



Impacts of the COVID-19 Pandemic on Opioid-Related Poisoning among First Nations in Ontario

A report prepared by:
The Chiefs of Ontario
and
**The Ontario Drug Policy
Research Network**

December 2021

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About the Research Partners

Chiefs of Ontario (COO)

Chiefs of Ontario supports all First Nations in Ontario as they assert their sovereignty, jurisdiction, and their chosen expression of nationhood.

Guided by the Chiefs in Assembly, we uphold self-determination efforts of the Anishinaabek, Mushkegowuk, Onkwehonwe, and Lenape Peoples in protecting and exercising their inherent and Treaty rights. Keeping in mind the wisdom of our Elders, and the future for our youth, we continue to create the path forward in building our Nations as strong, healthy Peoples respectful of ourselves, each other, and all creation. The activities of the Chiefs of Ontario are mandated through and guided by:

- Resolutions passed by the Chiefs in Assembly of the 133 First Nations in Ontario;
- The Leadership Council made up of the Grand Chiefs of Political Territorial Organizations (PTOs) and Independent First Nations;
- The elected Regional Chief for the Chiefs of Ontario.

For more information about COO, visit www.chiefs-of-ontario.org.

Ontario Drug Policy Research Network (ODPRN)

The Ontario Drug Policy Research Network is a province-wide network of researchers who provide timely, high quality, relevant drug policy research to decision makers and knowledge users across the province. The ODPRN houses the Ontario Opioid Drug Observatory (OODO) which is funded through a grant from the Canadian Institutes of Health Research (CIHR). This observatory aims to measure, assess and evaluate the use of prescription opioids, opioid-related poisonings, and opioid-related drug policy by leveraging large, population-level data sources. The ODPRN regularly uses data from ICES (formerly the Institute for Clinical Evaluative Sciences), an independent, non-profit research institute in Ontario, Canada to conduct this research.

For more information, visit www.odprn.ca.



**This report contains content that may trigger unpleasant feelings or thoughts.
If you need emotional support, please contact:**

- The **First Nations and Inuit Hope for Wellness Help Line** at 1-855-242-3310 or connect to the online chat at hopeforwellness.ca. Service languages: Ojibway, Cree, Inuktitut, English, French.
- Your local nursing station, health centre, local mental health program, or an Elder

Acknowledgements

This study was supported by ICES, which is funded by an annual grant from the Ontario Ministry of Health (MOH) and the Ministry of Long-Term Care (MLTC). This study also received funding from the Canadian Institutes of Health Research (grant #451385). Parts of this material are based on data and/or information compiled and provided by the Canadian Institute for Health Information and the MOH. The analyses, conclusions, opinions and statements expressed herein are solely those of the authors and do not reflect those of the funding or data sources; no endorsement is intended or should be inferred. We thank IQVIA Solutions Canada Inc. for use of their Drug Information File and the Office of the Chief Coroner for use of their death investigation data.

The authors of this report would like to acknowledge the loss and trauma held by First Nations People in Ontario who have been impacted by the opioid crisis. The grief experienced by First Nations people who use opioids, as well as their families, friends, and communities, is vast and cannot be fully represented by quantitative data, nor can the struggle or triumph of seeking support and treatment for opioid use. It is our hope that the data provided in this report will provide the impetus for federal, provincial, and municipal support for the development of additional First Nations-led, culturally appropriate programs and services that enhance access to treatment and address the root causes of the opioid crisis in these communities.

Co-Principal Investigators for this report are Bernadette deGonzague (Chiefs of Ontario) and Tara Gomes (Ontario Drug Policy Research Network).

The Chiefs of Ontario and the Ontario Drug Policy Research Network would like to thank the following individuals for their contribution to this report (alphabetical order):

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How to Cite This Report

Chiefs of Ontario and Ontario Drug Policy Research Network. *Impacts of the COVID-19 pandemic on opioid-related poisoning among First Nations in Ontario*. Toronto, ON: Chiefs of Ontario; 2021.

Key Terms

Opioids:

Opioids are a class of drugs that are primarily used to relieve pain. Common prescription opioid pain relievers include oxycodone, hydromorphone, fentanyl, morphine, codeine, and other combination products (e.g. *Tylenol® No. 2 and No. 3, Percocet®*). Certain opioids can also be used for the treatment of opioid use disorder, as well as for treating cough and diarrhea. Opioids commonly used to treat opioid use disorder include methadone and buprenorphine/naloxone (*Suboxone®*).

Opioid-Related Poisoning:

An opioid-related poisoning is a biological response that occurs when the body receives too much of an opioid, or when the body receives a mix of opioids and other substances, such as alcohol or benzodiazepines. An opioid-related poisoning causes a person's breathing to slow or stop, which results in loss of consciousness and can lead to death. Although often used interchangeably, the term opioid-related *poisoning* is preferred to opioid-related *overdose*, as the word "overdose" places the responsibility on the individual who is using the drug, and can therefore lead to stigma and blame. In contrast, using the term "poisoning" more accurately reflects the biological response of the body to the toxicity of the opioid. Naloxone is a drug that can be used to reverse the effects of opioids and opioid-related poisonings. Specifically, naloxone can restore normal breathing to someone whose breathing has slowed or stopped due to an opioid-related poisoning. Naloxone can also be used in combination with an opioid (e.g., in the case of the combination product buprenorphine/naloxone, which is commonly referred to by its brand name *Suboxone®*) to decrease the risk of opioid-related poisoning. It is important to note that the data in this report regarding opioid-related poisoning captures incidents arising from the use of opioids from any source (i.e., prescribed and non-prescribed).

Benzodiazepines:

Benzodiazepines are a class of sedative and anti-anxiety medications that are widely prescribed for the treatment of anxiety, sleep disorders, certain forms of epilepsy, and alcohol withdrawal. Currently, 14 different benzodiazepines are approved for use in Canada, with lorazepam (*Ativan®*), alprazolam (*Xanax®*) and diazepam (*Valium®*), being among the most frequently prescribed drugs within this class. Benzodiazepines that are not approved for medical use in Canada, such as etizolam, are also increasingly being found in the unregulated drug supply.

Rate:

The frequency with which an event or circumstance occurs per unit of time, population, or other standard of comparison. Example: Based on a rate of *1.5 deaths per 10,000 people*, we can expect approximately 15 deaths in a community of 100,000.

Stratification:

A stratification is the separation of data or measurements into distinct subgroups. This allows researchers to examine whether patterns or trends that are observed in the entire group overall are either the same or different when looking at certain subgroups. Example: When looking at rates of opioid use among First Nations people by age group, the stratification is the age group. Other stratifications that are commonly used in health research are sex, gender, race, ethnicity, region of residence, and socioeconomic status.

Background

The opioid overdose crisis has disproportionately impacted First Nations individuals in Ontario, Canada¹. In Ontario, deaths due to opioid-related poisoning have increased substantially during the COVID-19 pandemic²⁻³; however, little is known about the impacts of the pandemic on rates of opioid-related poisoning among First Nations people specifically. This information is needed to ensure Ontario's public health response is informed by the needs of First Nations communities and to provide communities with First Nations-specific data to inform their local responses.

The Chiefs of Ontario (COO; PI Bernadette deGonzague) and Ontario Drug Policy Research Network (ODPRN; PI Tara Gomes) have been collaborating on research led by a Steering Committee of First Nations representatives and community members to better understand trends in opioid use and opioid-related poisoning among First Nations people in Ontario. A companion report, 'Opioid use, related harms, and access to treatment among First Nations in Ontario, 2013-2019', examines trends in opioid prescribing and opioid-related poisoning among First Nations and non-First Nations people in the province⁴. This accompanying report provides recent information on the impact of COVID-19 on trends in opioid-related poisonings. Specifically, we describe the impact of COVID-19 on hospital visits and deaths due to opioid-related poisoning among First Nations and non-First Nations people in Ontario, Canada.

Methods

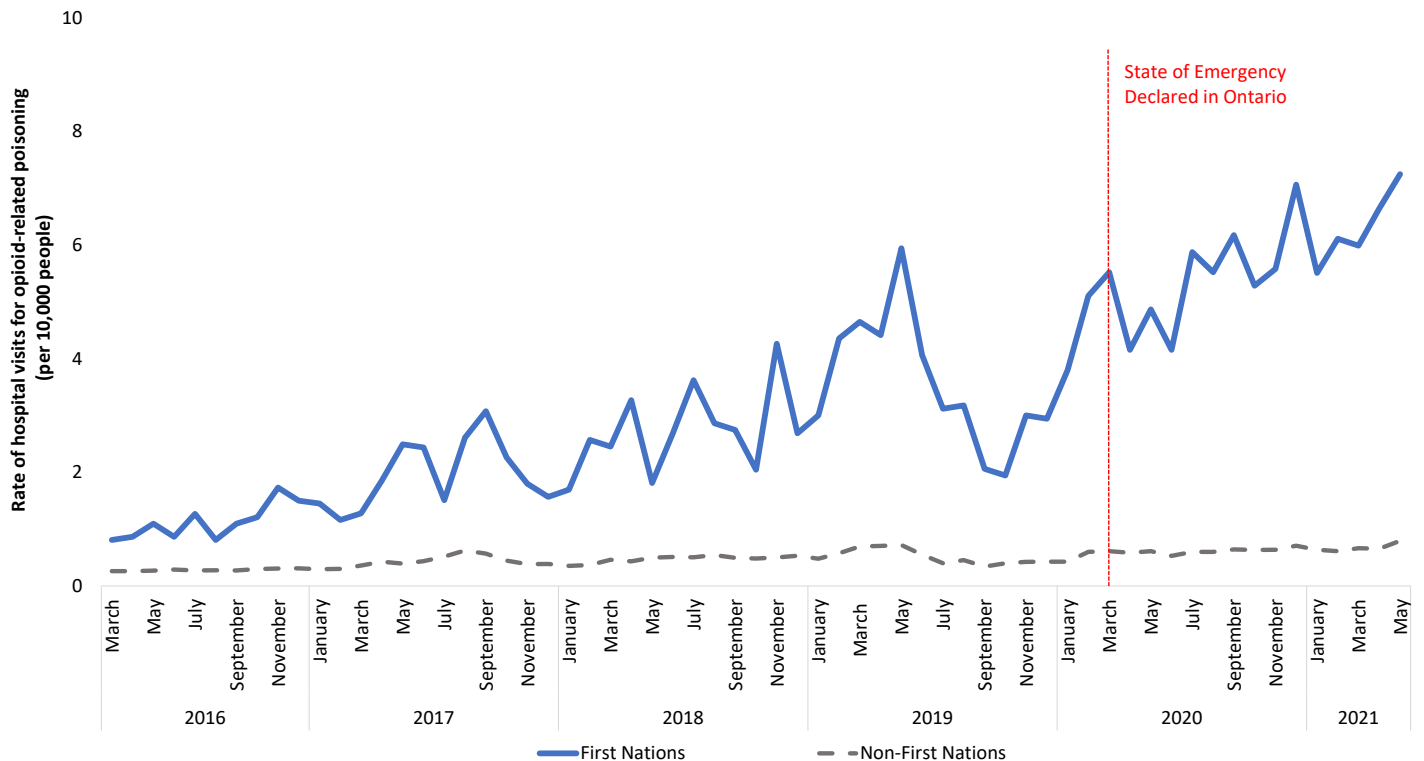
We examined patterns in hospitalizations and deaths due to opioid-related poisoning among First Nations and non-First Nations people in Ontario. Specifically, we described trends in the rate of hospital visits (i.e., emergency department visits or inpatient hospital admissions) for opioid-related poisoning per 10,000 First Nations and non-First Nations people between March 2016 and May 2021. We also compared demographic characteristics of people who visited the hospital for an opioid-related poisoning during the pandemic (March 17, 2020 to March 16, 2021) and the year prior to the pandemic (March 17, 2019 to March 16, 2020). Specifically, we compared age, sex and location of residence (rural vs. urban; within vs. outside of First Nations communities) among people who visited the hospital for an opioid-related poisoning in each time period. We repeated this process among people who died due to an opioid-related poisoning and compared the distribution of deaths due to opioid poisonings by age, sex and location of residence, along with briefly describing the circumstances surrounding these deaths (including other drugs involved in opioid-related poisonings) in two time periods (pre-pandemic: March 17, 2019 to December 31, 2019 and pandemic: March 17, 2020 to December 31, 2020). Rural regions were defined as communities with a population less than 10,000 based on the 2016 census.

All analyses were conducted using databases held at ICES, an independent, non-profit research institute in Ontario. To identify First Nations people, we used the **Indian Registry System**, which captures information on all registered (Status) First Nations people in Canada. We defined non-First Nations individuals as those with a valid Ontario health card who were not identified in the Indian Registry System. We used the **Registered Persons Database** to identify Ontario residents and their demographic characteristics (i.e., sex, age, region of residence). To capture emergency department visits and hospitalizations for opioid-related poisonings, we used the Canadian Institute for Health Information (CIHI) **National Ambulatory Care Reporting System** and the CIHI **Discharge Abstract Database**, respectively. Lastly, to identify people who died due to an opioid-related poisoning, we used the **Drug and Drug/Alcohol Related Death Database** from the Office of the Chief Coroner/Ontario Forensic Pathology Services (OCC/OFPS). These databases were linked using unique, encoded identifiers and were analyzed at ICES using SAS Enterprise Guide Version 7.1. In accordance with ICES' obligations under the Personal Health Information Protection Act, its commitments in data sharing agreements, and to minimize risk of re-identification, we did not report any small counts (i.e. values less than 6).

Key Findings

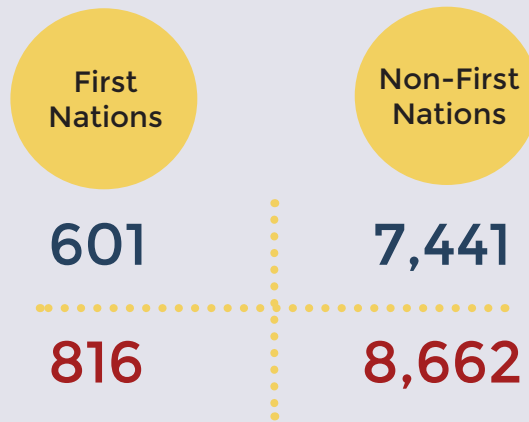
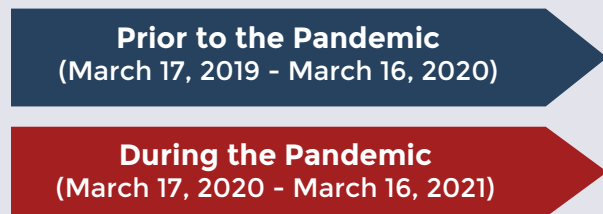
Hospital Visits for Opioid-Related Poisoning

Figure 1. Monthly rate of hospital visits for opioid-related poisoning in Ontario prior to and during the COVID-19 pandemic



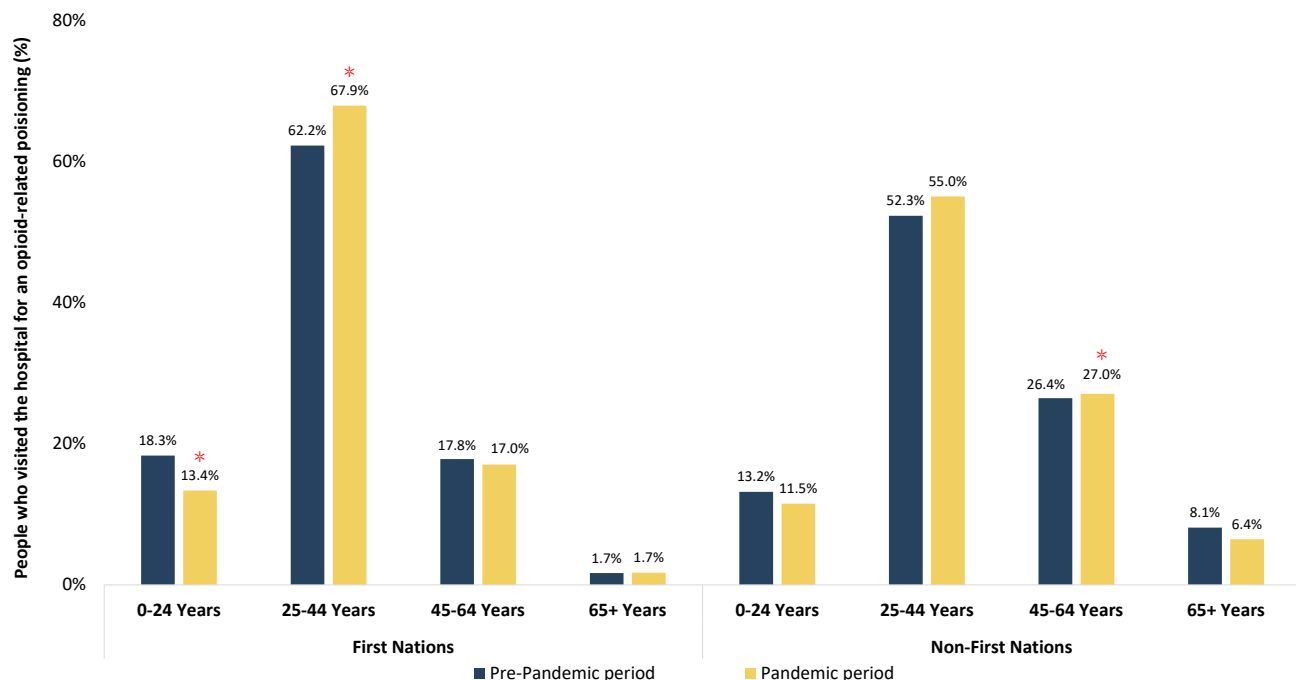
The monthly rate of hospital visits for opioid-related poisoning has increased since March 2016 among both First Nations and non-First Nations people. After the onset of the COVID-19 pandemic, there was a 41.9% increase in the rate of hospital visits for opioid-related poisoning among First Nations people, rising from 5.1 per 10,000 people in February 2020 (the month prior to the State of Emergency declaration; 86 hospital visits) to 7.2 per 10,000 people in May 2021 (121 hospital visits). In comparison, the rate of hospital visits for opioid-related poisoning among non-First Nations people increased by 32.6% during the same time period, from 0.6 per 10,000 people (909 hospital visits) to 0.8 per 10,000 people (1331 hospital visits).

Number of people who had a hospital visit for opioid-related poisoning



The number of First Nations people who visited the hospital for an opioid-related poisoning increased by 35.8% between the pre-pandemic (601 people) and pandemic (816 people) periods. In contrast, the number of non-First Nations people with a hospital visit increased 16.4% during this period (7,441 pre-pandemic to 8,662 during the pandemic).

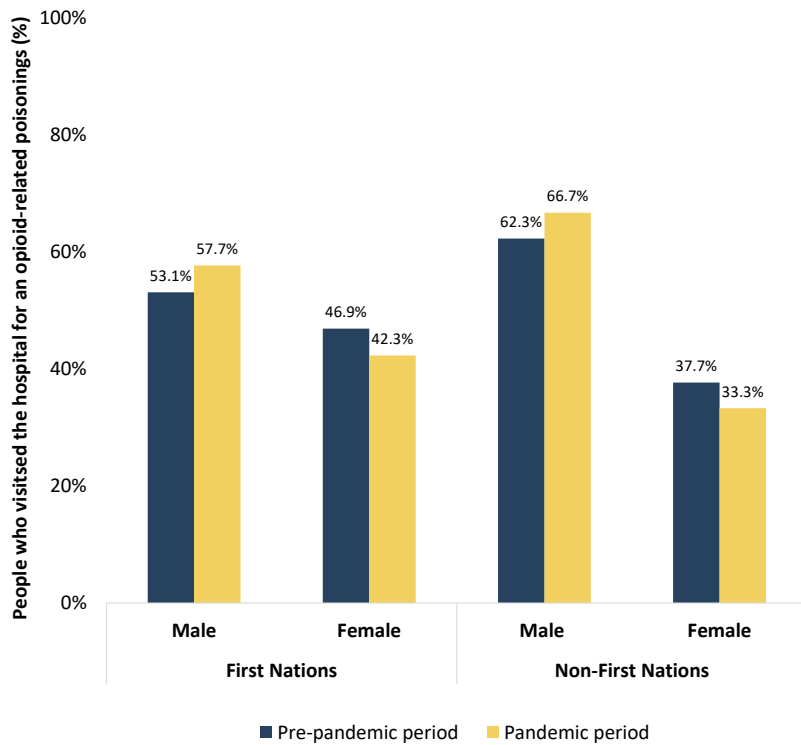
Figure 2. Age distribution of people who experienced a hospital visit for opioid-related poisoning



* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

The pandemic led to small, but significant shifts in the age distribution of First Nations and non-First Nations people who visited the hospital for an opioid-related poisoning. The majority of people were between the ages of 25 and 44, which increased significantly during the pandemic among First Nations people (62.2% in the pre-pandemic period vs. 67.9% in the pandemic period; $p=0.03$), along with a decrease in the percentage of hospital visits occurring among those aged 24 and under (from 18.3% to 13.4%; $p=0.01$). Among non-First Nations people, the age distribution of people who experienced a hospital visit for opioid-related poisoning was generally similar to that of First Nations people, but with a slightly higher proportion of people in older age groups.

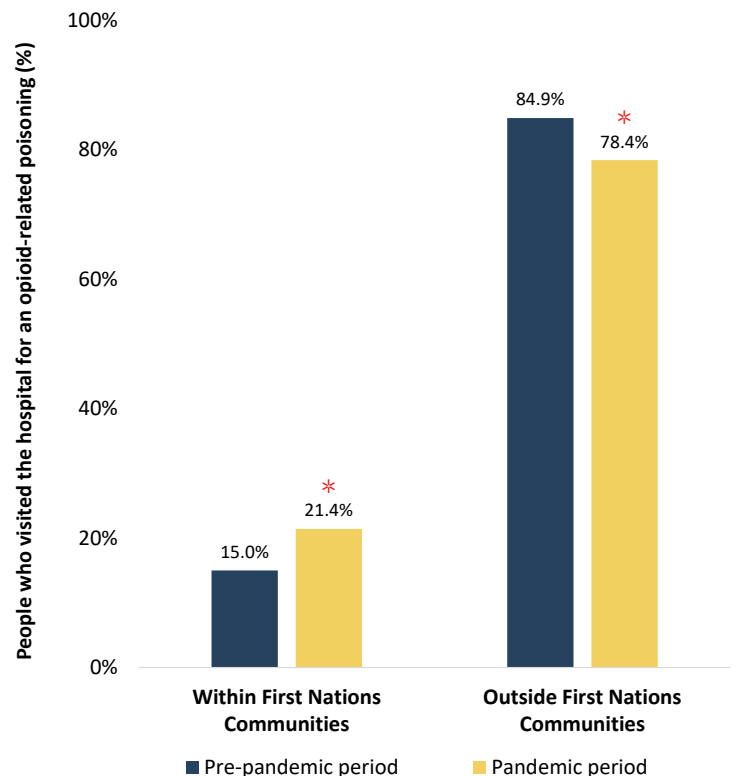
Figure 3. Sex distribution of people who experienced a hospital visit for opioid-related poisonings



There were no statistically significant changes in the sex distribution of people who had a hospital visit for an opioid-related poisoning during the pandemic. In both the pre-pandemic and pandemic time periods, the majority of people who experienced hospital visits were male, particularly among non-First Nations people (57.7% First Nations males vs. 66.7% non-First Nations males during the pandemic period).

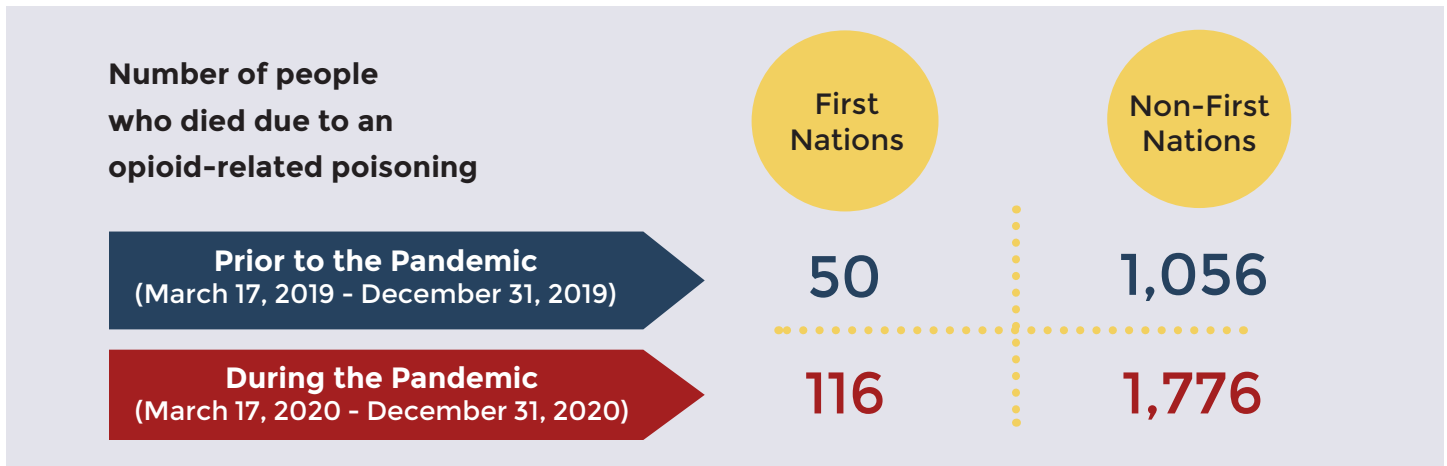
Figure 4. Location distribution of people who experienced a hospital visit for opioid-related poisoning

Although the majority of hospital visits for opioid-related poisoning occurred among First Nations people living outside of First Nations communities, the pandemic led to a significant shift towards more of these hospital visits occurring among people living within First Nations communities. Specifically, just over 1 in 5 hospital visits occurred among First Nations people living within First Nations communities during the pandemic (21.4%; N=175 of 816) compared to 1 in 7 prior to the pandemic (15.0%; N=90 of 601; $p=0.002$). This is similar to trends observed by geographic area of residence, with a greater increase in opioid-related poisonings among First Nations people living in rural areas during the pandemic, despite the majority of hospitalizations occurring among people living in urban areas.



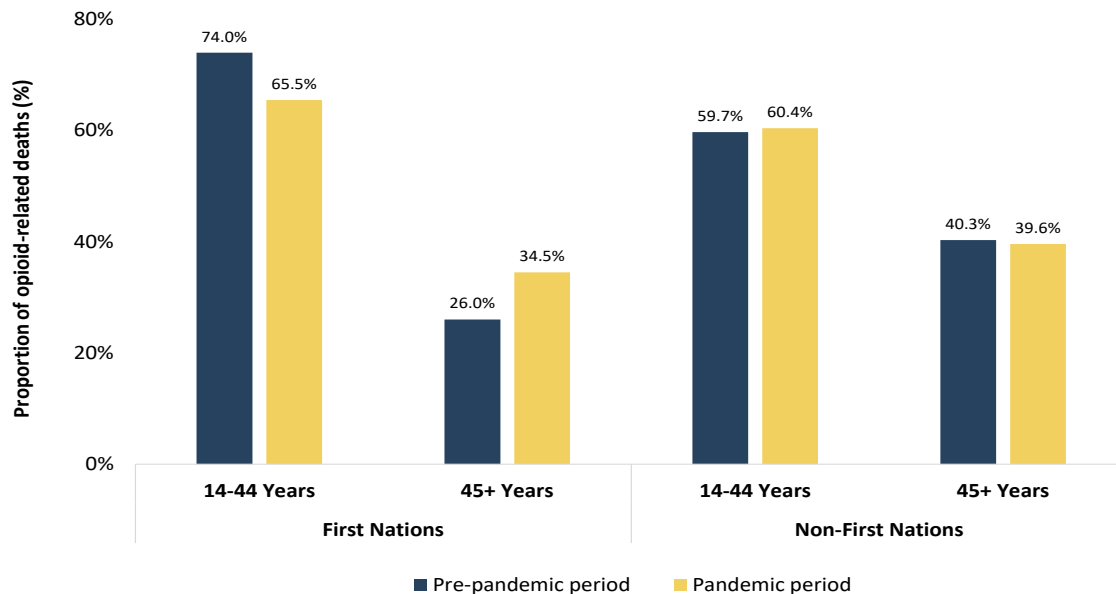
* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

People who Died of an Opioid-Related Poisoning



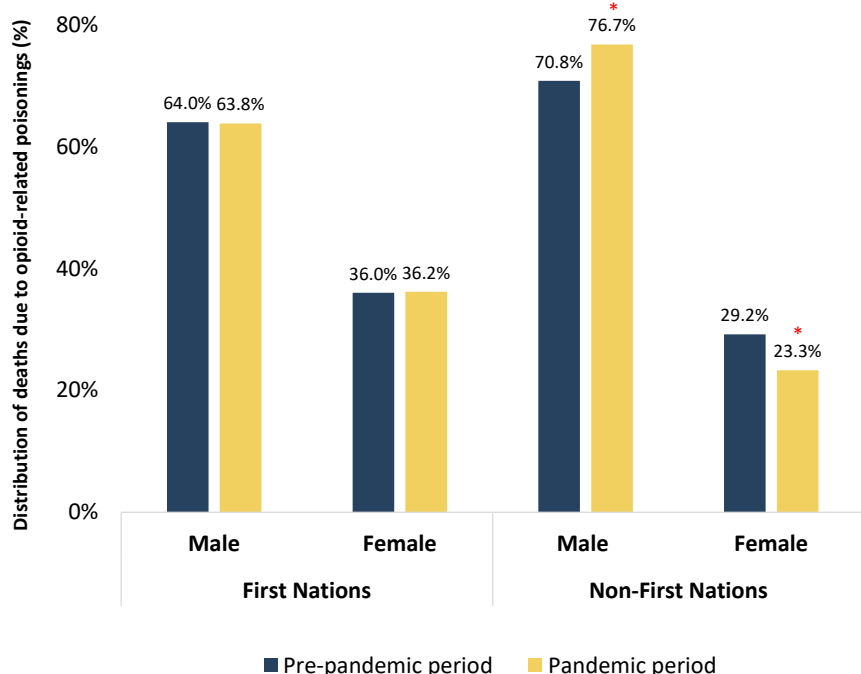
Among both First Nations and non-First Nations people, the COVID-19 pandemic led to increases in the number of people who died due to an opioid-related poisoning. The largest relative increase occurred among First Nations people, who experienced a 132% increase in the number of opioid poisoning-related deaths during the pandemic (50 deaths during the pre-pandemic period vs. 116 deaths during the pandemic). The number of opioid poisoning-related deaths among non-First Nations people increased 68% during this period (1,056 pre-pandemic vs. 1,776 post-pandemic).

Figure 5. Age distribution of people who died of an opioid-related poisoning



There were no statistically significant changes in the distribution of people who died due to an opioid-related poisoning by age group during the pandemic. Overall, the majority of people who died were aged 14 to 44, with 65.5% and 60.4% of all deaths related to opioid-poisoning occurring among First Nations and non-First Nations people in this age group during the pandemic, respectively. The largest relative increase in deaths occurred among First Nations people aged 45 and above (208% relative increase; pre-pandemic 13 deaths vs. 40 deaths during the pandemic).

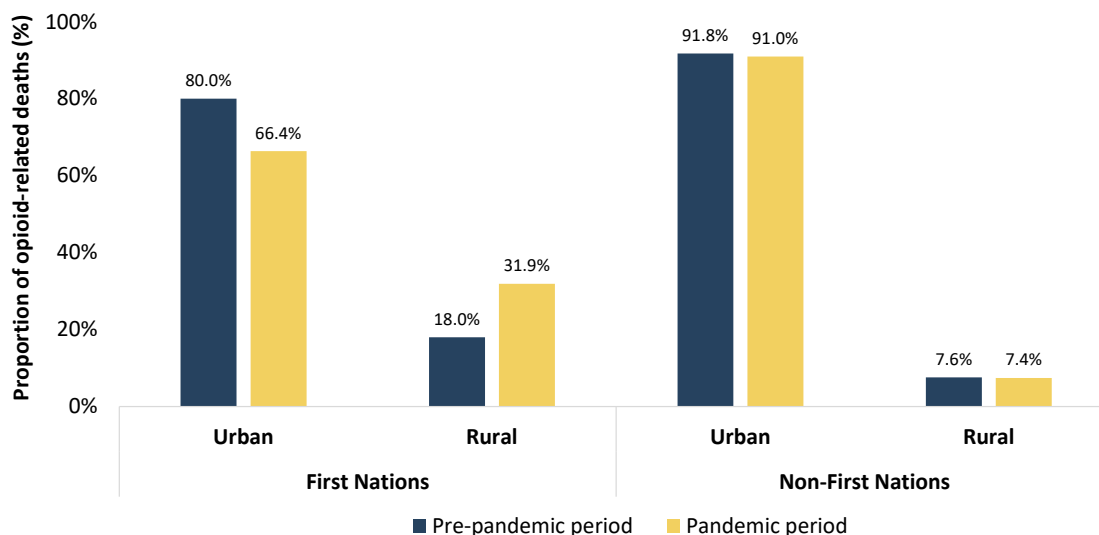
Figure 6. Sex distribution of people who died of an opioid-related poisoning



Overall, a majority of opioid-related deaths occurred among males, although this trend was more pronounced among non-First Nations people who experienced a shift towards deaths occurring more frequently among males during the pandemic (70.8% to 76.7%; $p < 0.001$). This trend was not observed among First Nations people.

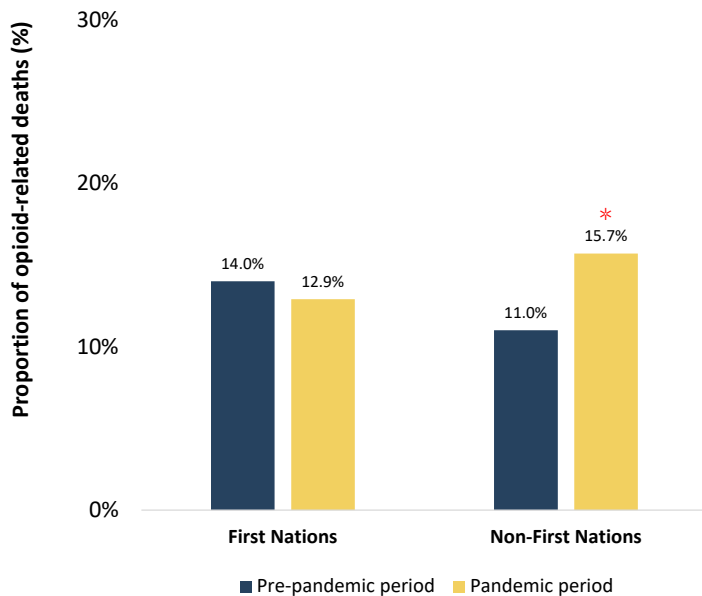
* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

Figure 7. Location distribution among people who died of an opioid-related poisoning



The majority of people who died of an opioid-related poisoning in Ontario were urban residents. While there were no significant changes during the pandemic, among First Nations people, there was a shift towards opioid-related deaths occurring more frequently among people living in rural settings during the pandemic (18.0% prior to the pandemic vs. 31.9% during the pandemic). Furthermore, there was a significant increase in the percentage of opioid poisoning-related deaths that occurred among people who resided within First Nations communities (≤ 5 in the pre-pandemic period vs. 27 in the pandemic period; $p < 0.05$). In the first year of the pandemic, 23.3% (27 of 116) of opioid-related deaths among First Nations people were among those residing within First Nations communities.

Figure 8. Distribution of deaths due to opioid-related poisoning among people experiencing homelessness



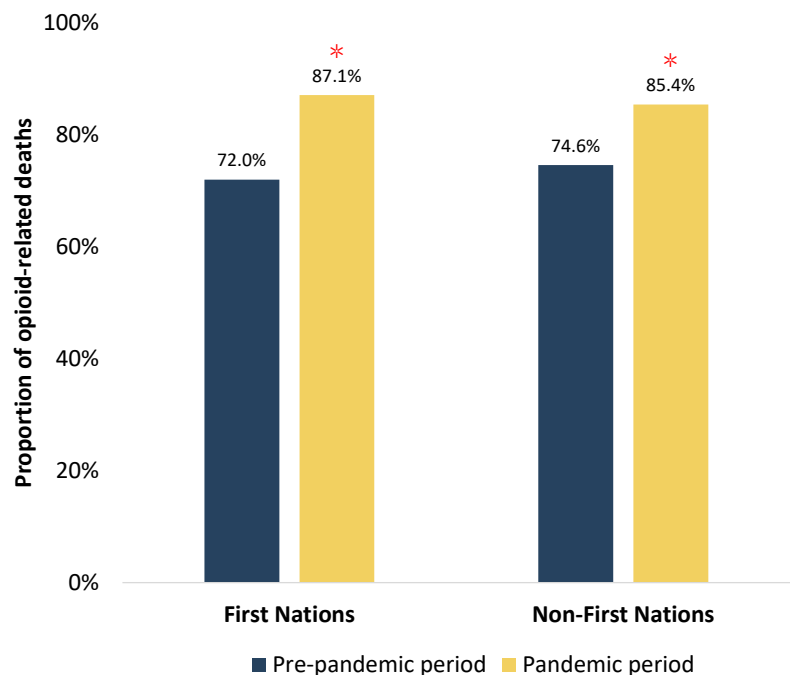
* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

There was no significant change in the proportion of opioid-related deaths among First Nations people experiencing homelessness during the pandemic, although the absolute number of these deaths doubled (14.0% [N=7] pre-pandemic vs. 12.9% [N=15] during the pandemic; $p=0.85$). In contrast, among non-First Nations people, a higher proportion of opioid-related deaths occurred among people experiencing homelessness during the pandemic (from 11.0% [N=116] to 15.7% [N=279]; $p<0.001$).

Note: People experiencing homelessness are defined in this report as those who are unsheltered, emergency sheltered (including in hotels), provisionally accommodated, or at immediate risk of homelessness

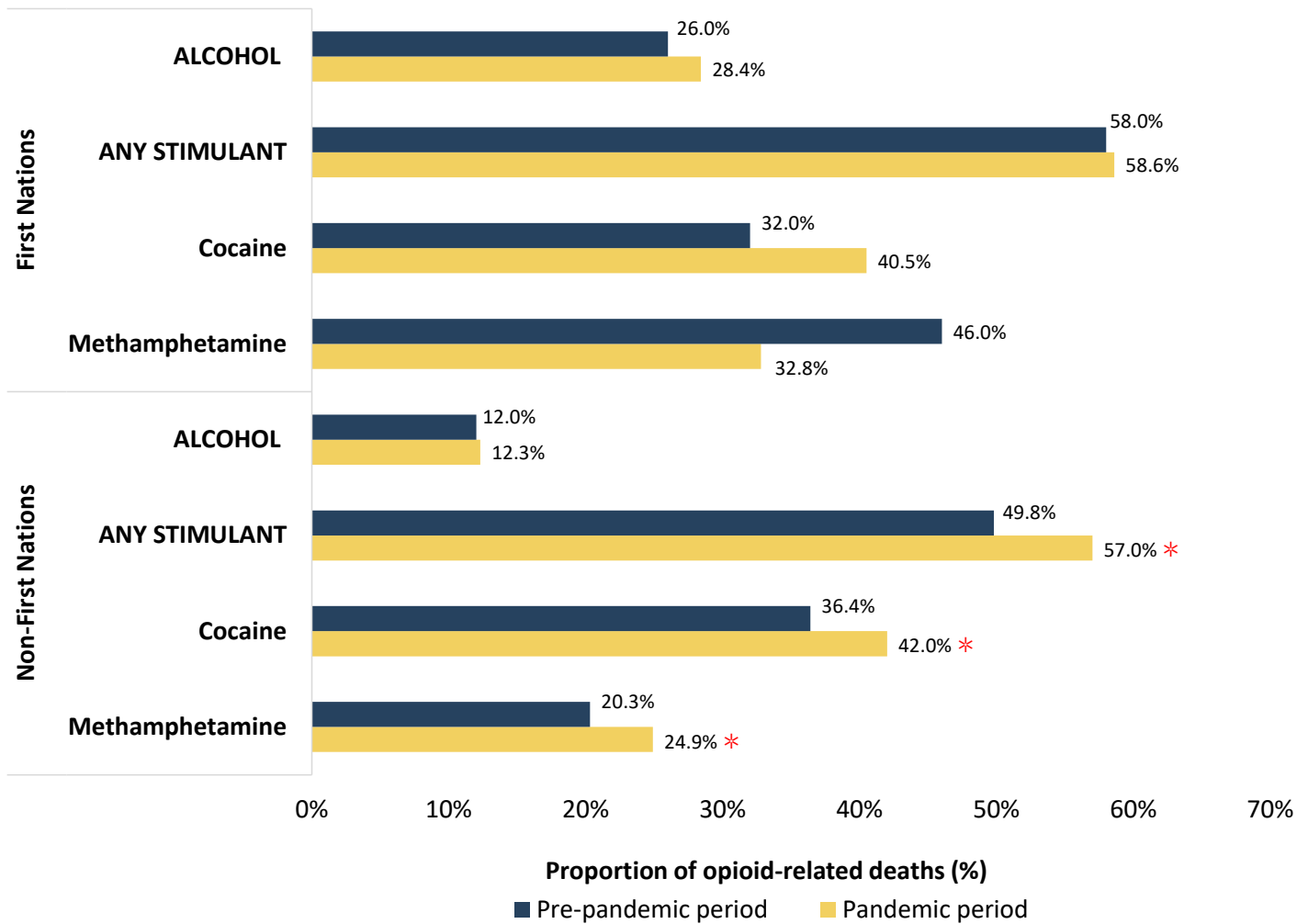
Figure 9. Fentanyl as a direct contributor to opioid poisoning-related deaths

The role of fentanyl as a direct contributor to opioid poisoning-related deaths continued to increase during the pandemic and accounted for the vast majority of deaths, among both First Nations (72.0% [36 deaths] to 87.1% [101 deaths]; $p=0.02$) and non-First Nations people (74.6% [788 deaths] to 85.4% [1,516 deaths]; $p<0.001$).



* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

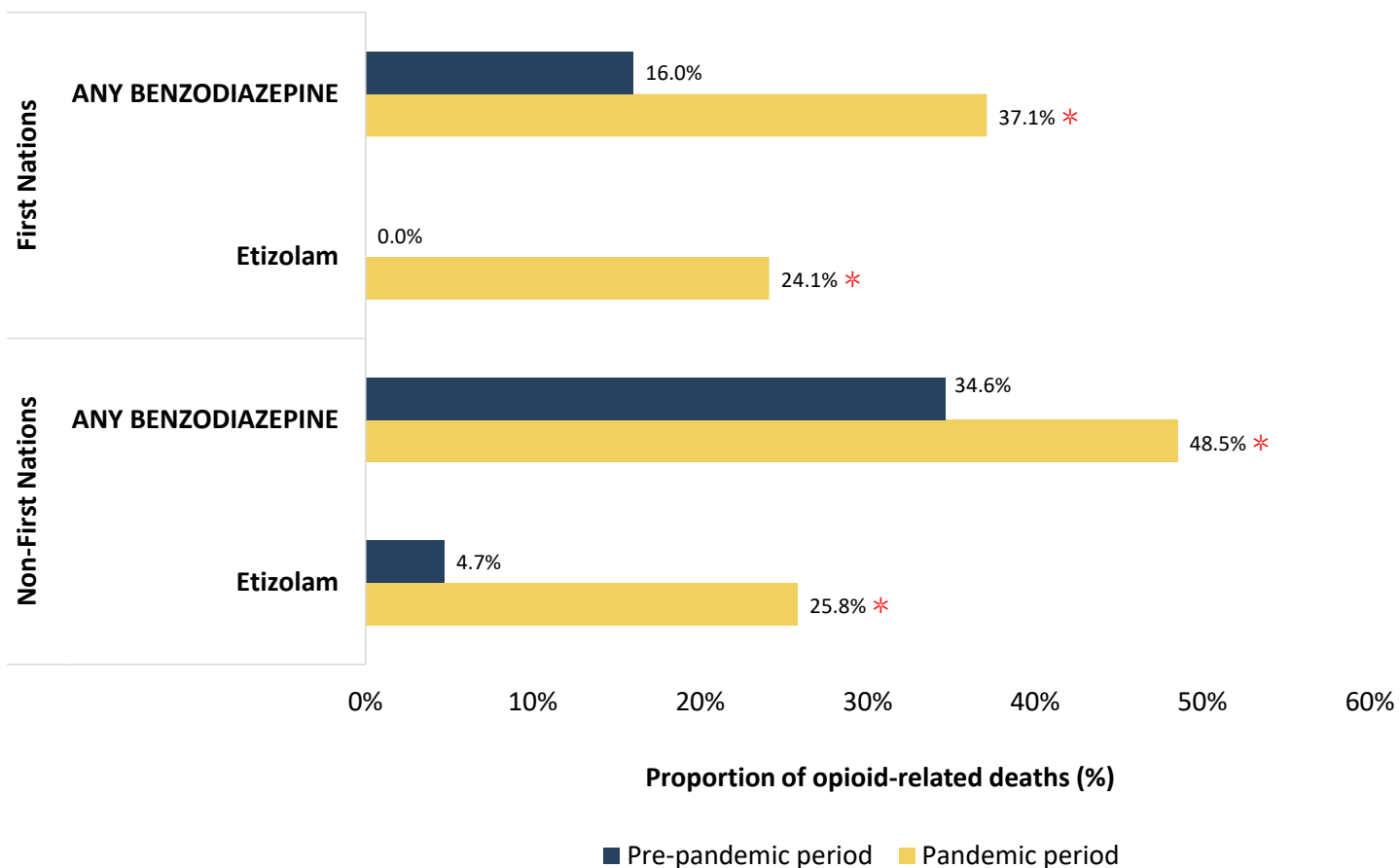
Figure 10. Other drugs directly contributing to opioid-related deaths



* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

Overall, there were no significant shifts in the role of stimulants overall as a direct contributor to opioid-related deaths among First Nations people during the pandemic. This lack of change may be due to the opposing shifts in cocaine and methamphetamine involvement in opioid-related deaths. Specifically, while cocaine directly contributed to a higher proportion of opioid-related deaths during the pandemic, rising from 32.0% [16 deaths] to 40.5% [47 deaths] of opioid-related deaths, the proportion of opioid-related deaths directly involving methamphetamine decreased from 46.0% [23 deaths] to 32.8% [38 deaths]. In contrast, among non-First Nations people, the overall role of stimulants as a direct contributor to opioid-related deaths significantly increased during the pandemic ($p < 0.001$), which was driven by increases in both cocaine and methamphetamine involvement in opioid-related deaths. As a result of these changes, stimulant involvement in opioid-related deaths was generally similar among First Nations and non-First Nations people during the pandemic, although a slightly lower percentage of deaths among non-First Nations people involved methamphetamines. Among both First Nations and non-First Nations people, the role of alcohol as a direct contributor to opioid-related deaths did not significantly change during the pandemic.

Figure 11. Percent of opioid-related deaths involving benzodiazepines



* Indicates statistically significant difference in proportions between the pre-pandemic and pandemic time periods

Benzodiazepine involvement in opioid-related deaths significantly increased during the pandemic among both First Nations (16.0% to 37.1%; $p=0.01$) and non-First Nations people (34.6% to 48.5%; $p<0.001$). This rise in benzodiazepine involvement in opioid-related deaths was primarily due to a significant increase in the involvement of etizolam, a benzodiazepine that is increasingly being found in the unregulated drug supply and not approved for use in Canada. In particular, among First Nations people, the proportion of opioid-related deaths involving etizolam increased from 0% prior to the pandemic to 24.1% during the pandemic. Other non-approved benzodiazepines that have been detected in the illicit drug supply (i.e. flualprazolam and flubromazolam) were not detected in any opioid-related deaths during the pandemic among First Nations people and were involved in a very small proportion (<5%) of opioid-related deaths among non-First Nations people.

Summary

During the COVID-19 pandemic, rates of hospital visits and deaths due to opioid-related poisoning increased among both First Nations and non-First Nation people in Ontario. However, these trends were more pronounced among First Nations people. Specifically, the number of deaths related to opioid poisonings more than doubled during the pandemic (from 50 to 116 deaths; 132% relative increase among First Nations people), compared to a 68% increase among non-First Nations people. The majority of First Nations people who visited the hospital or died due to an opioid-related poisoning lived in urban areas or out of First Nations communities. However, during the pandemic the largest relative increase in opioid-related harms occurred among First Nations people living in rural areas and within First Nations communities. As described in our recent report, despite differences in demographics between First Nations and non-First Nations people experiencing opioid poisonings, there were no significant changes in distribution of opioid-related deaths across age and sex during the pandemic⁴.

There are several potential explanations for the observed shift towards increasing hospital visits for opioid poisonings and opioid-related deaths among First Nations people living within communities during the pandemic. First, border restrictions that were implemented in many communities to prevent the spread of COVID-19 may have disrupted access to regular drug supplies, leading to increasingly unpredictable supplies that can increase the risk of poisoning. Furthermore, although there were strong efforts to maintain healthcare and harm reduction services within communities during the pandemic, most health centres were closed early in the pandemic, which could have resulted in interruptions in access to local healthcare, leading more people to have their opioid poisonings treated in hospital settings. Harm reduction programs are also often concentrated within urban areas, and treatment for opioid use disorder typically requires frequent visits to a pharmacy, meaning that many First Nations people must travel outside of their communities to access these services. Therefore, with restricted travel and requirements for physical distancing during the pandemic, it is likely that there were barriers to accessing naloxone, treatment (e.g. methadone and buprenorphine/naloxone [Suboxone®]), and other harm reduction services. As a result, these trends towards worsening rates of opioid poisonings within communities suggest a need for improved access to harm reduction and treatment services to support rural and remote First Nations communities across Ontario.

The involvement of fentanyl in deaths due to opioid-related poisoning significantly increased during the pandemic, contributing to 87% of opioid-related deaths among First Nations people, aligning with broader trends across Ontario and is indicative of the high potency of the current unregulated drug supply. There were also important changes in the role of stimulants in opioid-related deaths among First Nations people during the pandemic. In particular, cocaine was increasingly involved in these deaths, contributing to 2 out of every 5 fatalities that occurred due to opioid-related poisoning during the pandemic. However, the contribution of methamphetamines to fatal opioid poisonings among First Nations people decreased during the pandemic, from 46.0% to 32.8% of deaths. This differs from trends seen among non-First Nations people, among whom methamphetamine involvement in deaths due to opioid-related poisoning increased during the pandemic. However, prior to the pandemic, methamphetamine involvement in opioid-related deaths was much higher among First Nations people compared to non-First Nations people (46.0% vs. 20.3%). Therefore, despite decreases in prevalence during the pandemic, a slightly higher percentage of opioid-related deaths involved methamphetamines among First Nations (32.8%) compared to non-First Nations (24.9%) people during the pandemic. These findings highlight the continued support needed for First Nations communities to address the effects of combined use of opioids and methamphetamines.

Lastly, the percentage of opioid poisoning-related deaths in which unregulated benzodiazepines (i.e. etizolam) were detected increased among First Nations people during the pandemic. This is similar to the increases observed in Ontario overall during the pandemic³, and highlights the danger of the increasingly unpredictable drug supply in Ontario. In particular, the involvement of benzodiazepines in the drug supply further complicates the response to opioid-related poisoning as the administration of naloxone does not reverse benzodiazepine toxicity. Furthermore, treatment for substance use disorders must adapt as many people will experience withdrawal from both opioids and benzodiazepines when no longer using the unregulated drug supply. As a result, there is an urgent need to integrate this knowledge of the unpredictability of the drug supply, particularly as it relates to its high benzodiazepine content, into responses to the overdose crisis among First Nations people.

Strengths and Limitations

A core strength of our study is that it is the first to comprehensively assess the impact of COVID-19 on trends in opioid-related poisoning among First Nations people in Ontario. Importantly, this work is part of a broader research program that is First Nations-led and is supported by a Steering Committee and Knowledge User Advisory Group made up of First Nations community members, healthcare workers, and researchers, whose insights will continue to inform our future work. In addition, this study used detailed records available from the coroner's office to gain an in-depth understanding of opioid-related deaths among First Nations and non-First people.

There are also several limitations to this report. First, we identified First Nations people using the Indian Registry System database, which includes people who are eligible for 'Indian Status' under the 'Indian Act'. Therefore, this report does not include anyone who is not a registered First Nations person as identified in the Indian Registry System. Second, the indicator for hospital visits for opioid-related poisoning is based on emergency department visits and hospital admissions, but does not capture opioid-related poisonings that are treated outside of hospitals (e.g., by paramedics, by bystanders, or by nursing stations located within First Nations communities). Thus, we may have underestimated the true number of opioid-related poisonings among people living in areas with limited access to emergency health services or those who are treated outside of hospitals (e.g., by paramedics, by bystanders, or in nursing stations). Finally, the data on deaths due to opioid-related poisoning only reflect deaths that are directly caused by an opioid-related poisoning. We were not able to capture information on deaths caused by accidents (e.g., drowning, automobile accidents) or medical emergencies (e.g., cardiac arrest) that occurred while an individual was under the effects of an opioid but were not directly due to opioid-related poisoning.

Conclusion

The findings in this report reinforce the urgent need to address the rise in opioid-related harms among First Nations people during the COVID-19 pandemic. The increasing involvement of fentanyl and benzodiazepines in Ontario's unregulated drug supply further highlights the need for expansion of access to harm reduction services (e.g., access to a safe drug supply, access to naloxone) and reducing barriers to access opioid agonist treatment. This is particularly important among those living within First Nations communities in rural and remote areas of the province, where there has been a substantial rise in opioid-related harm during the pandemic.

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