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Complete List of Authors:	Maina , Geoffrey; University of Saskatchewan, College of Nursing Phaneuf, Taryn; University of Saskatchewan College of Nursing Kennedy, Megan ; University of Saskatchewan Health Sciences Library Mclean, Maeve ; University of Saskatchewan College of Graduate Studies and Research, Public Health Gakumo, Ann ; University of Massachusetts Boston, Nursing Nguemo, Joseph; Ryerson University, Daphne Cockwell School of Nursing; King , Alexandra ; University of Saskatchewan College of Medicine, Medicine
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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

Authors:

1. *Dr. Geoffrey Maina, Assistant Professor, College of Nursing, University of Saskatchewan. 210-1301 Central Avenue, Prince Albert, S5V 4W1 SK.

Tel: 306-765-3887; email: geoffrey.maina@usask.ca

2. Taryn Phaneuf, Undergraduate Nursing student, College of Nursing, University of Saskatchewan. Email: tlp044@mail.usask.ca
3. Megan Kennedy, Former Librarian, Leslie & Irene Dubé Health Sciences Library, University of Saskatchewan. Email: megan.kennedy@usask.ca.
4. Maeve Mclean, Graduate student, Master of Public Health, University of Saskatchewan, Saskatoon Campus. Maeve.mclean@usask.ca
5. Dr. Ann Gakumo, Associate Professor of Nursing, University of Massachusetts, Boston. Email: ann.gakumo@umb.edu
6. Dr. Joseph D. Nguemo Djiometio, weSpeak Postdoc fellow, Daphne Cockwell School of Nursing, Faculty of Community Services, Ryerson University. Email: jnguemodjiometio@ryerson.ca
7. Dr. Alexandra King, Cameco Chair in Indigenous Health, University of Saskatchewan. Email: alexandra.king@usask.ca

* Corresponding author: Dr. Geoffrey Maina

Abstract

Introduction: Throughout the world, Indigenous peoples share traumatic colonial experiences that have caused gross inequalities for them and continue to impact every aspect of their lives. The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental heath and addiction outcomes compared to non-Indigenous people of the same age. Most Indigenous children are exposed to addictive substances at an early age which often leads to early initiation of substance use and is associated with subsequent physical and mental heath issues, poor social and relational functioning, and occupational and legal problems.

Aim: The aim of this scoping review is to examine and map the evidence on school-based interventions for substance use prevention in Indigenous children ages 7-13 living in Canada, the US, Australia, and New Zealand.

Research questions: This scoping review seeks to answer the following questions: 1) What is known about Indigenous school-based interventions for preventing substance use 2) What are the characteristics and outcomes of school-based interventions for preventing substance use?

Methods: This scoping review will use steps described by Arksey and O'Malley (2005) & Levac, Colquhoun, & O'Brien (2010): (1) identifying the research question(s); (2) identifying relevant studies; (3) selecting the studies; (4) charting the data; (5) collating, summarizing and reporting the results; and (6) consulting with experts. Our findings will be reported according to the guidelines set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Conclusion: This study will contribute to a better understanding of the types and outcomes of school-based interventions aimed at preventing early substance use in Indigenous children in Canada. This information is critical for improving interventions and protecting vulnerable Indigenous youth from the devastating long-term impacts of early substance use.

Article summary

Strengths and limitations of this study

- This scoping review will lead to a better understanding of the nature, characteristics and outcomes of interventions for Indigenous pre-teen alcohol and substance use prevention.
- This review will highlight the critical need for early interventions for alcohol and substance use prevention, given the complexities of substance use disorder treatment.
- This study is limited to literature published in English between 2009 and 2019.
- This study is also limited to research in Canada, the US, Australia, and New Zealand, and the findings will only be relevant to these countries.

Key words: alcohol; substance use; addiction; prevention; elementary school; Indigenous

Background

Indigenous peoples worldwide share traumatic colonial experiences that continue to impact every aspect of their lives (1, 2). These historical socio-political processes have been attributed to causing gross inequalities for this population(3). In Canada, residential school experiences of physical, sexual, and emotional violence, along with other legacies of colonisation, have had dramatic and far-reaching impacts that continue to cause negative health consequences for Indigenous people (4). The resultant intergenerational trauma, which gets institutionalised within the family and the community, is associated with increased risks of mental health problems and addictions(5–7).

Indigenous peoples carry a disproportionate burden of harms associated with substance use (8). For example, compared to non-Indigenous injection drug users, Indigenous injection drug users are more likely to be infected with HIV and Hepatitis C and are less likely to receive treatment for substance use or have the support needed to remain on treatment(9,10). The rates of opioid use and opioid use disorder, as well as associated mortality and morbidity, are higher among Indigenous peoples compared to the general population. Furthermore, Indigenous youth, young adults, and young mothers are disproportionately affected by the opiate emergency(11–13).

The socio-political factors that arose from colonial practices against Indigenous people have also produced significant personal and structural barriers to health services (3). For example, Indigenous people often experience racism in the health care system, limiting their access to health services (14).

The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health outcomes (15). Suicide rates among Indigenous children and youth in Canada are three times higher (24.8 deaths per 100 000 people) compared to non-Indigenous people (16). These rates are double for those living on reserve (6 times higher) and are nine times higher for the Inuit population (16).

2019). Alcohol and substance misuse are risk factors for both committing and attempting suicide (17).

About 20% of indigenous youth use substance use, of which 33% are under the age of 15 years (18). These early exposures frequently occur in the children's homes and communities. For example, a Statistics Canada (19) report on Indigenous persons found that 35% of First Nation people living off reserve, 30% of Metis, and 39% of Inuit reported heavy drinking at least once a month for the past year, compared to 23% of non-Indigenous people. Further, 34.5% of First Nations adults reported drinking alcohol two to three times a month, 17.9% drank two to three times a week, and 3.2% drank daily (11). Roughly two-thirds (63.6%) of First Nations adults who had consumed alcohol in the past 12 months meet the criteria for heavy drinking, with 16.0% reporting heavy drinking weekly (11).

Early initiation of substance use is associated with development later in life of substance-use related mental heath issues, poor social and relational functioning, and legal and occupational problems (20–22). Early onset of substance use may be a manifestation of an underlying vulnerability towards addictive behaviours or exposures to environmental conditions that increase or reinforce an individual's propensity towards substance use problems later in life (23–26). For instance, adolescents that use one class of substances, such as alcohol or tobacco, are more likely to progress to other illicit substances such as cannabis, methamphetamine, or cocaine (20,24,27,28). Disruption of brain development in adolescents using substances can increase risk of substance use disorders later in life (29). Early use of alcohol and substances can also complicate treatment outcomes for clients, who often manifest with physical and mental impacts of chronic poly-substance use (10).

School as an ideal setting for implementing substance use interventions for this population

Chen, Storr, & Anthony (20) have established a link between the early onset of substance use and a greater propensity for substance use disorders later in life. Numerous studies suggest that the rate of substance use increases during adolescence, peaks in young adulthood, and decreases in

subsequent years(30,31). Delaying the onset of substance use can therefore minimize the trajectory of substance use during adolescence and prevent the development of substance use disorders in adulthood (32,33).

Elementary schools are a primary setting where pre-adolescent problems arise and where they can be prevented. School-based prevention programs can target large numbers of pre-adolescents in a relatively cost-effective and efficient manner (34). Randomised control trials have been central to legitimizing school-based substance use prevention programs(35,36). Reviews of these trials have found that evidence-based programming in schools is effective in preventing the early onset of substance use and the escalation of substance use in adolescence ((37,38).(39)

Effective school-based programs often involve social-emotional learning competencies, cognitive-behavioural approaches, changes in school climate, and multi-year and multi-component approaches (40). Efforts such as these may delay or prevent the onset of substance use among pre-adolescents.

There is a critical need to understand how to design and implement effective school-based interventions for substance use prevention aimed at Indigenous youth ages 7 -13. This scoping review aims to explore the research from Canada, the US, Australia, and New Zealand on types of interventions and their outcomes.

Methods

Scoping review methodology has proven to be very useful for investigating the extent of the research in a given topic area. This type of synthesis review methodology was selected because of its rigorous and methodical approach that allows for openly framed research questions. Further, it was important that this review not be limited to only one evidence type (e.g., only randomized controlled trials), as our preliminary search determined that the literature included a variety of qualitative evidence sources.

To ensure accurate and thorough reporting, the scoping review will be conducted following the six-stage approach described by (41) and refined by Levac, Colquhoun, & O'Brien (42): (1)

Identifying the research question(s), (2) identifying relevant studies, (3) selecting the studies, (4) charting the data, (5) collating, summarizing, and reporting the results, and (6) consulting with experts. Further, the review will be reported using guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Stage 1: Identifying the Research Questions

To start, the research team identified one broad research question: 1) What is known about indigenous school-based interventions for preventing substance use prevention? We chose to focus on this population because GM's research indicating that clients with addictions had been exposed to substances at a very young age (10). The librarian (MK) ran a trial search to determine feasibility of this research question. Following Arksey and O'Malley (41), our research question was refined as we became more familiar with the literature. Aiming to carefully examine and map the evidence on school-based interventions for preventing substance use in Indigenous children ages 7-13, we developed the following research questions:

1. What is known about Indigenous school-based interventions for preventing substance use?
2. What are the characteristics and outcomes of school-based interventions for preventing substance use?

Stage 2: Identifying Relevant Studies

As scoping reviews allow for flexibility in evidence type, our review will not be limited to any specific qualitative or quantitative study design. To efficiently conduct searches in electronic databases, some parameters are needed to help guide the search strategy.

Eligibility Criteria

The following inclusion criteria were identified and used to guide the searches and review the articles: 1) Only English language articles published between 2009-2019 will be included; 2) The population targeted in the studies will be primarily Indigenous children ages 7-13 living in North America (Canada or US), Australia, or New Zealand; 3) Studies that comment on mixed-age populations of Indigenous children and adolescents will be included for full-text analysis to further

explore their suitability for inclusion; 4) Studies will be discussing or presenting the intervention or the results of interventions for school-based substance use prevention for this target population; and 5) Concepts related to substance use prevention and age group (children) will be found in either the title or abstract during the screening phase.

Exclusion Criteria

The following exclusion criteria were identified: 1) Articles discussing interventions for addictions such as smoking, gambling, internet/social media/technology, and 2) articles discussing a population of mixed ages and adults (ages 18+)

Database searches

An experienced health sciences librarian, familiar with evidence synthesis and reporting, will establish and test the search strategy in MEDLINE. The following electronic databases will be searched for published literature: MEDLINE in-process and other nonindexed citations (Ovid) – 1946 – Present; PubMed – 1966 – Present; EMBASE Classic (Ovid) – 1947 – Present; Cumulative Index of Nursing and Allied Health Literature (CINAHL) (EBSCO) – 1937 – Present; Educational Resources Information Center (ERIC) (Ovid) – 1965 – Present; Scopus (Elsevier) – 1970 – Present; and Cochrane Library (Wiley).

In consultation with the research team, the librarian will identify relevant keywords. Controlled vocabulary will be used to enhance sensitivity and specificity within the search. The results from each database search will be documented and saved, and references will be imported into EndNote, a bibliographic management software. Following the removal of duplicate references from EndNote, references will be imported into Rayyan, a review software ((43) for title and abstract screening. Google Forms will be used to collect data during full-text analysis.

With input from the research team, the health sciences librarian developed a MEDLINE strategy for the search. This preliminary search was developed and run to determine the feasibility of the scoping review and inform the searches in additional databases. To facilitate retrieval of relevant articles, the search was limited by language (English) and publication date (2009-2019). See

Appendix A for full MEDLINE search strategies. In addition to searching electronic databases, we will develop a web search for relevant grey literature. We will also check reference lists of included studies to identify any that had not been found in our other searches.

Stage 3: Study selection

Rayyan will be used for the title/abstract screening process. The research team will identify inclusion/exclusion keywords. Two reviewers will independently review all articles. Should these 2 reviewers not reach a consensus, a third reviewer will complete the title and abstract screening. This process will be repeated during the full-text analysis; however, the mechanism for recording data and reviewing full-text articles will be by EndNote. Google survey will be used to collect data (see below, "Charting the data").

Stage 4: Charting the data

Review data extracted into a Google survey will include a) author(s), title, year of publication, b) age groups of target population, c) Indigenous population identified, including the country of residence, d) summary of intervention characteristics, and e) intervention outcomes (Yes/No).

Stage 5: Collating, summarizing, and reporting the results

The purpose of a scoping review is to map and aggregate findings to present an overview of the topic. Accordingly, we plan to a) map the results (main sources, locations, and quantity), b) provide a descriptive summary and qualitative analysis, c) identify conceptual definitions, d) provide a glossary of terms to clarify definitions found in the literature, and e) report our results using the PRISMA-ScR guidelines for scoping reviews to enhance transparency and reproducibility. Because this is a scoping review, we will not appraise the quality of the studies or offer statistical analysis.

Stage 6: Consulting

We will seek and incorporate community engagement advice from an advisory group comprised of an elder, a knowledge keeper, elementary school leadership, and community members. We anticipate that this consultation will lead to a knowledge translation event where our findings will be shared with a community chosen by the committee.

Results

The searches, title, and abstract screening are now complete. In the coming months, two independent reviewers will conduct full-text analyses. During the process of full-text screening, we will also extract data from the marked studies. We expect the scoping review to be completed by late 2019/early 2020.

Discussion

Understanding interventions to prevent substance use among Indigenous youth aged 7-13 is vital to addressing substance use and addictions in the Indigenous population as whole. The problem of substance use and addictions cannot be overstated: evidence shows that early exposure to substance use leads to life-long poly-substance use, which not only causes complex comorbid conditions that are difficult and expensive to treat, but also severely impacts the quality of life of these individuals and their families.

The proposed scoping review has the potential to influence future policy, programs, and services supporting the health and well being of Indigenous youth in Canada and beyond. It will describe the nature and value of early strategies to prevent substance use in this group, and it will provide exemplars of interventions that can be implemented in a Canadian, Australian, New Zealand, US settings.

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Contributions:

- Dr. Geoffrey Maina was involved in the conceptualisation and writing of the protocol.
- Taryn Phaneuf was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Maeve Mclean was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Megan Kennedy was involved in designing the search strategy and writing the methods section.
- Dr. Ann Gakumo was involved in editing and proofreading the manuscript.
- Dr. Joseph Nguemo was involved in editing and proofreading the manuscript.
- Dr. Alexandra King was involved in editing and proofreading the manuscript.

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Appendix A

Search Strategy – MEDLINE

The following search was run in Ovid MEDLINE on April 22, 2019:

1	alaska natives/ or indians, central american/ or indians, north american/ or indians, south american/ or inuits/	
2	Oceanic Ancestry Group/	
3	(indigenous or Indigenous* or "first nation" or "first nations" or metis or native or natives or "first people" or "first peoples" or "on reserve" or "off reserve" or inuit* or eskimo* or maori*).ab,ti,kw,kf.	
4	Health Services, Indigenous/	
5	or/1-4	
6	Child/	
7	(children? or child? or young or youth? or juvenile? or kid or kids or underage* or preteen* or preadolescen*).ab,ti,kw.	
8	(((school or under) adj1 age*) or (pre adj1 (teen* or adolescen*))).ab,ti,kf	
9	((elementary or primary or middle or grade or grammar or junior or secondary) adj1 school*).ab,ti,kf.	
10	"junior high".ab,ti,tw.	
11	Schools/	
12	or/6-11	
13	5 and 12	
14	exp Substance-Related Disorders/ed, pc, px [Education, Prevention & Control, Psychology]	
15	exp Alcohol-Related Disorders/pc, px [Prevention & Control, Psychology]	
16	exp Opioid-Related Disorders/pc, px [Prevention & Control, Psychology]	

17	exp Prescription Drug Misuse/pc, px [Prevention & Control, Psychology]	
18	or/ 14-17	
19	Underage Drinking/	
20	Drug-Seeking Behavior/	
21	exp "Marijuana Use"/	
22	((legal* or illegal* or prescription or illicit or street or club) adj1 (drug? or medication?)).ab,ti,kf.	
23	((binge or underage or "under age" or teen or adolescent?) adj1 (drink* or alcohol)).ab,ti,kf.	
24	controlled substances/ or medical marijuana/ or prescription drugs/ or exp street drugs/ or exp synthetic drugs/	
25	exp "hypnotics and sedatives"/ or exp narcotics/ or exp analgesics, opioid/ or exp hallucinogens/ or performance-enhancing substances/	
26	opium/ or (heroin or opium or smack or dope or horse or "china white").ab,ti,tw	
27	exp cannabinoids/ or cannabis/ or (marijuana or weed or pot or hash or hashish or ganja or blunt? or joint? or "mary jane" or reefer or CBD or cannbin* or cannabis).ab,ti,tw	
28	Central Nervous System Stimulants/ or (cocaine or coke or "crack cocaine" or amphetamine? or methamphetamine? or meth or crank or speed or upper? or "club drug" or "club drugs" or MDMA or ecstasy or molly or GHB).ab,ti,tw	
29	ketamine/ or phencyclidine/ or exp salvia/ or dextromethorphan/ or ("dissociative drugs" or "dissociative drug" or "special k" or PCP or "angel dust" or robotripping).ab,ti,tw.	

30	mescaline/ or psilocybin/ or exp testosterone congeners/ or (hallucinogen* or LSD or acid or peyote or "magic mushrooms" or shrooms or "anabolic steroids" or roids).ab,ti,tw	
31	nitrous oxide/ or (inhalant? or "laughing gas" or popper? or snapper? or whippets or huffing).ab,ti,tw	
32	Or/ 19-31	
33	(abus* or misus* or "inappropriate use").ab,ti,tw	
34	(prevent* or intervention or intervene or program? or programme? or activit* or support* or initiative?).ab,ti,tw.	
35	school health services/ or health education/ or health promotion/	
36	34 or 35	
37	32 and 33 and 36	
38	18 or 37	
39	13 and 38	
40	limit 39 to (english language and yr="2009 -Current")	

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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

Authors:

1. *Dr. Geoffrey Maina, Assistant Professor, College of Nursing, University of Saskatchewan. 210-1301 Central Avenue, Prince Albert, S5V 4W1 SK. Tel: 306-765-3887; email: geoffrey.maina@usask.ca
2. Taryn Phaneuf, Undergraduate Nursing student, College of Nursing, University of Saskatchewan. Email: tlp044@mail.usask.ca
3. Megan Kennedy, Former Librarian, Leslie & Irene Dubé Health Sciences Library, University of Saskatchewan. Email: megan.kennedy@usask.ca.
4. Maeve Mclean, Graduate student, Master of Public Health, University of Saskatchewan, Saskatoon Campus. Maeve.mclean@usask.ca
5. Dr. Ann Gakumo, Associate Professor of Nursing, and Department Chair of Nursing, University of Massachusetts, Boston. Email: ann.gakumo@umb.edu
6. Dr. Joseph D. Nguemo Djiometio, weSpeak Postdoc fellow, Daphne Cockwell School of Nursing, Faculty of Community Services, Ryerson University. Email: jnguemodjiometio@ryerson.ca
7. Dr. Alexandra King, Cameco Chair in Indigenous Health, University of Saskatchewan. Email: alexandra.king@usask.ca
8. Solomon Kasha Mcharo, PhD(c). College of Nursing, University of Saskatchewan. Saskatoon Campus. Email: kasha.mcharo@usask.ca

* Corresponding author: Dr. Geoffrey Maina

Abstract

Introduction: Throughout the world, Indigenous peoples share traumatic colonial experiences that have caused gross inequalities for them and continue to impact every aspect of their lives. The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health and addiction outcomes compared to non-Indigenous people of the same age. Most Indigenous children are exposed to addictive substances at an early age which often leads to early initiation of substance use and is associated with subsequent physical and mental health issues, poor social and relational functioning, and occupational and legal problems.

Aim: The aim of this paper is to report the protocol for the scoping review of school-based interventions for substance use prevention in Indigenous children ages 7-13 living in Canada, the US, Australia, and New Zealand.

Research questions: This scoping review seeks to answer the following questions: 1) What is known about Indigenous school-based interventions for preventing substance use 2) What are the characteristics and outcomes of school-based interventions for preventing substance use?

Methods: This scoping review will use steps described by Arksey and O'Malley (2005) & Levac, Colquhoun, & O'Brien (2010): (1) identifying the research question(s); (2) identifying relevant studies; (3) selecting the studies; (4) charting the data; (5) collating, summarizing and reporting the results; and (6) consulting with experts. Our findings will be reported according to the guidelines set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project. Findings from this study will be presented to lay public, at scientific conferences and published in a peer-reviewed journal.

Article summary

Strengths and limitations of this study

- This scoping review will lead to a better understanding of the nature, characteristics, and outcomes of interventions for Indigenous pre-teen alcohol and substance use prevention.
- This study is limited to literature published in English between January 2009 and December 2019.
- Since the scoping review aims to assess the research activity on a topic and not the quality of the research thereof, this project will provide an overview of all the intervention focussing on elementary school-based Indigenous substance use prevention.
- This study is also limited to research in Canada, the US, Australia, and New Zealand, and the findings will only be relevant to these countries.

Keywords: alcohol; substance use; addiction; prevention; elementary school; Indigenous

Background

Indigenous peoples worldwide share traumatic colonial experiences that continue to impact every aspect of their lives (1, 2). These historical socio-political processes have been attributed to causing gross inequalities for this population(3). Colonization, the imposition of colonial institutions and rules, and subsequent disruption of the Aboriginal way of life continue to have significant negative impacts on the lives and health of indigenous people. In Canada, residential school experiences of physical, sexual, and emotional violence, along with other legacies of colonization, have had dramatic and far-reaching impacts that continue to cause negative health consequences for Indigenous people (4). The resultant intergenerational trauma, which gets institutionalized within the family and the community, is associated with increased risks of mental health problems and addictions (5-11)

Colonization is now regarded as a determinant of health, as it impacts many aspects of Indigenous peoples' wellbeing (12). Moreover, in Canada, Aboriginal status is regarded as a determinant of health due to the numerous determinants of health they contend with, which are potentiated by colonial experiences (13-16). Thus, Indigenous peoples lag the general population in social, economic and health indicators (17, 18). Poverty, malnutrition, overcrowding, and inadequate health care services continue to impact the health of the indigenous people (19).

Indigenous peoples carry a disproportionate burden of harms associated with substance use (20). For example, compared to non-Indigenous injection drug users, Indigenous injection drug users are more likely to be infected with HIV and Hepatitis C and are less likely to receive treatment for substance use or have the support needed to remain on treatment (21,22). The rates of opioid use and opioid use disorder, as well as associated mortality and morbidity, are higher among Indigenous peoples compared to the general population. Furthermore, Indigenous youth, young adults, and young mothers are disproportionately affected by the opiate emergency (23-25).

The socio-political factors that arose from colonial practices against Indigenous people have also produced significant personal and structural barriers to health services (3). For example,

Indigenous people often experience racism in the health care system, limiting their access to health services (26).

The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health outcomes (26). Suicide rates among Indigenous children and youth in Canada are three to five times compared to non-Indigenous people (27). Among the Inuit youth, suicide rates are 11 times higher than the national average. Alcohol and substance use are risk factors for both committing and attempting suicide (28-30).

About 20% of indigenous youth use substance use, of which 33% are under the age of 15 years (31). These early exposures frequently occur in children's homes and communities. For example, a Statistics Canada (32) report on Indigenous persons found that 35% of First Nation people living off-reserve, 30% of Metis, and 39% of Inuit reported heavy drinking at least once a month for the past year, compared to 23% of non-Indigenous people. Further, 34.5% of First Nations adults reported drinking alcohol two to three times a month, 17.9% drank two to three times a week, and 3.2% drank daily (23). Roughly two-thirds (63.6%) of First Nations adults who had consumed alcohol in the past 12 months meet the criteria for heavy drinking, with 16.0% reporting heavy drinking weekly (23).

Early initiation of substance use is associated with development later in life of substance-use related mental health issues, poor social and relational functioning, and legal and occupational problems (33-35). Early-onset of substance use may be a manifestation of an underlying vulnerability towards addictive behaviors or exposures to environmental conditions that increase or reinforce an individual's propensity towards substance use problems later in life (36-39). For instance, adolescents that use one class of substances, such as alcohol or tobacco, are more likely to progress to other illicit substances such as cannabis, methamphetamine, or cocaine (33,37,40,41). Disruption of brain development in adolescents using substances can increase risk of substance use disorders

later in life (42). Early use of alcohol and substances can also complicate treatment outcomes for clients, who often manifest with physical and mental impacts of chronic poly-substance use (18).

Chen, Storr, & Anthony (42) have established a link between the early onset of substance use and a greater propensity for substance use disorders later in life. Numerous studies suggest that the rate of substance use increases during adolescence, peaks in young adulthood, and decreases in subsequent years(43,44). Delaying the onset of substance use can, therefore, minimize the trajectory of substance use during adolescence and prevent the development of substance use disorders in adulthood (45,46). A study authored by GM, an author in this manuscript on clients receiving methadone treatment for opiate use disorder, showed that clients were exposed to diverse substances at an early age- alcohol 6 years, marijuana, 7 years, Dilaudid, morphine, and cocaine (11 years), ritatin (8 years) and valium (13years). Considering this early exposure to substance use, and the difficult these clients faced on opiate replacement therapy treatment, a need was expressed to explore substance use prevention for this age group.

Elementary schools are a primary setting where pre-adolescent problems arise and where they can be prevented. School-based prevention programs can target large numbers of pre-adolescents in a relatively cost-effective and efficient manner (47). Randomized control trials have been central to legitimizing school-based substance use prevention programs(48,49). Reviews of these trials have found that evidence-based programming in schools is effective in preventing the early onset of substance use and the escalation of substance use in adolescence (50-52).

Effective school-based programs often involve social-emotional learning competencies, cognitive-behavioral approaches, changes in school climate, and multi-year and multi-component approaches (53). Efforts such as these may delay or prevent the onset of substance use among pre-adolescents.

There is a critical need to understand how to design and implement effective school-based interventions for substance use prevention aimed at Indigenous youth ages 7 -13. This scoping review aims to explore the research focusing on Indigenous people living in developed countries i.e.

Canada, the US, Australia, and New Zealand. Although the authors recognize the distinct cultural and experiential differences between Indigenous peoples of these countries, they share common historical experiences that impact their health. The authors intend to carry out interventions focusing on these populations in Canada. Therefore, limiting the literature search to these four countries will ensure that the results are relatable to the Canadian context.

Methods

The scoping review methodology has proven to be very useful for investigating the extent of the research in a given topic area. This type of synthesis review methodology was selected because of its rigorous and methodical approach that allows for openly framed research questions. Further, it was important that this review not be limited to only one evidence type (e.g., only randomized controlled trials), as our preliminary search determined that the literature included a variety of qualitative evidence sources.

To ensure accurate and thorough reporting, the scoping review will be conducted following the six-stage approach described by Arksey and O'Malley (54) and refined by Levac, Colquhoun, & O'Brien (55): (1) Identifying the research question(s), (2) identifying relevant studies, (3) selecting the studies, (4) charting the data, (5) collating, summarizing, and reporting the results, and (6) consulting with experts. Further, the review will be reported using guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project as the project is aimed at providing evidence for the presence of substance use interventions for Indigenous Elementary School children. Findings from this study will be presented to lay public, at scientific conferences and published in a peer reviewed journal.

Stage 1: Identifying the Research Questions

To start, the research team identified one broad research question: 1) what is known about indigenous elementary school-based interventions for preventing substance use? We chose to focus on this population because GM's research indicating that clients with addictions had been exposed

to substances at a very young age (22). The librarian (MK) ran a trial search to determine the feasibility of this research question. Following Arksey and O'Malley (54), our research question was refined as we became more familiar with the literature. Aiming to carefully examine and map the evidence on school-based interventions for preventing substance use in Indigenous children ages 7-13, we developed the following research questions:

1. What is known about elementary Indigenous school-based interventions for preventing substance use?
2. What are the characteristics and outcomes of elementary school-based interventions for preventing substance use?

Stage 2: Identifying Relevant Studies

As scoping reviews allow for flexibility in evidence type, our review will not be limited to any specific qualitative or quantitative study design. To efficiently conduct searches in electronic databases, some parameters are needed to help guide the search strategy.

Eligibility Criteria

The following inclusion criteria were identified and used to guide the searches and review the articles: 1) Only English language articles published between 2009-2019 will be included. Limiting the project to the last 10 years is informed by the authors' belief that due to ever-changing and dynamic substance use and addiction landscape, interventions older than ten years might not be clinically relevant for informing interventions for elementary school children. 2) The population targeted in the studies that identify Indigenous children ages 7-13 living in North America (Canada or US), Australia, or New Zealand as one of the target population for intervention; 3) Studies that comment on mixed-age populations of Indigenous children and adolescents will be included for full-text analysis to further explore their suitability for inclusion; 4) Studies will be discussing or presenting the intervention or the results of interventions for school-based substance use prevention for this target population.

Exclusion Criteria

The following exclusion criteria were identified: 1) Articles discussing interventions for addictions such as smoking, gambling, internet/social media/technology, 2) articles discussing adult population (ages 18+), and 3). Review articles and commentaries.

Database searches

With input and in consultation with the research team, MK, an experienced health sciences librarian and familiar with evidence synthesis and reporting, established and tested the search strategy in MEDLINE identified relevant keywords. Controlled vocabulary was used to enhance sensitivity and specificity within the search. This preliminary search was developed and run to determine the feasibility of the scoping review and inform the searches in additional databases.

The following electronic databases will be searched for published literature: MEDLINE in-process and other nonindexed citations (Ovid) – 1946 – Present; PubMed – 1966 – Present; EMBASE Classic (Ovid) – 1947 – Present; Cumulative Index of Nursing and Allied Health Literature (CINAHL) (EBSCO) – 1937 – Present; Educational Resources Information Center (ERIC) (Ovid) – 1965 – Present; Scopus (Elsevier) – 1970 – Present; and Cochrane Library (Wiley).

The results from each database search will be documented and saved, and references will be imported into EndNote, a bibliographic management software. Following the removal of duplicate references from EndNote, references will be imported into Rayyan, a review software (56) for title and abstract screening. Google Forms will be used to collect data during full-text analysis.

To facilitate retrieval of relevant articles, the search was limited by language (English) and publication date (2009-2019). See Appendix A for full MEDLINE search strategies. In addition to searching electronic databases, the Canadian Agency for Drug and Technology in Health (CADTH) (57) tool will be used to search for relevant grey literature. The relevant areas to be searched from the CADTH (57) tool will include Health Technology Assessment (HTA) agencies (Canada, Australia, and USA), free and subscription-based databases, internet search engines, mental health, and nursing. Keywords identified throughout our search process will be utilized in the search process. We

will also check reference lists of included studies to identify any that had not been found in our other searches.

Stage 3: Study selection

Rayyan will be used for the title/abstract screening process. The research team will identify inclusion/exclusion keywords in correlation with identified inclusion and exclusion criteria. For example, exclusion keywords for smoking, gambling, etc. as identified in exclusion criterion 1. Two reviewers will independently review all articles. Should these 2 reviewers not reach a consensus, a third reviewer will complete the title and abstract screening. This process will be repeated during the full-text analysis; however, the mechanism for recording data and reviewing full-text articles will be by EndNote. Google survey will be used to collect data (see below, "Charting the data").

Stage 4: Charting the data

Review data extracted into a Google survey will include a) author(s), title, b) age groups of the target population, c) Indigenous population identified, including the country of residence, d) summary of intervention characteristics and e) intervention outcomes (Yes/No).

Stage 5: Collating, summarizing, and reporting the results

The purpose of a scoping review is to map and aggregate findings to present an overview of the topic. Accordingly, we plan to a) map the results (main sources, locations, and quantity), b) provide a descriptive summary and qualitative analysis, c) identify conceptual definitions, d) provide a glossary of terms to clarify definitions found in the literature and e) report our results using the PRISMA-ScR guidelines for scoping reviews to enhance transparency and reproducibility. Because this is a scoping review, we will not appraise the quality of the studies or offer statistical analysis. Information to be extracted and compiled into a table include; title of the articles, country of focus, substance use intervention, intervention type, main findings, and lessons that can be learned. Thematic analysis will be applied to identify common threads that will emerge from the data.

Stage 6: Consulting

We will present the preliminary findings of this scoping review to an advisory group comprised of an Indigenous elder, a knowledge keeper, elementary school leadership, and community members of one of the communities GM has a collaborative relationship with and one whose children are impacted by substance use. Community partners working with GM will help identify the appropriate advisory team members to join the committee. Presenting the findings to this committee will assist in the validation of the results with the community and provide a basis for reflection and feedback on the relevance of similar interventions in the community. Advisory committee feedback will inform the discussion, recommendations, and implication for the practice section of the manuscript.

Patient and Public Involvement

This is a scoping review of literature aims to document evidence for the substance use prevention for Indigenous elementary school children and is partly informed by project that GM is involved that show early substance use for patients on opiate replacement therapy. Patients and public were not involved in the conceptualisation of the project, or the research question.

Results

The searches, title, and abstract screening are now complete. In the coming months, two independent reviewers will conduct full-text analyses. During the process of full-text screening, we will also extract data from the marked studies. We expect the scoping review to be completed by late 2019/early 2020.

Discussion

The decision to focus on Indigenous substance use prevention among elementary school children was informed by a project undertaken by GM, on characteristics and predictors of clinical experiences of clients on methadone project (22, 58). In this study, it became clear that the age of exposure to an addictive substance such as opiates, alcohol, and marijuana is between 6-11 years. Further, most of the clients on opiate replacement therapy struggle with treatment and recovery with more than 70% dropping out of ORT in the first year. Furthermore, considering that 95% of the

clients on this study self-identified as Indigenous, who contend with diverse social determinants of health that are a major barrier to the recovery from addiction, we believe that that emphasis should be placed on understanding the substance use prevention intervention for elementary school children, who are at a risk of substance use.

To start the process, we assembled a team of scholars with experiences working with Indigenous and marginalized communities. Consultations with the Health Science librarian helped her identify key phrases and words that represented the broader focus of Indigenous Elementary Substance use prevention.

Understanding interventions to prevent substance use among Indigenous youth aged 7-13 is vital to addressing substance use and addictions in the Indigenous population. Of interest, we will seek to identify the philosophical and theoretical underpinnings that characterize these interventions and the extent to which Indigenous knowledge is incorporated in these projects. The problem of substance use and addictions cannot be overstated: findings of numerous studies show that suggests that early exposure to substance use leads to life-long poly-substance use, which not only causes complex comorbid conditions that are difficult and expensive to treat but also severely impacts the quality of life of these individuals and their families (59-61). We, therefore, argue that prevention is the best intervention for Indigenous communities struggling with substance use challenges, considering they also content with other social determinants of health.

The proposed scoping review has the potential to influence future policy, programs, and services supporting the health and well being of Indigenous youth in Canada and beyond. It will describe the nature and value of early strategies to prevent substance use in this group, and it will provide exemplars of interventions that can be implemented in a Canadian, Australian, New Zealand, and US settings.

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Contributions:

- Dr. Geoffrey Maina was involved in the conceptualisation and writing of the protocol.
- Taryn Phaneuf was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Maeve Mclean was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Megan Kennedy was involved in designing the search strategy and writing the methods section.
- Dr. Ann Gakumo was involved in editing and proofreading the manuscript.
- Dr. Joseph Nguemo was involved in editing and proofreading the manuscript.
- Dr. Alexandra King was involved in editing and proofreading the manuscript.
- Solomon Kasha Mcharo was involved in the revision and formatting of the manuscript.

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Appendix A

Search Strategy – MEDLINE

The following search was run in Ovid MEDLINE on April 22, 2019:

1	alaska natives/ or indians, central american/ or indians, north american/ or indians, south american/ or inuits/	
2	Oceanic Ancestry Group/	
3	(indigenous or Indigenous* or "first nation" or "first nations" or metis or native or natives or "first people" or "first peoples" or "on reserve" or "off reserve" or inuit* or eskimo* or maori*).ab,ti,kw,kf.	
4	Health Services, Indigenous/	
5	or/1-4	
6	Child/	
7	(children? or child? or young or youth? or juvenile? or kid or kids or underage* or preteen* or preadolescen*).ab,ti,kw.	
8	(((school or under) adj1 age*) or (pre adj1 (teen* or adolescen*))).ab,ti,kf	
9	((elementary or primary or middle or grade or grammar or junior or secondary) adj1 school*).ab,ti,kf.	
10	"junior high".ab,ti,tw.	
11	Schools/	
12	or/6-11	
13	5 and 12	
14	exp Substance-Related Disorders/ed, pc, px [Education, Prevention & Control, Psychology]	
15	exp Alcohol-Related Disorders/pc, px [Prevention & Control, Psychology]	
16	exp Opioid-Related Disorders/pc, px [Prevention & Control, Psychology]	

17	exp Prescription Drug Misuse/pc, px [Prevention & Control, Psychology]	
18	or/ 14-17	
19	Underage Drinking/	
20	Drug-Seeking Behavior/	
21	exp "Marijuana Use"/	
22	((legal* or illegal* or prescription or illicit or street or club) adj1 (drug? or medication?)).ab,ti,kf.	
23	((binge or underage or "under age" or teen or adolescent?) adj1 (drink* or alcohol)).ab,ti,kf.	
24	controlled substances/ or medical marijuana/ or prescription drugs/ or exp street drugs/ or exp synthetic drugs/	
25	exp "hypnotics and sedatives"/ or exp narcotics/ or exp analgesics, opioid/ or exp hallucinogens/ or performance-enhancing substances/	
26	opium/ or (heroin or opium or smack or dope or horse or "china white").ab,ti,tw	
27	exp cannabinoids/ or cannabis/ or (marijuana or weed or pot or hash or hashish or ganja or blunt? or joint? or "mary jane" or reefer or CBD or cannbin* or cannabis).ab,ti,tw	
28	Central Nervous System Stimulants/ or (cocaine or coke or "crack cocaine" or amphetamine? or methamphetamine? or meth or crank or speed or upper? or "club drug" or "club drugs" or MDMA or ecstasy or molly or GHB).ab,ti,tw	
29	ketamine/ or phencyclidine/ or exp salvia/ or dextromethorphan/ or ("dissociative drugs" or "dissociative drug" or "special k" or PCP or "angel dust" or robotripping).ab,ti,tw.	

30	mescaline/ or psilocybin/ or exp testosterone congeners/ or (hallucinogen* or LSD or acid or peyote or "magic mushrooms" or shrooms or "anabolic steroids" or roids).ab,ti,tw	
31	nitrous oxide/ or (inhalant? or "laughing gas" or popper? or snapper? or whippets or huffing).ab,ti,tw	
32	Or/ 19-31	
33	(abus* or misus* or "inappropriate use").ab,ti,tw	
34	(prevent* or intervention or intervene or program? or programme? or activit* or support* or initiative?).ab,ti,tw.	
35	school health services/ or health education/ or health promotion/	
36	34 or 35	
37	32 and 33 and 36	
38	18 or 37	
39	13 and 38	
40	limit 39 to (english language and yr="2009 -Current")	

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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

Authors:

1. *Dr. Geoffrey Maina, Assistant Professor, College of Nursing, University of Saskatchewan. 210-1301 Central Avenue, Prince Albert, S5V 4W1 SK. Tel: 306-765-3887; email: geoffrey.maina@usask.ca
2. Taryn Phaneuf, Undergraduate Nursing student, College of Nursing, University of Saskatchewan. Email: tlp044@mail.usask.ca
3. Megan Kennedy, Former Librarian, Leslie & Irene Dubé Health Sciences Library, University of Saskatchewan. Email: megan.kennedy@usask.ca.
4. Maeve Mclean, Graduate student, Master of Public Health, University of Saskatchewan, Saskatoon Campus. Maeve.mclean@usask.ca
5. Dr. Ann Gakumo, Associate Professor of Nursing, and Department Chair of Nursing, University of Massachusetts, Boston. Email: ann.gakumo@umb.edu
6. Dr. Joseph D. Nguemo Djiometio, weSpeak Postdoc fellow, Daphne Cockwell School of Nursing, Faculty of Community Services, Ryerson University. Email: jnguemodjiometio@ryerson.ca
7. Dr. Alexandra King, Cameco Chair in Indigenous Health, University of Saskatchewan. Email: alexandra.king@usask.ca
8. Solomon Kasha Mcharo, PhD(c). College of Nursing, University of Saskatchewan. Saskatoon Campus. Email: kasha.mcharo@usask.ca

* Corresponding author: Dr. Geoffrey Maina

Abstract

Introduction: Throughout the world, Indigenous peoples share traumatic colonial experiences that have caused gross inequalities for them and continue to impact every aspect of their lives. The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health and addiction outcomes compared to non-Indigenous people of the same age. Most Indigenous children are exposed to addictive substances at an early age which often leads to early initiation of substance use and is associated with subsequent physical and mental health issues, poor social and relational functioning, and occupational and legal problems. The aim of this paper is to report the protocol for the scoping review of school-based interventions for substance use prevention in Indigenous children ages 7-13 living in Canada, the US, Australia, and New Zealand. This scoping review seeks to answer the following questions: 1) What is known about Indigenous school-based interventions for preventing substance use 2) What are the characteristics and outcomes of school-based interventions for preventing substance use?

Methods and analysis: This scoping review will use steps described by Arksey and O'Malley (2005) & Levac, Colquhoun, & O'Brien (2010): (1) identifying the research question(s); (2) identifying relevant studies; (3) selecting the studies; (4) charting the data; (5) collating, summarizing and reporting the results; and (6) consulting with experts. Our findings will be reported according to the guidelines set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project. Findings from this study will be presented to lay public, at scientific conferences and published in a peer-reviewed journal.

Article summary

Strengths and limitations of this study

- This scoping review will lead to a better understanding of the nature, characteristics, and outcomes of interventions for Indigenous pre-teen alcohol and substance use prevention.
- This study is limited to literature published in English between January 2009 and December 2019.
- Since the scoping review aims to assess the research activity on a topic and not the quality of the research thereof, this project will provide an overview of all the intervention focussing on elementary school-based Indigenous substance use prevention.
- This study is also limited to research in Canada, the US, Australia, and New Zealand, and the findings will only be relevant to these countries.

Keywords: alcohol; substance use; addiction; prevention; elementary school; Indigenous

Background

Indigenous peoples worldwide share traumatic colonial experiences that continue to impact every aspect of their lives (1, 2). These historical socio-political processes have been attributed to causing gross inequalities for this population(3). Colonization, the imposition of colonial institutions and rules, and subsequent disruption of the Aboriginal way of life continue to have significant negative impacts on the lives and health of indigenous people. In Canada, residential school experiences of physical, sexual, and emotional violence, along with other legacies of colonization, have had dramatic and far-reaching impacts that continue to cause negative health consequences for Indigenous people (4). The resultant intergenerational trauma, which gets institutionalized within the family and the community, is associated with increased risks of mental health problems and addictions (5-11)

Colonization is now regarded as a determinant of health, as it impacts many aspects of Indigenous peoples' wellbeing (12). Moreover, in Canada, Aboriginal status is regarded as a determinant of health due to the numerous determinants of health they contend with, which are potentiated by colonial experiences (13-16). Thus, Indigenous peoples lag the general population in social, economic and health indicators (17, 18). Poverty, malnutrition, overcrowding, and inadequate health care services continue to impact the health of the indigenous people (19).

Indigenous peoples carry a disproportionate burden of harms associated with substance use (20). For example, compared to non-Indigenous people who inject drugs, Indigenous people who inject drugs are more likely to be infected with HIV and Hepatitis C and are less likely to receive treatment for substance use or have the support needed to remain on treatment (21,22). The rates of opioid use and opioid use disorder, as well as associated mortality and morbidity, are higher among Indigenous peoples compared to the general population. Furthermore, Indigenous youth, young adults, and young mothers are disproportionately affected by the opiate emergency (23-25).

The socio-political factors that arose from colonial practices against Indigenous people have also produced significant personal and structural barriers to health services (3). For example,

Indigenous people often experience racism in the health care system, limiting their access to health services (26,27,28).

The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health outcomes (26). Suicide rates among Indigenous children and youth in Canada are 5-6 times higher than the national average (29-32). Among the Inuit youth, suicide rates are 11 times higher than the national average. Alcohol and substance use are risk factors for both committing and attempting suicide (33-35).

About 20% of Indigenous youth use substance use, of which 33% are under the age of 15 years (36). These early exposures frequently occur in children's homes and communities. For example, a Statistics Canada (37) report on Indigenous persons found that 35% of First Nation people living off-reserve, 30% of Metis, and 39% of Inuit reported heavy drinking at least once a month for the past year, compared to 23% of non-Indigenous people. Further, 34.5% of First Nations adults reported drinking alcohol two to three times a month, 17.9% drank two to three times a week, and 3.2% drank daily (23). Roughly two-thirds (63.6%) of First Nations adults who had consumed alcohol in the past 12 months meet the criteria for heavy drinking, with 16.0% reporting heavy drinking weekly (23).

Early initiation of substance use is associated with development later in life of substance-use related mental health issues, poor social and relational functioning, and legal and occupational problems (38-40). Early-onset of substance use may be a manifestation of an underlying vulnerability towards addictive behaviors or exposures to environmental conditions that increase or reinforce an individual's propensity towards substance use problems later in life (41-44). For instance, adolescents that use one class of substances, such as alcohol or tobacco, are more likely to progress to other illicit substances such as cannabis, methamphetamine, or cocaine (38,42,45,46). Disruption of brain development in adolescents using substances can increase risk of substance use disorders

later in life (47). Early use of alcohol and substances can also complicate treatment outcomes for clients, who often manifest with physical and mental impacts of chronic poly-substance use (18).

Chen, Storr, & Anthony (42) have established a link between the early onset of substance use and a greater propensity for substance use disorders later in life. Numerous studies suggest that the rate of substance use increases during adolescence, peaks in young adulthood, and decreases in subsequent years(48,49). Delaying the onset of substance use can, therefore, minimize the trajectory of substance use during adolescence and prevent the development of substance use disorders in adulthood (50,51). A study authored by GM, an author in this manuscript on clients receiving methadone treatment for opiate use disorder, showed that clients were exposed to diverse substances at an early age- alcohol 6 years, marijuana, 7 years, Dilaudid, morphine, and cocaine (11 years), ritatin (8 years) and valium (13years) [22]. Studies show that Indigenous children experience early exposure to substance use compared to non-Indigenous people and are, likely to encounter diverse barriers, and determinants of health that may hinder access and retention to care (22, 52,53). Hence the need to focus on preventative measure for this population.

Elementary schools are a primary setting where pre-adolescent problems arise and where they can be prevented. School-based prevention programs can target large numbers of pre-adolescents in a relatively cost-effective and efficient manner (54). Randomized control trials have been central to legitimizing school-based substance use prevention programs(55,56). Reviews of these trials have found that evidence-based programming in schools is effective in preventing the early onset of substance use and the escalation of substance use in adolescence (57-59).

Effective school-based programs often involve social-emotional learning competencies, cognitive-behavioral approaches, changes in school climate, and multi-year and multi-component approaches (60). Efforts such as these may delay or prevent the onset of substance use among pre-adolescents.

There is a critical need to understand how to design and implement effective school-based interventions for substance use prevention aimed at Indigenous youth ages 7 -13. This scoping

review aims to explore the research focusing on Indigenous people living in developed countries i.e. Canada, the US, Australia, and New Zealand. Although the authors recognize the distinct cultural and experiential differences between Indigenous peoples of these countries, they share common historical experiences that impact their health. The authors intend to carry out interventions focusing on these populations in Canada. Therefore, limiting the literature search to these four countries will ensure that the results are relatable to the Canadian context.

Methods

The scoping review methodology has proven to be very useful for investigating the extent of the research in a given topic area. This type of synthesis review methodology was selected because of its rigorous and methodical approach that allows for openly framed research questions. Further, it was important that this review not be limited to only one evidence type (e.g., only randomized controlled trials), as our preliminary search determined that the literature included a variety of qualitative evidence sources.

To ensure accurate and thorough reporting, the scoping review will be conducted following the six-stage approach described by Arksey and O'Malley (61) and refined by Levac, Colquhoun, & O'Brien (62): (1) Identifying the research question(s), (2) identifying relevant studies, (3) selecting the studies, (4) charting the data, (5) collating, summarizing, and reporting the results, and (6) consulting with experts. Further, the review will be reported using guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project as the project is aimed at providing evidence for the presence of substance use interventions for Indigenous Elementary School children. Findings from this study will be presented to lay public, at scientific conferences and published in a peer reviewed journal.

Stage 1: Identifying the Research Questions

To start the process, we assembled a team of scholars with experiences working with Indigenous and marginalized communities. Consultations with the Health Science librarian helped

her identify key phrases and words that represented the broader focus of Indigenous Elementary Substance use prevention. The research team identified one broad research question: 1) what is known about Indigenous elementary school-based interventions for preventing substance use? We chose to focus on this population because GM's research indicating that clients with addictions had been exposed to substances at a very young age (22). The librarian (MK) ran a trial search to determine the feasibility of this research question. Following Arksey and O'Malley (61), our research question was refined as we became more familiar with the literature. Aiming to carefully examine and map the evidence on school-based interventions for preventing substance use in Indigenous children ages 7-13, we developed the following research questions:

1. What is known about elementary Indigenous school-based interventions for preventing substance use?
2. What are the characteristics and outcomes of elementary school-based interventions for preventing substance use?

Stage 2: Identifying Relevant Studies

As scoping reviews allow for flexibility in evidence type, our review will not be limited to any specific qualitative or quantitative study design. To efficiently conduct searches in electronic databases, some parameters are needed to help guide the search strategy.

Eligibility Criteria

The following inclusion criteria were identified and used to guide the searches and review the articles: 1) Only English language articles published between 2009-2019 will be included. Limiting the project to the last 10 years is informed by the authors' belief that due to ever-changing and dynamic substance use and addiction landscape, interventions older than ten years might not be clinically relevant for informing interventions for elementary school children. 2) The population targeted in the studies that identify Indigenous children ages 7-13 living in North America (Canada or US), Australia, or New Zealand as one of the target population for intervention; 3) Studies that comment on mixed-age populations of Indigenous children and adolescents will be included for full-

text analysis to further explore their suitability for inclusion; 4) Studies will be discussing or presenting the intervention or the results of interventions for school-based substance use prevention for this target population.

Exclusion Criteria

The following exclusion criteria were identified: 1) Articles discussing interventions for addictions such as smoking, gambling, internet/social media/technology, 2) articles discussing adult population (ages 18+), and 3). Review articles and commentaries.

Database searches

With input and in consultation with the research team, MK, an experienced health sciences librarian and familiar with evidence synthesis and reporting, established and tested the search strategy in MEDLINE identified relevant keywords. Controlled vocabulary was used to enhance sensitivity and specificity within the search. This preliminary search was developed and run to determine the feasibility of the scoping review and inform the searches in additional databases.

The following electronic databases will be searched for published literature: MEDLINE in-process and other nonindexed citations (Ovid) – 1946 – Present; PubMed – 1966 – Present; EMBASE Classic (Ovid) – 1947 – Present; Cumulative Index of Nursing and Allied Health Literature (CINAHL) (EBSCO) – 1937 – Present; Educational Resources Information Center (ERIC) (Ovid) – 1965 – Present; Scopus (Elsevier) – 1970 – Present; and Cochrane Library (Wiley) and PsycINFO.

The results from each database search will be documented and saved, and references will be imported into EndNote, a bibliographic management software. Following the removal of duplicate references from EndNote, references will be imported into Rayyan, a review software (63) for title and abstract screening. Google Forms will be used to collect data during full-text analysis.

To facilitate retrieval of relevant articles, the search was limited by language (English) and publication date (2009-2019). See Appendix A for full MEDLINE search strategies. In addition to searching electronic databases, the Canadian Agency for Drug and Technology in Health (CADTH) (64) tool will be used to search for relevant grey literature. The relevant areas to be searched from

the CADTH (64) tool will include Health Technology Assessment (HTA) agencies (Canada, Australia, and USA), free and subscription-based databases, internet search engines, mental health, and nursing. Keywords identified throughout our search process will be utilized in the search process. We will also check reference lists of included studies to identify any that had not been found in our other searches.

Stage 3: Study selection

Rayyan will be used for the title/abstract screening process. The research team will identify inclusion/exclusion keywords in correlation with identified inclusion and exclusion criteria. For example, exclusion keywords for smoking, gambling, etc. as identified in exclusion criterion 1. Two reviewers will independently review all articles. Should these 2 reviewers not reach a consensus, a third reviewer will complete the title and abstract screening. This process will be repeated during the full-text analysis; however, the mechanism for recording data and reviewing full-text articles will be by EndNote. Google survey will be used to collect data (see below, “Charting the data”).

Stage 4: Charting the data

Review data extracted into a Google survey will include a) author(s), title, b) age groups of the target population, c) Indigenous population identified, including the country of residence, d) summary of intervention characteristics and e) intervention outcomes (Yes/No).

Stage 5: Collating, summarizing, and reporting the results

The purpose of a scoping review is to map and aggregate findings to present an overview of the topic. Accordingly, we plan to a) map the results (main sources, locations, and quantity), b) provide a descriptive summary and qualitative analysis, c) identify conceptual definitions, d) provide a glossary of terms to clarify definitions found in the literature and e) report our results using the PRISMA-ScR guidelines for scoping reviews to enhance transparency and reproducibility. Because this is a scoping review, we will not appraise the quality of the studies or offer statistical analysis.

Information to be extracted and compiled into a table include; title of the articles, country of focus, substance use intervention, intervention type, main findings, and lessons that can be learned. Thematic analysis will be applied to identify common threads that will emerge from the data.

Stage 6: Consulting

We will present the preliminary findings of this scoping review to an advisory group comprised of an Indigenous elder, a knowledge keeper, elementary school leadership, and community members of one of the communities GM has a collaborative relationship with and one whose children are impacted by substance use. Community partners working with GM will help identify the appropriate advisory team members to join the committee. Presenting the findings to this committee will assist in the validation of the results with the community and provide a basis for reflection and feedback on the relevance of similar interventions in the community. Advisory committee feedback will inform the discussion, recommendations, and implication for the practice section of the manuscript.

Patient and Public Involvement

This is a scoping review of literature aims to document evidence for the substance use prevention for Indigenous elementary school children and is partly informed by project that GM is involved that show early substance use for patients on opiate opioid agonist treatment which showed that clients on this treatment were exposed to polysubstance from 6-13 years [22].. Patients and public were not involved in the conceptualisation of the project, or the research question.

Results

The searches, title, and abstract screening are now complete. In the coming months, two independent reviewers will conduct full-text analyses. During the process of full-text screening, we will also extract data from the marked studies. We expect the scoping review to be completed by late 2019/early 2020.

Discussion

The decision to focus on Indigenous substance use prevention among elementary school children was informed by a project undertaken by GM, on characteristics and predictors of clinical

experiences of clients on methadone project (22, 65). In this study, it became clear that the age of exposure to an addictive substance such as opiates, alcohol, and marijuana is between 6-11 years. Further, most of the clients on opiate replacement therapy struggle with treatment and recovery with more than 70% dropping out of ORT in the first year. Furthermore, considering that 95% of the clients on this study self-identified as Indigenous, who contend with diverse social determinants of health that are a major barrier to the recovery from addiction, we believe that that emphasis should be placed on understanding the substance use prevention intervention for elementary school children, who are at a risk of substance use.

Understanding interventions to prevent substance use among Indigenous youth aged 7-13 is vital to addressing substance use and addictions in the Indigenous population. Of interest, we will seek to identify the philosophical and theoretical underpinnings that characterize these interventions and the extent to which Indigenous knowledge is incorporated in these projects. The problem of substance use and addictions cannot be overstated: findings of numerous studies show that suggests that early exposure to substance use leads to life-long poly-substance use, which not only causes complex comorbid conditions that are difficult and expensive to treat but also severely impacts the quality of life of these individuals and their families (66-68). We, therefore, argue that prevention is the best intervention for Indigenous communities struggling with substance use challenges, considering they also content with other social determinants of health.

The proposed scoping review has the potential to influence future policy, programs, and services supporting the health and well being of Indigenous youth in Canada and beyond. It will describe the nature and value of early strategies to prevent substance use in this group, and it will provide exemplars of interventions that can be implemented in a Canadian, Australian, New Zealand, and US settings.

Limitations of the review

Since the scoping review aims to assess the research activity on a topic and not the quality of the research thereof, this project will provide an overview of all the intervention focussing on elementary

school-based Indigenous substance use prevention. The research team recognizes that focusing exclusively on substance use prevention projects catering to the 7-13 years old population may limit the number of reviews that can be included in the review. Therefore, some projects which might have provided relevant information to this review might be excluded on account of the age limit. Also, the exclusive focus on school-based interventions, means that any community-based substance use prevention focusing on this age group will be excluded. As a result, the review will not encompass the totality of diverse substance use prevention interventions for this population.

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Contributions:

- Dr. Geoffrey Maina was involved in the conceptualisation and writing of the protocol.
- Taryn Phaneuf was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Maeve Mclean was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Megan Kennedy was involved in designing the search strategy and writing the methods section.
- Dr. Ann Gakumo was involved in editing and proofreading the manuscript.
- Dr. Joseph Nguemo was involved in editing and proofreading the manuscript.
- Dr. Alexandra King was involved in editing and proofreading the manuscript.
- Solomon Kasha Mcharo was involved in the revision and formatting of the manuscript.

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Appendix A

Search Strategy – MEDLINE

The following search was run in Ovid MEDLINE on April 22, 2019:

1	alaska natives/ or indians, central american/ or indians, north american/ or indians, south american/ or inuits/	
2	Oceanic Ancestry Group/	
3	(indigenous or Indigenous* or "first nation" or "first nations" or metis or native or natives or "first people" or "first peoples" or "on reserve" or "off reserve" or inuit* or eskimo* or maori*).ab,ti,kw,kf.	
4	Health Services, Indigenous/	
5	or/1-4	
6	Child/	
7	(children? or child? or young or youth? or juvenile? or kid or kids or underage* or preteen* or preadolescen*).ab,ti,kw.	
8	(((school or under) adj1 age*) or (pre adj1 (teen* or adolescen*))).ab,ti,kf	
9	((elementary or primary or middle or grade or grammar or junior or secondary) adj1 school*).ab,ti,kf.	
10	"junior high".ab,ti,tw.	
11	Schools/	
12	or/6-11	
13	5 and 12	
14	exp Substance-Related Disorders/ed, pc, px [Education, Prevention & Control, Psychology]	
15	exp Alcohol-Related Disorders/pc, px [Prevention & Control, Psychology]	
16	exp Opioid-Related Disorders/pc, px [Prevention & Control, Psychology]	

17	exp Prescription Drug Misuse/pc, px [Prevention & Control, Psychology]	
18	or/ 14-17	
19	Underage Drinking/	
20	Drug-Seeking Behavior/	
21	exp "Marijuana Use"/	
22	((legal* or illegal* or prescription or illicit or street or club) adj1 (drug? or medication?)).ab,ti,kf.	
23	((binge or underage or "under age" or teen or adolescent?) adj1 (drink* or alcohol)).ab,ti,kf.	
24	controlled substances/ or medical marijuana/ or prescription drugs/ or exp street drugs/ or exp synthetic drugs/	
25	exp "hypnotics and sedatives"/ or exp narcotics/ or exp analgesics, opioid/ or exp hallucinogens/ or performance-enhancing substances/	
26	opium/ or (heroin or opium or smack or dope or horse or "china white").ab,ti,tw	
27	exp cannabinoids/ or cannabis/ or (marijuana or weed or pot or hash or hashish or ganja or blunt? or joint? or "mary jane" or reefer or CBD or cannbin* or cannabis).ab,ti,tw	
28	Central Nervous System Stimulants/ or (cocaine or coke or "crack cocaine" or amphetamine? or methamphetamine? or meth or crank or speed or upper? or "club drug" or "club drugs" or MDMA or ecstasy or molly or GHB).ab,ti,tw	
29	ketamine/ or phencyclidine/ or exp salvia/ or dextromethorphan/ or ("dissociative drugs" or "dissociative drug" or "special k" or PCP or "angel dust" or robotripping).ab,ti,tw.	

30	mescaline/ or psilocybin/ or exp testosterone congeners/ or (hallucinogen* or LSD or acid or peyote or "magic mushrooms" or shrooms or "anabolic steroids" or roids).ab,ti,tw	
31	nitrous oxide/ or (inhalant? or "laughing gas" or popper? or snapper? or whippets or huffing).ab,ti,tw	
32	Or/ 19-31	
33	(abus* or misus* or "inappropriate use").ab,ti,tw	
34	(prevent* or intervention or intervene or program? or programme? or activit* or support* or initiative?).ab,ti,tw.	
35	school health services/ or health education/ or health promotion/	
36	34 or 35	
37	32 and 33 and 36	
38	18 or 37	
39	13 and 38	
40	limit 39 to (english language and yr="2009 -Current")	

BMJ Open

School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

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Primary Subject Heading:	Addiction
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School-based interventions for preventing substance use in Indigenous children ages 7-13: A scoping review protocol

Authors:

1. *Dr. Geoffrey Maina, Assistant Professor, College of Nursing, University of Saskatchewan. 210-1301 Central Avenue, Prince Albert, S5V 4W1 SK. Tel: 306-765-3887; email: geoffrey.maina@usask.ca
2. Taryn Phaneuf, Undergraduate Nursing student, College of Nursing, University of Saskatchewan. Email: tlp044@mail.usask.ca
3. Megan Kennedy, Librarian- Library and Museums - Public Services 2, University of Alberta, Edmonton. Email: mrkenned@ualberta.ca
4. Maeve Mclean, Graduate student, Master of Public Health, University of Saskatchewan, Saskatoon Campus. Maeve.mclean@usask.ca
5. Dr. Ann Gakumo, Associate Professor of Nursing, and Department Chair of Nursing, University of Massachusetts, Boston. Email: ann.gakumo@umb.edu
6. Dr. Joseph D. Nguemo Djiometio, weSpeak Postdoc fellow, Daphne Cockwell School of Nursing, Faculty of Community Services, Ryerson University. Email: jnguemodjiometio@ryerson.ca
7. Dr. Alexandra King, Cameco Chair in Indigenous Health, University of Saskatchewan. Email: alexandra.king@usask.ca
8. Solomon Kasha Mcharo, PhD(c). College of Nursing, University of Saskatchewan. Saskatoon Campus. Email: kasha.mcharo@usask.ca

* Corresponding author: Dr. Geoffrey Maina

Abstract

Introduction: Throughout the world, Indigenous peoples share traumatic colonial experiences that have caused gross inequalities for them and continue to impact every aspect of their lives. The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health and addiction outcomes compared to non-Indigenous people of the same age. Most Indigenous children are exposed to addictive substances at an early age which often leads to early initiation of substance use and is associated with subsequent physical and mental health issues, poor social and relational functioning, and occupational and legal problems. The aim of this paper is to report the protocol for the scoping review of school-based interventions for substance use prevention in Indigenous children ages 7-13 living in Canada, the US, Australia, and New Zealand. This scoping review seeks to answer the following questions: 1) What is known about Indigenous school-based interventions for preventing substance use 2) What are the characteristics and outcomes of school-based interventions for preventing substance use?

Methods and analysis: This scoping review will use steps described by Arksey and O'Malley (2005) & Levac, Colquhoun, & O'Brien (2010): (1) identifying the research question(s); (2) identifying relevant studies; (3) selecting the studies; (4) charting the data; (5) collating, summarizing and reporting the results; and (6) consulting with experts. Our findings will be reported according to the guidelines set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project. Findings from this study will be presented to lay public, at scientific conferences and published in a peer-reviewed journal.

Article summary

Strengths and limitations of this study

- This scoping review will lead to a better understanding of the nature, characteristics, and outcomes of interventions for Indigenous pre-teen alcohol and substance use prevention.
- This study is limited to literature published in English between January 2009 and December 2019.
- Since the scoping review aims to assess the research activity on a topic and not the quality of the research thereof, this project will provide an overview of all the intervention focussing on elementary school-based Indigenous substance use prevention.
- This study is also limited to research in Canada, the US, Australia, and New Zealand, and the findings will only be relevant to these countries.

Keywords: alcohol; substance use; addiction; prevention; elementary school; Indigenous

Background

Indigenous peoples worldwide share traumatic colonial experiences that continue to impact every aspect of their lives (1, 2). These historical socio-political processes have been attributed to causing gross inequalities for this population(3). Colonization, the imposition of colonial institutions and rules, and subsequent disruption of the Aboriginal way of life continue to have significant negative impacts on the lives and health of indigenous people. In Canada, residential school experiences of physical, sexual, and emotional violence, along with other legacies of colonization, have had dramatic and far-reaching impacts that continue to cause negative health consequences for Indigenous people (4). The resultant intergenerational trauma, which gets institutionalized within the family and the community, is associated with increased risks of mental health problems and addictions (5-11)

Colonization is now regarded as a determinant of health, as it impacts many aspects of Indigenous peoples' wellbeing (12). Moreover, in Canada, Aboriginal status is regarded as a determinant of health due to the numerous determinants of health they contend with, which are potentiated by colonial experiences (13-16). Thus, Indigenous peoples lag the general population in social, economic and health indicators (17, 18). Poverty, malnutrition, overcrowding, and inadequate health care services continue to impact the health of the indigenous people (19).

Indigenous peoples carry a disproportionate burden of harms associated with substance use (20). For example, compared to non-Indigenous people who inject drugs, Indigenous people who inject drugs are more likely to be infected with HIV and Hepatitis C and are less likely to receive treatment for substance use or have the support needed to remain on treatment (21,22). The rates of opioid use and opioid use disorder, as well as associated mortality and morbidity, are higher among Indigenous peoples compared to the general population. Furthermore, Indigenous youth, young adults, and young mothers are disproportionately affected by the **opioid** emergency (23-25).

The socio-political factors that arose from colonial practices against Indigenous people have also produced significant personal and structural barriers to health services (3). For example,

Indigenous people often experience racism in the health care system, limiting their access to health services (26,27,28).

The effect of intergenerational trauma and other health disparities have been remarkable for Indigenous children and adolescents, who are at a greater risk of adverse mental health outcomes (26). Suicide rates among Indigenous children and youth in Canada are 5-6 times higher than the national average (29-32). Among the Inuit youth, suicide rates are 11 times higher than the national average. Alcohol and substance use are risk factors for both committing and attempting suicide (33-35).

About 20% of Indigenous youth use substance use, of which 33% are under the age of 15 years (36). These early exposures frequently occur in children's homes and communities. For example, a Statistics Canada (37) report on Indigenous persons found that 35% of First Nation people living off-reserve, 30% of Metis, and 39% of Inuit reported heavy drinking at least once a month for the past year, compared to 23% of non-Indigenous people. Further, 34.5% of First Nations adults reported drinking alcohol two to three times a month, 17.9% drank two to three times a week, and 3.2% drank daily (23). Roughly two-thirds (63.6%) of First Nations adults who had consumed alcohol in the past 12 months meet the criteria for heavy drinking, with 16.0% reporting heavy drinking weekly (23).

Early initiation of substance use is associated with development later in life of substance-use related mental health issues, poor social and relational functioning, and legal and occupational problems (38-40). Early-onset of substance use may be a manifestation of an underlying vulnerability towards addictive behaviors or exposures to environmental conditions that increase or reinforce an individual's propensity towards substance use problems later in life (41-44). For instance, adolescents that use one class of substances, such as alcohol or tobacco, are more likely to progress to other illicit substances such as cannabis, methamphetamine, or cocaine (38,42,45,46). Disruption of brain development in adolescents using substances can increase risk of substance use disorders

later in life (47). Early use of alcohol and substances can also complicate treatment outcomes for clients, who often manifest with physical and mental impacts of chronic poly-substance use (18).

Chen, Storr, & Anthony (42) have established a link between the early onset of substance use and a greater propensity for substance use disorders later in life. Numerous studies suggest that the rate of substance use increases during adolescence, peaks in young adulthood, and decreases in subsequent years(48,49). Delaying the onset of substance use can, therefore, minimize the trajectory of substance use during adolescence and prevent the development of substance use disorders in adulthood (50,51). A study authored by GM, an author in this manuscript on clients receiving methadone treatment for opiate use disorder, showed that clients were exposed to diverse substances at an early age- alcohol 6 years, marijuana, 7 years, Dilaudid, morphine, and cocaine (11 years), ritatin (8 years) and valium (13years) [22]. Studies show that Indigenous children experience early exposure to substance use compared to non-Indigenous people and are, likely to encounter diverse barriers, and determinants of health that may hinder access and retention to care (22, 52,53). Hence the need to focus on preventative measure for this population.

Elementary schools are a primary setting where pre-adolescent problems arise and where they can be prevented. School-based prevention programs can target large numbers of pre-adolescents in a relatively cost-effective and efficient manner (54). Randomized control trials have been central to legitimizing school-based substance use prevention programs(55,56). Reviews of these trials have found that evidence-based programming in schools is effective in preventing the early onset of substance use and the escalation of substance use in adolescence (57-59).

Effective school-based programs often involve social-emotional learning competencies, cognitive-behavioral approaches, changes in school climate, and multi-year and multi-component approaches (60). Efforts such as these may delay or prevent the onset of substance use among pre-adolescents.

There is a critical need to understand how to design and implement effective school-based interventions for substance use prevention aimed at Indigenous youth ages 7 -13. This scoping

review aims to explore the research focusing on Indigenous people living in developed countries i.e. Canada, the US, Australia, and New Zealand. Although the authors recognize the distinct cultural and experiential differences between Indigenous peoples of these countries, they share common historical experiences that impact their health. The authors intend to carry out interventions focusing on these populations in Canada. Therefore, limiting the literature search to these four countries will ensure that the results are relatable to the Canadian context.

Methods

The scoping review methodology has proven to be very useful for investigating the extent of the research in a given topic area. This type of synthesis review methodology was selected because of its rigorous and methodical approach that allows for openly framed research questions. Further, it was important that this review not be limited to only one evidence type (e.g., only randomized controlled trials), as our preliminary search determined that the literature included a variety of qualitative evidence sources.

To ensure accurate and thorough reporting, the scoping review will be conducted following the six-stage approach described by Arksey and O'Malley (61) and refined by Levac, Colquhoun, & O'Brien (62): (1) Identifying the research question(s), (2) identifying relevant studies, (3) selecting the studies, (4) charting the data, (5) collating, summarizing, and reporting the results, and (6) consulting with experts. Further, the review will be reported using guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Ethics and dissemination: Ethics review approval is not required for this project as the project is aimed at providing evidence for the presence of substance use interventions for Indigenous Elementary School children. Findings from this study will be presented to lay public, at scientific conferences and published in a peer reviewed journal.

Stage 1: Identifying the Research Questions

To start the process, we assembled a team of scholars with experiences working with Indigenous and marginalized communities. Consultations with the Health Science librarian helped

her identify key phrases and words that represented the broader focus of Indigenous Elementary Substance use prevention. The research team identified one broad research question: 1) what is known about Indigenous elementary school-based interventions for preventing substance use? We chose to focus on this population because GM's research indicating that clients with addictions had been exposed to substances at a very young age (22). The librarian (MK) ran a trial search to determine the feasibility of this research question. Following Arksey and O'Malley (61), our research question was refined as we became more familiar with the literature. Aiming to carefully examine and map the evidence on school-based interventions for preventing substance use in Indigenous children ages 7-13, we developed the following research questions:

1. What is known about elementary Indigenous school-based interventions for preventing substance use?
2. What are the characteristics and outcomes of elementary school-based interventions for preventing substance use?

Stage 2: Identifying Relevant Studies

As scoping reviews allow for flexibility in evidence type, our review will not be limited to any specific qualitative or quantitative study design. To efficiently conduct searches in electronic databases, some parameters are needed to help guide the search strategy.

Eligibility Criteria

The following inclusion criteria were identified and used to guide the searches and review the articles: 1) Only English language articles published between 2009-2019 will be included. Limiting the project to the last 10 years is informed by the authors' belief that due to ever-changing and dynamic substance use and addiction landscape, interventions older than ten years might not be clinically relevant for informing interventions for elementary school children. 2) The population targeted in the studies that identify Indigenous children ages 7-13 living in North America (Canada or US), Australia, or New Zealand as one of the target population for intervention; 3) Studies that comment on mixed-age populations of Indigenous children and adolescents will be included for full-

text analysis to further explore their suitability for inclusion; 4) Studies will be discussing or presenting the intervention or the results of interventions for school-based substance use prevention for this target population.

Exclusion Criteria

The following exclusion criteria were identified: 1) Articles discussing interventions for addictions such as smoking, gambling, internet/social media/technology, 2) articles discussing adult population (ages 18+), and 3). Review articles and commentaries.

Database searches

With input and in consultation with the research team, MK, an experienced health sciences librarian and familiar with evidence synthesis and reporting, established and tested the search strategy in MEDLINE identified relevant keywords. Controlled vocabulary was used to enhance sensitivity and specificity within the search. This preliminary search was developed and run to determine the feasibility of the scoping review and inform the searches in additional databases.

The following electronic databases will be searched for published literature: MEDLINE in-process and other nonindexed citations (Ovid) – 1946 – Present; PubMed – 1966 – Present; EMBASE Classic (Ovid) – 1947 – Present; Cumulative Index of Nursing and Allied Health Literature (CINAHL) (EBSCO) – 1937 – Present; Educational Resources Information Center (ERIC) (Ovid) – 1965 – Present; Scopus (Elsevier) – 1970 – Present; and Cochrane Library (Wiley) and PsycINFO (1806 - present).

The results from each database search will be documented and saved, and references will be imported into EndNote, a bibliographic management software. Following the removal of duplicate references from EndNote, references will be imported into Rayyan, a review software (63) for title and abstract screening. Google Forms will be used to collect data during full-text analysis.

To facilitate retrieval of relevant articles, the search was limited by language (English) and publication date (2009-2019). See Appendix A for full MEDLINE search strategies. In addition to searching electronic databases, the Canadian Agency for Drug and Technology in Health (CADTH) (64) tool will be used to search for relevant grey literature. The relevant areas to be searched from

the CADTH (64) tool will include Health Technology Assessment (HTA) agencies (Canada, Australia, and USA), free and subscription-based databases, internet search engines, mental health, and nursing. Keywords identified throughout our search process will be utilized in the search process. We will also check reference lists of included studies to identify any that had not been found in our other searches.

Stage 3: Study selection

Rayyan will be used for the title/abstract screening process. The research team will identify inclusion/exclusion keywords in correlation with identified inclusion and exclusion criteria. For example, exclusion keywords for smoking, gambling, etc. as identified in exclusion criterion 1. Two reviewers will independently review all articles. Should these 2 reviewers not reach a consensus, a third reviewer will complete the title and abstract screening. This process will be repeated during the full-text analysis; however, the mechanism for recording data and reviewing full-text articles will be by EndNote. Google survey will be used to collect data (see below, “Charting the data”).

Stage 4: Charting the data

Review data extracted into a Google survey will include a) author(s), title, b) age groups of the target population, c) Indigenous population identified, including the country of residence, d) summary of intervention characteristics and e) intervention outcomes (Yes/No).

Stage 5: Collating, summarizing, and reporting the results

The purpose of a scoping review is to map and aggregate findings to present an overview of the topic. Accordingly, we plan to a) map the results (main sources, locations, and quantity), b) provide a descriptive summary and qualitative analysis, c) identify conceptual definitions, d) provide a glossary of terms to clarify definitions found in the literature and e) report our results using the PRISMA-ScR guidelines for scoping reviews to enhance transparency and reproducibility. Because this is a scoping review, we will not appraise the quality of the studies or offer statistical analysis.

Information to be extracted and compiled into a table include; title of the articles, country of focus, substance use intervention, intervention type, main findings, and lessons that can be learned. Thematic analysis will be applied to identify common threads that will emerge from the data.

Stage 6: Consulting

We will present the preliminary findings of this scoping review to an advisory group comprised of an Indigenous elder, a knowledge keeper, elementary school leadership, and community members of one of the communities GM has a collaborative relationship with and one whose children are impacted by substance use. Community partners working with GM will help identify the appropriate advisory team members to join the committee. Presenting the findings to this committee will assist in the validation of the results with the community and provide a basis for reflection and feedback on the relevance of similar interventions in the community. Advisory committee feedback will inform the discussion, recommendations, and implication for the practice section of the manuscript.

Patient and Public Involvement

This is a scoping review of literature aims to document evidence for the substance use prevention for Indigenous elementary school children and is partly informed by project that GM is involved that show early substance use for patients on opioid agonist treatment which showed that clients on this treatment were exposed to polysubstance from 6-13 years [22].. Patients and public were not involved in the conceptualisation of the project, or the research question.

Results

The searches, title, and abstract screening are ongoing. In the coming months, two independent reviewers will conduct full-text analyses. During the process of full-text screening, we will also extract data from the marked studies. We expect the scoping review to be completed by late 2019/early 2020.

Discussion

The decision to focus on Indigenous substance use prevention among elementary school children was informed by a project undertaken by GM, on characteristics and predictors of clinical

experiences of clients on methadone project (22, 65). In this study, it became clear that the age of exposure to an addictive substance such as **opioids**, alcohol, and marijuana is between 6-11 years. Further, most of the clients on opiate replacement therapy struggle with treatment and recovery with more than 70% dropping out of ORT in the first year. Furthermore, considering that 95% of the clients on this study self-identified as Indigenous, who contend with diverse social determinants of health that are a major barrier to the recovery from addiction, we believe that that emphasis should be placed on understanding the substance use prevention intervention for elementary school children, who are at a risk of substance use.

Understanding interventions to prevent substance use among Indigenous youth aged 7-13 is vital to addressing substance use and addictions in the Indigenous population. Of interest, we will seek to identify the philosophical and theoretical underpinnings that characterize these interventions and the extent to which Indigenous knowledge is incorporated in these projects. The problem of substance use and addictions cannot be overstated: findings of numerous studies show that suggests that early exposure to substance use leads to life-long poly-substance use, which not only causes complex comorbid conditions that are difficult and expensive to treat but also severely impacts the quality of life of these individuals and their families (66-68). We, therefore, argue that prevention is the best intervention for Indigenous communities struggling with substance use challenges, considering they also content with other social determinants of health.

The proposed scoping review has the potential to influence future policy, programs, and services supporting the health and well being of Indigenous youth in Canada and beyond. It will describe the nature and value of early strategies to prevent substance use in this group, and it will provide exemplars of interventions that can be implemented in a Canadian, Australian, New Zealand, and US settings.

Limitations of the review

Since the scoping review aims to assess the research activity on a topic and not the quality of the research thereof, this project will provide an overview of all the intervention focussing on elementary

school-based Indigenous substance use prevention. The research team recognizes that focusing exclusively on substance use prevention projects catering to the 7-13 years old population may limit the number of reviews that can be included in the review. Therefore, some projects which might have provided relevant information to this review might be excluded on account of the age limit. Also, the exclusive focus on school-based interventions, means that any community-based substance use prevention focusing on this age group will be excluded. As a result, the review will not encompass the totality of diverse substance use prevention interventions for this population.

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Contributions:

- Dr. Geoffrey Maina was involved in the conceptualisation and writing of the protocol.
- Taryn Phaneuf was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Maeve Mclean was involved in the literature search, writing the introductory section, and proofreading the protocol.
- Megan Kennedy was involved in designing the search strategy and writing the methods section.
- Dr. Ann Gakumo was involved in editing and proofreading the manuscript.
- Dr. Joseph Nguemo was involved in editing and proofreading the manuscript.
- Dr. Alexandra King was involved in editing and proofreading the manuscript.
- Solomon Kasha Mcharo was involved in the revision and formatting of the manuscript.

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Appendix A

Search Strategy – MEDLINE

The following search was run in Ovid MEDLINE on April 22, 2019:

1	alaska natives/ or indians, central american/ or indians, north american/ or indians, south american/ or inuits/	
2	Oceanic Ancestry Group/	
3	(indigenous or Indigenous* or "first nation" or "first nations" or metis or native or natives or "first people" or "first peoples" or "on reserve" or "off reserve" or inuit* or eskimo* or maori*).ab,ti,kw,kf.	
4	Health Services, Indigenous/	
5	or/1-4	
6	Child/	
7	(children? or child? or young or youth? or juvenile? or kid or kids or underage* or preteen* or preadolescen*).ab,ti,kw.	
8	(((school or under) adj1 age*) or (pre adj1 (teen* or adolescen*))).ab,ti,kf	
9	((elementary or primary or middle or grade or grammar or junior or secondary) adj1 school*).ab,ti,kf.	
10	"junior high".ab,ti,tw.	
11	Schools/	
12	or/6-11	
13	5 and 12	
14	exp Substance-Related Disorders/ed, pc, px [Education, Prevention & Control, Psychology]	
15	exp Alcohol-Related Disorders/pc, px [Prevention & Control, Psychology]	
16	exp Opioid-Related Disorders/pc, px [Prevention & Control, Psychology]	

17	exp Prescription Drug Misuse/pc, px [Prevention & Control, Psychology]	
18	or/ 14-17	
19	Underage Drinking/	
20	Drug-Seeking Behavior/	
21	exp "Marijuana Use"/	
22	((legal* or illegal* or prescription or illicit or street or club) adj1 (drug? or medication?)).ab,ti,kf.	
23	((binge or underage or "under age" or teen or adolescent?) adj1 (drink* or alcohol)).ab,ti,kf.	
24	controlled substances/ or medical marijuana/ or prescription drugs/ or exp street drugs/ or exp synthetic drugs/	
25	exp "hypnotics and sedatives"/ or exp narcotics/ or exp analgesics, opioid/ or exp hallucinogens/ or performance-enhancing substances/	
26	opium/ or (heroin or opium or smack or dope or horse or "china white").ab,ti,tw	
27	exp cannabinoids/ or cannabis/ or (marijuana or weed or pot or hash or hashish or ganja or blunt? or joint? or "mary jane" or reefer or CBD or cannbin* or cannabis).ab,ti,tw	
28	Central Nervous System Stimulants/ or (cocaine or coke or "crack cocaine" or amphetamine? or methamphetamine? or meth or crank or speed or upper? or "club drug" or "club drugs" or MDMA or ecstasy or molly or GHB).ab,ti,tw	
29	ketamine/ or phencyclidine/ or exp salvia/ or dextromethorphan/ or ("dissociative drugs" or "dissociative drug" or "special k" or PCP or "angel dust" or robotripping).ab,ti,tw.	

30	mescaline/ or psilocybin/ or exp testosterone congeners/ or (hallucinogen* or LSD or acid or peyote or "magic mushrooms" or shrooms or "anabolic steroids" or roids).ab,ti,tw	
31	nitrous oxide/ or (inhalant? or "laughing gas" or popper? or snapper? or whippets or huffing).ab,ti,tw	
32	Or/ 19-31	
33	(abus* or misus* or "inappropriate use").ab,ti,tw	
34	(prevent* or intervention or intervene or program? or programme? or activit* or support* or initiative?).ab,ti,tw.	
35	school health services/ or health education/ or health promotion/	
36	34 or 35	
37	32 and 33 and 36	
38	18 or 37	
39	13 and 38	
40	limit 39 to (english language and yr="2009 -Current")	