to the opioid crisis in the City of Ottawa, Canada. *Health Promotion and Chronic Disease Prevention in Canada*, *39*(3), 112–115. https://doi.org/10.24095/hpcdp.39.3.03

Dunn, K. E., Barrett, F. S., Yepez-Laubach, C., Meyer, A. C., Hruska, B. J., Sigmon, S. C., Fingerhood, M., & Bigelow, G. E. (2016). Brief Opioid Overdose Knowledge (BOOK): A Questionnaire to Assess Overdose Knowledge in Individuals Who Use Illicit or

Prescribed Opioids. *Journal of Addiction Medicine*, *10*(5), 314–323. https://doi.org/10.1097/ADM.0000000000000235

Fowler, M., Ali, S., Gouin, S., Drendel, A. L., Poonai, N., Yaskina, M., Sivakumar, M., Jun, E., & Dong, K. (2020). Knowledge, attitudes and practices of Canadian pediatric emergency physicians regarding short-term opioid use: a descriptive, cross-sectional survey. *CMAJ Open*, *8*(1), E148–E155. https://doi.org/10.9778/cmajo.20190101

Gazelka, H. M., Leal, J. C., Lapid, M. I., & Rummans, T. A. (2020). Opioids in older adults: Indications, prescribing, complications, and alternative therapies for primary care. *Mayo Clinic Proceedings*, *95*(4), 793–800. https://doi.org/10.1016/j.mayocp.2020.02.002

Hatt, L. (2022). The Opioid Crisis in Canada. In *Library of Parliament* (No. 2021-23-E). Library of Parliament. https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/HillStudies/PDF/2021-23-E.pdf

Health Canada. (2023a). Fentanyl. In *Government of Canada*. https://www.canada.ca/en/health-canada/services/substance-use/controlled-illegal-drugs/fentanyl.html

Health Canada. (2023b). Opioids. In *Government of Canada*. https://www.canada.ca/en/health-canada/services/opioids.html

Health Canada. (2023c). Opioid use disorder. In *Government of Canada*. https://www.canada.ca/en/health-canada/services/opioids.html

Health Canada. (2023d). Overdose. In *Government of Canada*. https://www.canada.ca/en/health-canada/services/opioids/overdose.html

Lee, H. Y., Wang, K., Choi, E., Gajos, J. M., & Won, C. R. (2023). Opioid literacy among African Americans living in rural Alabama: Findings from a social determinants of health

(SDH) framework. *Journal of Drug Issues*, *53*(1), 3–17. https://doi.org/10.1177/00220426221093610

Neilson, G. E., Freeland, A., & Schütz, C. G. (2020). Psychiatry and the opioid crisis in Canada. *Canadian Journal of Psychiatry*, *65*(3), 196–203. https://doi.org/10.1177/0706743719861118

NIDA. (2023). Men died of overdose at 2-3 times greater a rate than women in the U.S. in 2020-2021. Retrieved from https://nida.nih.gov/news-events/news-releases/2023/06/men-died-of-overdose-at-2-3-times-greater-a-rate-than-women-in-the-us-in-2020-2021

Opioid and stimulant poisoning hospitalizations (2023). Opioid- and Stimulant-related Harms in Canada. *Ottawa: Public Health Agency of Canada; 2023*. https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants/

Statistics Canada. (2022). Canada at a glance, 2022: Population. https://www150.statcan.gc.ca/n1/pub/12-581-x/2022001/sec1-eng.htm

Substance-related Overdose and Mortality Surveillance Task Group (SOMS-TG) of the Federal, provincial, and territorial Special Advisory Committee on the Epidemic of Opioid Overdoses [SAC]. (2023a). Opioid and Stimulant Toxicity Deaths: Surveillance of Opioid and Stimulant-Related Harms in Canada. In *Health Infobase* (No. 2816–2307). Public Health Agency of Canada. https://health-infobase.canada.ca/src/doc/SRHD/Update_Deaths_2023-12.pdf

Substance-related Overdose and Mortality Surveillance Task Group (SOMS-TG) of the Federal, provincial, and territorial Special Advisory Committee on the Epidemic of Opioid Overdoses [SAC]. (2023b). Opioid and Stimulant Poisoning Hospitalizations: Surveillance of Opioid and Stimulant-Related Harms in Canada. In *Health Infobase* (No.

2816-2331). Public Health Agency of Canada. https://health-infobase.canada.ca/src/doc/SRHD/Update_Hospitalizations_2023-12.pdf

Survey on opioid awareness. (2017). *Statistics Canada.* http://www23.statcan.gc.ca/imdb/p3Instr.pl?

The Daily January 9, 2018. (2018). Results of the Survey on Opioid Awareness, November 2017. 11-001-X. *Statistics Canada*. https://www150.statcan.gc.ca/n1/en/daily-quotidien/180109/dq180109a-eng.pdf?st=O7pRw64O

Turner, S., Allen, V. M., Graves, L., Tanguay, R., Green, C.R., & Cook, J. L. (2023). Guideline No. 443a: Opioid Use throughout women's lifespan: Fertility, contraception, chronic pain, and menopause. *Journal of Obstetrics and Gynaecology Canada*, 45(11), 102143-102143. http://doi.org/10.1016/j.jogc.2023.05.011