First Nations Opioid and Methamphetamine Survey

National Aggregate Short Report

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THUNDERBIRD PARTNERSHIP FOUNDATION

The Thunderbird Partnership Foundation is a leading culturally centred voice in Canada on Indigenous substance use and mental wellness research, advocating for partnerships that involve integrated and wholistic approaches to healing and wellness for First Nations. Thunderbird promotes research and collaboration to empower Hope, Belonging, Meaning, and Purpose within First Nations communities. Thunderbird's mandate is to implement the Honouring Our Strengths: A Renewed Framework to address Substance Use Issues Among First Nations People in Canada (HOS) and the First Nations Mental Wellness Continuum (FNMWC) framework.

The Thunderbird Partnership Foundation is a non-profit organization and a division of the National Native Addictions Partnership Foundation Inc.

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1.0 Introduction

There is limited data on the surveillance of illicit substance use among First Nations in Canada (National Native Addictions Partnership Foundation, [NNAPF], 2011; Assembly of First Nations [AFN], 2019). Current national data sources have revealed that many First Nations abstain from using illicit substances, however prescription substance use has been identified as a public health concern as opioid and methamphetamine use is disproportionately higher among First Nations and continues to increase (AFN, 2019; First Nations Information Governance Centre, [FNIGC], 2018). Prescription substance use includes both pharmaceutical (i.e., codeine, benzodiazepines) and non-pharmaceutical (i.e., fentanyl, carfentanil, methamphetamine) use of substances. In recent years, there has been a shift in the use of pharmaceutical to non-pharmaceutical substance use among First Nations, where non-pharmaceutical opioid use has contributed to most opioid-related overdoses and deaths among First Nations in Alberta (Alberta First Nations Information Governance Centre [AFNIGC], 2021).

The 2015/2016 Regional Health Survey (RHS) estimated that 4 out of 10 First Nations used illicit substances in the past year, of which 24.9% reported using prescription opioids and 1.2% reported using methamphetamine (FNIGC, 2018). Many communities have declared public health emergencies due to the increasing number of opioid-related overdoses and deaths among First Nations in recent years (AFN, 2019). Research in British Columbia and Alberta has shown that First Nations are at a five times higher risk of experiencing an overdose and three times higher risk of dying due to an overdose than non-First Nations (AFN, 2019; First Nations Health Authority [FNHA], 2017; Government of Alberta, 2017). Rates of emergency room visits, hospitalizations, and emergency medical response due to opioid misuse are significantly higher among First Nations when compared to the general population in Alberta (Government of Alberta, 2017). As a result, in 2016, the Assembly of First Nations passed a resolution calling for action from all levels of the government to address opioid-related issues that are present in First Nations communities (AFN, 2019).

Since then, and specifically during the COVID-19 pandemic, rates of opioid overdoses and opioid-related deaths have drastically increased (Chiefs of Ontario & The Ontario Drug Policy Research Network, 2021; Nurses and Nurse Practitioners of British Columbia, 2020). Recent research has shown a 35.8% increase in opioid overdoses and 132% increase in opioid-related deaths among First Nations in Ontario since pre-pandemic. Rates of opioid-related deaths among First Nations are two times higher than the general Ontario population (Chiefs of Ontario and The Ontario Drug Policy Research Network, 2021). Findings are similar in British Columbia and Alberta, where there was a 93% increase in opioid-related deaths among First Nations in British Columbia (Nurses and Nurse Practitioners of British Columbia, 2020) and First Nations accounted for 22% of all opioid-related deaths in Alberta (AFNIGC, 2021). Research has identified many contributing factors to the increase in illicit substance use during the COVID-19 pandemic, including culturally unsafe COVID-19 policies that have had a negative impact on First Nations individuals and communities (i.e., social distancing), barriers to accessing detox and treatment centres (Nurses and Nurse Practitioners of British Columbia, 2020), barriers to accessing harm reduction services, and travel restrictions in and out of communities which interrupted individuals' usual drug supplies (Chiefs of Ontario & The Ontario Drug Policy Research Network, 2021).

In addition to the challenges identified by communities during the COVID-19 pandemic, post-colonial trauma due to the longstanding history of colonial practices against First Nations in Canada including the Indian Act and residential schools contribute to the high rates of illicit substance use among First Nations (House of Commons, 2016). It is important to recognize the interconnectedness between the social determinants of health and illicit substance use. Research has shown that factors such as poverty, unemployment, education status, housing, and poor social support systems can contribute to illicit substance use (Carriere, Garner, & Sanmartin, 2022). Health determinants that are specific to First Nations should also be considered. These include community readiness, economic development, employment, environmental stewardship, gender, historical conditions and colonialism, housing, land and resources, language, cultural identity, legal and political equity, lifelong learning, living on or off reserve, racism and discrimination, self-determination and non-dominant, social services and supports, and urban and rural (AFN, 2019, p. 12-13). Research has also identified that parents who use substances, and people who have mental health disorders, have experienced abuse (physical, emotional, sexual), have been incarcerated, are involved or previously have been involved in gangs, identify as 2LGBTQ+, or have experienced childhood trauma have unique health needs and may be at greater risk of illicit drug use (AFN, 2019).

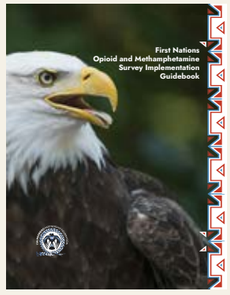
To address gaps in the limited available surveillance data on opioid and methamphetamine use among First Nations in Canada and to understand the key factors that influence substance use among this population, the First Nations Opioid and Methamphetamine Survey was developed and implemented across a sample of First Nations communities and treatment centres across the nation.

Findings from a national sample of Indigenous adults who completed the First Nations Opioid and Methamphetamine Survey are presented in this report. The following sections report on the methods used to create and implement the First Nations Opioid and Methamphetamine Survey tool. Key findings from the descriptive and multivariate analyses are then presented and include the prevalence of opioid and methamphetamine use and how usage differed across various characteristics. Lastly, the multivariate analysis identified key characteristics that were associated with opioid and methamphetamine use.

2.0 Method

2.1 First Nations Opioids and Methamphetamine Survey

The First Nations Opioid Survey was created to better understand the effect of opioids as well as the strengths and resiliency in First Nations communities. The opioid survey was designed to target the entire adult community, whether they have used opioids by prescription, illicitly, or not at all. The adult survey was developed in 2016 and tested in 2017 by a working group coordinated by Thunderbird Partnership Foundation consisting of members from Thunderbird, the First Nations and Inuit Health Branch (FNIHB), the Assembly of First Nations (AFN), Centre for Addiction and Mental Health (CAMH) and First Nations treatment and community program representatives. It has been revised several times to reflect feedback from community about current substance use in communities across Canada. The last pre-pandemic revision added a section on methamphetamine in response to feedback from First Nation communities, addictions clinicians, and government partners interested in learning more about methamphetamine use and its impacts. With this addition, the survey was renamed *The First Nations Opioid and Methamphetamine Survey*. Due to the COVID-19 pandemic, a COVID-19 section was also added to the survey.



The survey updates and release were made possible through a grant from the Public Health Agency of Canada from 2019 to 2022.

2.2 Defining variables

See appendix 1 for the questions and response categories that were used in this analysis.

2.2.1 Covariates and exposure variables influencing mental wellness in the First Nations communities

2.2.1.1 Demographic and social determinants of health

Age: Initially the respondents were asked to report their age in years at the time of the survey collection, but it was changed to age categories sometime during the survey administration. Because of this, we had to define age using the predefined age categories of 18 to 29 years, 30 to 39 years, 40 to 49 years, 50 to 59 years, and 60 years and older. Based on the age distribution of substance usage, it was decided to collapse the 50 to 59 years and 60 years and older groups together. To ease interpretation of the analysis, we decided to use the 50 years and older category as the reference category for all univariate and multivariable regression analyses.

Gender: The respondents were asked to report their current gender identity: male, female, transgender, two-spirited or other. The number of participants who identified as *transgender, two-spirited* or *other genders* in the survey were less than five. To preserve the privacy and confidentiality of these clients they were included in the male gender group for all the analyses. This adjustment made no difference in the analyses results produced when these clients were not included in the male gender group.

Residence in community: The respondents were asked if they were currently living on or off the reserve.

Household size: Like age, the initial version of the FNOM survey recorded the household size as the number of individuals who were living with the respondent. The current FNOM survey version, however, recorded the household size in five response categories: (a) 1 to 3, (b) 4 to 6, (c) 7 to 9, and (d) 10 people or more.

Due to the small sample size in the category (d), the analysis was conducted with three categories: (a) 1 to 3, (b) 4 to 6, and (c & d) 7 people or more.

Food insecurity: Finally, the respondents were asked how often they were unable to buy food that their household needed in the past 12 months. The response categories of *not very often, fairly often* and *very often* were collapsed for the analysis and contrasted against the remaining response category of *never*.

2.2.1.2 Trauma-related variables

The respondents were asked a series of questions about experiences and feelings that may have caused them distress. A total of nine questions were asked, but we excluded the question about *their community experiences with a crisis or a disaster* because of the reduced variation of the variable as participants in almost all the communities had experienced a COVID-19 crisis and a majority of the surveys were conducted during the pandemic.

2.2.1.3 Supports

In total, the absence of five supports covariables were explored for their association with the outcome variables. These supports included a) positive role models, b) employment/ school, c) supportive family/ friends; (d) community/family activities, and e) health/drug awareness education.

2.2.2 Outcome variables

2.2.2.1 Harmful opioids use

Approximately two-thirds of the respondents who reported ever having used opioids stated they used opioids for medical reasons. However, it is possible those respondents also used opioids in a harmful way. Therefore, we decided to create a harmful opioid use variable based on either lifetime or current harmful use (see Appendix 2 for algorithm).

2.2.2.2 Methamphetamine use

Since 26% of the respondents did not have the opportunity to complete the *methamphetamine use* section of the FNOM survey, we included the methamphetamine question that was in the *other substances* section in the definition for *ever used methamphetamine* in their lifetime. In addition, there were respondents who either answered *do not know* or *prefer not to answer* for lifetime use of methamphetamine, but stated they were currently using methamphetamine. Therefore, we used three questions to define methamphetamine use in their lifetime (see Appendix 2 for algorithm).

Respondents who answered *yes* to having used methamphetamine in the past 12 months, having ever used methamphetamine at least once, or are currently using methamphetamine were classified as *having used methamphetamine in their lifetime*. Respondents who answered *no* or *do not know* (if applicable) to these questions and did not respond *yes* to any of the questions were classified as having not used methamphetamine in their lifetime.

2.2.2.3 Any harmful drug use

We combined those who were identified as having harmful opioid methamphetamine use together. In addition, we included respondents who stated they had used cocaine, hallucinogens, or inhalants in the past 12 months in this variable (see Appendix 2 for algorithm).

2.3 Statistical analysis

The prevalence for outcome variables: harmful opioids use, methamphetamine use, or any harmful drug use were reported as percentages. The association between the outcome variables and the covariate/ exposure variables was measured as *adjusted risk (ARR)* or *risk*. Univariate analysis was conducted to understand the distribution of outcome variables across each of the covariate/ exposure variables independent of each other (for example, how harmful opioids use is distributed within various age group categories). This provided us with *unadjusted risk ratio* or *unadjusted risk*. However, in the real world, all the covariates/exposure variables are at play and not just a single covariate in isolation. To get the estimated risk closer to the real risk, a multivariable (backward stepping) analysis with p-value at 20% tolerance was conducted to explore the association of each covariate/ exposure variable with the outcome variables by also accounting or adjusting for the other covariate/ exposure variables that are also influencing the risk for the outcomes. This measure of association produced by multivariable analysis is reported as *adjusted risk ratio/ risk*. The association between the covariables/ exposure variables were statistically significant only if the p-values (P) were below 0.05 and the 95% confidence intervals (95% CIs) did not include 1.

3.0 Results

There were 2,220 records in the First Nations Opioids and Methamphetamine Survey adult module database. Of those records, 51 (2%) respondents did not consent to be included in the national report, 209 (9%) respondents did not answer most of the questions and 168 (8%) respondents did not identify themselves with a known community, treatment centre or organization name. A total of 428 records were dropped from the analysis. This analysis was completed on the remaining 1,792 records.

3.1 Harmful opioids use

Nearly 17% of the sample (n = 298) did not complete any of the opioid-related questions. They were dropped for this analysis. Among the 1,494 who responded, 417 did report harmful use of opioids and its prevalence was 28% (95% CI = 26% to 30%), (Table 1).

Age: Overall, the younger respondents had a higher unadjusted risk of using opioids in a harmful way than the respondents who fell in to the 50 years and older age category (p < 0.001 See Table 2).

Gender: Of those respondents who used opioids in a harmful way, 41% identified as either *male or LGBTQ2S+* where of those respondents who did not use opioids in a harmful way, 27% identified as *either male or LGBTQ2S+*. This translates to *males and LGBTQ2S+* having approximately 1.6 times higher unadjusted risk (URR = 1.56, 95% CI = 1.33 – 1.84, P < 0.001) of using opioids in a harmful way than females.

Residence in community: Respondents who reported they were living off the reserve had approximately 30% decreased unadjusted risk (URR = 0.69, 95% CI = 0.55 – 0.87, P < 0.001) of using opioids in a harmful way than respondents who were living on the reserve (Table 2). Specifically, of those respondents who used opioids in a harmful way, 18% reported living off the reserve, but 26% of those respondents who were not using opioids in a harmful way were living off the reserve, (Table 1).

Household size: Overall, there was an association between the number of people living in a respondent's household and harmful opioid use. The difference in the unadjusted risk for harmful opioids use was insignificant among respondents living in household sizes of 4 to 6 people compared to those living in household sizes of 1 to 3 people (URR P = 0.08). However, there was a significantly higher (approximately 1.6 times) unadjusted risk of using opioids in a harmful way for respondents who were living in households of at least 7 people compared to those living in households with 4 to 6 people (URR = 1.56, 95% CI = 1.23 - 1.95, P < 0.001), (Table 2).

Food insecurity: There was at least a two-fold increase in the unadjusted risk of using opioids in a harmful way for respondents who had issues buying food that they needed for their household compared against those who did not have any issues buying food (URR = 2.09, 95% CI = 1.74 - 2.50, P < 0.001), (Table 2).

Trauma-related variables: All the trauma-related variables had a significantly increased risk of harmful opioid usage, (Table 2).

Absence of support: An association for all the five support variables was observed. Respondents with an absence of any of these supports in their lifetime had a higher unadjusted risk of using opioids in a harmful way compared to those who had these supports, (Table 2).

3.2 Methamphetamine use in their lifetime

The methamphetamines questions were not in the original version of the survey, the questions were added in 2021. Therefore, the sample size for this section is smaller than it could have been. A total of 1,084 adult respondents answered at least one of the methamphetamine questions. The prevalence of methamphetamine use was 18% (95% CI 16% to 21%).

Age: Similar to the results of the question about using opioids in a harmful way, the younger age groups also had a higher risk of using methamphetamine in their lifetime than respondents aged 50 years and older (p value < 0.001) (See Table 2).

Gender: There was a relationship between gender and methamphetamine use. It was observed that 45% of those using methamphetamine reported being a *male or LGBTQ2S+* versus 25% in the group not using methamphetamine who, identified as *male or LGBTQ2S+* (See Table 1). This translates to 2.2 times increase in the unadjusted risk of using methamphetamine in respondents who identified as either *male or LGBTQ2S+* compared to those who identified as *female* (URR = 2.20, 95% CI = 1.72 – 2.81, P < 0.001), (Table 2).

Neither *currently living on the reserve* (URR = 0.91, 95% CI = 0.67 - 1.23, P = 0.524) at the time of the survey, nor the *household size* (P = 0.1709) showed significant difference in the unadjusted risk for methamphetamine use, (Table 2).

Food insecurity: There was slightly more than two and half-fold increase in the unadjusted risk of using methamphetamine for respondents who had issues buying food for their household compared to the respondents who did not have any issues buying food, (Table 2).

Trauma-related variables: Generally, those who answered *yes* to having experienced any of the 8 trauma-related questions had a higher unadjusted risk of using methamphetamine than those who did not experience these events, (see Table 2). In particular, for those respondents who used methamphetamine, 40% *felt helpless to change their life*, while of those who did not used methamphetamine, 13% *felt helpless to change their life*, (Table 1). There was no significant association between methamphetamine use and having had friends or family members who attempted suicide, (Table 2).

Absence of supports: Respondents who did not have positive role models, employment/school, supportive family/friends, and health/drug awareness education had higher unadjusted risk for having used methamphetamine in their lifetime compared to those for whom these supports were present, (Table 2).

3.3 Any harmful drug use

A total of 1,544 respondents answered at least one of the drug use questions that were used to define this context (see Appendix 2). The prevalence of using any substance was 34% (95% CI 32% to 36%).

Age: The younger age groups had a higher unadjusted risk of reporting any substance use than the respondents aged 50 years and older (P < 0.0001) (see Table 2). Twelve percent of those aged 50 years and older reported *any substance use* whereas 24% of those aged 40 to 49, 36% of those aged 30 to 39 and 28% of those aged 18 to 20 reported *any substance use*, (Table 1).

Gender: For those who reported *any substance use*, 42% identified as *male or LGBTQ2S+* whereas the respondents who did not report any substances, only a quarter of them identified as *male or LGBTQ2S+* (see Table 1). This means there was 1.6 times (URR = 1.63, 95% CI = 1.42 – 1.87, P < 0.001) increased unadjusted risk of using any substances for respondents who identified as *male or LGBTQ2S+* compared to their female counterparts, (Table 2).

Residence in community: Respondents who reported they were living off the reserve had a 27% decreased unadjusted risk of using any substance than those who were living on the reserve, (Table 2). For respondents who were using any substances, 19% were living off the reserve at the time of the survey and for those who were not using any substances 27% were living off the reserve, (Table 1).

Household size: Overall, the number of people living in a household was associated with reporting any substance use. Respondents who were living in households with 7 or more individuals in it had 1.3 times higher risk than those living in households with 1 to 3 individuals (URR = 1.33, 95% CI = 1.09 - 1.63 P = 0.01).

Food Insecurity: Having problems buying food was associated with reporting any substance use (see Table 2). Of those who had any substance use, 67% reported problems securing food, but for those who did not report any substance use, only 42% reported problems securing food. This is nearly a two-fold increase in the unadjusted risk of reporting any substance use in those who were exposed to food insecurity compared to those who were not (URR = 1.97, 95% CI = 1.69 - 2.29, P < 0.001), (Table 1).

Trauma-related variables: All the trauma-related variables had a significantly higher unadjusted risk of using any substance compared to those who did not experience these traumatic events, (Table 2).

Absence of supports: Respondents who had the absence of the five supports during their lifetime showed an increased unadjusted risk of any drug use compared to the respondents who had these supports, (Table 2).

3.4 Multivariable analysis of determining what characteristics were associated with substance use

The three social and demographic covariables that were significantly associated with all the three outcomes were: a) age category, b) identified gender, and c) food-insecurity.

Younger individuals, identifying as *male or LGBTQ2S+*, and facing food-insecurity had a higher risk for all three of the outcomes.

Table 2, for the trauma-related characteristics, the relationship between the characteristics differed across the three outcome variables. Those who reported *often having nightmares* at the time of the survey had nearly two-fold increased risk of using methamphetamine in their lifetime than those who did not have nightmares. Additionally, those who reported nightmares had 1.2 times higher adjusted risk of any substance use than those who did not report having nightmares often. On the contrary, no significant association was observed between having nightmares and harmful opioid use after adjusting for other covariables.

Those who reported having *felt helpless to change their life* at the time of the survey had an almost similar increased risk of *harmful opioid use* (ARR = 1.27, 95% CI = 1.0 – 1.7, P < 0.001) and *any substance use* (ARR = 1.40, 95% CI = 1.14 - 1.72, P < 0.001). This association did not hold for methamphetamine use (ARR = 1.34, 95%CI = 0.92 - 1.96, P = 0.130) in the multivariable model after adjusting for other covariables, (Table 2).

Those who had friends and/or family members who attempted suicide had 1.3 times higher risk of using any substances than those who did not. Methamphetamine. The association between having any friends and/or family members who attempted suicide and methamphetamine use was not significant (p value = 0.193) after adjusting for other covariables.

Having friends and/or family members who died by suicide had 1.3 times higher risk for harmful opioids use (ARR = 1.32, 95% CI = 1.01 - 1.72, P = 0.04) compared to those who did not experience this traumatic event. However, no significant association was observed between having friends and/or family members who died by suicide and methamphetamines use or any other substance use, methamphetamine. (Table 2).

Those who felt betrayed by others had almost 1.4 times higher risk (ARR = 1.36, 95% CI =1.04 - 1.76, P = 0.02) of using opioids in a harmful way than those who did not feel betrayed by others. Additionally, they had a 1.3 times higher risk (ARR = 1.302, 95% CI = 1.05 - 1.614, P = 0.02) of using any substances than those who had not felt betrayed by others. However, there was not a significant association between betrayal and having used methamphetamine (ARR = 1.40, 95% CI = 0.93 - 2.10, P = 0.11), (Table 2).

Although almost all the support characteristics were significantly associated with the three outcome variables in the univariate analysis, this was not the case in the multivariable models. Most of the support characteristics did not reach significance after adjusting for the other covariables in the models.

Not having positive role models or mentors was found to be associated with methamphetamine use. Respondents who did not have positive role models or mentors had a 1.6 times increased adjusted risk of using methamphetamine than those who did have positive role models or mentors, (Table 2). However, not having positive role models or mentors did not show any significant association with *harmful opioid use* and *any substance use* (P = 0.173 and P = 0.079, respectively), (Table 2).

Having employment/ going to school or not having supportive family or friends were not significantly associated with any of the three outcome variables.

Respondents who reported they did not have health or drug awareness had at least 1.3 times higher risk of *harmful opioids use*, and *any substance use* compared to those who did have awareness.

4.0 Discussion

Summary of Findings

The present findings demonstrate that among First Nations, younger aged males, living on reserves in households with more than seven residents, were food insecure (issues with buying food for their household), and had trauma experiences were associated with higher risks of harmful opioid use. Furthermore, methamphetamine use was more prevalent in younger male respondents who had experienced food insecurity and trauma in their lives, felt helpless to change their lives, and had no positive role models, employment/school, supportive family/ friends, and health/drug awareness education. The multivariable analysis of the characteristics associated with substance use revealed the following factors: younger age, identified as *male or LGBTQ2S+*, and had food insecurity. Given the cross-sectional nature of this study, the temporal sequences of these factors could not be established and are pending future research.

Younger Age

A key characteristic that was observed repeatedly in our analyses was that younger age was associated with higher risks of any harmful opioid use or methamphetamine use in the lifespan. This was a unique contribution of this study, in terms of identification of this important group who would benefit from targeted prevention strategies. A Canadian nationwide survey assessed the prevalence of prescription drug use among 44,344 adolescents in 2008 (Currie & Wild, 2012). It was observed that the prevalence of prescription drug use for non-medical purposes was 11% among the First Nation, which was almost double the prevalence of the national statistic for prescription drug use (5.9%) among Canadian adolescents (Currie & Wild, 2012). This has implications for policymakers to target preventative policies to meet the needs of the younger people.

Unemployment and No School

We found that being unemployed and not being in school increased the risk of respondents having used methamphetamine in their lifetime. Our findings were consistent with a smaller scale study of 381 participants, where low educational attainment and current unemployment were significantly associated with illicit substance use problems (Currie et al. 2013). Currie and Wild suggest that 'school connectedness' is an important preventative intervention strategy for the younger population. They observed that Aboriginal youth reported not being close to people at school, not feeling safe or happy at school or that they are even a part of their school (Currie & Wild, 2012). This was further confirmed by another Canadian Nationwide study by Weatherson et al., in 2018 on 33,313 students (Weatherson et al. 2018). They observed that decreased school connectedness was associated with higher likelihood of substance abuse (Weatherson et al. 2018). A scoping review published in 2020 highlighted that early school prevention programs should be culturally responsive and should equip the youths with information and ability to prevent substance use when faced with real-life situations. When Indigenous Knowledge (beliefs, values, languages, worldview, and visuals) is at the center of the program curriculum, it achieves enhanced effectiveness and sustainability within the communities. It also underscores the key role of Indigenous communities in themselves creating culturally bespoke, evidence-based programs and implementing them with optimal fidelity (Maina et al., 2020).

Role Models or Mentors, Supportive Family/ Friends, and Health/Drug Awareness

Among the factors associated with methamphetamines use in the lifespan, having positive role models or mentors, supportive family/friends and health/drug awareness education underline the importance of culturally appropriate interventions among the First Nations. A 2013 study by Currie et al. examined the role of traditional beliefs, practices, and culture in protection and resilience for illicit and prescription drug problems among urban Aboriginal adults in Canada (Currie et al. 2013). Traditional Aboriginal culture was identified as a factor that "can empower and foster pride among Aboriginal peoples, and it is a determinant many may be intrinsically motivated to strengthen" (Currie et al. 2013, p. 1). They found that 'enculturation' was inversely associated with prescription and illicit drug use. Moreover, attending cultural Aboriginal activities such as cultural events, smudging, and spiritual ceremonies were among the factors that promoted resilience, and the development of such activities was encouraged for promoting and protecting Aboriginal cultural practices and beliefs (Currie et al. 2013). Another study by Janelle et al. (2009) found that improving the rich and specific Indigenous cultural activities among the First Nations youth in Canada is essential for encouraging self-esteem, re-establishing pro-social behaviors, and increasing cultural continuity (Janelle et al. 2009).

Food Insecurity

We observed that household food insecurity was associated with elevated risks of harmful opioid and methamphetamine use among the First Nations. Even though food insecurity rates vary by several factors such as age, level of education, gender, economic status, the region where one resides, and community among other factors (Domingo et al., 2020; Dachner & Tarasuk 2018; Natcher et al., 2016), the statistic for the Indigenous Peoples of Canada is alarming (Mirzaei & Natcher 2021). Longitudinal studies on the sequential association between illicit drug use and food insecurity are scarce among the First Nations peoples of Canada and it appears that household insecurity represents a complex, multi-faceted, and non-linear interplay of several factors (Bragazzi et al., 2021). Anema et al., propose a framework illustrating that "drug use acts as an individual-level as well as an environmental-level driver of food insecurity and that, in turn, food insecurity exacerbates illicit drug use" (Anema et al., 2015, p.360).

In a scoping review of the food security status of Indigenous Peoples of Canada, Shafiee et al. discuss how climate-related environmental changes have affected all four pillars of food insecurity in this population (Shafiee et al. 2022). These four pillars consist of 1) availability (availability of traditional foods, market foods, etc.), 2) accessibility (economic disadvantage, distance to grocery stores, lack of an active hunter in the household, etc.), 3) utilization (loss of traditional skills and knowledge, preference, and cultural acceptability, etc.), and 4) stability (continuity of the three previously mentioned pillars over time), (Shafiee et al. 2022). This scoping review concludes that tackling food insecurity issues among the Indigenous Peoples of Canada requires the development of culturally appropriate and integrated strategies that focus on all four aspects of food insecurity (Shafiee et al. 2022).

Community/Cultural Programs

Community-wide programs as assessed by Kanate et al., were shown to have improved the opioid dependency issues drastically among the First Nations in Canada (Kanate et al., 2015). These community-wide programs consisted of substitution therapy, traditional First Nations healing methods, and addiction treatment (Kanate et al., 2015). Daily sessions of individual and group sessions were provided by First Nation healers and counselors (Kanate et al., 2015). These sessions focused on diverse topics such as grief counseling, understanding early-life trauma, traditional healing teachings, relapse prevention, and land-based activities (Kanate et al., 2015). Such cultural community-wide programs promote a sense of role modeling and story sharing, enhance education and drug awareness, and allow for building supportive community among the First Nations. One year after the launch of this program, a decrease of 61.1% in police charges, and 58.3% in child protection cases was observed (Kanate et al., 2015). Further, school attendance increased by 33.3% (Kanate et al., 2015). To this effect, a systematic review of empirical research in the First Nations peoples in Australia looked at the community-based treatments for alcohol and other substance abuse (Krakouer et al., 2022). This systematic review concluded that "First Nations-led research, that is controlled by and co-produced with First Nations peoples, is necessary to ensure reciprocity, respect and culturally appropriate involvement of local community members in the design, development, implementation and evaluation of such programs" (Krakouer et al., 2022, p. 1426).

Experience of Trauma/Distress

The First Nations peoples who had trauma experience or distress of any type, were at an increased risk of any substance abuse. These experiences of trauma caused by a myriad of factors such as intergenerational colonization, social and economic marginalization, discrimination, and racism, were found to affect the substance abuse, health, and well-being of the First Nations peoples not only in Canada, but also in the USA and Australia (Gone et al., 2019; Watego et al., 2021). The discussion about the reasons of historical traumatization among the First Nations peoples is beyond the scope of this study, however, our findings further emphasize the role of culturally safe and appropriate interventions to better meet the needs of this population. As Richer and Roddy (2022) mention in their article "treatments for Indigenous populations need to reflect the values and traditions of their communities in order to facilitate healing and recovery" (Richer & Roddy, 2022, p. 257). These value-based models reflect the cultural perspectives and themes, tailored to First Nations communities.

Despite the strong evidence supporting the beneficial effects of these culturally appropriate, wrap-around wholistic programs, such programs are currently underfunded, and lack resources (Krakouer et al., 2022; Kanate et al., 2015). As an example, a 2019 systematic review of the role of mutual support groups for addiction recovery among the Indigenous Peoples failed to find any evidence in the literature regarding this program in Canada (Dale et al., 2019). We recommend that future research to address the opioid crisis among the First Nations peoples incorporate a multi-faceted approach, integrating culturally appropriate interventions within routine medical and pharmacological interventions.

Strengths

The data collected in this study came from various First Nations communities and organizations across Canada. Some of the communities were in a state of emergency due to substance-related problems in their communities, but not everyone who participated was living in communities where this was the case. Each community and organization decided upon the best method to implement the survey, and they were also responsible for implementing the survey. This probably reduced the problem of not trusting external parties and thus it is more likely that a broader range of individuals participated than if the external researchers tried to implement the survey.

Limitations

According to the Canadian government census (Government of Canada, 2020) 40% of First Nations live on reserve, which should be taken into consideration for this report. Thus, for most First Nations communities where this survey was completed, 60% of its population was not included. We cannot assume that if all First Nations members were included for this survey that the data would simply be doubled, so it is important to take this into consideration to provide a more thorough picture of what is occurring.

Most of the data was collected during the COVID-19 pandemic. It is unknown what impact the pandemic had on both the characteristics and the outcome variables. Therefore, these results must keep in mind the unknown influence the pandemic may have had.

We were unable to report any of the youth data because there were too few youths who reported using substances. Very few of the communities were able to recruit more than 30 youths and therefore, it is uncertain if the convenient sample of youths would represent the First Nations youth population. However, according to reports (Webster, 2012), First Nations youth are experiencing high levels of prescription misuse and overdoses compared to non-First Nations youth.

The methamphetamine specific section was added to the survey part way through the survey implementation. Because of this, slightly over a quarter of the respondents did not have the opportunity to complete these questions. This means we were not able to calculate their lifetime exposure to methamphetamine but were only able to answer their exposure in the past 12 months at 18% (95% CI 16% - 21%). Therefore, the prevalence of methamphetamine use may be underestimated in our report. The National Report of the First Nations Regional Health Survey found that methamphetamine/crystal meth use among adults aged 18 years and above in 2015-2016 (age 18+) was approximately 1.2% (National Report of the First Nations Regional Health Survey, 2018). This means that methamphetamine use might have increased among First Nation communities over time.

5.0 Conclusion

We conclude the prevalence of using opioids in a harmful way, methamphetamine is higher than the general Canadian population during the study period. It is possible that the use of methamphetamine might have increased in First Nation communities in the past years. Many characteristics are associated with drug use. Many characteristics are associated with substance use. In this study we found younger age, having food insecurity, having experienced certain traumatic triggering events and lack of role models or no drug awareness were associated with a higher risk of using substances. Several of these characteristics are modifiable and strategies should be designed to reduce the occurrences of these characteristics.

6.0 Recommendations

As a result of this report, we recommend the following:

- Continue collaborations and surveillance with First Nations communities' assessments and data collection regarding opioid and methamphetamine drug use within their communities.
- Collaborate with provincial and federal health organizations in support of opioid and methamphetamine addiction data collection regarding First Nations peoples within rural and urban First Nations populations.
- Create a First Nation youth specific assessment of opioids and methamphetamine involving First Nations communities, urban and rural First Nations population.

- Fund research studies within urban and rural First Nations communities regarding cultural intervention to address opioid and methamphetamine addiction.
- Create opioid and methamphetamine information about use, addiction, prescription use and illicit drug use - within First Nation schools and at the community level.
- Provide on-going funding for First Nations populations who have experienced certain traumatic triggering events, such as community level support for trauma, and culturally specific healing spaces to address historical, intergenerational, and personal trauma.

- Conduct research on the causation and impacts of food insecurity within First Nations communities, urban and rural First Nations population.
- Create and implement mentoring opportunities and/or role modeling programs for First Nations leaders, educators and Elders within First Nations communities and schools.
- Conduct a review/environmental scan on what school systems offer as culturally responsive early prevention programs for substance use, since the youths are found to have high risk for substance use.

Table 1:

Distribution of outcome variables across covariate/ exposure variables *(N= 1792 respondents)*

Covariates/ exposure variables	Harmful Opioids Use		Methamphetamine Use		Any harmful drug use	
Total clients who responded to the three outcomes related questions	n=1494		n=1084		n=1544	
Total number of clients' response	Yes (n=417)	No (n=1077)	Yes (n=199)	No (n=885)	Yes (n=525)	No (n=1019)
Demographics and social determinants of health						
1. Age (years)						
18 - 29	111 (28%)	217 (21%)	48 (24%)	170 (19%)	140 (28%)	197 (20%)
30 - 39	143 (36%)	223 (22%)	76 (39%)	210 (24%)	181 (36%)	197 (20%)
40 - 49	101 (25%)	221 (21%)	50 (26%)	200 (23%)	121 (24%)	212 (22%)
50 & over	45 (11%)	375 (36%)	20 (10%)	292 (33%)	62 (12%)	372 (38%)
2. Male or LGBTQ2S+	168 (41%)	283 (27%)	94 (47%)	221 (25%)	217 (42%)	247 (25%)
3. Living off the reserve	72 (18%)	268 (26%)	44 (23%)	218 (25%)	95 (19%)	257 (27%)
4. Household size						
1 - 3 people	157 (40%)	500 (48%)	81 (45%)	427 (49%)	207 (42%)	468 (48%)
4 - 6 people	164 (42%)	415 (40%)	73 (40%)	350 (40%)	203 (41%)	398 (41%)
7 or more people	70 (18%)	119 (12%)	27 (15%)	90 (10%)	80 (16%)	116 (12%)
5. Have food insecurity	274 (68%)	453 (43%)	138 (70%)	373 (42%)	340 (67%)	415 (42%)
Trauma-related experiences						
1. Nightmares	170 (42%)	213 (23%)	100 (52%)	187 (22%)	213 (42%)	177 (20%)
2. Felt helpless to change your life	128 (33%)	118 (13%)	74 (40%)	108 (13%)	161 (33%)	88 (10%)
3. Felt you do not matter	98 (25%)	167 (18%)	66 (37%)	154 (19%)	134 (28%)	141 (16%)
4. Friends/family attempted suicide	322 (80%)	702 (74%)	158 (82%)	643 (76%)	404 (80%)	654 (73%)
5. Friends/family died by suicide	298 (74%)	612 (64%)	140 (74%)	563 (66%)	366 (73%)	573 (64%)
6. Upsetting memories	311 (79%)	614 (67%)	150 (80%)	564 (68%)	386 (78%)	567 (65%)
7. Felt betrayed by others	286 (72%)	510 (55%)	148 (78%)	468 (56%)	357 (72%)	461 (53%)
Absence of the supports						
1. Positive role models	162 (55%)	334 (37%)	84 (54%)	288 (38%)	205 (54%)	301 (36%)
2. Employment/school	174 (59%)	338 (37%)	90 (58%)	293 (39%)	217 (57%)	303 (36%)
3. Supportive family/friends	163 (55%)	350 (39%)	75 (48%)	301 (40%)	203 (53%)	320 (38%)
4. Community/family activities	212 (72%)	566 (62%)	107 (69%)	482 (64%)	272 (72%)	518 (61%)
5. Health/drug awareness education	207 (70%)	491 (54%)	102 (66%)	420 (55%)	264 (69%)	445 (53%)

Table 2:

Unadjusted and adjusted risk for measure of association between the outcome variables and covariates/ exposure variables.

Covariates/ exposure variables	Harmful opioids use		Methamphetamine use		Any harmful drug use	
	URR (95% CI); P-value	ARR (95% CI); P-value	URR (95% CI); P-value	ARR (95% CI); P-value	URR (95% CI); P-value	ARR (95% CI); P-value
Demographics and social determinants of health						
1. Age (years)						
18 - 29	3.16(2.31-4.33); <0.001	3.47(2.17-5.55); <0.001	3.44(2.10-5.62); <0.001	3.39(1.54-7.44); 0.002	2.91(2.24-3.78); <0.001	2.73(1.90-3.93); <0.001
30 - 39	3.65(2.69-4.94); <0.001	4.13(2.63-6.50); <0.001	4.15(2.60-6.61); <0.001	4.36(2.09-9.07); <0.001	3.35(2.60-4.32); <0.001	3.19(2.25-4.52); <0.001
40 - 49	2.93(2.13-4.03); <0.001	3.38(2.13-5.38); <0.001	3.12(1.91-5.10); <0.001	3.56(1.67-7.59); 0.001	2.54(1.94-3.34); <0.001	2.57(1.79-3.71); <0.001
50 & over	Reference	Reference	Reference	Reference	Reference	Reference
2. Male or LGBTQ2S+	1.56(1.33-1.84); <0.001	1.55(1.26-5.38); <0.001	2.20(1.72-2.81); <0.001	2.13(1.52-2.97); <0.001	1.63(4 1.423-1.87); <0.001	1.52(1.28-1.81); <0.001
3. Living off the reserve	0.69(0.55-0.87); <0.001		0.91(0.67-1.23); 0.524		0.73(0.61-0.88); <0.001	
4. Household size						
1 - 3 people	Reference		Reference		Reference	
4 - 6 people	1.19(0.98-1.43); 0.080		1.08(0.81-1.45); 0.591		1.10(0.94-1.29); 0.240	
7 or more people	1.55(1.23-1.95); <0.001		1.45(0.98-2.13); 0.061		1.33(1.09-1.63); 0.010	
5. Unable to buy food	2.09(1.74-2.50); <0.001	1.65(1.30-2.09); <0.001	2.64(1.99-3.50); <0.001	2.34(1.53-3.59); <0.001	1.97(1.69-2.29); <0.001	1.53(1.25-1.87); <0.001
Trauma-related experiences						
1. Nightmares	1.81(1.55-2.12); <0.001		2.86(2.23-3.67); <0.001	1.99(1.30-3.02); 0.001	1.88(1.65-2.15); <0.001	1.24(1.02-1.50); 0.030
2. Felt helpless to change your life	2.11(1.80-2.48); <0.001	1.27(1.01-1.60); 0.040	3.00(2.35-3.84); <0.001	1.34(0.92-1.96); 0.130	2.21(1.94-2.52); <0.001	1.40(1.14-1.72); <0.001
3. Felt you do not matter	1.34(1.12-1.62); <0.001		2.08(1.60-2.71); <0.001		1.50(1.30-1.75); <0.001	
4. Friends/family attempted suicide	1.29(1.04-1.59); 0.020		1.40(0.99-1.97); 0.054	1.31(0.87-1.95); 0.193	1.31(1.09-1.57); 0.004	1.34(1.05-1.71); 0.019
5. Friends/family died by suicide	1.41(1.16-1.71); <0.001	1.33(1.03-0.71); 0.030	1.39(1.03-1.87); 0.031		1.33(1.13-1.57); 0.001	
6. Upsetting memories	1.56(1.27-1.92); <0.001	1.25(0.91-1.71); 0.163	1.67(1.20-2.32); 0.002		1.49(1.25-1.77); <0.001	
7. Felt betrayed by others	1.72(1.42-2.09); <0.001	1.36(1.04-1.76); 0.022	2.36(1.71-3.25); <0.001	1.40(0.93-2.10); 0.106	1.73(1.47-2.04); <0.001	1.30(1.05-1.61); 0.016
Absence of the supports						
1. Positive role models	1.73(1.42-2.12); <0.001	1.21(0.92-1.58); 0.173	1.72(1.29-2.29); <0.001	1.62(1.14-2.30); 0.007	1.66(1.41-1.96); <0.001	1.23(0.98-1.54); 0.079
2. Employment/school	1.94(1.58-2.37); <0.001	1.22(0.92-1.62); 0.169	1.92(1.43-2.56); <0.001		1.80(1.52-2.13); <0.001	1.17(0.93-1.47); 0.171
3. Supportive family/friends	1.66(1.36-2.02); <0.001	1.23(0.92-1.62); 0.134	1.34(1.01-1.78); 0.046		1.54(1.30-1.81); <0.001	1.19(0.95-1.49); 0.138
4. Community/family activities	1.39(1.11-1.74); 0.004		1.23(0.90-1.68); 0.201		1.38(1.14-1.67); 0.001	
5. Health/drug awareness education	1.70(1.36-2.12); <0.001	1.32(1.01-1.72); 0.040	1.44(1.06-1.96); 0.019		1.65(1.37-1.99); <0.001	1.33(1.06-1.67); 0.015

ARR = Adjusted Risk Ratio/ Risk; URR = Unadjusted Risk Ratio; 95% CI = 95% Confidence Intervals; Statistically insignificant: If the 95% Confidence Interval includes 1 then the association is statistically insignificant; Reference: Category against which the other categories of the covariates are compared for the risk of outcome variables

Appendix 1

1. What is your age? _____ years

2. What is your current gender identity?

- ☐ Male
- ☐ Female
- ☐ Two-spirited
- ☐ Identity not listed above: _____
- ☐ Prefer not to answer

4. Do you live on or off reserve?

- ☐ On reserve
- ☐ Off reserve

6. How many people live in your household, including yourself? _____

8. During the past 12 months, how often were you unable to buy food your household needed?

- ☐ Never
- ☐ Not very often
- ☐ Fairly often
- ☐ Very often

Trauma-related questions

This section is about your feelings as well as experiences that may have caused some distress.

26. Do you often have nightmares?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

27. Do you feel helpless to change your life?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

28. Does your Indigenous or cultural identity make you feel like you do not matter?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

29. Have close friends or family members ever attempted suicide?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

30. Have close friends or family members ever died by suicide?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

32. Do you have upsetting memories?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

33. Do you feel betrayed by others? (i.e., gossip or relationship problems?)

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

34. Have you or has someone in your family been a student in residential school?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

Substances-related questions

Please think about other substances you have used.

45. In the past 12 months, which of the following substances have you used? (Check all that apply)

- ☐ Cocaine or crack
- ☐ Hallucinogens (e.g., LSD, PCP (also known as *angel dust*), MDMA (*ecstasy, molly*), Ketamine (*special k*), salvia divinorum (*sally-D, magic mint*), mescaline (*magic mushrooms*)
- ☐ Inhalants (e.g., sniffed paint thinners, glue, nail polish remover)
- ☐ Methamphetamine (also known as *meth, crystal meth, speed, ice, chalk, crystal, crank, glass*)

49. Have you ever used methamphetamine at least once?

- ☐ Yes
- ☐ No (skip to Q.60)
- ☐ Don't know
- ☐ Prefer not to answer

50. Are you currently using methamphetamine? (up to and including the past 12 months)

- ☐ Yes
- ☐ No (skip to Q.57)
- ☐ Don't know
- ☐ Prefer not to answer

The following questions ask about your use of opioids.

Have you ever in your lifetime

60. Used an opioid, at least once?

- ☐ Yes
- ☐ No (skip to Q.93)
- ☐ Don't know
- ☐ Prefer not to answer

62. Have you ever used opioids in any of the following ways? (Check all that apply) The following list includes some ways that opioids are used, which can increase your risk of harm, including risk of addiction, overdose, driving accidents, inability to work, hepatitis C, and death.

- ☐ Tampered with medication
- ☐ Injected opioids
- ☐ Used opioids for reasons other than medical purposes
- ☐ Used street sources
- ☐ Used opioids with alcohol
- ☐ Used opioids with other substances
- ☐ Have not used opioids in a way that puts you at risk (skip to Q.64)

63. Have you ever used opioids in a way that increases your risk of harm? (Please refer to the list on previous question)

- ☐ Yes
- ☐ No (skip to Q.64)
- ☐ Don't know
- ☐ Prefer not to answer

Current use

The following questions ask about your current use of opioids. (The past 12 months up to and including now.)

69. Are you currently using opioids?

- ☐ Yes
- ☐ No (skip to Q.78)
- ☐ Don't know
- ☐ Prefer not to answer

71. Are you currently using opioids in any of the following ways? (Circle all that apply)

- ☐ Tampered with medication
- ☐ Injected opioids
- ☐ Used opioids for reasons other than medical purposes
- ☐ Used street sources
- ☐ Used opioids with alcohol
- ☐ Used opioids with other substances
- ☐ Have not used opioids in a way that puts you at risk (skip to Q.78)

72. Are you currently using opioids in a way that increases your risk of harm?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Prefer not to answer

Supports

96. Why do you think you have not used methamphetamine/ opioids in a way that increases your risk of harm? (Circle all that apply)

- ☐ Positive role models or mentors
- ☐ Employment, school, or other daily activities
- ☐ Supportive family or friends
- ☐ Community and family activities
- ☐ Health or drug awareness education

Appendix 2

A2.1 Opioids use in a harmful way

We defined those who ever in their lifetime used opioids in a harmful manner based on the following:

1. **Those who used opioids in this way must have answered at least one of the following questions *yes*:**
   - Tampered with medication (Q62_5 or Q71_5, lifetime or current)
   - Injected opioids (Q62_6 or Q71_6, lifetime or current)
   - Used opioids for reasons other than medical purposes (Q62_7 or Q71_7, lifetime or current)
   - Used street sources (Q62_8 or Q71_8, lifetime or current)
   - Used opioids with alcohol (Q62_9 or Q71_9, lifetime or current)
   - Used opioids with other substances (Q62_10 or Q71_10, lifetime or current)
   - Have you ever used opioids in a way that increases your risk of harm (Q63)
   - Are you currently using opioids in a way that increases your risk of harm (Q72)

OR

2. **Those who used opioids in a harmful way must have answered the following as *no***
   - I have not used opioids in a way that puts me at risk (Q62_12 or Q71_12, lifetime or current)

3. **Those who did not use opioids in a harmful way must have answered at least one of the following questions either *no* or *don't know* and must not have already been defined based on either of the above two criteria.**
   - Have you ever in your lifetime used an opioid at least once? (Q60)
   - Have you ever used opioids in a way that increases your risk of harm? (Q63)
   - Are you currently using opioids? (Q69)
   - Are you currently using opioids in a way that increases your risk of harm? (Q72)

A2.2 Methamphetamine Use

1. **We defined those who used methamphetamine at least once in their lifetime if they answered *yes* to at least one of the following questions**
   - In the past 12 months, which of the following substances have you used – methamphetamine (also known as meth, speed, ice, chalk, crystal, crank, and glass) (Q45_7)
   - Have you ever used methamphetamine (meth) at least once? (Q49)
   - Are you currently using methamphetamine (meth) (up to including the past 12 months) (Q50)

2. **We defined those who did not use methamphetamine if they answered at least one of the following as either *no* or *don't know* and they must not have satisfied the first criteria.**
   - Have you ever used methamphetamine (meth) at least once? (Q49)
   - Are you currently using methamphetamine (meth) (up to including the past 12 months) (Q50)

A2.3 Any substance usage

We defined any substance usage using both the above two algorithms for defining opioids use in a harmful way and methamphetamine and exposure to other substances (i.e., cocaine, hallucinogens and/or inhalants).

1. **Those who have been exposed to any substances in their lifetime must have been defined as *yes* for either opioids usage in a harmful way or methamphetamine usage or answered *yes* to the following substances.**

   In the past 12 months, which of the following substances have you used:
   - Cocaine or crack (Q45_5)
   - Hallucinogens (Q45_5)
   - Inhalants (Q45_6)

2. **Those who have not been exposed to any substances in their lifetime must have either defined as a *no* for either opioids in a harmful way or methamphetamine or answered *no* to the following substances.**

   In the past 12 months, which of the following substances have you used:
   - Cocaine or crack (Q45_5)
   - Hallucinogens (Q45_5)
   - Inhalants (Q45_6)

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