

**Exploring the Prevalence and Factors Associated with Pain-Related
Disabilities Among Indigenous Peoples in Canada: A Scoping Review and
Cross-Sectional Study of the 2017 Aboriginal Peoples Survey**

by

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ABSTRACT

Pain-related disabilities (PRDs) are among the most commonly reported disabilities in Canada, yet little is known about their impact among Indigenous populations. The aim of my thesis was to determine the prevalence of PRDs and explore associated factors among Indigenous peoples in Canada. My thesis was guided by *Etuaptmumk* (Two-Eyed Seeing) and conducted in partnership with an Indigenous Advisory Committee that I put together to govern and support this work.

I first conducted a scoping review of the peer-reviewed and grey literature. Of 5,902 peer-reviewed citations and 49 grey literature sources screened, two met the inclusion criteria: one epidemiological study describing PRD prevalence among First Nations people living off-reserve, Inuit, and Métis (FNIM), and one qualitative study exploring pain-related limitations in functioning. This demonstrated a significant gap in the literature.

To address this, I analyzed the 2017 Aboriginal Peoples Survey (APS) to estimate PRD prevalence and identify associated factors among FNIM aged 15 years and older. PRDs were defined as pain-related activity limitations lasting ≥ 6 months. The sample included 9,115 First Nations people living off-reserve, 8,499 Métis, and 2,972 Inuit. I used person-level and bootstrap weights and applied modified Poisson regression with robust variance, guided by Indigenous-specific frameworks.

PRDs were reported by 22.1% of First Nations people living off-reserve, 20.4% of Métis, and 11.1% of Inuit. Prevalence was higher among females, older age groups, and those with multiple co-existing disabilities. For First Nations and Métis peoples, prevalence was similar across geographic regions. Among Inuit, those living outside Inuit Nunangat reported higher PRD levels.

Demographic, socioeconomic, health, historical, and cultural factors were associated with PRDs in each group.

My thesis highlights the complex and multidimensional nature of PRDs among Indigenous peoples in Canada. Addressing these disabilities requires a holistic approach that considers the impacts of colonialism, social inequities and cultural disconnection. Limitations include possible differences between survey participants and non-participants, and the unknown validity and reliability of many APS variables, leading to potential misclassification bias.

Future Indigenous-led research should be guided by Indigenous priorities, including qualitative studies exploring lived experiences of PRDs, and how culture, language, and social conditions influence well-being.

Keywords: Pain; disability; Indigenous peoples; determinants of health; prevalence

AUTHOR'S DECLARATION

I hereby declare that this thesis consists of original work which I have authored. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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STATEMENT OF CONTRIBUTIONS

The work described in **Chapter 2** has been accepted for publication as:

DeSouza, A., Taylor, D., Ward, J.L., Vizza, J., Yu, H., Murnaghan, K., Cancelliere, C., Hogg-Johnson, S., Sheppard, A.J., Côté, P. Prevalence, incidence, and factors associated with pain-related disabilities, and experiences of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada: a scoping review. *Canadian Journal of Public Health*. 2025 Jun; <https://doi.org/10.17269/s41997-025-01047-z>

I led and contributed to the conceptualization, design and methodology of the study. Additionally, I conducted the screening of articles, searching of grey literature, extraction of data, and writing of the original draft of the manuscript.

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I led and contributed to the conceptualization, design and methodology of the study. I performed all the formal analysis, and wrote the original draft of the manuscript.

The work described in **Chapter 4** has been submitted for publication as:

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I led and contributed to the conceptualization, design and methodology of the study. I performed all the formal analysis, and wrote the original draft of the manuscript.

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CHAPTER ONE

INTRODUCTION

1.1 WHAT IS DISABILITY?

Disability is a complex construct. Health research, practice, education, and public perceptions of disability have often been shaped by the dominant models or frameworks prevailing at the given time.¹ Prominent models of disability which have influenced earlier discourse include the medical (or biomedical) model and social model of disability. The medical model frames disability as originating from within the individual, viewing it as a pathology or bodily defect.^{1,2} In contrast, the social model conceptualizes disability as a social construct where the environment, more specifically barriers created by society (i.e., lack of accessibility or accommodations) serve as the primary source of disability.^{2,3}

One widely adopted framework is the World Health Organization's International Classification of Functioning, Disability, and Health (ICF), which offers a globally applied understanding of disability.⁴ According to the ICF, disability is a broad term encompassing limitations in functioning, daily activities or social participation. This perspective also recognizes the interaction between an individual's health conditions or impairments, personal characteristics, and the surrounding physical and social environment in which a person lives. While all models and frameworks offer distinct perspectives on the experience of disability, a key strength of the ICF is its integration of elements from both the medical and social model. Central to the ICF is its emphasis on the concept of functioning. *But what exactly is functioning?*

Functioning is recognized as a third indicator of health alongside morbidity and mortality.⁵ Functioning reflects both biological health and lived experience which can be shaped by a person's intrinsic health and the environment.⁵ In addition, human functioning exists on a continuum and can change across a person's life course.⁶ Disability and functioning are closely related, and often perceived as opposite ends of a spectrum. Functioning represents "a rethinking of health" (p.3), in consideration of a person's biological health and lived health.⁵ Biological health encompasses structures and functions related to one's mind and body, and influence our capacity to carry out activities.⁷ Lived health reflects how well a person can actually go about performing these activities in the environment within which they are situated.⁷ These environments can either support or hinder human functioning depending on factors such as technology, accessibility and society.

Disability on the other hand is what is experienced when dysfunctioning occurs. Personal and environmental factors can contribute to whether or not an individual experiences disability regardless of the disease status. As such, disability can be viewed as the relationship between body structures, body functions, activities and participation, with contextual factors (i.e., environmental and personal) dynamically interacting with these various components.⁴ Therefore, disability can arise for example, when difficulty with functioning occurs preventing an individual from going about their day-to-day activities or participating in society.⁴ Disability and functioning can vary greatly from person to person. For instance, a person born without lower limbs may still work, drive, and live independently with the aid of assistive technologies and accessible environments. In contrast, someone with a severe acquired spinal cord injury may face significant limitations and

be unable to regain the same level of independence pre-injury despite available supports. Thus, functioning can be shaped by both personal and environmental factors.

1.1.1 Indigenous health, disability and the ICF

Indigenous worldviews often conceptualize health holistically, moving beyond the physical, and encompassing emotional, mental and spiritual components.⁸ In some cultures, different abilities are recognized, valued and celebrated for their uniqueness.⁹ For example, some Indigenous groups may view those with different abilities as having a purpose and serving a meaningful role within the community.¹⁰ This stands in contrast to dominant Western perspectives that have historically used a biomedical approach which as previously mentioned, focuses disability primarily within the context of disease or individual impairment.

The ICF's biopsychosocial framework, which offers a holistic understanding of health and well-being, has been presented as a promising tool for exploring disability among Indigenous peoples.^{11, 12} In Canada, for example, Indigenous-specific organizations such as the First Nations Information Governance Centre and Nunavummi Disabilities Makinnasuaqtiit Society have referenced the framework in relation to how they define disabilities.^{13, 14} However, while the ICF provides a broad and inclusive lens for understanding disability, it is also important to acknowledge that the construct of disability itself may not align with Indigenous worldviews. As emphasized by Indigenous Disability Canada in their report *First Nations Accessibility Standards: A Path Forward to Inclusion*, "...it is important to note that the term 'disability' is based in colonialism and does not always align with First Nations' perspectives and understandings. Using the method of two-eyed seeing, this report works to intertwine First Nations' understandings of

disability and accessibility with colonial definitions to create comprehensive and holistic results” (p.10).¹⁵ This illustrates the importance of approaches that respectfully integrate Indigenous and Western knowledge systems, rather than privileging one over the other.

Similarly, the Métis National Council highlights the need for culturally grounded understandings of disability, stating in their report on *Métis perspectives on disability research and the United Nations Convention on the Rights of Persons with Disabilities*, “In western contexts, physical and neurological disabilities (e.g., autism) are often perceived as deficits to be cured or treated. In contrast, a strength-based approach informed by Métis ways of knowing, being, and doing offers a culturally supportive perspective on disability support” (p. 5).¹⁶ While definitions rooted in colonial systems are often required to access health and social services, it is essential that research efforts do not reinforce those definitions as universally representative.

Because terminology and interpretations of the meaning of disability can vary across Indigenous communities, the ICF’s approach and emphasis on contextual factors, may support its cross-cultural applicability. However, given the diversity among Indigenous groups in their culture, language and traditions, it is essential to complement the ICF with Indigenous-specific health frameworks.¹² This ensures that the questions asked and results from epidemiological studies are culturally relevant, adaptable, and meaningful for each community.

Although the ICF definition of disability is widely used, its application within culturally distinct populations, in particular Indigenous communities in Canada, remains underexplored and largely unknown.¹¹ The ICF has the potential to be used within Indigenous communities due to its

biopsychosocial nature but more dialogue is required with Indigenous leadership and communities to fully understand its applicability and usefulness. To address this dilemma, I propose complementing the ICF with Indigenous-specific frameworks or methodologies. As will be discussed under section 1.4 below, I will use a Two-Eyed Seeing approach in an attempt to understand disability through Indigenous worldviews.

In this dissertation, I use the term disability to align with existing epidemiological literature and will use the ICF definition. However, I recognize and acknowledge that this term may not reflect the perspectives of all Indigenous communities and may in some cases be at odds with their worldviews. This reflects a broader issue in research that extends beyond the scope of this work.

1.1.2 Pain and pain-related disabilities in an Indigenous context

Pain is a multifaceted experience which can manifest in diverse ways and influence functioning. From a Western perspective, pain is often described using a clinical and basic science perspective which emphasizes standardized terms and classifications.¹⁷ From Indigenous perspectives, pain can extend beyond physical sensations to encompass emotional, social, and spiritual dimensions of an individual's life.¹⁸ Although pain is a universal experience, its expression can be personal and cultural. Among Indigenous communities for example, oral traditions often shape how pain is communicated, which may not necessarily align with standardized measures of pain.¹⁹ In addition, alternative terms such as *hurt* or *discomfort* may be used to describe their experience. Some may even conceal their pain in an effort to avoid affecting others by the pain they experience.²⁰

A global review of chronic pain among Indigenous peoples highlights the interconnection between emotions, thoughts, relationships, and places.²¹ The Indigenous experience of pain is complex and shaped by historical and colonial aspects. Pain is understood holistically, within the context of community, nature, identity, and the legacy of colonial history.²¹ This often differs from that of non-Indigenous populations. These perspectives are particularly significant given that individuals with disabilities are generally more likely to experience pain. However, given the holistic yet complex nature of pain among Indigenous peoples, to date there remains limited knowledge of the etiology of pain-related disabilities (or in other words pain-related limitations in functioning) among Indigenous peoples in Canada.

Reviews and primary studies show a similar trend with existing literature predominantly focusing on specific pain conditions,²²⁻²⁶ but do not examine how these painful conditions affect one's functioning, participation, or activities of daily living. It is important to recognize however that while certain conditions may cause pain, they do not necessarily lead to disability. For the context of this dissertation, pain-related conditions and pain-related disabilities are distinct. The latter refers to the extent to which pain interferes with a person's ability to function and participate in daily life. However, whether or not pain experienced may lead to disability may also be dependent on a range of factors which can affect one's functioning. The surrounding physical or built environments may shape the extent to which pain interferes with daily life. The social environment including relationships with family, friends, community, and experiences of discrimination or inclusion can also influence how pain is experienced. Similarly, personal characteristics such as cultural identity, language, and sense of belonging may serve as protective factors.^{27, 28} Understanding how these factors may influence the experience of pain-related

disabilities is essential for developing equitable, culturally grounded supports which reflect the realities and strengths of Indigenous peoples and communities.

1.2 STATEMENT OF THE PROBLEM

Indigenous peoples often experience a higher prevalence of health inequities and disability.²⁹ While it remains challenging to obtain exact statistics due to the limited availability of global data specific to Indigenous populations, available estimates suggest that 54 million Indigenous persons live with a disability worldwide.³⁰ Moreover, the prevalence of disability is reported to be higher among Indigenous peoples than in non-Indigenous populations.³⁰ For Indigenous populations, the historical, political, and socioeconomic conditions can contribute towards further exacerbating the impact of disability.^{8,31} This pattern is evident in Canada where Indigenous peoples are disproportionately affected by disability.^{23,33}

In Canada in 2017, approximately one in three First Nations people living off-reserve, one in three Métis, and one in five Inuit reported at least one type of disability.³³ For First Nations adults living on-reserve and in northern communities, estimates from 2008-2010 suggest numbers closer to one in four.¹³ In comparison, one in five non-Indigenous Canadians reported living with a disability.³³ Among First Nations people living off-reserve, Inuit, and Métis, pain-related disabilities were the most commonly reported.³³

Though pain-related disabilities appeared to be the most commonly reported, limited information existed from both epidemiological and Indigenous literature on their extent in Canada. This was not the only motivation for exploring this topic. My dissertation's focus on pain-related disabilities began to form through initial rich conversations in the first month of my PhD program

with Elder Dorothy Taylor, who shared her insights as both an Elder and as someone who has been living with disability for many years. She also revealed the complex and interconnected nature of pain which not only encompassed the physical, but also emotional, spiritual and mental dimensions. These early discussions along with those which took place with other visiting Elders, Indigenous Cultural Advisors, and additional consultations with the manager and coordinator of Indigenous programs at March of Dimes Canada, and with a senior policy analyst with the Assembly of First Nations, shaped the direction of this research. These conversations highlighted that disability-related research among Indigenous populations has not been prioritized. While chronic conditions such as diabetes, arthritis, and mental health have been more frequently studied, their relationship to disability, especially pain-related disability remains underexplored.

Furthermore, the reasons for the higher prevalence of pain-related disabilities among First Nations people living off-reserve, Inuit, and Métis may be multifactorial and rooted in the detrimental effects of colonialism.³⁴ In addition, factors which effect whether or not pain can result in disability being experienced are often not captured in ways that reflect Indigenous perspectives. Focusing on this topic was further affirmed through the initial and ongoing engagement with members of the Indigenous Advisory Committee (which will be discussed in subsequent sections throughout this dissertation). Ultimately, the goal of my dissertation was to generate knowledge which can inform a more culturally grounded understanding of pain-related disabilities that Indigenous communities, partners and organizations may choose to take up and adapt for their own health agendas and advocacy efforts.

1.3 HISTORICAL CONTEXT

In Canada, *Indigenous* is a collective name used to describe the first inhabitants as well as their descendants, and includes First Nations, Inuit and Métis peoples.³⁵ The term *Aboriginal* has been a government imposed and legally defined term used when referring to Canada's original peoples.³⁶ Using the term Indigenous as opposed to Aboriginal, supports individuals, families and communities in choosing how they may wish to self-define, as this plays a pivotal role in self-determination.³⁶

Historically, the treatment of Indigenous peoples in Canada has been one of great oppression, pain and exploitation. The effects of colonialism and the ban of cultural practices have had detrimental effects, which continue to be felt throughout multiple generations.³⁴ Thus, to understand disability among Indigenous peoples in Canada, we must first consider the effects of colonialism. Colonialism is the act of settlers (people from other countries) coming to a new land and imposing their own "laws and public processes that are designed to violate the human rights of the Indigenous peoples".³⁷ In turn, Indigenous languages, cultures, governance and legal structures are suppressed, resulting in Indigenous peoples being forced to conform and abide by the new colonial systems in place.³⁷

Colonialism has led to an unequal distribution of resources, supports and power, which has given rise to differences in opportunities available to Indigenous peoples and created barriers towards achieving optimal health.⁸ These colonial processes have resulted in a lack of Indigenous perspectives being a part of the initial decisions and policies pertaining to the health and well-being of First Nations, Inuit and Métis communities.³⁸

As a starting point to rebuild relationships with Indigenous peoples, the Truth and Reconciliation Commission (TRC) of Canada worked from 2007-2015 to begin facilitating reconciliation among former students, families and communities affected by the sorrowful legacy of residential schools. More than 6,500 individuals from throughout Canada shared their experiences, contributing to a national dialogue on reconciliation.³⁹ The TRC's final report issued 94 calls to action which urged for the continued journey of true reconciliation between Canadians and Indigenous peoples.⁴⁰ Among them is the call to adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) as a framework for reconciliation. UNDRIP establishes standards for the rights and well-being of Indigenous peoples.⁴¹ This includes the right to be actively and respectfully engaged in decisions affecting their lives.⁴² Building collaborative relationships with Indigenous peoples through research projects which are culturally grounded, supports these principles contributing to both the decolonization and Indigenization of research practices.

The concept of disability has historically carried negative connotations shaped by colonial views.^{9, 12} These views have often reinforced deficit-based thinking and further marginalized Indigenous peoples experiencing disabilities. Therefore, it becomes imperative to reframe our understanding of disability. Changing the narrative is essential to challenging the dominant settler-colonial lens and reclaiming space for Indigenous voices and perspectives.

1.3.1 Applying a strength-based approach to secondary data

Changing the narrative around pain-related disabilities requires a deliberate shift towards a strength-based approach. This means recognizing the distinct experiences of First Nations, Inuit, and Métis peoples. Through ongoing conversations with the Indigenous Advisory Committee, it

became clear that this meant rejecting a pan-Indigenous approach and instead grounding the research in three specific frameworks that reflect the unique histories, cultures, and priorities of each group. Situating this work within the broader context of colonialism is critical to understanding the root causes of health inequities, and to ensure that Indigenous voices are not only included but meaningfully heard, respected, and valued throughout the research process, and not treated as an afterthought. Given that applying strength-based principles may vary across projects, this dissertation follows the guidance of the Indigenous Advisory Committee in describing what strength-based means in this particular work. In contrast, a deficit-based approach as described by Indigenous Advisory Committee members relies on generalizations, uses a pan-Indigenous perspective, and risks perpetuating narratives that place blame on Indigenous peoples rather than addressing the structural and intergenerational effects of colonialism. *But how can one apply a strength-based approach to secondary data?*

My dissertation draws on secondary data from the 2017 Aboriginal Peoples Survey (APS), which at the time was the most recent cycle available and most comprehensive source of disability-related information for First Nations people living off-reserve, Inuit, and Métis. While disability is a colonial construct, it is the term currently used within national surveys and by many Indigenous organizations to access services and advocate for inclusive environments. Acknowledging that many Indigenous languages lack a direct equivalent, I engaged with an Indigenous Advisory Committee that I put together to govern and support this work, to discuss how to navigate the use of such terminology within secondary data. These conversations reinforced that there is no one-size-fits-all approach. Rather, respectful, ongoing dialogue with members helped guide ethical decision-making.

Understanding the 2017 APS involved discussions with the Indigenous Advisory Committee about both its strengths and limitations. Each survey cycle incorporated changes based on feedback from Indigenous partners, allowing it to be more responsive to the needs of communities and organizations. For example, the definition of pain-related disabilities was informed by input from Indigenous reviewers during multiple rounds of qualitative testing.⁴³ Moreover, the survey question refers to any form of pain, placing emphasis on whether the pain experienced limits daily activities, aligning with more holistic understandings of pain and functioning. However, it was also important to critically reflect on the challenges of using secondary data.

The use of the 2017 APS, while valuable for exploring population-level trends, presents inherent limitations in fully aligning with Indigenous data sovereignty and governance principles. Data governance and sovereignty are essential to ensuring that research involving First Nations, Inuit, and Métis peoples respects their rights, priorities, and self-determination. Many communities have developed their own principles to guide how data is collected, used, and shared. In Canada, the OCAP® principles (Ownership, Control, Access, and Possession) are widely recognized among First Nations, while Inuit Tapiriit Kanatami promotes Inuit Qaujimajatuqangit (IQ) principles, and Métis Nations often have their own distinct governance frameworks.^{44, 45} These community-driven approaches align with the broader global CARE principles (Collective benefit, Authority to control, Responsibility, and Ethics), which center Indigenous data needs and values.⁴⁶

As a government-owned dataset, the APS is not governed by First Nations, Inuit, or Métis communities, which means that principles such as OCAP®, Inuit Qaujimajatuqangit (IQ), and

Métis-specific data frameworks cannot be fully upheld. These limitations reflect the ongoing structural challenges of using externally controlled data sources, where Indigenous peoples have limited authority over how their data are interpreted and used. One important and meaningful way to address this challenge was through continued engagement with the Indigenous Advisory Committee, which helped to partially address these gaps by guiding the wording of research questions, interpretation, and contextual framing in ways that were respectful and community-informed.

1.4 THEORETICAL FRAMEWORK: TWO-EYED SEEING

Brought forward by Mi'kmaq Elder Albert Marshall, *Two-Eyed Seeing* (*Etuaptmumk*) is a guiding principle which encourages learning to see from one eye with the strengths of Indigenous knowledge and from the other with the strengths of Western knowledge, using both together for the benefit of all.⁴⁷ This approach does not give preference to one worldview over the other. Rather, based on the context, it promotes respectful weaving between perspectives, drawing on each system strengths as needed. As an emerging epidemiologist, this means going through a co-learning journey, which honours multiple ways of knowing and fosters equitable engagement across knowledge systems. In this thesis, applying a Two-Eyed Seeing lens allowed for a holistic understanding of disability, particularly in the context of pain by integrating culturally grounded Indigenous perspectives (where applicable) with conventional epidemiological approaches. As such, a constant theme throughout this work was to collaboratively develop research processes which were culturally meaningful, respectful and relevant.

While the ICF provides a universal framework for conceptualizing disability and functioning, applying a Two-Eyed Seeing approach in unison allows for the integration of

Indigenous ways of knowing. These complementary perspectives broadened my understanding of disability by allowing for the consideration of dimensions often overlooked in Western models such as components related to culture, spirituality and community. While other methodologies exist which can be relational, based in storytelling, and support ethical spaces of engagement,⁴⁸⁻⁵⁰ Two-Eyed Seeing was selected and reinforced by the Indigenous Advisory Committee as it centers respectful coexistence and mutual strengths of Indigenous and Western knowledge systems.

1.4.1 Formation of an Indigenous Advisory Committee

Throughout this dissertation, I was privileged and honoured to partner with an Indigenous Advisory Committee (IAC). The IAC was composed of Indigenous knowledge holders and individuals with lived experience of disability, including an Elder (who served a dual role on the Supervisory Committee), community members, and healthcare professionals. The IAC played a central role throughout the research process, contributing to the study objectives, design, methodology, analysis, interpretation, and dissemination. Their involvement assisted in ensuring that Indigenous perspectives were meaningfully considered and integrated, when possible, at every stage. Guidance and feedback from the IAC were incorporated iteratively using an integrated knowledge translation approach. Integrated Knowledge Translation (iKT) is a collaborative research approach that engages knowledge users (e.g., community members, health practitioners, educators) as equal partners throughout the entire research process helping to shape findings and conclusions which were culturally-grounded, meaningful and respectful.⁵¹

Members of the IAC worked closely with me providing critical insights which shaped my thesis and as such, contributed as co-authors. Discussions with the IAC emphasized the importance

of viewing disability and pain holistically, encompassing the mind, body, spirit, and emotions. Earlier conversations further highlighted the need to move beyond deficit-based narratives by applying a strength-based approach grounded in Indigenous-specific perspectives. This meant changing the proposed wording of the overall aim of my dissertation, which originally included the word *burden*, to now use *extent*. Members explained the negative connotations often associated with the term *burden* and encouraged a shift toward more neutral and respectful language. Similarly, while members of the IAC supported the use of the ICF to conceptualize disability and functioning, they recommended replacing the Integrated Life Course and Social Determinants of Health (ILCSDOH) framework⁸ with three group-specific frameworks (which will be discussed in Chapters 3 to 5) which better reflect the distinct contexts of First Nations, Inuit, and Métis peoples.

The IAC also provided guidance on appropriate language and search terms for the scoping review, recommended relevant sources to search, and provided feedback on group specific frameworks and variables to consider throughout the analysis, interpretation, and dissemination of findings. These contributions significantly enhanced the quality, relevance and methodological rigour of this research. In the Discussion chapter, I present specific examples which further illustrate engagement with the IAC.

1.4.2 Situating myself in the research

As I journeyed through this process, engaging in this research required an openness to learning, unlearning, and rethinking my own assumptions, knowledge, and ways of being. From the beginning, it was important for me to recognize that new ideas, multiple perspectives and ways of doing would emerge, and as such, my way of thinking, knowing, and doing would adapt and

evolve as well. I also acknowledge that *research*, a term often used to describe academic inquiries, carries a legacy of harm for many Indigenous communities due to past unethical practices. This recognition deepened my commitment to approach this work differently – with humility, care, and responsibility. To this end, reflexive journaling became an essential part of this process, enabling critical self-awareness across personal, interpersonal and collective dimensions.⁵² This reflexivity helped raise an awareness of how my positionality, which was and has been shaped by my training, lived experiences, and cultural background, can influence the research.^{49, 53} This further reinforced the need of being accountable.

Situating myself within this research was both a methodological and ethical commitment. As a settler of Indian descent, raised in what is now known as Oshawa, Ontario – the traditional territory of the Mississaugas of Scugog Island First Nation, I realized how little I had been exposed to Indigenous histories, cultures, and perspectives while growing up. Although I thought I understood colonialism within the context of Canadian history and Indigenous peoples, I quickly learned that what I thought I understood was very different from what I actually understood. My interest in Indigenous health emerged during my early work as a youth program facilitator, where I had the privilege to work with and serve youth who came from various backgrounds and situations, all of whom experienced numerous barriers and hardships in life. It was during this time, through my interactions with the Indigenous youth in particular, that I began to learn that many of these youth lived within the urban communities, same as me, but yet had experienced and continued to experience numerous barriers. Their stories of resilience in the face of systemic barriers sparked a growing curiosity, and later, a sense of responsibility to better understand the historical, political, and social contexts shaping Indigenous health and disability.

Throughout my PhD journey, I was guided by the generous insights of Indigenous Elders, community members, and cultural advisors, in particular, through conversations with Elder Dorothy Taylor, who shared her perspectives on the spiritual roots of disability and the need for holistic approaches. This dialogue and others, highlighted that disability among Indigenous peoples in Canada remains an underexplored topic, shaped by unique historical and cultural factors. I learned that disability cannot be fully understood through clinical or diagnostic frameworks alone. Rather, it must be approached as a lived experience placed within the context of the past, present, and future. These teachings shaped the direction of this work and my commitment to engaging in epidemiological research that is respectful and relational.

Additionally, it was fundamental for me to recognize and acknowledge that secondary data, such as pain-related disability estimates from the APS, would not be sufficient on their own.⁵⁴ Such data must be interpreted alongside the cultural understandings and priorities of First Nations, Inuit, and Métis communities to meaningfully support their health agendas. One early question raised was whether the APS was the appropriate dataset for this dissertation's research questions. Through ongoing dialogue, it became clear that given the available data at the time, the APS was the most suitable source. However, this process also highlighted my ethical responsibility to ensure that any government-collected data used was situated within Indigenous perspectives and applied in ways that support strength-based, culturally grounded narratives. My role as a researcher has been to first listen and learn how such data can be used to challenge and reclaim historically colonial interpretations of Indigenous health.

1.5 OVERALL AIM AND RESEARCH OBJECTIVES

The overall aim of my thesis was to explore the prevalence of and factors associated with pain-related disabilities among Indigenous peoples in Canada. In discussions with members of the IAC and for the purpose of my research, pain-related disabilities were defined broadly as experiencing limitations in functioning, daily activities, and/or participation due to pain. Pain could be experienced in any form (physical, emotional, mental or spiritual). Specifically, I address three specific research objectives.

1. To describe the prevalence, incidence, factors associated with pain-related disabilities, and experiences of limitations due to pain among Indigenous peoples in Canada.
2. To determine the prevalence of pain-related disabilities overall, and by region, age, sex, number and type of co-existing disabilities among First Nations living off-reserve, Inuit, and Métis peoples in Canada in 2017.
3. To investigate the factors associated with pain-related disabilities among First Nations living off-reserve, Inuit, and Métis peoples in Canada in 2017.

The first research objective was addressed through a scoping review of the literature, while the second and third were addressed through the secondary analysis of Statistics Canada's 2017 Aboriginal Peoples Survey. The work presented in this dissertation builds on the report published by Statistics Canada which provided an overview of disability estimates among First Nations living off-reserve, Inuit, and Métis peoples using data from the 2017 Aboriginal Peoples Survey.³³ For the purpose of this thesis the public use microdata file was used to reproduce the overall prevalence of pain-related disabilities among the three Indigenous groups, and stratified by sex. As a result, there may be minor differences between the estimates presented here and those reported by

Hahmann et al. (2019) who used the analytical file. This thesis extends the original Statistics Canada analysis by computing age, and region-specific prevalence estimates, conducting regression modelling guided by Indigenous-specific frameworks, stratifying the models by sex, producing 95% confidence intervals for all estimates, and most importantly, engaging directly with an IAC throughout the process.

1.6 STRUCTURE OF THE THESIS

This thesis is presented in a journal article format and is organized into six chapters: an introduction (Chapter One), four manuscript-based papers (Chapters Two through Five), and a general discussion (Chapter Six). In alignment with guidance received from the IAC, which emphasized the importance of avoiding a pan-Indigenous approach, findings are presented using a distinction-based framework respecting the unique contexts of First Nations, Inuit, and Métis peoples. As such, the results from objectives two and three are not presented as separate papers per objective, but rather as three distinction-based papers, each focusing on one of the three Indigenous groups.

My thesis contributes to the existing body of literature by addressing the gap in our knowledge of pain-related disabilities among Indigenous peoples in Canada. This is a topic which has received limited epidemiological attention, in particular in integration with Indigenous perspectives. Working in partnership with an IAC, and applying a strength-based approach to national population-based data offers novel insights into the prevalence and factors associated with pain-related disabilities among First Nations people living off-reserve, Inuit, and Métis. Methodologically, my thesis contributes to advancing the field by integrating the ICF with

Indigenous-specific health frameworks. This contributes to the ongoing discourse on decolonizing disability-related research within epidemiology.

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CHAPTER TWO

Prevalence, incidence, and factors associated with pain-related disabilities, and experiences of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada: A scoping review*

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2.1 ABSTRACT

Objectives: To describe the prevalence, incidence, factors associated with pain-related disabilities, and experiences of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada.

Methods: We conducted a scoping review of the literature. The search strategy, developed with a health sciences librarian, included Indigenous-specific and health peer-reviewed databases, and grey literature for studies from inception to May 23, 2023. We included epidemiological, qualitative, and mixed-methods studies assessing pain-related disability outcomes among First Nations, Inuit, and Métis peoples in Canada.

Synthesis: We screened 5902 citations from the peer-reviewed databases, of which 86 were screened as full-text items, and 49 were screened separately from grey literature sources. Two relevant items were retrieved. In 2017, an epidemiological study reported point prevalence estimates of pain-related disability lasting 6 months or more as follows: 11.4% among Inuit, 20.7% among Métis, and 22.2% among off-reserve First Nations people, with higher prevalence in women than in men. In 2002, a qualitative study highlighted emergent themes related to “difficulty coping with pain” and “suffering” among Cree adults with disabilities from the Mushkegowuk Territory. No studies reported on the incidence or factors associated with pain-related disability.

Conclusion: Our scoping review found two studies on pain-related disabilities among Indigenous peoples in Canada. Continued collaboration with Indigenous partners is required to contextualize these findings and determine appropriate next steps.

2.2 INTRODUCTION

Due to the devastating effects of colonization in Canada, First Nations, Inuit, and Métis peoples (henceforth referred to as Indigenous where applicable) are disproportionately affected by disability, with higher rates reported in Indigenous populations compared to non-Indigenous counterparts.¹⁻³ Living with disability can cause significant discomfort and pain, and conversely, pain itself can cause considerable disability. While disability and pain are closely interconnected, the body of literature regarding disability related to pain among First Nations, Inuit, and Métis peoples in Canada remains scarce. A recent scoping review identified the literature largely investigated pain conditions, while a review examining works in and outside of Canada reported a higher proportion of pain experienced by Indigenous peoples compared to non-Indigenous populations.^{4,5} Although pain is highly prevalent,⁶⁻⁸ little is known about the impact of pain on functioning, participation, and activities of daily living among First Nations, Inuit, and Métis peoples in Canada.

One factor contributing to this is that the construct of disability is dynamic and multifaceted. For many, it encompasses the relationship among body structures and functions, daily activities, and social participation, in interaction with personal and environmental factors.⁹ As such, according to Western models, disability can arise when functioning is limited due to a health condition.⁹ In contrast, among certain First Nations, Inuit, and Métis languages and communities, the term “disability” often does not exist or holds different meaning, and those born with different abilities are celebrated for their uniqueness.^{10,11} For some, these abilities are meant

to be viewed as gifts that serve a purpose in strengthening the community as a whole.^{12, 13} Hence, multiple realities can play a role in understanding the construct of disability. Moreover, the conceptualization of pain can extend beyond the context of physical sensations, interconnecting with emotional, social, and spiritual aspects of an individual.¹⁴ However, the predominance of Eurocentric knowledge paradigms has created a hierarchy between Western approaches and Indigenous knowledge. Thus, to understand pain-related disability among First Nations, Inuit, and Métis peoples in Canada, we must first consider the effects of historical and contemporary colonialism.

Indigenous peoples are those who are descendants of the original (first) inhabitants of the land.¹⁵ Historically, the treatment of Indigenous peoples in Canada has been one of oppression, genocide, pain, exploitation, and racial discrimination increasing within the healthcare system.¹⁶ Colonial processes have often resulted in a lack of Indigenous perspectives being part of decisions and policies pertaining to the health and well-being of First Nations, Inuit, and Métis, and urban Indigenous communities.¹⁷ Living with disability often requires access to tailored community services, as well as health and rehabilitation services.¹⁸ However, Indigenous peoples with pain-related disabilities may face additional barriers to adequately accessing care. These barriers include, but are not limited to, discrimination and systemic racism, limited opportunities often resulting in financial barriers, limited access to and availability of health professionals, services and equipment, and scarcity of services in rural and urban areas.^{3, 19}

The effects of colonialism, the legacy of residential schools involving the forced removal of children from their communities, and the ban of cultural practices have had detrimental effects, which continue to be felt throughout multiple generations.²⁰⁻²² Contemporary colonialism continues to prevail through the invasive control of non-Indigenous procedures, rules, and

standards embedded within all levels of government. Alfred and Corntassel (2005) write of colonial processes that actively persist in "... trying to eradicate their existence as peoples through the erasure of the histories and geographies that provide the foundation for Indigenous cultural identities and sense of self"(p. 598).²³ As such, colonialism has led to an unequal distribution of resources, supports, and power that has given rise to differences in opportunities available for First Nations, Inuit, and Métis peoples. This has created barriers towards achieving optimal health, particularly for those with pain-related disabilities. In their 2020 report, the Canadian Pain Task Force describes a higher incidence of pain and pain-related disability among Indigenous peoples than in non-Indigenous populations. The report further describes symptoms related to chronic pain as a primary reason for seeking healthcare among Indigenous peoples; however, due to systemic racism and discrimination within the healthcare system, many Indigenous people do not get the care they need.²⁴ As such, for those living with pain-related disabilities, these barriers to seeking and receiving healthcare can have profound implications on the health and well-being of Indigenous peoples who may be faced with an unsafe environment and fearful to seek necessary care when needed.^{25, 26}

For too long, Indigenous voices and perspectives have been excluded from conversations pertaining to their own health.¹⁸ Investigating pain-related disabilities through respectful and active engagement with First Nations, Inuit, and Métis peoples further supports the underpinnings on which the 94 calls to action issued by the Truth and Reconciliation Commission of Canada (2015) were built.²⁰ Exploring this area of research offers insights into a novel field of literature, allowing us to significantly contribute towards understanding the epidemiology of pain-related disabilities through an evidence-informed dialogue with Indigenous peoples. This in turn can contribute towards developing effective and equitable healthcare access, delivery, and services

grounded in community priorities to reduce pain-related disabilities. Working collaboratively with an Indigenous Advisory Committee, and guided by the Mi'kmaq principles of *Etuaptmumk* (Two-Eyed Seeing) in which both Indigenous and Western knowledge and ways of knowing are used,²⁷ we conducted a scoping review to identify and synthesize the peer-reviewed and grey literature to describe the prevalence, incidence, and factors associated with pain-related disabilities, and experiences of limitations in activities, functioning, or participation due to pain among First Nations, Inuit, and Métis peoples in Canada.

2.2.1 Review questions

Our scoping review addressed the following research questions: (1) What is the prevalence of disability related to pain among Indigenous peoples in Canada? ; (2) What is the incidence of disability related to pain among Indigenous peoples in Canada? ; (3) What factors are associated with pain-related disabilities among Indigenous peoples in Canada? ; and (4) What are the experiences of limitations in activities, functioning, or participation due to pain among Indigenous peoples in Canada?

2.3 INCLUSION CRITERIA

2.3.1 Population

We included studies of peoples from First Nations, Inuit, Métis, and urban Indigenous nations and communities of any age in Canada. If the study included Indigenous and non-Indigenous participants, stratified results by Indigenous identity needed to be available.

2.3.2 Concept

Eligible studies investigated pain-related disabilities, which were defined as experiencing limitations in functioning, daily activities, or participation due to pain.⁹ This included disability related to any conditions associated with pain, self-reported or medically diagnosed. While pain

can present in any form (e.g. physical, emotional, mental, or spiritual), it had to be linked to disability to be eligible for our review. We excluded studies which focused on the prevalence or incidence of pain-related conditions (e.g. rheumatoid arthritis) that did not report on pain-related disability.

2.3.3 Context

Studies conducted in Canada during any year or within any setting which reported on the prevalence, incidence, factors, or experiences associated with pain-related disabilities were included.

2.3.4 Types of sources

With the specificity of the research questions above, eligible studies met the following criteria: (1) epidemiological studies (cross-sectional studies to estimate prevalence or associated factors; cohort or ecologic studies to estimate prevalence, incidence or associated factors; case–control studies to estimate associated factors); (2) qualitative studies to describe experiences of limitations in activities, functioning, or participation due to pain; we also included qualitative studies to inform the analysis of epidemiological studies regarding variables to consider when understanding potential factors associated with pain-related disabilities; or (3) mixed-methods studies. We excluded the following publication types from the overall evidence synthesis: case series, case reports, narrative reviews and systematic reviews, scoping reviews, randomized controlled trials, commentaries, guidelines, letters, editorials, books and book chapters, meeting abstracts, lectures, cadaveric or animal studies. However, we manually reviewed the reference lists of relevant narrative, scoping and systematic reviews, conference abstracts, and book chapters to determine whether any articles included may be eligible in answering our research questions.

2.4 METHODS

We selected a scoping review as a starting point to understand the breadth and depth of the current landscape of the pain-related disability literature among Indigenous peoples in Canada, and identify the type of evidence available and gaps in knowledge to inform future research initiatives.²⁸ The conduct of our scoping review was guided by the JBI methodology for scoping reviews²⁹ and according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist.³⁰ Our scoping review protocol was registered a priori with Open Science Framework (OSF) Registries ([https:// doi.org/ 10.17605/ OSF. IO/ TSH5W](https://doi.org/10.17605/OSF.IO/TSH5W)).

2.4.1 Search strategy

We developed our search strategy with an experienced health sciences librarian, along with a second librarian who independently reviewed our strategy using the Peer Review of Electronic Search Strategies Checklist.³¹ We searched both Indigenous-specific (Informit Indigenous Collection) and health peer-reviewed databases—MEDLINE (Ovid), EMBASE (Ovid), CINAHL (EBSCO), PubMed, PsycINFO (Ovid), and Scopus for epidemiological, qualitative, and mixed-methods studies—with no limits placed on publication years or language. We defined keyword search terms and concept groups related to pain, disability, and Indigenous peoples in Canada. The initial search strategy was developed using subject headings specific to Ovid MEDLINE and then adapted to the other databases (Appendix A.2).

We followed the methodology proposed in the *Cochrane Handbook* to identify relevant grey literature, and as such searched reports, dissertations, and theses (through key organizations, websites, and ProQuest Dissertations and Theses Global database).³² When searching the grey literature, we used Grey Matters Checklist,³³ along with other documentation strategies to guide

the conduct of our grey literature search for published and unpublished studies.³⁴ Appendix A.3 outlines the detailed strategies used to organize the grey literature search.

2.4.2 Study/source of evidence selection

We used a two-phase screening process (phase I: titles/abstracts and phase II: full-text) to identify eligible studies and literature. Prior to phase I, AD, JV, and HY pilot tested the screening of titles/abstracts with 100 randomly selected citations to discuss any disagreements or inconsistencies prior to screening. Reviewers needed to achieve $\geq 80\%$ agreement during pilot testing before completing title/abstract screening. Pairs of trained reviewers independently screened all items (AD/JV, and AD/HY) in phase I and phase II to identify relevant studies. We similarly screened the grey literature in a two-phase process. Any disagreements throughout the peer-reviewed database and grey literature screening process were discussed, with the paired reviewers reaching consensus. We used EPPI-Reviewer (version 6.15.0.2) to manage all phases of the review process.³⁵ Full-text studies which did not meet the inclusion criteria were excluded, with reasons for their exclusion provided in Appendix A.4.

2.4.3 Data extraction

One reviewer extracted data from eligible studies and built evidence tables. We extracted the following information from relevant studies: author, year, years of observation, study aim, design and mode of administration, sample participants, age, sex/gender, sociodemographic and health characteristics, Indigenous population or community, geographical region, pain-related disability outcome measure, comparison population, and adjustment variables. We extracted estimates of prevalence and incidence, and measures of association for associated factors (where applicable and provided). We also extracted themes in relation to describing limitations in

activities, functioning, or participation due to pain. The data extracted were verified independently by a second reviewer.

2.4.4 Data analysis and presentation

We computed the inter-rater reliability using the Cohen's kappa statistic and percentage of agreement between reviewers for the titles/abstract and full-text screening. From the charted data, we narratively summarized the characteristics of the included studies organized by data first describing epidemiological studies on the prevalence of pain-related disability, the incidence of developing a pain-related disability, and factors associated. Next, we provided relevant information from qualitative (e.g., themes) and mixed-methods studies on individuals reporting limitations in activities, functioning, or participation due to pain.

2.4.5 Indigenous Advisory Committee

We conceptualized our scoping review using elements of an integrated knowledge translation approach.³⁶ An Indigenous Advisory Committee (IAC) was established and consisted of a respected Elder and traditional knowledge holder, and Indigenous healthcare professionals and researchers, who are knowledge-users themselves, with expertise within the realm of Indigenous health and well-being. The IAC worked collaboratively with the research team in the development of the review methodology to review the research questions, concept groups, and key search terms, as well as the search strategy. The IAC had representation from First Nations, Métis, rural, and urban Indigenous individuals, all of whom resided in different geographical areas within Canada. In addition, the IAC provided guidance on additional databases and sources of grey literature to be searched, reviewed materials, and provided reflections on the included studies, and guidance on knowledge translation and next steps. The teachings and reflections shared influenced our thinking and shaped the interpretation of our findings. With each Indigenous community

having its own identity, history, and culture, we acknowledge that while it was not possible to engage members from all communities, we strive to work with and identify a diverse group of individuals who brought complementary knowledge to the IAC in consideration of the physical, mental, emotional, and spiritual dimensions of health and functioning.

In collaboration with the IAC, the findings of this review were discussed with its members in order to contribute towards the development of an evidence-informed program of research to further understand pain and disability among Indigenous peoples in Canada. During meetings with the IAC, the study protocol, plan for analysis, and interpretation of results were discussed. In addition to working with the IAC to discuss the dissemination of findings through appropriate knowledge translation activities, we consulted with the Canadian Chiropractic Association (CCA), a national organization which works to address and advocate for the musculoskeletal health needs of all, to actively share our findings with Canadian chiropractors and chiropractic organizations. We also worked with the IAC and CCA to identify the implications of the findings for healthcare professionals, along with next steps.

2.4.6 Study protocol deviation

Our review protocol registered on OSF Registries indicated we would explore disability related to painful conditions, specifically: (1) What is the prevalence of disability related to painful conditions among Indigenous peoples in Canada? ; (2) What is the incidence of disability related to painful conditions among Indigenous peoples in Canada? ; and (3) What factors are associated with pain-related disabilities among Indigenous peoples in Canada? However, after consultations with the IAC, our research questions 1 and 2 were modified prior to the review being initiated to state “disability related to pain” in lieu of “painful conditions”. This revision was made because experiencing pain-related disability may not solely be restricted to those with a painful condition.

Additionally, given that our search included qualitative studies, a fourth objective was added to clarify the purpose of including qualitative study designs within the research objectives stated.

We updated our scoping review methodology to follow the guidance provided by the most recent *JBI Manual for Evidence Synthesis*,²⁹ which builds on the six-stage approach described by Arksey and O'Malley and recommendations by others.²⁷⁻²⁹ As such, a preliminary search for existing and in-progress scoping or systematic reviews on the topic was not identified through the Cochrane Database of Systematic Reviews and JBI Evidence Synthesis. Moreover, because our initial screening yielded only one epidemiological study, we re-screened the 829 citations that were initially excluded based on study design to include case reports and case-series (hypothesis-generating designs), and theses. As a result, we identified one (Master's thesis) that met our inclusion criteria.

2.5 RESULTS

We retrieved 9812 citations from the peer-reviewed literature of which 86 full-text items were reviewed for eligibility, and 49 from the grey literature (Figure 2.1). For the titles/ abstracts screened by paired reviewers, the percentage of agreement was greater than 95% with corresponding kappas of 0.55 [95% CI (0.42, 0.68)] and 0.76 [95% CI (0.66, 0.86)] for the two reviewing pairs. Screening of full-text items in phase II yielded perfect agreement. Of those, two were included in our review: a national cross-sectional study which reported the prevalence of pain-related disabilities among First Nations people living off reserve, Métis and Inuit (*objective 1*),¹ and a qualitative study which explored the lived experiences of Cree adults living with disabilities from the Mushkegowuk Territory (*objective 4*).⁴⁰ No studies reported the incidence of pain-related disability, or factors associated (*objectives 2 and 3*).

During full-text screening, we excluded most citations because they did not report on pain-related disability (Appendix A.4).

2.6 EPIDEMIOLOGICAL STUDIES

2.6.1 The prevalence of pain-related disabilities

The cross-sectional study conducted by Statistics Canada used the Disability Screening Questions (DSQ) introduced in the 2017 Aboriginal Peoples Survey to measure the prevalence of disability among First Nations people living off reserve, Métis and Inuit 15 years and older.¹ The authors reported that the point prevalences of pain-related disabilities lasting 6 months or more were 11.4% among Inuit, 20.7% among Métis, and 22.2% among First Nations people living off reserve (Table 2.1).¹ Within this study, the DSQ asked about any form of pain. The prevalence estimates for First Nations people living off reserve and Métis were higher than those for the non-Indigenous comparison group (14.2%).

In addition, the single cross-sectional study reported that women reported a higher prevalence of pain-related disabilities as compared with men.¹ This finding was consistent among the three groups, First Nations people living off reserve (women 26.2%, men 17.4%), Métis (women 24.0%, men 17.2%), and Inuit (women 13.7%, men 8.8%). The prevalence estimates for First Nations people living off reserve and Métis were higher than those for the non-Indigenous comparison group (women 16.1%, men 12.2%).

2.6.2 The incidence of pain-related disabilities

No studies reported the incidence of pain-related disability.

2.6.3 Factors associated with pain-related disabilities

No studies reported factors associated with pain-related disability.

2.7 QUALITATIVE AND MIXED-METHOD STUDIES

2.7.1 The experiences of limitations in activities, functioning, or participation due to pain

Robarts (2002) conducted a qualitative ethnographic study using participatory development methods to understand the lived experiences of Cree adults with disabilities from communities in the Mushkegowuk Territory. Focus groups and semi-structured interviews were conducted with 31 people with disabilities, 15 caregivers, and 15 community spokespersons and healthcare professionals. From the case descriptions of individuals living with disabilities, two (of the six) emergent themes spoke towards experiences of limitations in activities, functioning, or participation due to pain. These two themes were “Difficulty coping with pain” and “Suffering”. Additionally, the impact of pain was an underlying notion throughout this thesis.⁴⁰

2.8 DISCUSSION

To our knowledge, this article is the first comprehensive review in Canada to investigate the peer-reviewed and grey literature exploring the prevalence, incidence, and factors associated with pain-related disabilities, and any experiences of limitations in activities, functioning, or participation due to pain among First Nations, Inuit, and Métis peoples. Our scoping review found only two studies: one with pain-related disability prevalence estimates for First Nations out of community, Métis, and Inuit from different geographical locations throughout Canada, and another which shed light on important themes with regard to the impact of pain on functioning for Cree adults living with disabilities from communities in the Mushkegowuk Territory. No studies reporting on the incidence or factors associated were found.

Previous systematic reviews summarized the measures of occurrence for pain-related conditions such as rheumatic diseases and multiple sclerosis among Indigenous populations in the Americas (Canada, the United States, Latin America), Australia, and New Zealand.^{41, 42} Further

reviews explored pain without focusing on disability or functioning. For example, Jimenez et al. (2011) found 12 studies which focused on the epidemiology of pain among American Indian, Alaska Native, and Aboriginal peoples, two of which reported prevalence estimates for painful conditions, such as arthritis among adult First Nations in the province of Manitoba, and dental caries among First Nation preschool children in the Inuvik Region.⁵ Additionally, Julien et al.'s (2018) review of the non-cancer pain literature identified ten studies that reported prevalence estimates of chronic non-cancer pain in general or condition specific among Aboriginal people in Canada.⁴³ However, a key feature differentiating our review from those previous ones is that these reviews did not focus on the disability experienced due to pain (i.e. limitations in functioning or activities, or participation restrictions).

In addition, through our discussions with the IAC, the few studies retrieved further reinforced Indigenous perspectives that their pain continues to be minimized, not taken seriously, nor validated in the research literature. It remains largely unknown whether current outcome measures used for pain are reflective of the true pain experienced by Indigenous peoples given that pain manifests itself in many different forms, from physical to emotional, mental, and spiritual. Given the low number of studies in our review, we hypothesize the subjective nature of pain and the diverse understanding of disability within First Nations, Inuit, and Métis communities as a contributing factor to the current gap in the literature. Therefore, the findings of our scoping review highlight the importance for healthcare professionals to acknowledge and recognize the different ways pain and disability can be expressed. Accounting for these differences can prevent experiences of pain and disability from being devalued, dismissed as inconsequential, minimized, or misinterpreted.

2.8.1 Strengths and limitations

Our scoping review, developed in collaboration with the Indigenous Advisory Committee, takes a strength-based and decolonized approach to centre Indigenous voices. Other strengths include using a systematic methodology to search the literature and working with a health sciences librarian to develop a robust search strategy, which was peer-reviewed by a second librarian. We conducted a comprehensive search of various databases, including both peer-reviewed and grey literature. Furthermore, we utilized the health science search filters by the University of Alberta library, which contain an extensive set of Indigenous-specific search filters per province and territory in Canada.⁴⁴ All reviewers underwent training with a pilot screening exercise prior to commencing the phase I title and abstract screening.

We also acknowledge the limitations of our scoping review. Our selection criteria focused on studies conducted in Canada and on studies that investigated pain-related disability. Therefore, the results of our review may not be generalizable to other Indigenous populations. The concepts of “pain” and “disability” have varying meanings among different Indigenous communities, which may result in the potential omission of community-specific terminology used to describe these concepts. Furthermore, given the diversity among First Nations in and out of community, Métis, and Inuit groups, and urban Indigenous peoples, it is possible that certain terms used to describe specific nations, communities, bands, or tribes may not have been captured. To mitigate this, we worked with members of the IAC during the development of the search strategy to integrate Indigenous terminology and perspectives from the onset. Finally, while the IAC had representation from First Nations, Métis, and urban Indigenous individuals, this committee did not include direct representation from Inuit communities, despite our efforts.

2.8.2 Implications for research, practice, and policy

Although the prevalence of pain-related disability among Indigenous peoples in Canada is not well documented, it is known that the prevalence of other types of disabilities and overall disability is higher among Indigenous peoples than among non-Indigenous populations.^{1, 2} Moreover, the study by Hahmann et al. (2019) included in our scoping review found that pain-related disabilities were the most prevalent type of disability among the ten different types measured in the 2017 Aboriginal Peoples Survey.

Given these findings, we make a specific call to action for those involved in Indigenous health research and care. It is crucial to recognize the importance of incorporating First Nations, Inuit, and Métis methodologies and perspectives.⁴⁵ Researchers, healthcare providers, and policymakers must work collaboratively *with* and *for* communities to address and remove barriers to care and improve access to supports and services. For researchers, this means designing studies that are culturally relevant and inclusive of Indigenous ways of knowing. For healthcare providers, it involves being aware of and sensitive to the unique experiences and needs of Indigenous patients with pain-related disabilities. For policymakers, it is essential to develop policies that support equitable access to healthcare and resources for Indigenous communities. By working together and prioritizing the inclusion of Indigenous voices and knowledge systems, we can develop more effective and equitable healthcare practices and policies that reduce pain-related disabilities and improve overall health outcomes for First Nations, Inuit, and Métis peoples.

2.9 CONCLUSION

Our scoping review identified two studies addressing pain-related disabilities among First Nations, Inuit, and Métis peoples in Canada. The limited number of studies highlights a substantial knowledge gap. Addressing this research gap is urgent. Researchers, healthcare professionals, and policy makers must move beyond colonial frameworks and actively engage with Indigenous

communities to co-create knowledge and develop culturally relevant solutions. In doing so, we can gain a more accurate understanding of the true extent of pain-related disabilities and work towards more effective and equitable healthcare practices and policies, ultimately improving health outcomes for Indigenous populations across Canada.

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Figure 2.1 Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram for scoping reviews showing identification and selection of included studies

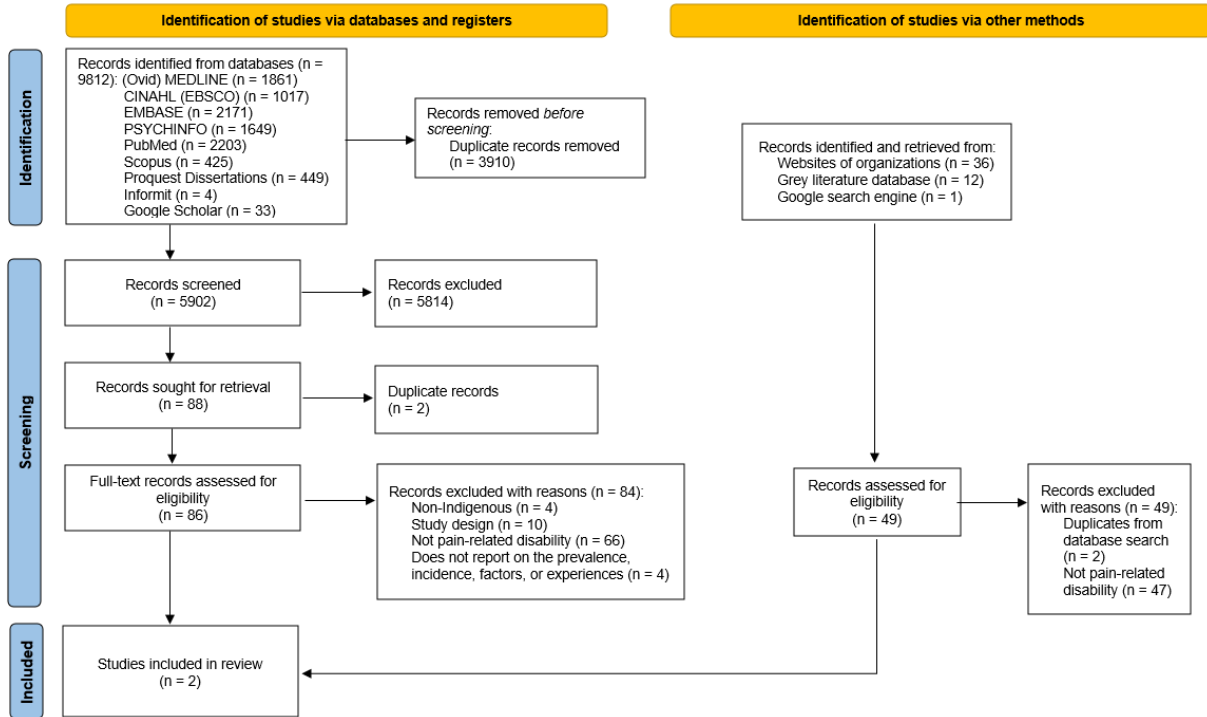


Table 2.1 Data extraction table for scoping review on the prevalence, incidence, and factors associated with pain-related disabilities, and experience of limitations due to pain among First Nations, Inuit and Métis peoples in Canada

Publication	Study characteristics				Sample characteristics			Outcome measure	Comparison population	Pain-related disability estimates
	Years of observation	Aim	Design & mode of administration	Recruitment & sample	Age	Sex, gender	Indigenous group			
Hahmann et al., 2019	Data collection period: January 16 – August 15, 2017	To provide an overview of disability prevalence estimates among First Nations people living off reserve, Métis, and Inuit	Cross-sectional Computer-assisted personal interviews and computer-assisted telephone interviews	Complex multiple-phase stratified random sampling design *Indigenous participants who completed the survey: n=23,946	15 years and older	Not provided	First Nations people living off reserve, Métis and Inuit Throughout Canada	Disability Screening Questions (DSQ) within the 2017 Aboriginal Peoples Survey	Non-Indigenous	Prevalence: First Nations people living off reserve 22.2% <i>[95% CI not provided]</i> Métis 20.7% <i>[95% CI not provided]</i> Inuit 11.4% <i>[95% CI not provided]</i> Sex-specific: First Nations people living off reserve Men 17.4% <i>[95% CI not provided]</i> Women 26.2% <i>[95% CI not provided]</i> Métis Men 17.2% <i>[95% CI not provided]</i> Women 24.0% <i>[95% CI not provided]</i> Inuit Men 8.8% <i>[95% CI not provided]</i> Women 13.7% <i>[95%</i>

										<i>CI not provided]</i>
Robarts, 2002	Data collection period: September to December 2001	To explore the lived experiences and understand the needs of Cree adults with disabilities living in remote communities of the Mushkegowuk Territory	Ethnography Focus groups, semi-structured interviews and participant observation Facilitated visual techniques with participants such as: impact drawings, social mapping, fish and rocks drawing exercise, flow charts and Venn diagrams	Volunteer, nominative and snowballing strategies Persons with disabilities (n=31) Healthcare professionals and community spokespersons (n=15) Caregivers (n=15)	28-88 years Not available 20-60 years	Male (n=13) Female (n=18) Not available Not available	Cree Mushkegowuk Territory (4 remote communities: Moosonee, Moose Factory, Attawapiskat and Kashechewan)	**Themes	Not applicable	Themes related to pain-related disability for participants living with disabilities: Difficulty coping with pain Suffering

* Information obtained from supplementary documentation. Eligible Indigenous respondents: 34,176, and Indigenous participants who completed the survey: n=23,946. Response rate: 70.1% (response rate during collection includes the total number of respondents divided by the total number of eligible units).

** This thesis presents the following emergent themes from case descriptions of select Mushkegowuk Territory community members living with disabilities: 1) Ineffective help-seeking behaviour (waiting for help, not asking for help); 2) Ineffective/inadequate community response to disability; 3) Difficulty coping with pain; 4) Isolation; 5) Suffering; and 6) Losing hope.

CHAPTER THREE

PREVALENCE AND FACTORS ASSOCIATED WITH PAIN-RELATED DISABILITIES AMONG FIRST NATIONS PEOPLE LIVING OFF-RESERVE IN CANADA IN 2017: A CROSS-SECTIONAL STUDY

3.1 ABSTRACT

Purpose: To determine the prevalence and factors associated with pain-related disabilities (PRDs) among First Nations people living off-reserve in Canada in 2017.

Materials and methods: We analyzed data from the 2017 Aboriginal Peoples Survey (APS), a cross-sectional, population-based survey by Statistics Canada. We computed the prevalence of PRDs [95% CI] overall and by region, age, sex, number/type of co-existing disabilities. Modified Poisson regression with robust variance estimation examined associations between selected factors and PRDs.

Results: Overall, 22.1% [20.9, 23.4] of First Nations people living off-reserve reported PRDs. Prevalence was higher among females, increased with age, and similar across geographic areas. PRDs increased with the number of co-existing disabilities and was highest among those reporting physical disabilities. Regression models suggested that individuals with unmet basic needs, housing dissatisfaction, unmet healthcare needs, a history of mental health consultations, part-time or no employment, chronic conditions, residential school attendance, or a low sense of belonging, as well as those who were female or older in age, were more likely to report PRDs.

Conclusions: PRDs are common among First Nations people living off-reserve, and their etiology may be multi-factorial and complex. Continued collaboration with Indigenous partners is required to contextualize findings and inform next steps.

3.2 INTRODUCTION

Worldwide, Indigenous peoples are disproportionately affected by disability, with higher prevalence compared to non-Indigenous counterparts.¹ This holds true in Canada, where individuals who exclusively identify as First Nations people – accounting for more than 50% of the Indigenous population² – experience high rates of disability.^{3, 4} However, this may be an underestimate, as historical sampling methodologies in national surveys have likely contributed to underreporting.⁵

Moreover, the experiences of First Nations people living off-reserve may differ from those living on-reserve. In Canada, reserves refer to lands controlled by the government and designated for the use of First Nations communities.⁶ The establishment of reserves displaced many communities from fertile lands, to smaller, resource-scarce areas with limited economic opportunities.⁷ Over time, this has contributed to migration toward urban areas for employment and services.⁸ However, living off-reserve presents unique challenges. For example, individuals experiencing disconnection from their health and wellness may seek traditional healing practices, which are often limited or inaccessible in urban settings.⁸

Between 2008 and 2010, 27.9% of First Nations adults living on-reserve and in northern Canada reported disabilities.⁹ In 2017, 32.3% of First Nations people aged 15 years and older living off-reserve reported a disability, compared to 21.8% in the non-Indigenous population.⁴ Among this group, pain-related conditions were the leading cause of disability.⁴ Despite this, little is known about the epidemiology of pain-related disability among Indigenous peoples.¹⁰ Previous research has typically focused on pain or pain-related conditions,^{11, 12} rather than the impact of pain on functioning.¹⁰ This gap is critical as ‘functioning’ extends beyond health conditions to

encompass interconnected components such as body structures, body functions, activities, and participation.¹³

For First Nations people living off-reserve, experiencing disability can result in increased barriers to achieving optimal functioning. Their impairments and limitations in day-to-day activities maybe compounded by isolation and exclusion from community life.¹⁴ Moreover, females, those identifying as women, or a part of the 2SLGBTQ+ community, may experience further marginalization.¹⁵ Additional factors such as transportation, housing, education, employment, and income can further serve as either barriers or facilitators to daily living for those with disabilities.¹⁴

In addition, pain can manifest in diverse ways and affect functioning depending on its nature. For instance, Zhang et al. (2024) identified the impact of pain on daily living as a central theme in their study of chronic musculoskeletal pain management in La Loche, a Dene/Métis community in northern Saskatchewan.¹⁶ Community members reported that pain permeated all aspects of life, including culture, emotions, employment, family, and social participation. Pain was also seen as linked to systemic oppression and negative healthcare experiences.¹⁶

Investigating disability in Indigenous peoples requires moving beyond Western models. A holistic understanding of pain-related disabilities among First Nations people living off-reserve must be grounded in First Nations principles that recognize the interconnection of mind, body, spirit, and emotion. A lack of robust epidemiological data hinders our understanding of the extent and impact of pain-related disabilities on functioning. Addressing this gap is essential to inform healthcare policies and interventions that aim to improve quality of life. As such, research

grounded in partnership with Indigenous peoples is needed to ensure findings are both comprehensive and contextually meaningful. Working with an Indigenous Advisory Committee, the aim of this study was to investigate the prevalence and factors associated with pain-related disabilities, and to explore whether these associations varied by sex, among First Nations people living off-reserve in Canada in 2017.

3.3 METHODS

3.3.1 Indigenous engagement and involvement

Aligning with principles of ethical Indigenous health research and in the spirit of building respectful and meaningful relationships with Indigenous communities,¹⁷ we worked closely with an Indigenous Advisory Committee (IAC) throughout the project. The IAC consisted of six individuals who brought unique Indigenous perspectives and expertise related to disability and health. Some relationships with IAC members pre-dated the conceptualization of this project.

While there is no exhaustive list of Indigenous methodologies, they are often relational in nature and challenge conventional ways of knowing and doing.¹⁸ These methodologies may include practices such as ceremony, song, dance, art, storytelling, and sharing circles. In collaboration with the IAC, we sought to incorporate the principle of *Etuaptmumk* (Two-Eyed Seeing), introduced by Elder Albert Marshall. This principle, “*refers to learning to see from one eye with the strengths of (or best in) Indigenous knowledges and ways of knowing, and learning to see from the other eye with the strengths of (or best in) Western knowledges and ways of knowing... and, most importantly, using both of these eyes together for the benefit of all*”.¹⁸ This approach helped us recognize that no single knowledge system dominates; rather, one may draw upon either – or both – depending on the situation.

IAC engagement began at project onset, focusing on the selection of Indigenous-specific frameworks to guide variable selection. Consensus was reached during these meetings on how best to proceed. Additional meetings were held to share results, interpret findings, and inform knowledge translation strategies. The IAC's insights were integrated into both the selection of variables and statistical modeling process.

3.3.2 Study design

We conducted a cross-sectional study using data from the 2017 Aboriginal¹ Peoples Survey (APS), a national survey conducted by Statistics Canada.¹⁹ This design provided a snapshot in time to estimate how many individuals were living with pain-related disabilities and enabled the examination of associations across multiple variables. While cross-sectional studies cannot establish causality, they are effective for identifying population-level patterns.

The APS was designed to collect information on social, economic and health conditions of Indigenous peoples in Canada to inform the development of programs and services.¹⁹ We chose the fifth and most recent cycle (2017) at the time of grant writing, as it is the official source of disability-related information for Indigenous peoples in Canada. Compared to the Canadian Survey on Disability, the APS includes a larger and more representative sample of the Indigenous population.⁴

¹ The terms 'Aboriginal' and 'Indian' are not the authors' own words but rather those used in the official federal government documents.

This study is reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (Appendix B.1).²⁰ Ethics approval was obtained from Ontario Tech University’s research ethics board (REB # 16845) (Appendix B.2).

3.3.3 Recruitment strategy and study sample

The 2017 APS used a complex multiple-phase, stratified random sampling design.¹⁹ The sample was drawn based on responses to four questions on the 2016 Census long-form questionnaire about Indigenous ancestry – ethnic origin, and identity – First Nations, Métis or Inuk, Status or Non-Status, and First Nation band membership. A systematic sample of approximately 1 in 4 households nationwide was sent the census, while it was administered through in-person interviews in remote areas.¹⁹

Individuals who answered “yes” to any of the four questions were considered eligible.¹⁹ However, those living on reserves or in some First Nations communities in Yukon and Northwest Territories were excluded from the sampling frame.¹⁹ Stratification was conducted by geography, age group and Indigenous group, with further sub-stratification based on form type, respondent type, and Indigenous identification to ensure representativeness.

Eligible respondents were aged 15 years or older, living in private dwellings, and self-identified as having Indigenous identity, being a Status Indian (Registered or Treaty), and/or being a member of a First Nation/Indian band. Of the approximately 34,176 individuals sampled, 23,946 completed the APS – a response rate of 70.1%.¹⁹ For the purpose of this paper, our analytic sample included 9115 of whom identified as First Nations respondents living off-reserve, drawn from the broader 2017 APS sample.

3.3.4 Data Source

Data were collected from January 16 to August 15, 2017, through computer-assisted personal and telephone interviews. In addition to demographic-related information, the data collected falls into six content areas: labour, health, education, skills and training, economic well-being, and Indigenous-specific.¹⁹

We accessed the APS public user microdata file (PUMF) through the Ontario Data Documentation, Extraction Services and Infrastructure (ODESI) repository.²¹ ODESI provides access to Statistics Canada microdata and other datasets for academic research. The PUMF contains non-identifiable data that cannot be linked back to respondents.

3.3.5 Outcome

The outcome of interest, self-reported pain-related disability (binary, yes/no) – was measured using the Disability Screening Questions (DSQ) from the health section of the 2017 APS. This was a pre-constructed variable based on responses to initial pre-screening type questions. First, participants were asked whether they experienced constant or recurring pain due to a long-term condition expected to last six months or more. Those who answered “yes” were asked how often this pain limited their daily activities. In this deciding final question, respondents who answered “sometimes”, “often”, or “always” were categorized as having a pain-related disability.²²

The DSQ has undergone extensive qualitative and quantitative testing and has face validity.²³ Prior to the APS, its psychometric properties – such as content validity and reliability, were assessed in the general Canadian population.²³ Though it has not yet been validated specifically among Indigenous peoples, several steps were taken in the APS development, data

collection, processing and reporting to ensure cultural sensitivity and clarity.¹⁹ Questions underwent multiple rounds of testing with First Nations, Inuit, and Métis participants, with refinements made based on feedback.¹⁹

3.3.6 Factors associated with pain-related disability

The selection of potential associated factors was guided by the First Nations Holistic Policy and Planning Model²⁴ and input from the IAC. We selected this model because it is First Nations-specific and suited for analyzing epidemiological data. Developed by the Assembly of First Nations, the model includes 15 health determinants within a medicine wheel, with community at its core. Together, with the IAC, we mapped variables in the APS to determinants. This process led to the selection of 34 variables across five of the six content areas (excluding skills and training). Variables included basic needs, housing, general health, residential school attendance, labour, chronic conditions, community involvement, sense of belonging, Indigenous language, mental health consultations, education, household composition, income, residence and demographic characteristics. The specific survey questions used are listed in Appendix B.3.

3.3.7 Statistical analysis

We used frequencies to describe the characteristics of the sample of First Nations people living off-reserve overall and stratified by pain-related disability status. For all prevalence estimates and regression analyses, we applied the person-level and the 1,000 bootstrap replicate weights provided by Statistics Canada.¹⁹ These weights accounted for the complex survey design.

We computed prevalence estimates of pain-related disabilities overall, and stratified by geographic region of residence (census metropolitan area/ other population centre/ other rural), age (15-18/ 19-24/ 25-34/ 35-44/ 45-54/ 55 and over), and sex (male/ female), along with 95%

confidence intervals (CIs). We also examined prevalence by the number (one/ two or three/ more than three) and types of co-existing disabilities (i.e., seeing, hearing, mobility, flexibility, dexterity, cognitive and mental health), as these variables are often viewed as influencing physical, emotional, mental, spiritual and social aspects of Indigenous health.²⁵

We used modified Poisson regression with robust variance estimation to estimate prevalence ratios (PRs) and corresponding 95% CIs for the association between each pre-selected factor and pain-related disability.²⁶ Each factor was modeled individually and adjusted for age group and sex. We did not construct a full multivariable model, as all variables were purposefully selected a priori in collaboration with the IAC and were interpreted individually within a holistic, community-informed framework. This analytic approach allows us to understand how each factor relates to pain-related disability while accounting for two key confounders. Recognizing the intersectionality between disability, Indigenous identity and sex/gender,¹⁵ we conducted additional stratified analyses by sex, adjusting for age to explore whether associations differed between groups. We used PRs to describe the magnitude and direction of the association between each selected variable and the outcome. The 95% CIs reflect the statistical precision of each point estimate. Given that each variable was purposefully selected, if the PR meaningfully differs from 1.00 but the CI includes 1.00, we use the phrase “may be associated” to describe a potential relationship with limited precision.

For the outcome variable, less than 1% of responses were coded as “not stated”. These were included in the denominator for prevalence estimates. In regression models, for the outcome and independent variables, non-response categories such as “not stated” and “valid skip” were excluded. The “valid skip” category indicated that the question was not applicable to the

respondent based on earlier answers. The “not stated” category indicated missing responses due to the pathway being undetermined (i.e., did not answer previous filter questions or inconsistencies found within the response pathway). For independent variables, the responses “don’t know” and “refusal” were retained and analyzed as meaningful responses.

We conducted all statistical analyses using the R statistical software, utilizing the *survey* and *srvyr* packages.²⁷

3.4 RESULTS

3.4.1 Sample characteristics

Our sample of 9115 respondents represents approximately 482,066 First Nations people living off-reserve when applying person-level weights. Table 3.1 presents the descriptive characteristics of the sample, overall and stratified by pain-related disability status. Of the respondents, more than half were female (54.8%) and resided in census metropolitan areas (52.2%). Additionally, more than fifty-percent were employed (54.5%), felt that their household income was enough to meet their household needs (53.0%), and that they had the current ability to cover unexpected expenses (57.5%). The largest age group was those 55 years and older (22.7%), while the smallest was those between 15-18 years (10.6%). Almost two-thirds identified as Registered or Treaty Indian (65.0%), and/or a member of a First Nation or Indian band (67.8%).

Compared to those without pain-related disabilities, respondents with pain-related disabilities were more likely to be female (64.7% vs 52.0%), aged 45 years and older (62.5% vs 35.8%), not in the labour force (56.5% vs 30.5%), and reported unmet healthcare needs (29.0% vs. 11.2%) (Table 3.1). Additionally, individuals with pain-related disabilities reported a higher

proportion of chronic conditions, such as arthritis (50.9%), mood disorders (39.1%) and anxiety disorders (38.4%) compared to those without (11.9%, 13.0%, and 15.6% respectively).

3.4.2 Prevalence of pain-related disabilities

Overall, 22.1% [20.9, 23.4] of respondents reported pain-related disabilities. Table 3.2 highlights that prevalence was higher among females [26.1% (24.3, 28.0)] compared to males [17.3% (15.7, 18.9)], and increased with age. The highest prevalence was observed among those aged 45-54 [34.3% (30.3, 38.5)] and 55 years and older [32.1% (30.0, 34.3)], while the lowest was among those aged 15-18 years [5.7% (3.8, 8.3)]. Prevalence was similar across all three geographic areas ranging from 21.0% [18.3, 23.9] to 22.5% [20.8, 24.2].

Table 3.3 shows that pain-related disability was more common among those with multiple co-existing disabilities and highest among those reporting disabilities related to flexibility [91.0% (88.6, 92.9)], dexterity [90.8% (87.5, 93.3)], and mobility [88.2% (85.6, 90.4)].

3.4.3 Associations between factors informed by the First Nations Holistic Policy and Planning Model and pain-related disabilities

Demographic-related

From our crude models, most variables were associated with pain-related disabilities (Table 3.4). In sex- and age-adjusted models, demographic variables age, sex, education and identity were associated with pain-related disabilities. For example, individuals aged 55 years and older were more likely to report pain-related disabilities compared to those aged 15-18 [PR=5.62; 95% CI: 3.78, 8.35]. Females were also more likely to report pain-related disabilities than males [PR=1.48; 95% CI: 1.32, 1.66]. Findings suggest higher levels of education are protective.

Compared to those with grade 8 equivalent or lower, those with a bachelor degree or university certificate, diploma, degree or above were much less likely to report pain-related disabilities [PR=0.42; 95% CI: 0.32, 0.54]. Similarly, respondents who identified as Registered or Treaty Indian [PR=0.69; 95% CI: 0.62, 0.77], or as members of a First Nation or Indian band [PR=0.70; 95% CI: 0.63, 0.78], were less likely to report pain-related disabilities compared to those who did not. However, geographical location or residence suggests that those in other rural areas may be less likely to report pain-related disabilities compared to those living in census metropolitan areas [PR=0.88; 95% CI: 0.76, 1.03].

Employment-related

Labour force status was associated with pain-related disabilities. Compared to those employed, individuals who were not in the labour force were twice as likely to report pain-related disabilities [PR=2.38; 95% CI: 2.11, 2.69]. This pattern also extended to individuals involved in traditional labour activities such as hunting, fishing, trapping, gathering plants, making clothing or crafts. Among those employed, those working part-time were more likely to report pain-related disabilities compared to those working full-time [PR=1.77; 95% CI: 1.42, 2.21]. Similar to education, higher income levels appear to be protective. For instance, those earning \$70,000 or more annually (vs. less than \$5,000) were less likely to report pain-related disabilities [PR=0.34; 95% CI: 0.23, 0.52].

Housing and basic needs

Housing dissatisfaction was associated with pain-related disabilities. Individuals who were dissatisfied or very dissatisfied with their housing conditions were twice as likely to report pain-related disabilities than those who were very satisfied [PR=2.21; 95% CI: 1.89, 2.58]. In particular,

those who attributed their dissatisfaction to high costs were more likely to report pain-related disabilities [PR=1.48; 95% CI: 1.17, 1.87] (Table 3.5).

Financial insecurity was another important factor. Those reporting that their household income was “not enough” to meet household needs were three times more likely to have pain-related disabilities compared to those reporting “more than enough” [PR=3.30; 95% CI: 2.75, 3.96]. Similarly, individuals who lacked the ability – or were unsure of their ability – to cover unexpected expenses were more likely to report pain-related disabilities. Compared to households composed of a couple with child(ren), all other household types were more likely to report pain-related disabilities. Conversely, compared to individuals living alone, those in two-, three-, four-, or five-plus person households were less likely to report pain-related disabilities.

Community readiness, culture and language

Community engagement also appeared protective. Those who volunteered either individually [PR=0.68; 95% CI: 0.55, 0.85] or with an organization [PR=0.73; 95% CI: 0.60, 0.88], were less likely to report pain-related disabilities compared to those who had not volunteered. In regard to feeling a sense of belonging to one’s own Indigenous group, those who disagreed with this statement (vs those who strongly agreed) were more likely to report pain-related disabilities [PR=1.22; 95% CI: 1.05, 1.42]. However, being active in group events and activities may be protective.

A history of residential school attendance was also associated with pain-related disabilities. Respondents who had personally attended a residential school were more likely to report pain-related disabilities than those with no direct or familial residential school experience [PR=1.38;

95% CI: 1.12, 1.69]. Lastly, the ability to understand or speak an Indigenous language was likely not associated with pain-related disabilities [PR=1.02; 95% CI: 0.92, 1.15] (Table 3.4).

Health-related

Unmet healthcare needs were associated with pain-related disabilities. Those who experienced unmet needs due to costs [PR=1.27; 95% CI: 1.08, 1.50] or other reasons [PR=1.35; 95% CI: 1.15, 1.59] were more likely to report pain-related disabilities; whereas those who cited “personal reasons” were less likely [PR=0.81; 95% CI: 0.66, 0.99] (Table 3.5). Similarly, having a history of mental health consultation [PR=1.85; 95% CI: 1.64, 2.08] and having at least one chronic condition were both associated with higher likelihood of pain-related disabilities. Interestingly, those without a regular medical doctor were less likely to report pain-related disabilities (vs. those with) [PR=0.64; 95% CI: 0.52, 0.78].

3.4.4 Sex-Stratified Associations

Findings from the age-adjusted sex-stratified analysis suggested no major differences in the strength and magnitude of associations between males and females. Having arthritis [males PR=3.90 vs. females PR=2.84], being neither satisfied nor dissatisfied with one’s housing conditions [males PR=4.14 vs. females PR=1.94], and not in the labour force [males PR=3.09 vs. females PR=2.06] were more strongly associated with pain-related disabilities among males than females. However, the direction of the association may differ between males and females for the following variables: language [males PR=1.17 vs. females PR=0.96], feeling a sense of belonging, particularly those who neither agreed nor disagreed with this statement [males PR=0.93 vs. females PR=1.34], those who only had other family members attend residential schools [males PR=1.14 vs. females PR=0.81], and labour force status without participation in other traditional activities [males PR=1.19 vs. females PR=0.72] (Table 3.4).

3.5 DISCUSSION

We found that approximately, 1 in 5 First Nations people living off-reserve had pain-related disabilities in 2017. Pain-related disabilities were more common among females and those in the older age groups but remained similar across the geographic regions. They were also strongly associated with chronic conditions and several factors spanning multiple determinants of health, including financial insecurity, housing dissatisfaction, unmet healthcare needs, and lower community connectedness.

Although limited data exists on the prevalence and factors associated with pain-related disabilities among First Nations people, emerging community-specific epidemiological research begins to help bridge this knowledge gap, in particular as it relates to the impact of pain on functioning. A recent study of Cross Lake community members, mostly Treaty status, and included First Nations, Métis and non-Indigenous people, found that of those with chronic spine symptoms, 52.8% with neck pain and 74.1% with low back pain reported their pain sometimes or often affected daily activities.²⁸ These findings, in addition to our study, highlights the need for ongoing efforts which deepen our understanding as to the impact of chronic pain on daily functioning, particularly within the unique context of specific Indigenous communities.

One possible explanation for the lower-than-expected overall prevalence may be due to the off-reserve focus. Individuals residing off-reserve may have greater access to care based on their location of residence,²⁹ though whether the care was culturally relevant remains unknown. Second, our analyses indicated a comparable prevalence of pain-related disabilities across the three geographical regions. This finding is noteworthy as a higher prevalence had been anticipated among those residing in rural areas compared to urban areas due to limited access to services,³⁰

and physical demands of land-based activities often common in remote living. Furthermore, a member of the IAC anticipated a stronger, more clear association in the adjusted models for factors related to sense of belonging and residential school attendance. Given the complex history of residential schools and impact of intergenerational trauma, capturing these experiences through a single survey question, without the opportunity to build in-person relationships and trust, poses significant challenges. Thus, likely influencing the resulting estimates.

Presenting the findings to the IAC also revealed key patterns across the 15 health determinants outlined in the First Nations Holistic Policy and Planning Model. In particular, the interrelated themes in relation to inadequate income, unmet needs, and housing dissatisfaction highlight how financial insecurity can intensify the experience of pain-related disabilities. Limited resources can often restrict one's access to basic needs which are essential for managing pain in those with functioning difficulties.

Moreover, differences seen in some of the variables in the sex-stratified models suggests that employment-related exclusion, housing indifference, and chronic health conditions such as arthritis may carry distinct health and social implications for First Nations men. As such, there is the need to consider sex-specific mechanisms in the experience of pain-related disabilities to understand differences between males and females in terms of experience, social roles, or health services.¹⁵

In addition, arthritis, rheumatism and chronic back pain were previously identified as being the most common sources of disabilities among First Nations people.³¹ This is consistent with findings of our study which demonstrate a strong association between arthritis and pain-related

disabilities. This association may partly explain the higher prevalence of pain-related disabilities among those with flexibility, dexterity and mobility disabilities. These patterns may reflect the clustering of multiple disabilities, particularly given that the categories for co-existing disabilities were not mutually exclusive. Several health, demographic and socioeconomic factors also suggested strong associations with pain-related disabilities. These findings align with the guiding First Nations principles of the Assembly of First Nations in relation to the Seven Generations Continuum of Care Resolution.³² This approach calls to attention the interconnection of wellness, health, social and economic well-being, emphasizing the need for a holistic perspective to address the evolving care needs throughout the entire lifespan.³²

3.5.1 Implications for future research, practice, and policy

We recognize that as we attempt to interpret the factors associated with pain-related disabilities, it is important to contextualize these findings within previous knowledge available. Western viewpoints have frequently depicted First Nations and other Indigenous groups through a lens of disadvantage and despair, often attempting to interpret Indigenous knowledge within non-Indigenous frameworks. As such, we actively worked alongside the IAC which included First Nations members, to foster discussions grounded in First Nations principles and determinants of health frameworks that hold the potential to be meaningfully applied and tailored to the unique needs of First Nations people. While the use of the First Nations Holistic Policy and Planning Model within an epidemiological context, and among First Nations people living off-reserve remains unknown, its application can contribute towards empowering First Nations communities, organizations and researchers to determine how best to interpret findings as they align with their health priorities. Future epidemiological research guided by strength-based models is essential to investigate pain-related disabilities in a culturally relevant and respectful way.

The ongoing effects of colonialism often act as an underpinning determinant linked to many of the health inequities faced by First Nations. There is a need for research and practice to find ways which highlight the strengths of First Nations communities (both on and off-reserve) – particularly, characteristics related to resilience and self-determination despite the ongoing barriers faced. Such efforts foster a comprehensive understanding of pain, resulting in the development of tailored supports for those struggling in their ability to perform daily activities or participate in life’s events due to pain. These strategies and services need to extend beyond physical interventions, addressing broader aspects of health, functioning and well-being to provide meaningful and culturally relevant care.

For policy, government officials must prioritize the needs of First Nations with pain-related disabilities working collaboratively with these communities. Such partnership is essential for developing equitable policies which lead to improved health outcomes for marginalized populations.

3.5.2 Limitations and strengths

A key strength throughout this project was the critical role of the IAC in providing valuable insights in decision-making and data interpretation. However, it is important to recognize that each Indigenous community is distinct and unique. As such, these findings act as a starting point for future work but should not be assumed to be generalizable to all First Nations communities. Additionally, discussions with the IAC highlighted the influence of language and wording use for certain questions in the survey. For some respondents, language or cultural context may have affected how the survey questions were interpreted and responded to, potentially resulting in measurement bias.

The recruitment strategy of the 2017 APS presents potential limitations for consideration. First Nations people living on-reserve and in certain First Nations communities were excluded for this survey and may differ in their experiences from that of those living off-reserve. In addition, with respondents for the survey being individuals who resided in private dwellings, those living in institutions such as hospitals or long-term care homes were excluded. Individuals living in these settings may be more prone to various health challenges, and older in age. As such, this may lead to an underrepresentation of those with certain characteristics. It is also worth recognizing that the characteristics of those who were non-respondents may systematically differ from the 70.1% who completed the survey. The historical and socio-political contexts within which First Nations people are forced to navigate may have contributed to the non-response.⁵ The selection bias in turn may have led to an underestimation of the prevalence and unclear associations for certain variables.

Various mitigation strategies were used to limit the potential forms of bias mentioned above. For example, efforts were made to ensure that all the 2017 APS questions were understood, relevant and culturally sensitive.¹⁹ This included several rounds of qualitative testing, and testing among individuals from different Indigenous groups. With regards to the sampling frame, proper construction of survey weights which took into account the various stages of recruitment, helped minimize bias introduced during sampling.¹⁹

3.6 CONCLUSION

A little over twenty-percent of First Nations people living off-reserve had pain-related disabilities. Moreover, our analysis suggests a complex interplay of factors linked to pain-related disabilities with strong associations between variables related to demographics, basic needs, housing conditions and health, such as chronic conditions. More documentation through research

is needed on the epidemiology of pain-related disabilities among First Nations people living off-reserve in particular, measures of occurrence and association, and possible contributing factors in order to gain a better understanding of functioning among this group.

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Table 3.1. Sample characteristics of First Nations people living off-reserve, overall and those with and without pain-related disabilities (weighted)

	Overall	With pain-related disability	Without pain-related disability	Not stated
n (%)	482066	106537	372016	3513
Age				
15-18	51324 (10.6)	2903 (2.7)	47910 (12.9)	---
19-24	63684 (13.2)	6993 (6.6)	56099 (15.1)	592 (16.9)
25-34	89005 (18.5)	14165 (13.3)	74200 (19.9)	---
35-44	76911 (16.0)	15870 (14.9)	60770 (16.3)	---
45-54	91710 (19.0)	31480 (29.5)	59803 (16.1)	---
55 and over	109432 (22.7)	35125 (33.0)	73235 (19.7)	1072 (30.5)
Sex				
Male	217813 (45.2)	37578 (35.3)	178566 (48.0)	1670 (47.5)
Female	264253 (54.8)	68959 (64.7)	193450 (52.0)	1843 (52.5)
Geographical location of residence				
Census Metropolitan Area	251433 (52.2)	56515 (53.0)	193616 (52.0)	1302 (37.1)
Other population centre	136589 (28.3)	30311 (28.5)	105246 (28.3)	1032 (29.4)
Other rural	94044 (19.5)	19711 (18.5)	73153 (19.7)	1179 (33.6)
Aboriginal identification – Status Indian				
Registered or Treaty Indian	313218 (65.0)	60125 (56.4)	250902 (67.4)	2191 (62.4)
Not a Registered or Treaty Indian	168848 (35.0)	46412 (43.6)	121113 (32.6)	1323 (37.6)
Aboriginal identification – Member of First Nation or Indian band				
Member of a First Nation or Indian band	326790 (67.8)	63928 (60.0)	260327 (70.0)	2535 (72.2)
Not a member of a First Nation or Indian band	155276 (32.2)	42609 (40.0)	111689 (30.0)	978 (27.8)
Highest level of education attainment				
Grade 8, equivalent or lower	23504 (4.9)	8679 (8.1)	14788 (4.0)	---
Some secondary education	62410 (12.9)	18383 (17.3)	43925 (11.8)	---
Secondary school diploma or equivalent	72734 (15.1)	14565 (13.7)	58004 (15.6)	---
Some postsecondary education	84499 (17.5)	18230 (17.1)	66089 (17.8)	---
Postsecondary certificate or diploma	146679 (30.4)	35796 (33.6)	110758 (29.8)	---
Bach. Degree or univ, cert./dip/degree above bach.	47865 (9.9)	6856 (6.4)	40910 (11.0)	---
Valid skip	35994 (7.5)	1985 (1.9)	34009 (9.1)	---
Not stated	8381 (1.7)	2044 (1.9)	3533 (0.9)	2804 (79.8)
Total 2016 employment income				
Less than \$5000	35267 (7.3)	5338 (5.0)	29902 (8.0)	---
\$5000 to \$9,999	25522 (5.3)	5766 (5.4)	19745 (5.3)	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
\$10,000 to \$19,999	39823 (8.3)	5686 (5.3)	34070 (9.2)	---
\$20,000 to \$29,999	34516 (7.2)	4782 (4.5)	29693 (8.0)	---
\$30,000 to \$39,999	32697 (6.8)	3975 (3.7)	28722 (7.7)	---
\$40,000 to \$49,999	28588 (5.9)	4077 (3.8)	24511 (6.6)	---
\$50,000 to \$69,999	38119 (7.9)	4978 (4.7)	32872 (8.8)	---
\$70,000 and over	49754 (10.3)	4482 (4.2)	45273 (12.2)	---
Valid skip	162373 (33.7)	59707 (56.0)	102481 (27.5)	---
Not stated	35406 (7.3)	7747 (7.3)	24745 (6.7)	2914 (82.9)
Labour force status				
Employed	262532 (54.5)	38596 (36.2)	221996 (59.7)	1941 (55.2)
Unemployed	42638 (8.8)	7547 (7.1)	34840 (9.4)	---
Not in the labour force	174802 (36.3)	60141 (56.5)	113541 (30.5)	1120 (31.9)
Not stated	2094 (0.4)	---	1639 (0.4)	---
Type of employment				
Full-time employment	205481 (42.6)	26594 (25.0)	177617 (47.7)	1270 (36.1)
Part-time employment	54517 (11.3)	11412 (10.7)	42434 (11.4)	671 (19.1)
Valid skip	219034 (45.4)	67897 (63.7)	149565 (40.2)	1573 (44.8)
Not stated	3034 (0.6)	634 (0.6)	2400 (0.6)	---
Labour force status with participation in other labour activities (other activities would include, hunting, fishing, trapping, gathering wild plants, making clothing, making cravings, jewellery)				
Labour force participant, participant in other labour	188901 (39.2)	30084 (28.2)	157043 (42.2)	1774 (50.5)
Not in the labour force, participant in other labour activities	92358 (19.2)	32338 (30.4)	59583 (16.0)	---
Labour force participant, did not participate in other	116269 (24.1)	16058 (15.1)	99792 (26.8)	---
Not in the labour force, did not participate in other labour	82402 (17.1)	27780 (26.1)	53938 (14.5)	684 (19.5)
Not stated	2136 (0.4)	---	1659 (0.4)	---
Household income meets household needs for the past 12 months				
More than enough	97438 (20.2)	11680 (11.0)	85128 (22.9)	630 (17.9)
Enough	255294 (53.0)	39419 (37.0)	214589 (57.7)	1287 (36.6)
Not enough	127924 (26.5)	55142 (51.8)	71227 (19.1)	1555 (44.3)
Don't know	1283 (0.3)	---	946 (0.3)	---
Refusal	---	---	---	---
Current ability to cover unexpected expenses				
Yes	277196 (57.5)	39099 (36.7)	237042 (63.7)	1056 (30.0)
No	196779 (40.8)	66215 (62.2)	128385 (34.5)	2179 (62.0)

	Overall	With pain-related disability	Without pain-related disability	Not stated
Don't know	7898 (1.6)	1223 (1.1)	6396 (1.7)	---
Refusal	---	---	---	---
Housing conditions satisfaction				
Very satisfied	182547 (37.9)	30280 (28.4)	151106 (40.6)	1161 (33.1)
Satisfied	232285 (48.2)	50668 (47.6)	179723 (48.3)	1894 (53.9)
Neither satisfied nor dissatisfied	11765 (2.4)	4574 (4.3)	7115 (1.9)	---
Dissatisfied or very dissatisfied	54779 (11.4)	20771 (19.5)	33686 (9.1)	---
Don't know	---	---	---	---
Refusal	---	---	---	---
Number of persons in household				
One person	67761 (14.1)	22209 (20.8)	45254 (12.2)	---
Two persons	133022 (27.6)	33353 (31.3)	98385 (26.4)	1284 (36.5)
Three persons	101840 (21.1)	23594 (22.1)	77526 (20.8)	---
Four persons	92756 (19.2)	12965 (12.2)	79283 (21.3)	---
Five or more persons	85765 (17.8)	14101 (13.2)	70973 (19.1)	691 (19.7)
Not stated	922 (0.2)	---	595 (0.2)	---
Household type				
Respondent family household: couple with child(ren)	168141 (34.9)	25850 (24.3)	141249 (38.0)	1042 (29.7)
Respondent family household: couple without child(ren)	95420 (19.8)	23988 (22.5)	70628 (19.0)	805 (22.9)
Respondent family household: other family household	129163 (26.8)	30543 (28.7)	97374 (26.2)	1246 (35.4)
Respondent non-family household	88457 (18.3)	25898 (24.3)	62178 (16.7)	381 (10.8)
Not stated	885 (0.2)	---	586 (0.2)	---
Having a regular medical doctor				
Yes	386572 (80.2)	95036 (89.2)	290419 (78.1)	1118 (31.8)
No	92282 (19.1)	11491 (10.8)	80643 (21.7)	---
Don't know	869 (0.2)	---	833 (0.2)	---
Refusal	---	---	---	---
Not stated	2182 (0.5)	---	---	2182 (62.1)
In the past 12 months, health care needed but not received				
Yes	73021 (15.1)	30868 (29.0)	41824 (11.2)	---
No	405621 (84.1)	75304 (70.7)	329498 (88.6)	820 (23.3)
Don't know	1048 (0.2)	---	658 (0.2)	---
Refusal	---	---	---	---
Not stated	2220 (0.5)	---	---	2220 (63.2)
In the past 12 months, mental health consultation				
Yes	112192 (23.3)	36707 (34.5)	75009 (20.2)	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
No	346008 (71.8)	65029 (61.0)	280258 (75.3)	722 (20.5)
Valid skip	20965 (4.3)	4584 (4.3)	16194 (4.4)	---
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	2231 (0.5)	---	---	2063 (58.7)
Residential school attendance (or federal industrial school)				
Respondent attended	27866 (5.8)	10172 (9.5)	17604.4 (4.7)	---
Only parent(s) or grandparent(s) attended	61162 (12.7)	12287 (11.5)	48700.0 (13.1)	---
Only other family members attended	21230 (4.4)	4140 (3.9)	17089.8 (4.6)	---
Only parent(s)/grandparent(s)/other family members attended	118060 (24.5)	24746 (23.2)	93078.9 (25.0)	---
Neither respondent nor any family members attended	128792 (26.7)	25479 (23.9)	103243.4 (27.8)	---
Not stated	124958 (25.9)	29714 (27.9)	92299.0 (24.8)	2944 (83.8)
Volunteering for a group or organization				
At least once a week	60528 (12.6)	15037 (14.1)	45349 (12.2)	---
At least once a month	75078 (15.6)	14201 (13.3)	60326 (16.2)	---
Less than once a month	77621 (16.1)	12540 (11.8)	64698 (17.4)	---
Not at all in the past 12 months	268110 (55.6)	64617 (60.7)	201055 (54.0)	2438 (69.4)
Don't know	614 (0.1)	---	568 (0.2)	---
Refusal	---	---	---	---
Helping others on your own and not with an organization				
At least once a week	177657 (36.9)	41453 (38.9)	134567 (36.2)	1637 (46.6)
At least once a month	142868 (29.6)	28366 (26.6)	113846 (30.6)	---
Less than once a month	56538 (11.7)	9067 (8.5)	46967 (12.6)	---
Not at all in the past 12 months	103682 (21.5)	27366 (25.7)	75600 (20.3)	716 (20.4)
Don't know	1224 (0.3)	---	939 (0.3)	---
Refusal	---	---	---	---
Ability to understand or speak an Aboriginal language				
Yes	223580 (46.4)	50744 (47.6)	172401 (46.3)	---
No	250311 (51.9)	54650 (51.3)	195387 (52.5)	---
Don't know	796 (0.2)	---	718 (0.2)	---
Refusal	---	---	---	---
Not stated	7096 (1.5)	---	3341 (0.9)	2728 (77.6)
Active in Aboriginal group events and activities				
Strongly agree	50568 (10.5)	12666 (11.9)	37496 (10.1)	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
Agree	139956 (29.0)	28141 (26.4)	110450 (29.7)	1365 (38.9)
Neither agree nor disagree	26994 (5.6)	6957 (6.5)	19915 (5.4)	---
Disagree or strongly disagree	241843 (50.2)	53701 (50.4)	186928 (50.2)	1213 (34.5)
Valid skip	20965 (4.3)	4584 (4.3)	16194 (4.4)	---
Don't know	1395 (0.3)	---	783 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Sense of belonging to own Aboriginal group				
Strongly agree	108161 (22.4)	25386 (23.8)	81867 (22.0)	909 (25.9)
Agree	192913 (40.0)	37047 (34.8)	154360 (41.5)	1505 (42.8)
Neither agree nor disagree	40455 (8.4)	10375 (9.7)	30032 (8.1)	---
Disagree or strongly disagree	117260 (24.3)	28750 (27.0)	87903 (23.6)	608 (17.3)
Valid skip	20965 (4.3)	4584 (4.3)	16194 (4.4)	---
Don't know	1926 (0.4)	---	1369 (0.4)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Chronic health conditions				
Asthma				
Yes	69585 (14.4)	27035 (25.4)	42443 (11.4)	---
No	411345 (85.3)	79463 (74.6)	329179 (88.5)	2703 (76.9)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Arthritis (excluding fibromyalgia)				
Yes	99164 (20.6)	54198 (50.9)	44306 (11.9)	---
No	381190 (79.1)	51932 (48.7)	327108 (87.9)	2150 (61.2)
Don't know	954 (0.2)	---	522 (0.1)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
High blood pressure				
Yes	82722 (17.2)	30345 (28.5)	51862 (13.9)	515 (14.7)
No	395962 (82.1)	75344 (70.7)	318365 (85.6)	2254 (64.1)
Don't know	2582 (0.5)	---	1709 (0.5)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Chronic bronchitis/Emphysema/COPD				
Yes	26537 (5.5)	14491 (13.6)	11963 (3.2)	---
No	453647 (94.1)	91796 (86.2)	359313 (96.6)	2538 (72.2)
Don't know	1083 (0.2)	---	660 (0.2)	---
Refusal	---	---	---	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
Not stated	---	---	---	---
Diabetes				
Yes	47854 (9.9)	20359 (19.1)	27225 (7.3)	---
No	432660 (89.8)	85960 (80.7)	344201 (92.5)	2499 (71.1)
Don't know	739 (0.2)	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Heart disease				
Yes	27273 (5.7)	13269 (12.5)	13815 (3.7)	---
No	452635 (93.9)	92748 (87.1)	357307 (96.0)	2580 (73.4)
Don't know	1324 (0.3)	521 (0.5)	778 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Intestinal or stomach ulcers				
Yes	21307 (4.4)	11742 (11.0)	9480 (2.5)	---
No	458578 (95.1)	94214 (88.4)	361756 (97.2)	2609 (74.3)
Don't know	1403 (0.3)	581 (0.5)	722 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Bowel disorders				
Yes	34967 (7.3)	18584 (17.4)	16141 (4.3)	---
No	445038 (92.3)	87507 (82.1)	355005 (95.4)	2527 (71.9)
Don't know	1248 (0.3)	446 (0.4)	778 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Mood disorder				
Yes	90452 (18.8)	41632 (39.1)	48314 (13.0)	---
No	389735 (80.8)	64534 (60.6)	323002 (86.8)	2200 (62.6)
Don't know	978 (0.2)	---	582 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Anxiety disorder				
Yes	99697 (20.7)	40866 (38.4)	58206 (15.6)	624 (17.8)
No	379005 (78.6)	64792 (60.8)	312211 (83.9)	2002 (57.0)
Don't know	2356 (0.5)	---	1453 (0.4)	---
Refusal	---	---	---	---
Not stated	---	---	---	---

--- As per Statistics Canada's dissemination guidelines, underlying unweighted cell counts below 10 cannot be reported

Table 3.2. Overall prevalence of pain-related disability among First Nations people living off-reserve and by sex, age and geographic region of residence

	Prevalence [95% CI]
Overall	22.1 [20.9 - 23.4]
Sex	
Male	17.3 [15.7 - 18.9]
Female	26.1 [24.3 - 28.0]
Age	
15-18 years	5.7 [3.8 - 8.3]
19-24 years	11.0 [9.4 - 12.8]
25-34 years	15.9 [13.2 - 19.0]
35-44 years	20.6 [17.4 - 24.3]
45-54 years	34.3 [30.3 - 38.5]
55 and over	32.1 [30.0 - 34.3]
Geographic region of residence	
Census Metropolitan Area (CMA)	22.5 [20.8 - 24.2]
Other population centre	22.2 [19.7 - 24.9]
Other rural	21.0 [18.3 - 23.9]

Table 3.3. Prevalence of pain-related disability among First Nations people living off-reserve by different type and number of disabilities

Disability types	Prevalence [95% CI]
Seeing	77.0 [71.6 – 81.7]
Hearing	67.5 [61.3 - 73.1]
Mobility	88.2 [85.6 - 90.4]
Flexibility	91.0 [88.6 – 92.9]
Dexterity	90.8 [87.5 - 93.3]
Cognitive	68.6 [64.1 – 72.8]
Mental health-related	60.9 [56.9 - 64.7]
Number of disabilities	
One disability type	33.8 [29.8, 38.1]
Two or three disability types	77.1 [73.8, 80.1]
More than three disability types	96.2 [94.3, 97.5]

Table 3.4. Age- and sex- adjusted prevalence ratios of associations between pain-related disability and selected variables, and sex-stratified models adjusted for age only, among First Nations people living off-reserve

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Basic needs - household income meets household needs (past 12 months)								
More than enough	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Enough	1.29	[1.06, 1.56]	1.34	[1.11, 1.61]	1.41	[1.05, 1.90]	1.29	[1.02, 1.64]
Not enough	3.62	[3.00, 4.36]	3.30	[2.75, 3.96]	3.78	[2.84, 5.03]	3.03	[2.41, 3.81]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Basic needs - current ability to cover unexpected expenses								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	2.40	[2.14, 2.70]	2.27	[2.03, 2.54]	2.45	[2.01, 2.99]	2.15	[1.87, 2.47]
Don't know	1.13	[0.72, 1.79]	1.80	[1.18, 2.76]	---		2.20	[1.36, 3.57]
Refusal	---		---		---		---	
Housing conditions - satisfaction level								
Very satisfied	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Satisfied	1.32	[1.15, 1.51]	1.36	[1.20, 1.55]	1.54	[1.22, 1.94]	1.27	[1.08, 1.49]
Neither satisfied nor dissatisfied	2.34	[1.76, 3.12]	2.63	[1.98, 3.51]	4.14	[2.65, 6.47]	1.94	[1.39, 2.71]
Dissatisfied or very dissatisfied	2.28	[1.94, 2.69]	2.21	[1.89, 2.58]	2.63	[1.97, 3.51]	2.00	[1.67, 2.40]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Number of persons in household								
One person	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Two persons	0.77	[0.66, 0.90]	0.81	[0.70, 0.94]	0.85	[0.66, 1.09]	0.77	[0.65, 0.92]
Three persons	0.71	[0.60, 0.84]	0.87	[0.74, 1.02]	0.82	[0.60, 1.11]	0.86	[0.71, 1.03]
Four persons	0.43	[0.35, 0.52]	0.60	[0.49, 0.74]	0.62	[0.44, 0.87]	0.57	[0.44, 0.74]
Five or more persons	0.50	[0.42, 0.61]	0.75	[0.62, 0.91]	0.90	[0.65, 1.26]	0.67	[0.52, 0.85]
Household type								
Respondent family household: couple with child(ren)	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Respondent family household: couple without child(ren)	1.64	[1.38, 1.94]	1.18	[0.99, 1.40]	1.06	[0.80, 1.42]	1.24	[1.00, 1.54]
Respondent family household: other family household	1.54	[1.29, 1.84]	1.54	[1.30, 1.83]	1.59	[1.18, 2.14]	1.54	[1.25, 1.90]
Respondent non-family household	1.90	[1.61, 2.24]	1.48	[1.25, 1.74]	1.33	[1.01, 1.74]	1.62	[1.32, 1.99]
Regular medical doctor								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	0.51	[0.42, 0.61]	0.64	[0.52, 0.78]	0.69	[0.51, 0.94]	0.62	[0.48, 0.78]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Health care needed but not received (past 12 months)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.28	[2.04, 2.56]	2.23	[2.00, 2.49]	2.52	[2.09, 3.03]	2.08	[1.82, 2.37]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Mental health consultation (past 12 months)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.74	[1.55, 1.97]	1.85	[1.64, 2.08]	1.97	[1.61, 2.41]	1.79	[1.55, 2.05]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Residential school attendance (or federal industrial school)								
Neither respondent nor any family members attended	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Only parent(s) or grandparent(s) attended	1.02	[0.82, 1.26]	1.17	[0.95, 1.43]	1.01	[0.71, 1.44]	1.25	[0.97, 1.62]
Only other family members attended	0.99	[0.74, 1.31]	0.91	[0.69, 1.20]	1.14	[0.74, 1.76]	0.81	[0.58, 1.14]
Only parent(s)/grandparent(s)/other family members attended	1.06	[0.90, 1.25]	1.10	[0.94, 1.29]	1.10	[0.82, 1.47]	1.11	[0.91, 1.35]
Respondent attended	1.85	[1.51, 2.27]	1.38	[1.12, 1.69]	1.59	[1.12, 2.24]	1.27	[0.99, 1.62]
Helping others - volunteering for a group or organization (past 12 months)								
Not at all in the past 12 months	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
At least once a week	1.02	[0.87, 1.21]	1.01	[0.87, 1.18]	0.90	[0.69, 1.18]	1.06	[0.89, 1.28]
At least once a month	0.78	[0.66, 0.93]	0.79	[0.67, 0.94]	0.82	[0.61, 1.10]	0.77	[0.63, 0.95]
Less than once a month	0.67	[0.55, 0.81]	0.73	[0.60, 0.88]	0.63	[0.42, 0.93]	0.77	[0.63, 0.95]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Helping other - on your own and not a part of an organization (past 12 months)								
Not at all in the past 12 months	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
At least once a week	0.89	[0.77, 1.03]	0.95	[0.83, 1.09]	0.86	[0.69, 1.07]	1.00	[0.84, 1.20]
At least once a month	0.75	[0.64, 0.89]	0.84	[0.71, 0.98]	0.70	[0.54, 0.91]	0.92	[0.75, 1.13]
Less than once a month	0.61	[0.48, 0.77]	0.68	[0.55, 0.85]	0.55	[0.39, 0.77]	0.78	[0.60, 1.01]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Ability to understand or speak an Aboriginal language								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.04	[0.93, 1.17]	1.02	[0.92, 1.15]	1.17	[0.96, 1.43]	0.96	[0.84, 1.10]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Active in Aboriginal group events and activities								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	0.80	[0.66, 0.98]	0.89	[0.73, 1.08]	0.84	[0.60, 1.18]	0.92	[0.73, 1.16]
Neither agree nor disagree	1.03	[0.76, 1.39]	1.17	[0.87, 1.57]	1.18	[0.75, 1.84]	1.16	[0.79, 1.69]
Disagree or strongly disagree	0.88	[0.73, 1.07]	1.01	[0.84, 1.21]	0.96	[0.71, 1.30]	1.04	[0.84, 1.30]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Sense of belonging to own Aboriginal group								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	0.82	[0.71, 0.95]	0.94	[0.81, 1.08]	0.95	[0.74, 1.22]	0.94	[0.79, 1.11]
Neither agree nor disagree	1.08	[0.86, 1.37]	1.21	[0.97, 1.51]	0.93	[0.60, 1.45]	1.31	[1.02, 1.69]
Disagree or strongly disagree	1.04	[0.89, 1.22]	1.22	[1.05, 1.42]	1.38	[1.06, 1.80]	1.14	[0.95, 1.36]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Total 2016 employment income								
Less than \$5000	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
\$5000 to \$9,999	1.49	[1.06, 2.11]	1.19	[0.85, 1.67]	1.63	[0.88, 3.01]	1.02	[0.69, 1.52]
\$10,000 to \$19,999	0.94	[0.67, 1.32]	0.67	[0.48, 0.94]	0.67	[0.37, 1.23]	0.67	[0.44, 1.00]
\$20,000 to \$29,999	0.92	[0.63, 1.34]	0.59	[0.40, 0.85]	0.67	[0.35, 1.28]	0.56	[0.36, 0.89]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
\$30,000 to \$39,999	0.80	[0.54, 1.19]	0.47	[0.32, 0.70]	0.41	[0.20, 0.83]	0.51	[0.32, 0.81]
\$40,000 to \$49,999	0.94	[0.64, 1.39]	0.54	[0.36, 0.80]	0.51	[0.24, 1.05]	0.58	[0.36, 0.92]
\$50,000 to \$69,999	0.87	[0.60, 1.25]	0.52	[0.36, 0.75]	0.62	[0.31, 1.23]	0.47	[0.31, 0.72]
\$70,000 and over	0.59	[0.40, 0.88]	0.34	[0.23, 0.52]	0.34	[0.18, 0.66]	0.36	[0.21, 0.62]
Labour force status								
Employed	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Unemployed	1.20	[0.95, 1.52]	1.46	[1.17, 1.83]	1.46	[1.00, 2.14]	1.49	[1.14, 1.96]
Not in the labour force	2.34	[2.07, 2.64]	2.38	[2.11, 2.69]	3.09	[2.45, 3.91]	2.06	[1.78, 2.38]
Type of employment								
Full-time employment	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Part-time employment	1.63	[1.31, 2.02]	1.77	[1.42, 2.21]	1.46	[0.83, 2.59]	1.86	[1.45, 2.38]
Labour force status with participation in other labour activities (other activities would include, hunting, fishing, trapping, gathering wild plants, making clothing, making cravings, jewellery)								
Labour force participant, participant in other labour	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Not in the labour force, participant in other labour activities	2.19	[1.90, 2.51]	2.19	[1.91, 2.51]	3.25	[2.48, 4.27]	1.78	[1.51, 2.09]
Labour force participant, did not participate in other	0.86	[0.70, 1.06]	0.85	[0.70, 1.04]	1.19	[0.85, 1.67]	0.72	[0.56, 0.91]
Not in the labour force, did not participate in other labour	2.11	[1.82, 2.46]	2.07	[1.77, 2.41]	2.99	[2.29, 3.91]	1.69	[1.41, 2.03]
Geographical location								
CMA	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Other population centre	0.99	[0.86, 1.13]	1.00	[0.88, 1.13]	1.00	[0.80, 1.24]	1.00	[0.85, 1.18]
Other rural	0.94	[0.80, 1.10]	0.88	[0.76, 1.03]	0.95	[0.74, 1.23]	0.84	[0.70, 1.01]
Aboriginal identification – Status Indian (Registered or Treaty)								
Not a Registered or Treaty Indian	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Registered or Treaty Indian	0.70	[0.62, 0.78]	0.69	[0.62, 0.77]	0.68	[0.56, 0.81]	0.71	[0.62, 0.81]
Aboriginal identification – Member of First Nation or Indian band								

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Not a member of a First Nation or Indian band	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Member of a First Nation or Indian band	0.71	[0.64, 0.80]	0.70	[0.63, 0.78]	0.67	[0.55, 0.81]	0.73	[0.64, 0.83]
Age					---		---	
15-18	1.00	[Reference]	1.00	[Reference]				
19-24	1.94	[1.28, 2.94]	1.95	[1.29, 2.95]				
25-34	2.81	[1.82, 4.32]	2.78	[1.81, 4.29]				
35-44	3.62	[2.37, 5.53]	3.59	[2.36, 5.47]				
45-54	6.04	[4.01, 9.08]	5.97	[3.96, 8.98]				
55 and over	5.67	[3.82, 8.43]	5.62	[3.78, 8.35]				
Sex of respondent					---		---	
Male	1.00	[Reference]	1.00	[Reference]				
Female	1.51	[1.34, 1.70]	1.48	[1.32, 1.66]				
Highest level of education attainment								
Grade 8, equivalent or lower	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Some secondary education	0.80	[0.64, 0.99]	1.01	[0.82, 1.23]	1.03	[0.73, 1.44]	1.00	[0.78, 1.28]
Secondary school diploma or equivalent	0.54	[0.43, 0.68]	0.75	[0.60, 0.94]	0.71	[0.48, 1.05]	0.79	[0.60, 1.04]
Some postsecondary education	0.58	[0.47, 0.73]	0.78	[0.63, 0.97]	0.87	[0.60, 1.26]	0.75	[0.58, 0.96]
Postsecondary certificate or diploma	0.66	[0.54, 0.80]	0.72	[0.60, 0.87]	0.71	[0.51, 0.98]	0.73	[0.59, 0.90]
Bach. Degree or univ. cert./dip/degree above bach.	0.39	[0.30, 0.51]	0.42	[0.32, 0.54]	0.45	[0.28, 0.75]	0.40	[0.29, 0.54]
Chronic conditions								
Asthma								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.00	[1.77, 2.27]	1.93	[1.72, 2.16]	1.94	[1.55, 2.43]	1.91	[1.68, 2.18]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Arthritis (excluding fibromyalgia)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	4.02	[3.63, 4.44]	3.18	[2.84, 3.57]	3.90	[3.24, 4.70]	2.84	[2.46, 3.28]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
High blood pressure								

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.93	[1.72, 2.17]	1.40	[1.24, 1.58]	1.43	[1.15, 1.77]	1.41	[1.21, 1.63]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Chronic bronchitis/Emphysema/COP D								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.69	[2.37, 3.06]	2.00	[1.75, 2.28]	1.93	[1.48, 2.51]	2.03	[1.76, 2.35]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Diabetes								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.14	[1.89, 2.42]	1.59	[1.40, 1.81]	1.51	[1.18, 1.92]	1.63	[1.40, 1.89]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Heart disease								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.38	[2.08, 2.71]	1.82	[1.60, 2.07]	1.61	[1.26, 2.05]	1.96	[1.70, 2.27]
Don't know	1.95	[1.06, 3.57]	1.62	[0.89, 2.94]	---		---	
Refusal	---		---		---		---	
Mood disorder								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.78	[2.49, 3.10]	2.73	[2.46, 3.04]	2.76	[2.28, 3.35]	2.71	[2.39, 3.06]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Anxiety disorder								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.40	[2.14, 2.69]	2.55	[2.29, 2.84]	2.69	[2.21, 3.26]	2.51	[2.20, 2.85]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Intestinal or stomach ulcers								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.68	[2.30, 3.12]	2.09	[1.81, 2.42]	2.03	[1.46, 2.83]	2.17	[1.87, 2.52]
Don't know	2.16	[1.35, 3.46]	1.95	[1.14, 3.34]	---		2.07	[1.09, 3.95]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Refusal	---		---		---		---	
Bowel disorders								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.71	[2.41, 3.04]	2.18	[1.93, 2.46]	2.43	[1.82, 3.24]	2.12	[1.85, 2.42]
Don't know	1.84	[0.76, 4.44]	1.85	[0.99, 3.46]	---		---	
Refusal	---		---		---		---	

--- As per Statistics Canada’s dissemination guidelines, underlying cell counts below 10 cannot be reported

Note: aPR – adjusted prevalence ratio; Each independent variable was modeled individually adjusted for age group and sex. The stratified male and female only models were adjusted for age group. Selected variables were informed by the First Nations Holistic Policy and Planning Model.

Table 3.5. Age- and sex-adjusted prevalence ratios of associations between pain-related disability and selected variables for subgroup analysis, and sex-stratified models adjusted for age only, among First Nations people living off-reserve

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Reasons for housing dissatisfaction								
<i>Crowded/not enough space</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.04	[0.76, 1.44]	1.20	[0.92, 1.57]	0.98	[0.62, 1.56]	1.25	[0.92, 1.70]
Don't know	---		---		---			
Refusal	---		---		---			
High costs								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.55	[1.20, 1.98]	1.48	[1.17, 1.87]	2.12	[1.47, 3.07]	1.25	[0.95, 1.64]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Problems – run down/need many repairs, poor insulation, presence of mould or mildew, presence of unwanted pests such as mice, bedbugs or cockroaches								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.24	[0.96, 1.59]	1.11	[0.87, 1.40]	1.03	[0.68, 1.57]	1.19	[0.90, 1.58]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Other (location, safety concerns, problems with landlord, neighbours or other tenants, other)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.97	[0.75, 1.24]	1.02	[0.81, 1.28]	0.87	[0.59, 1.28]	1.05	[0.80, 1.38]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Reasons for unmet health care needs								
Cost								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.26	[1.06, 1.50]	1.27	[1.08, 1.50]	1.15	[0.87, 1.52]	1.32	[1.08, 1.61]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
<i>Not avail./Wait times too long</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.99	[0.81, 1.20]	0.89	[0.74, 1.07]	0.79	[0.57, 1.08]	0.93	[0.74, 1.16]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
<i>Personal (felt it would be inadequate; too busy; didn't get around to it; decided not to seek care; personal/family responsibilities; dislikes doctors/afraid)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.71	[0.56, 0.89]	0.81	[0.66, 0.99]	0.77	[0.53, 1.13]	0.85	[0.65, 1.10]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
<i>Other (didn't think it was necessary, other)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.38	[1.16, 1.65]	1.35	[1.15, 1.59]	1.68	[1.29, 2.19]	1.21	[0.97, 1.50]
Don't know	---		---		---		---	
Refusal	---		---		---		---	

--- As per Statistics Canada's dissemination guidelines, underlying cell counts below 10 cannot be reported

Note: aPR – adjusted prevalence ratio; Each independent variable was modeled individually adjusted for age group and sex. The stratified male and female only models were adjusted for age group. Selected variables were informed by the First Nations Holistic Policy and Planning Model.

CHAPTER FOUR

PREVALENCE AND FACTORS ASSOCIATED WITH PAIN-RELATED DISABILITIES AMONG MÉTIS PEOPLE IN CANADA IN 2017: A CROSS-SECTIONAL STUDY

4.1 ABSTRACT

Objective: To determine the prevalence and factors associated with pain-related disabilities (PRDs) among Métis people in Canada.

Design: We analyzed data from Statistics Canada's 2017 Aboriginal Peoples Survey (APS). This population-based cross-sectional survey included self-reported data from approximately 8,499 Métis respondents aged ≥ 15 years. We computed the prevalence of PRDs overall, and by geographic region, age, sex, type and number of co-existing disabilities. We investigated associations between Métis-specific factors and PRDs using modified Poisson regression with robust variance estimation.

Results: Overall, 20.4% [19.3, 21.6] of Métis people had PRDs. The prevalence was higher among females, increased with age, and was similar across geographical regions. PRDs were highest among those with disabilities related to flexibility 91.7% [89.5, 93.5], and lowest related to mental health, 60.0% [55.9, 63.9]. Our regression models suggested that females, older individuals, those with chronic conditions and unmet health needs, familial members who attended residential schools, or those who experienced socioeconomic challenges were more likely to report PRDs.

Conclusion: Our analysis suggests a diverse array of social determinants of health interconnected with PRDs among Métis people in Canada. The multi-faceted nature of PRDs requires ongoing partnership with Indigenous leadership and communities to meaningfully contextualize these findings.

4.2 INTRODUCTION

Persons with disability often experience greater functional limitations when faced with health inequities, in particular those tied to the social determinants of health (SDOH).¹ For Indigenous populations, the socioeconomic, political, and historical contexts contribute towards further exacerbating the extent of disability experienced.^{2, 3} This is evident in Canada, where Indigenous peoples are disproportionately affected by health inequities and disability.⁴ In Canada, Métis people represent a distinct group of Indigenous peoples originating from the cross-cultural union between First Nations women and European men during the fur trade.⁵ With elements of both cultures, Métis culture itself is unique, containing a rich history, language and lifestyle of its own.

In 1991 and 2017, 30-32% of Métis people reported disabilities which was higher than in the non-Indigenous population.^{6, 7} In 1991, mobility and agility were the leading cause of disabilities among Métis, with 33% of Métis people requiring assistance to perform heavy household chores and 15% needing help with everyday housework.⁸ However, by 2017, pain-related disabilities (PRDs) were the most common cause of disability among Métis people.⁷ This is important because individuals with chronic health conditions are likely to experience pain. To date, little is known about the etiology of PRDs in Métis people.

Indigenous perspectives on health emphasize a holistic approach, equally valuing physical, emotional, mental and spiritual dimensions of well-being.² Situating disability within this paradigm requires recognizing the effects of colonial society in shaping deficit-based views of disability.⁹ Western perspectives have framed disabilities through a lens of disadvantage, in need

of a cure or fixing.⁹ This is different from Indigenous perspectives. Métis scholar, Dr. Rheanna Robinson (2024) highlights how language, kinship and culture shape our perceptions of the term disability.¹⁰ Individuals born with different abilities are honoured for their unique talents, with their gifts seen as a valuable contribution serving a meaningful purpose within the community.^{9, 10} This supports the belief that every individual has an essential role within the broader community.

Rivas Velarde (2018) further noted that in many Indigenous communities there is a reluctance to use the term disability as it is often associated with limitations or an inability to perform tasks.⁹ This is in contrast with the holistic, community perspectives valuing each individual's unique contributions. In addition, spiritual and cultural beliefs may further shape one's perceptions of how pain affects a person's ability to function. For instance, some may interpret acquiring an impairment due to an accident as a form of punishment for past wrongdoings or a consequence for harmful actions committed by the individual or their family.⁹

Partnering with Métis people is essential to fully understanding how pain affects functioning and well-being. Therefore, we must recognize that Métis health is a balance of interconnected aspects, physical, mental, emotional, social, economic, spiritual, environmental, and cultural – supporting individual and collective well-being across generations.¹¹ Integrating this definition into PRD research requires meaningful collaboration with Métis communities to ensure a culturally relevant and comprehensive understanding of pain. In doing so, disability-related interventions and policies can be inclusive of the unique experiences of Métis people, the historical context and spaces within which they navigate, and relevant SDOH. These spaces however, have historically marginalized Indigenous women and girls with disabilities, compounding their

experiences of discrimination and contributing to the worsening of overall health and well-being.¹²

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With each Indigenous group having distinct histories, oral traditions, cultures and languages, research conducted must attempt to incorporate community-specific teachings and perspectives to strengthen the relevance of the work. Thus, any epidemiological exploration into PRDs must consider Métis-specific principles rooted within Métis culture. One such example would be the 2023 report published by the Métis National Council in collaboration with Métis Nation Governments which describes 17 specific Métis SDOH.¹¹ Applying these SDOH to investigate PRDs among Métis people highlights the need to view these concepts on a continuum. This continuum connects the past, present and future through the history shared by all Métis.¹⁴ Furthermore, guiding principles must be rooted within a holistic approach which encompasses the individual, families, communities and nation to nation relations.¹⁴

In partnership with an Indigenous Advisory Committee (IAC), we aimed to describe the prevalence and factors associated with PRDs among Métis peoples in Canada in 2017 and to explore whether these associations varied by sex.

4.3 METHODS

4.3.1 Partnership with Indigenous Peoples

From the onset of this project, we collaborated with Indigenous colleagues and formed an Indigenous Advisory Committee (IAC). The IAC included First Nations, Métis, rural and urban Indigenous individuals who resided in different geographical areas within Canada. Potential

committee members were first identified through guidance from the Indigenous Cultural Advisor at Ontario Tech University and by connecting with colleagues in the field. With each Indigenous community having its own unique identity, history and culture, we recognize that while it was not possible to engage with members from all communities, individuals as part of the IAC brought diverse perspectives to this work. They informed the methodology, analysis, interpretation of findings and dissemination through meaningful ways detailed throughout this paper. Regular meetings took place virtually and at all stages of the project. Between meetings, correspondence continued through email. In the spirit of true collaboration, all IAC members are co-authors of this work.

4.3.2 Study design

We used data from the 2017 Aboriginal Peoples Survey (APS), a cross-sectional study conducted by Statistics Canada. The survey was conducted across Canada from January 16 to August 15, 2017. This APS cycle gathered information on social and economic conditions to identify needs and help inform future Indigenous programming.¹⁵ It is also considered the most representative of First Nations people living off-reserve, Métis, and Inuit in Canada and the official source of disability information.⁷

We report our study in accordance with the STROBE checklist¹⁶ (Appendix C.1). We obtained ethical approval from the Ontario Tech University Research Ethics Board (REB # 16845) (Appendix B.2).

4.3.3 Participants

In this paper we present the analyses for those who self-identified as Métis. The 2017 APS sample was selected using a complex multiple-phase stratified random sampling design.¹⁵ Participation was based on responses to the 2016 Census, submitted online or by paper.¹⁷ Individuals sent the APS had reported Indigenous ancestry or identity – either as First Nations (North American Indian) Status and Non-Status, Métis or Inuk.¹⁵ A response rate of 70.1% was obtained.

Respondents of the 2017 APS met the following inclusion criteria: 1) 15 years or older; 2) lived in private dwellings; and 3) identified as having Indigenous identity, Status Indian (Registered or Treaty Indian), or a member of a First Nation/Indian band. When constructing the sampling frame, stratification and sub-stratification ensured adequate sample sizes for those with specific characteristics related to First Nations, Inuit and Métis identity, age groups, and geographical region.¹⁵

4.3.4 Data Collection

Data were collected through a computer assisted interviewing environment via two methods: computer-assisted personal interviews and computer-assisted telephone interviews.¹⁵

Data for the 2017 APS were accessed through a secure password protected, digital data repository – ODESI service.¹⁸ We used the public user microdata file which contained 20,849 Indigenous respondents - 8,499 of whom identified as Métis.

4.3.5 Outcome

Self-reported PRD, a binary variable (yes/no) was measured using a set of survey questions. Respondents were asked if they had pain that is always present or periods of pain that reoccur from time to time due to a long-term condition that has lasted or is expected to last for six months or more. Participants who answered “yes” were then asked, “How often does this pain limit your daily activities?”.¹⁹ Those who responded either, “sometimes”, “often”, or “always”, were categorized as having a PRD.¹⁹

4.3.6 Factors associated with PRDs

Guided by the IAC, we selected factors that were potentially associated with PRDs using a Métis-specific framework in lieu of a general Indigenous-health framework. With guidance from the IAC’s Métis members, we selected the Métis SDOH presented in the 2023 Métis National Council report.¹¹ One-on-one meetings with members further assisted our understanding of these SDOH, and which questions within the APS may capture the essence of these determinants. These determinants (or factors) were then mapped, when possible, to variables available in the APS dataset. This process led to the identification of 38 variables grouped within a range of demographic, socioeconomic, health and culture-related domains (Appendix C.2).

4.3.7 Statistical methods

We used percentages to describe the characteristics of our sample. We calculated overall prevalence and 95% confidence intervals (CI) of PRDs, and stratified prevalence by age (15-18, 19-24, 25-34, 35-44, 45-54, 55+), sex (male, female), geographic region (CMA, other population centre, other rural), number of disabilities (one, two or three, more than three), and types of co-existing disabilities (seeing, hearing, mobility, flexibility, dexterity, cognitive, mental health).

We used modified Poisson regression with robust variance estimation to assess association between Métis-specific factors and PRDs.²⁰ We built univariable models to explore the crude association between the 38 a priori selected variables and PRDs. Next, each model was adjusted for age and sex. Given the socioeconomic and health disadvantages women often face – particularly Indigenous women with disabilities,¹³ we built sex-stratified models while controlling for age to examine whether associations between each selected factor and the outcome varied by sex.

We describe associations between each selected variable and the outcome using PRs as point estimates to illustrate the magnitude and direction for each association. Additionally, we present the 95% CIs to reflect the statistical precision of each estimate. Instead of interpreting results solely on statistical significance, when the PR meaningfully differs from 1.00 but the CI includes 1.00, we use the phrase “may be associated” to present a potential relationship with limited precision.

For the outcome < 1% of responses were coded as ‘not stated’ and included in the denominator for prevalence estimates. Missing data (i.e., ‘not stated’ and ‘valid skip’ responses) in the regression models were excluded from the analysis. Analyses were conducted in R²¹ using person-level weights and the generation of 1,000 bootstrap weights for each survey respondent provided by Statistics Canada.¹⁵

4.4 RESULTS

4.4.1 Descriptive characteristics of participants

Our sample represented 458,918 Métis respondents upon applying weights. Table 4.1 presents the descriptive characteristics of the full sample and stratified by PRD status. Over half of respondents were female (51.2%) and resided in CMAs (52.5%). The smallest age group was 15-18 years (8.3%), and the largest was 55 and older (27.8%). Nearly two-thirds were employed (63.7%), with half working full-time (50.7%). Most had a regular medical doctor (83.2%) and no unmet healthcare needs (85.1%). Métis with PRDs were more likely to be female (59.4%), aged 55+ (42.6%), have unmet healthcare needs (27.9%), and report more chronic conditions such as arthritis (50.6%).

4.4.2 Prevalence of PRDs

In Canada, 20.4% [19.3, 21.6]) of Métis people self-reported PRDs. Table 4.2 shows that the prevalence of PRDs was similar across the geographical regions. The prevalence was higher among females compared to males [23.7% vs 17.0%], and increased with age, with the highest proportion among those 55+ [31.3% (29.2, 33.5)]. These patterns further supported our decision adjusting regression models for age and sex, and stratifying by sex to assess differences in associations.

As shown in Table 4.3, PRDs were highest among those with physical co-existing disabilities (e.g., flexibility 91.7% [89.5, 93.5], dexterity 91.3% [87.4, 94.1] and mobility 90.5% [88.1, 92.4]). The lowest prevalence was in relation to mental health, 60.0% [55.9, 63.9]. Prevalence also increased with the number of co-existing disabilities.

4.4.3 Associations between Métis-specific factors and PRDs

Our crude models suggest that the majority of variables identified by the IAC were associated with PRDs (Table 4.4).

Demographic-related

Our age- and sex- adjusted analyses, consistent with prevalence values reported above, suggests females (vs. males) were more likely to have PRDs [PR=1.41; 95% CI: 1.26, 1.57], and those in the oldest age group (vs. youngest) were much more likely to have PRDs [PR=3.84; 95% CI: 2.70, 5.45] (Table 4.4). Those with any form of university postsecondary-related education or above (vs. grade 8, equivalent or lower) [PR=0.46; 95% CI: 0.35, 0.60] were less likely to have PRDs.

Those who consumed alcohol 2 to 3 times a week (vs. those who had a drink less than once a month) [PR=0.54; 95% CI: 0.44, 0.66], those who did not smoke (vs. daily smokers) [PR=0.63; 95% CI: 0.56, 0.71], and those who did not use recreational drugs (vs. those who did) [PR=0.72; 95% CI: 0.62, 0.84] were less likely to report PRDs. However, in terms of geographical location, those living in other population centres (vs. CMAs) may be slightly more likely to have PRDs [PR=1.11; 95% CI: 0.98, 1.26].

Socioeconomic-related

Those who experienced severe food insecurity (vs. food secure) [PR=3.29; 95% CI: 2.92, 3.70], whose household income was insufficient to meet household needs (vs. sufficient household income) [PR=3.65; 95% CI: 3.06, 4.34], who did not have the current ability to cover unexpected

expenses (vs. those who did) [PR=2.36; 95% CI: 2.13, 2.62], and those who were dissatisfied or very dissatisfied with their housing conditions (vs. very satisfied) [PR=3.15; 95% CI: 2.67, 3.71] were two to three times more likely to report PRDs. However, those who lived in a couple relationship with children were less likely to report PRDs than other household arrangements.

Additionally, those who reported higher levels of personal and employment income (vs. < \$5000) were less likely to have PRDs. Those not in the labour force (vs. employed) were more likely to report PRDs [PR=2.41; 95% CI: 2.12, 2.74]. Moreover, this association persisted regardless of whether or not these individuals participated in other traditional labour activities such as hunting, fishing, trapping, gathering wild plants, making clothing, cravings or jewellery. Those who worked part-time (vs. full-time) were more likely to report PRDs. In addition, there was a gradient in the prevalence ratios for the association between the number of months since last worked and PRDs with the strength of the association increasing as time spent out of work increased.

Health-related

Those who did not have a regular medical doctor (vs. those who did) [PR=0.65; 95% CI: 0.52, 0.81], or had not consulted a health professional (vs. those who had) [PR=0.42; 95% CI: 0.35, 0.50] were less likely to report PRDs. However, those who had a mental health consultation (vs. those who did not) [PR=2.27; 95% CI: 2.04, 2.53], unmet health care needs (vs. those with none) [PR=2.39; 95% CI: 2.14, 2.67], and those with chronic conditions (vs. those without) were more likely to report PRDs.

Culture-related

Lastly, those who could understand or speak an Indigenous language (vs. those who could not) were more likely to report PRDs [PR=1.16; 95% CI: 1.03, 1.31]. In terms of giving back to the community and helping others, those who volunteered were less likely to report PRDs compared to those who had not in the past year. Additionally, those who did not feel a sense of belonging to one's own Indigenous group, or participated in group events and activities (vs those who did), were less likely to report PRDs. Finally, individuals with a parent, grandparent, or other family members who attended residential schools were more likely to report PRDs than those with no personal or familial history [PR=1.54; 95% CI: 1.27, 1.85].

4.4.4 Sex-specific associations

We found sex-specific associations differences for the following variables: food security, housing satisfaction, type of employment, labour force status (also with participation in other traditional labour activities), number of months since last worked, and chronic conditions such as chronic bronchitis/emphysema/COPD. In particular, the association was almost one and a half times stronger among males than females for those experiencing severe food insecurity [PR=4.08 vs. 2.83]; one and two-thirds times stronger for males than females not in the labour force [PR=3.29 vs. 1.98]; and two times stronger among males than females who felt neutral of their housing conditions [PR=5.39 vs. 2.68]. However, for those who have been out of work for six to less than twelve months, the direction of the association may be different between males and females [PR=1.65 vs. 0.73].

4.5 DISCUSSION

Among Métis people in Canada in 2017, 1 in 5 lived with PRDs. These estimates were higher among females, increased with age and were similar across the geographical regions. Additionally, the findings suggest that Métis people with PRDs were more likely to be living with chronic conditions, or experiencing socioeconomic challenges such as food insecurity, inadequate housing, and unemployment. These associations remained fairly consistent when analyzed separately by sex.

In Canada, to our knowledge, no studies have investigated the epidemiology of PRDs in Métis peoples.²² The differences between Western models of disability and Indigenous ways of knowing may contribute to the current limited body of literature in regard to PRDs. Given the various perspectives in understanding the concept of disability, many Indigenous languages often do not have an equivalent word.^{9, 10} Rather, different abilities, impairments or functional difficulties are understood within the cultural and spiritual contexts in which a person is situated in relation to their community.

In light of this, discussions with the IAC brought attention to a number of trends among the demographic and socioeconomic factors. Adolescence and young adulthood are often characterized as a time of identity formation, exploration, and risk seeking behaviours,²³ factors which may contribute to the higher prevalence of PRDs observed among Métis respondents 19-24 years compared to those 25-34 years. Our analysis also suggests PRDs were more common among females and older adults – a pattern consistent with broader trends observed in the general Canadian population.²⁴

Our results suggest food insecurity and being out of the labour force were linked to higher PRD, especially among males, highlighting potential sex-based differences. Although Métis men have been reported to earn more than Métis women,²⁵ their income may still be insufficient – especially when considering geographical location and cost of living. These economic challenges may have broader implications. For instance, Indigenous parents have identified income constraints, limited access to fresh foods, and reduced availability of traditional foods as barriers to providing a healthy diet for their child.²⁶ Additionally in males, the effects of PRDs could be compounded due to additional psychological or economic distress if working less or being out of work for longer time periods. Community, family or societal expectations of providing or being stoic when faced with adversity can further prevent individuals from seeking help, treatment or care. Collectively, these additional pressures may contribute to a higher burden of PRDs experienced among Métis men.

Lastly, our analyses suggest PRDs increased with the number of co-existing disabilities and were most prevalent among those with physical limitations. With categories for co-existing disabilities not mutually exclusive, higher prevalence among those with flexibility, dexterity and mobility issues may reflect overlapping limitations. Furthermore, potential overlap among constructs such as basic needs, food security, and income reflect the interrelated nature of the SDOH. Future research and interventions should address these determinants holistically rather than isolated components.

4.5.1 Implications for future research, practice and policy

Although there is limited epidemiological information available on this topic, qualitative studies can inform our understanding of factors for consideration when investigating PRDs among Métis people. Sex differences in the experience of PRDs suggest future community-led interventions may need to be tailored for males and females.

For practice, it is important to consider the implications of not receiving holistic care. PRDs should be investigated not in silos, but rather through interconnection and in partnership with Métis Nation governments, organizations and people.

For policy, continued engagement is needed with Indigenous communities to contextualize the findings in a way which contributes towards moving forward the agenda and needs for Métis people living with PRDs as determined by them.

4.5.2 Study strengths and limitations

A main strength of our work is the partnership between members of the Métis community who were a part of the IAC and our research team to co-design research questions and interpret the results. Using the Métis SDOH to guide the variable selection better positioned our study to produce findings which were more relevant and meaningful to communities. In the APS, several strategies were used by Statistics Canada to mitigate bias.¹⁵

Our study also has limitations. The psychometric properties of the Disability Screening Questions, the tool used to measure PRDs within the 2017 APS are unknown among Métis and Indigenous groups. Moreover, PRDs, was constructed using several questions, both of which may

have led to misclassification. In light of the different terminology and language used by Indigenous peoples in reference to the concept of pain and disability, cultural interpretation of the questions may have led to an underestimation of the prevalence – leading to non-differential misclassification of the outcome. The misclassification may have diluted the association between certain variables and PRDs.

The characteristics of respondents who completed the APS may also differ from those who were non-respondents. Given the ongoing treatment of Indigenous peoples and their history with government run surveys, those who did not participate in the survey may not have done so due to mistrust of researchers and government officials from past unethical and harmful practices. This may have in turn contributed to an underreporting of PRDs.

4.6 CONCLUSION

Approximately twenty-percent of Métis people in Canada live with PRDs. Furthermore, a multitude of factors ranging from demographic, socioeconomic, health and culture-related are associated with PRDs. Understanding Métis population health information in partnership with community members can support Métis-specific initiatives to promote holistic functioning inclusive of an individual's ability to perform daily tasks, engage in social interactions, and participate in community activities.

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Table 4.1. Sample characteristics of Métis, overall and those with and without pain-related disabilities (weighted)

	Overall	With pain-related disability	Without pain-related disability	Not stated
n (%)	458918	93707	359575	5636
Age				
15-18	38220 (8.3)	3095 (3.3)	34692 (9.6)	---
19-24	55263 (12.0)	6623 (7.1)	48404 (13.5)	---
25-34	79985 (17.4)	8522 (9.1)	69824 (19.4)	---
35-44	71398 (15.6)	12247 (13.1)	58339 (16.2)	---
45-55	86451 (18.8)	23289 (24.9)	62167 (17.3)	---
55 and over	127601 (27.8)	39930 (42.6)	86150 (24.0)	1522 (27.0)
Sex				
Male	223991 (48.8)	38046 (40.6)	183415 (51.0)	2531 (44.9)
Female	234927 (51.2)	55661 (59.4)	176160 (49.0)	3106 (55.1)
Geographical location of residence				
Census Metropolitan Areas (CMAs)	241025 (52.5)	46991 (50.1)	191233 (53.2)	2801 (49.7)
Other population centres	112298 (24.5)	24357 (26.0)	86741 (24.1)	1200 (21.3)
Other rural	105595 (23.0)	22359 (23.9)	81601 (22.7)	1635 (29.0)
Education				
Grade 8, equivalent or lower	18567 (4.0)	7336 (7.8)	11189 (3.1)	---
Some secondary education	44562 (9.7)	11881 (12.7)	32607 (9.1)	---
Secondary school diploma or equivalent	69953 (15.2)	14884 (15.9)	54940 (15.3)	---
Some postsecondary education	76798 (16.7)	16063 (17.1)	60537 (16.8)	---
Postsecondary certificate or diploma	161874 (35.3)	33215 (35.4)	128536 (35.7)	---
Bach. Degree or university, cert./dip/degree above bachelor's	53348 (11.6)	7513 (8.0)	45530 (12.7)	---
Valid skip	26103 (5.7)	2328 (2.5)	23688 (6.6)	---
Not stated	7714 (1.7)	488 (0.5)	2547 (0.7)	4680 (83.0)
Residential school attendance (or federal industrial school)				
Respondent attended	7986 (1.7)	1606 (1.7)	6380 (1.8)	---
Only parent(s) or grandparent(s) attended	42184 (9.2)	9010 (9.6)	33006 (9.2)	---
Only other family members attended	16171 (3.5)	3599 (3.8)	12572 (3.5)	---
Only parent(s)/grandparent(s)/other family members attended	30372 (6.6)	8170 (8.7)	22113 (6.1)	---
Neither respondent nor any family members attended	223855 (48.8)	39388 (42.0)	184150 (51.2)	---
Not stated	138350 (30.1)	31934 (34.1)	101354 (28.2)	5063 (89.8)

	Overall	With pain-related disability	Without pain-related disability	Not stated
Food security status				
Food secure	320238 (69.8)	47970 (51.2)	268845 (74.8)	3423 (60.7)
Moderate food insecurity	95278 (20.8)	25324 (27.0)	68451 (19.0)	1503 (26.7)
Severe food insecurity	40902 (8.9)	19868 (21.2)	20426 (5.7)	---
Not stated	2501 (0.5)	545 (0.6)	1853 (0.5)	---
Basic needs - household income meets household needs (past 12 months)				
More than enough	111205 (24.2)	11529 (12.3)	98946 (27.5)	730 (12.9)
Enough	253948 (55.3)	44500 (47.5)	205839 (57.2)	3609 (64.0)
Not enough	92588 (20.2)	37311 (39.8)	54057 (15.0)	1219 (21.6)
Don't know	1054 (0.2)	---	686 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Basic needs - current ability to cover unexpected expenses				
Yes	311044 (67.8)	44726 (47.7)	262824 (73.1)	3494 (62.0)
No	141743 (30.9)	48446 (51.7)	91278 (25.4)	2019 (35.8)
Don't know	5628 (1.2)	490 (0.5)	5051 (1.4)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Housing conditions - satisfaction level				
Very satisfied	203717 (44.4)	27292 (29.1)	174449 (48.5)	1976 (35.1)
Satisfied	211757 (46.1)	48043 (51.3)	161039 (44.8)	2675 (47.5)
Neither satisfied nor dissatisfied	8274 (1.8)	4144 (4.4)	4029 (1.1)	---
Dissatisfied or very dissatisfied	34919 (7.6)	14229 (15.2)	19918 (5.5)	---
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Household type				
Respondent family household: couple with child(ren)	168464 (36.7)	21873 (23.3)	144163 (40.1)	2428 (43.1)
Respondent family household: couple without child(ren)	118396 (25.8)	27129 (29.0)	90265 (25.1)	1002 (17.8)
Respondent family household: other family household	85743 (18.7)	21172 (22.6)	63393 (17.6)	1179 (20.9)
Respondent non-family household	85972 (18.7)	23533 (25.1)	61501 (17.1)	938 (16.6)
Not stated	344 (0.1)	---	254 (0.1)	---
Have a regular medical doctor				
Yes	382001 (83.2)	85026 (90.7)	295101 (82.1)	1874 (33.2)
No	72687 (15.8)	8251 (8.8)	63925 (17.8)	---
Don't know	1289 (0.3)	---	524 (0.1)	---
Refusal	---	---	---	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
Not stated	2653 (0.6)	---	---	2653 (47.1)
Healthcare needed but not received				
Yes	63954 (13.9)	26111 (27.9)	37629 (10.5)	---
No	390342 (85.1)	67524 (72.1)	321481 (89.4)	1338 (23.7)
Don't know	800 (0.2)	---	442 (0.1)	---
Refusal	---	---	---	---
Not stated	3150 (0.7)	---	---	3150 (55.9)
Consulted a health professional in last 12 months				
Yes	343654 (74.9)	83742 (89.4)	258571 (71.9)	1341 (23.8)
No	110782 (24.1)	9942 (10.6)	100470 (27.9)	---
Not stated	4482 (1.0)	---	---	3926 (69.6)
Mental health consultation past 12 months				
Yes	99342 (21.6)	33096 (35.3)	65233 (18.1)	1013 (18.0)
No	341029 (74.3)	57108 (60.9)	282548 (78.6)	1374 (24.4)
Valid skip	15362 (3.3)	3450 (3.7)	11704 (3.3)	---
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	2398 (0.5)	---	---	2398 (42.6)
Asthma				
Yes	67325 (14.7)	21875 (23.3)	44866 (12.5)	---
No	390417 (85.1)	71764 (76.6)	314514 (87.5)	4140 (73.5)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Arthritis (excluding fibromyalgia)				
Yes	93222 (20.3)	47375 (50.6)	45437 (12.6)	---
No	363239 (79.2)	45911 (49.0)	313419 (87.2)	3909 (69.4)
Don't know	1172 (0.3)	---	620 (0.2)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
High blood pressure				
Yes	84387 (18.4)	30543 (32.6)	52557 (14.6)	1288 (22.8)
No	372562 (81.2)	63047 (67.3)	306442 (85.2)	3073 (54.5)
Don't know	581 (0.1)	---	375 (0.1)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Chronic bronchitis / Emphysema / COPD				

	Overall	With pain-related disability	Without pain-related disability	Not stated
Yes	23676 (5.2)	13011 (13.9)	10404 (2.9)	---
No	433241 (94.4)	80338 (85.7)	348844 (97.0)	4059 (72.0)
Don't know	626 (0.1)	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Diabetes				
Yes	38814 (8.5)	17744 (18.9)	20877 (5.8)	---
No	418283 (91.1)	75803 (80.9)	338481 (94.1)	3999 (71.0)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Heart disease				
Yes	25633 (5.6)	11120 (11.9)	14463 (4.0)	---
No	430926 (93.9)	82085 (87.6)	344654 (95.9)	4187 (74.3)
Don't know	948 (0.2)	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Intestinal or stomach ulcers				
Yes	19544 (4.3)	9029 (9.6)	10515 (2.9)	---
No	436983 (95.2)	84365 (90.0)	348390 (96.9)	4228 (75.0)
Don't know	925 (0.2)	---	473 (0.1)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Bowel disorders				
Yes	39738 (8.7)	18571 (19.8)	20968 (5.8)	---
No	417146 (90.9)	74871 (79.9)	338237 (94.1)	4037 (71.6)
Don't know	623 (0.1)	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Mood disorder				
Yes	78274 (17.1)	36729 (39.2)	41237 (11.5)	---
No	378317 (82.4)	56786 (60.6)	317601 (88.3)	3929 (69.7)
Don't know	702 (0.2)	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Anxiety disorder				
Yes	82261 (17.9)	34967 (37.3)	46391 (12.9)	---
No	374633 (81.6)	58740 (62.7)	312606 (86.9)	3287 (58.3)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
Ability to understand or speak an Indigenous language				
Yes	108663 (23.7)	25664 (27.4)	82674 (23.0)	---
No	342154 (74.6)	67082 (71.6)	274483 (76.3)	590 (10.5)
Don't know	836 (0.2)	---	---	---
Refusal	---	---	---	---
Not stated	6602 (1.4)	---	1978 (0.6)	3895 (69.1)
Active in Indigenous group events and activities				
Strongly agree	18441 (4.0)	5251 (5.6)	12560 (3.5)	---
Agree	87071 (19.0)	19134 (20.4)	66153 (18.4)	1784 (31.7)
Neither agree nor disagree	29243 (6.4)	7560 (8.1)	21683 (6.0)	---
Disagree or strongly disagree	307209 (66.9)	57832 (61.7)	246362 (68.5)	3015 (53.5)
Valid skip	15362 (3.3)	3450 (3.7)	11704 (3.3)	---
Don't know	1353 (0.3)	---	896 (0.2)	---
Refusal	---	---	---	---
Sense of belonging to own Indigenous group				
Strongly agree	64152 (14.0)	18737 (20.0)	44320 (12.3)	1095 (19.4)
Agree	159096 (34.7)	30041 (32.1)	127551 (35.5)	1504 (26.7)
Neither agree nor disagree	52021 (11.3)	10392 (11.1)	41139 (11.4)	---
Disagree or strongly disagree	165224 (36.0)	30576 (32.6)	132522 (36.9)	2126 (37.7)
Valid skip	15362 (3.3)	3450 (3.7)	11704 (3.3)	---
Don't know	2954 (0.6)	---	2229 (0.6)	---
Refusal	---	---	---	---
Helping others - volunteering for a group or organization				
At least once a week	64229 (14.0)	13290 (14.2)	50211 (14.0)	---
At least once a month	67358 (14.7)	11496 (12.3)	55062 (15.3)	---
Less than once a month	85533 (18.6)	13319 (14.2)	70801 (19.7)	---
Not at all in the past 12 months	240906 (52.5)	55434 (59.2)	182843 (50.8)	2629 (46.6)
Don't know	892 (0.2)	---	657 (0.2)	---
Helping others - helping people on your own, not on behalf of an organization				
At least once a week	159492 (34.8)	35326 (37.7)	122481 (34.1)	1685 (29.9)
At least once a month	150178 (32.7)	25461 (27.2)	122673 (34.1)	2044 (36.3)
Less than once a month	65053 (14.2)	10845 (11.6)	53433 (14.9)	---
Not at all in the past 12 months	83190 (18.1)	21894 (23.4)	60189 (16.7)	1108 (19.7)
Don't know	1006 (0.2)	---	800 (0.2)	---
Total 2016 personal income				
Less than \$5000	48639 (10.6)	8946 (9.5)	39462 (11.0)	---
\$5000 to \$9,999	25657 (5.6)	6665 (7.1)	18968 (5.3)	---
\$10,000 to \$19,999	69999 (15.3)	23607 (25.2)	46328 (12.9)	---

	Overall	With pain-related disability	Without pain-related disability	Not stated
\$20,000 to \$29,999	58375 (12.7)	14219 (15.2)	44084 (12.3)	---
\$30,000 to \$39,999	45209 (9.9)	10094 (10.8)	34927 (9.7)	---
\$40,000 to \$49,999	36954 (8.1)	6830 (7.3)	30124 (8.4)	---
\$50,000 to \$69,999	61177 (13.3)	7188 (7.7)	53989 (15.0)	---
\$70,000 and over	82793 (18.0)	9599 (10.2)	73156 (20.3)	---
Not stated	30114 (6.6)	6559 (7.0)	18537 (5.2)	5018 (89.0)
Total 2016 employment income				
Less than \$5000	29259 (6.4)	7105 (7.6)	22076 (6.1)	---
\$5000 to \$9,999	21593 (4.7)	2963 (3.2)	18607 (5.2)	---
\$10,000 to \$19,999	38077 (8.3)	6025 (6.4)	32052 (8.9)	---
\$20,000 to \$29,999	35827 (7.8)	5631 (6.0)	30184 (8.4)	---
\$30,000 to \$39,999	32733 (7.1)	4530 (4.8)	28060 (7.8)	---
\$40,000 to \$49,999	28814 (6.3)	4209 (4.5)	24605 (6.8)	---
\$50,000 to \$69,999	47619 (10.4)	4380 (4.7)	43200 (12.0)	---
\$70,000 and over	69717 (15.2)	7121 (7.6)	62596 (17.4)	---
Valid skip	119086 (25.9)	45699 (48.8)	73064 (20.3)	---
Not stated	36193 (7.9)	6043 (6.4)	25131 (7.0)	5018 (89.0)
Labour force status				
Employed	292286 (63.7)	39660 (42.3)	249516 (69.4)	3110 (55.2)
Unemployed	28788 (6.3)	5398 (5.8)	22913 (6.4)	---
Not in labour force	136014 (29.6)	48552 (51.8)	85911 (23.9)	1550 (27.5)
Not stated	1829 (0.4)	---	1235 (0.3)	---
Number of months since last worked				
Has not been working for less than six months	28566 (6.2)	4686 (5.0)	23165 (6.4)	---
Has not been working for six months to less than one year	18282 (4.0)	3118 (3.3)	14815 (4.1)	---
Has not been working for one year to less than two years	13326 (2.9)	4322 (4.6)	8681 (2.4)	---
Has not been working for two years or more	59503 (13.0)	25449 (27.2)	33515 (9.3)	---
Valid skip	307923 (67.1)	41523 (44.3)	263095 (73.2)	3304 (58.6)
Not stated	31319 (6.8)	14609 (15.6)	16304 (4.5)	---
Full-time or part-time work				
Full-time employment	232897 (50.7)	29627 (31.6)	200885 (55.9)	2385 (42.3)
Part-time employment	55659 (12.1)	9191 (9.8)	45743 (12.7)	---
Valid skip	166402 (36.3)	54047 (57.7)	109829 (30.5)	2526 (44.8)
Not stated	3960 (0.9)	843 (0.9)	3118 (0.9)	---
Labour force status with participation in other traditional labour activities				
Labour force participant, participant in other labour activities	199300 (43.4)	30508 (32.6)	166683 (46.4)	2109 (37.4)

	Overall	With pain-related disability	Without pain-related disability	Not stated
Not in labour force, participant in other labour activities	72401 (15.8)	25413 (27.1)	46436 (12.9)	---
Labour force participant, did not participate in other labour activities	121749 (26.5)	14550 (15.5)	105721 (29.4)	1478 (26.2)
Not in labour force, did not participate in other labour activities	63573 (13.9)	23140 (24.7)	39436 (11.0)	998 (17.7)
Not stated	1895 (0.4)	---	1300 (0.4)	---
Frequency of drinking alcohol in the past 12 months				
Less than once a month	86618 (18.9)	20713 (22.1)	65101 (18.1)	---
1 to 3 times a month	109513 (23.9)	20200 (21.6)	88457 (24.6)	857 (15.2)
Once a week	67479 (14.7)	9511 (10.1)	57521 (16.0)	---
2 to 3 times a week	61776 (13.5)	7940 (8.5)	53655 (14.9)	---
More than 3 times a week or every day	38500 (8.4)	8253 (8.8)	30013 (8.3)	---
Valid skip	92185 (20.1)	26949 (28.8)	64144 (17.8)	1093 (19.4)
Don't know	662 (0.1)	---	419 (0.1)	---
Refusal	---	---	---	---
Not stated	2052 (0.4)	---	---	1917 (34.0)
Type of smoker				
Daily	99280 (21.6)	28770 (30.7)	69570 (19.3)	940 (16.7)
Occasionally	31240 (6.8)	7441 (7.9)	23575 (6.6)	---
Not at all	326426 (71.1)	57496 (61.4)	266195 (74.0)	2736 (48.5)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	1631 (0.4)	---	---	1631 (28.9)
Drug use in the past 12 months				
Yes, used drugs	101092 (22.0)	19929 (21.3)	80338 (22.3)	---
No, did not	339365 (73.9)	70130 (74.8)	267119 (74.3)	2117 (37.6)
Valid skip	15362 (3.3)	3450 (3.7)	11704 (3.3)	---
Not stated	3099 (0.7)	---	---	2487 (44.1)

--- As per Statistics Canada's dissemination guidelines, underlying unweighted cell counts below 10 cannot be reported

Table 4.2. Overall prevalence of pain-related disability among Métis people and by sex, age and geographic region of residence

	Prevalence [95% CI]
Overall	20.4 [19.3 - 21.6]
Sex	
Male	17.0 [15.4 - 18.6]
Female	23.7 [22.1 - 25.3]
Age	
15-18 years	8.1 [5.7 - 11.3]
19-24 years	12.0 [10.0 - 14.3]
25-34 years	10.7 [8.6 - 13.1]
35-44 years	17.2 [14.3 - 20.4]
45-54 years	26.9 [23.5 - 30.7]
55 and over	31.3 [29.2 - 33.5]
Geographic region of residence	
Census Metropolitan Areas (CMAs)	19.5 [17.9 - 21.2]
Other population centres	21.7 [19.4 - 24.1]
Other rural	21.2 [19.0 - 23.5]

Table 4.3. Prevalence of pain-related disability among Métis people by different type and number of disabilities

Disability types	Prevalence [95% CI]
Seeing	75.6 [70.1, 80.4]
Hearing	69.1 [63.0, 74.5]
Mobility	90.5 [88.1, 92.4]
Flexibility	91.7 [89.5, 93.5]
Dexterity	91.3 [87.4, 94.1]
Cognitive	66.7 [62.4, 70.8]
Mental health-related	60.0 [55.9, 63.9]
Number of disabilities	
One disability type	35.5 [31.5, 39.7]
Two or three disability types	77.5 [74.2, 80.6]
More than three disability types	97.2 [95.3, 98.4]

Table 4.4. Age- and sex- adjusted prevalence ratios for associations between pain-related disability and selected variables, and sex-stratified models adjusted for age only, among Métis people (2017 APS)

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Food security								
Food secure	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Moderate food insecurity	1.78	[1.57, 2.02]	1.88	[1.66, 2.12]	2.00	[1.64, 2.44]	1.78	[1.53, 2.06]
Severe food insecurity	3.26	[2.87, 3.70]	3.29	[2.92, 3.70]	4.08	[3.36, 4.94]	2.83	[2.45, 3.28]
Basic needs - household income meets household needs (past 12 months)								
More than enough	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Enough	1.70	[1.43, 2.04]	1.71	[1.43, 2.04]	1.65	[1.21, 2.24]	1.73	[1.41, 2.13]
Not enough	3.91	[3.28, 4.67]	3.65	[3.06, 4.34]	4.02	[2.95, 5.47]	3.39	[2.78, 4.14]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Basic needs - current ability to cover unexpected expenses								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	2.38	[2.14, 2.66]	2.36	[2.13, 2.62]	2.64	[2.22, 3.13]	2.18	[1.91, 2.48]
Don't know	0.61	[0.32, 1.17]	0.92	[0.49, 1.73]	---		0.69	[0.36, 1.33]
Refusal	---		---		---		---	
Housing conditions - satisfaction level								
Very satisfied	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Satisfied	1.70	[1.50, 1.93]	1.78	[1.57, 2.02]	2.08	[1.68, 2.58]	1.61	[1.38, 1.87]
Neither satisfied nor dissatisfied	3.75	[2.88, 4.87]	3.68	[2.87, 4.73]	5.39	[3.82, 7.62]	2.68	[1.96, 3.67]
Dissatisfied or very dissatisfied	3.08	[2.60, 3.64]	3.15	[2.67, 3.71]	3.68	[2.64, 5.13]	2.86	[2.39, 3.43]
Don't know	---		---		---		---	
Household type								
Respondent family household: couple with child(ren)	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Respondent family household: couple without child(ren)	1.75	[1.51, 2.03]	1.21	[1.03, 1.42]	1.39	[1.09, 1.78]	1.07	[0.87, 1.32]
Respondent family household: other family household	1.90	[1.58, 2.28]	1.87	[1.56, 2.25]	2.37	[1.75, 3.21]	1.61	[1.31, 1.98]

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Respondent non-family household	2.10	[1.79, 2.46]	1.54	[1.31, 1.82]	1.81	[1.40, 2.35]	1.39	[1.11, 1.74]
Regular medical doctor								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	0.51	[0.41, 0.64]	0.65	[0.52, 0.81]	0.54	[0.39, 0.75]	0.78	[0.58, 1.04]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Health care needed but not received (past 12 months)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.36	[2.11, 2.64]	2.39	[2.14, 2.67]	2.61	[2.14, 3.17]	2.25	[1.97, 2.57]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Consulted a health professional in the last 12 months								
Consulted a health professional at least once last years	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Did not consult a health professional last year	0.37	[0.31, 0.44]	0.42	[0.35, 0.50]	0.36	[0.28, 0.47]	0.48	[0.38, 0.61]
Mental health consultation (past 12 months)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.00	[1.79, 2.24]	2.27	[2.04, 2.53]	2.45	[2.01, 3.00]	2.16	[1.90, 2.46]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Helping others - volunteering for a group or organization (past 12 months)								
Not at all in the past 12 months	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
At least once a week	0.90	[0.76, 1.07]	0.89	[0.75, 1.05]	0.82	[0.61, 1.10]	0.92	[0.76, 1.12]
At least once a month	0.74	[0.62, 0.88]	0.77	[0.65, 0.91]	0.81	[0.63, 1.05]	0.74	[0.60, 0.92]
Less than once a month	0.68	[0.57, 0.81]	0.75	[0.63, 0.89]	0.70	[0.52, 0.94]	0.78	[0.64, 0.95]
Don't know	---		---		---		---	
Helping other - on your own and not a part of an organization (past 12 months)								
Not at all in the past 12 months	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
At least once a week	0.84	[0.72, 0.98]	0.91	[0.79, 1.05]	0.81	[0.64, 1.01]	0.98	[0.83, 1.16]
At least once a month	0.64	[0.55, 0.76]	0.75	[0.64, 0.88]	0.61	[0.47, 0.78]	0.87	[0.72, 1.05]

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Less than once a month	0.63	[0.52, 0.78]	0.74	[0.60, 0.90]	0.68	[0.48, 0.95]	0.78	[0.61, 0.99]
Don't know	---		---		---		---	
Geographical location								
CMAAs	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Other population centres	1.11	[0.97, 1.27]	1.11	[0.98, 1.26]	1.01	[0.81, 1.26]	1.18	[1.01, 1.38]
Other rural	1.09	[0.95, 1.25]	1.01	[0.89, 1.16]	0.94	[0.77, 1.15]	1.07	[0.90, 1.26]
Income								
Total 2016 personal income								
Less than \$5000	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
\$5000 to \$9,999	1.41	[1.09, 1.82]	1.12	[0.89, 1.41]	1.11	[0.68, 1.79]	1.10	[0.83, 1.44]
\$10,000 to \$19,999	1.83	[1.49, 2.24]	1.17	[0.98, 1.41]	1.14	[0.79, 1.65]	1.15	[0.93, 1.41]
\$20,000 to \$29,999	1.32	[1.05, 1.66]	0.84	[0.68, 1.04]	0.77	[0.51, 1.17]	0.86	[0.68, 1.10]
\$30,000 to \$39,999	1.21	[0.95, 1.54]	0.72	[0.57, 0.91]	0.59	[0.40, 0.88]	0.78	[0.59, 1.03]
\$40,000 to \$49,999	1.00	[0.75, 1.33]	0.60	[0.45, 0.79]	0.51	[0.33, 0.79]	0.64	[0.44, 0.92]
\$50,000 to \$69,999	0.64	[0.49, 0.83]	0.38	[0.30, 0.49]	0.37	[0.25, 0.57]	0.36	[0.25, 0.50]
\$70,000 and over	0.63	[0.48, 0.83]	0.37	[0.28, 0.49]	0.31	[0.20, 0.48]	0.43	[0.31, 0.61]
Total 2016 employment income								
Less than \$5000	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
\$5000 to \$9999	0.56	[0.40, 0.80]	0.53	[0.38, 0.74]	0.37	[0.19, 0.72]	0.63	[0.42, 0.94]
\$10000 to \$19999	0.65	[0.47, 0.89]	0.54	[0.40, 0.73]	0.44	[0.27, 0.70]	0.61	[0.43, 0.88]
\$20000 to \$29999	0.65	[0.47, 0.89]	0.49	[0.36, 0.67]	0.37	[0.22, 0.59]	0.60	[0.41, 0.87]
\$30000 to \$39999	0.57	[0.40, 0.81]	0.39	[0.28, 0.55]	0.27	[0.15, 0.49]	0.49	[0.33, 0.73]
\$40000 to \$49999	0.60	[0.41, 0.87]	0.41	[0.28, 0.59]	0.28	[0.16, 0.49]	0.52	[0.33, 0.80]
\$50000 to \$69999	0.38	[0.27, 0.53]	0.25	[0.18, 0.36]	0.20	[0.12, 0.33]	0.29	[0.18, 0.45]
\$70000 and over	0.42	[0.30, 0.59]	0.28	[0.20, 0.39]	0.19	[0.12, 0.31]	0.36	[0.24, 0.55]
Employment								
Labour force status								
Employed	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Unemployed	1.39	[1.07, 1.81]	1.63	[1.27, 2.09]	1.64	[1.07, 2.51]	1.69	[1.25, 2.28]
Not in the labour force	2.63	[2.34, 2.96]	2.41	[2.12, 2.74]	3.29	[2.67, 4.06]	1.98	[1.70, 2.29]
Number of months since last worked								
Has not been working for less than six months	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Has not been working for six months to less than one year	1.03	[0.67, 1.58]	1.07	[0.70, 1.63]	1.65	[0.92, 2.97]	0.73	[0.42, 1.25]

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Has not been working for one year to less than two years	1.98	[1.41, 2.76]	1.87	[1.38, 2.53]	2.72	[1.73, 4.27]	1.45	[0.97, 2.16]
Has not been working for two years or more	2.57	[2.00, 3.29]	2.09	[1.62, 2.70]	2.60	[1.77, 3.83]	1.79	[1.29, 2.50]
Part-time vs full-time work								
Full-time employment	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Part-time employment	1.30	[1.06, 1.59]	1.35	[1.08, 1.69]	2.39	[1.62, 3.52]	1.06	[0.83, 1.37]
Labour force status with participation in other labour activities (other activities would include, hunting, fishing, trapping, gathering wild plants, making clothing, making cravings, jewellery..)								
Labour force participant, participant in other labour	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Not in the labour force, participant in other labour activities	2.29	[1.99, 2.62]	2.10	[1.81, 2.43]	3.13	[2.49, 3.94]	1.6	[1.33, 1.91]
Labour force participant, did not participate in other	0.78	[0.65, 0.94]	0.75	[0.63, 0.91]	0.89	[0.65, 1.22]	0.68	[0.54, 0.84]
Not in the labour force, did not participate in other labour	2.39	[2.06, 2.78]	2.06	[1.77, 2.40]	2.84	[2.20, 3.68]	1.68	[1.41, 1.99]
Health behaviours and tendencies								
Frequency of drinking alcohol in the past 12 months								
Less than once a month	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
1 to 3 times a month	0.77	[0.65, 0.92]	0.83	[0.71, 0.98]	0.91	[0.68, 1.22]	0.78	[0.65, 0.95]
Once a week	0.59	[0.47, 0.73]	0.60	[0.48, 0.75]	0.67	[0.50, 0.91]	0.54	[0.40, 0.75]
2 to 3 times a week	0.53	[0.43, 0.66]	0.54	[0.44, 0.66]	0.53	[0.38, 0.73]	0.57	[0.42, 0.76]
More than 3 times a week or every day	0.89	[0.71, 1.12]	0.79	[0.63, 1.00]	0.79	[0.56, 1.11]	0.81	[0.60, 1.11]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Type of smoker								
Daily	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Occasionally	0.82	[0.65, 1.04]	0.98	[0.78, 1.22]	0.91	[0.63, 1.31]	1.03	[0.79, 1.34]
Not at all	0.61	[0.54, 0.69]	0.63	[0.56, 0.71]	0.58	[0.47, 0.71]	0.66	[0.57, 0.76]
Don't know	---		---		---		---	
Refusal	---		---		---		---	

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Drug use in the past 12 months								
Yes, used drugs	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No, did not	1.05	[0.90, 1.21]	0.72	[0.62, 0.84]	0.72	[0.57, 0.93]	0.73	[0.60, 0.87]
Demographics								
Age								
15-18	1.00	[Reference]	1.00	[Reference]	---		---	
19-24	1.47	[0.99, 2.18]	1.46	[0.98, 2.16]				
25-34	1.33	[0.89, 1.98]	1.31	[0.88, 1.95]				
35-44	2.12	[1.44, 3.12]	2.12	[1.45, 3.12]				
45-54	3.33	[2.30, 4.81]	3.32	[2.30, 4.80]				
55 and over	3.87	[2.72, 5.50]	3.84	[2.70, 5.45]				
Sex								
Male	1.00	[Reference]	1.00	[Reference]	---		---	
Female	1.40	[1.25, 1.57]	1.41	[1.26, 1.57]				
Ability to understand or speak an Aboriginal language								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.21	[1.07, 1.36]	1.16	[1.03, 1.31]	1.07	[0.88, 1.30]	1.22	[1.05, 1.41]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Active in Aboriginal group events and activities								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	0.76	[0.61, 0.95]	0.86	[0.70, 1.07]	0.86	[0.59, 1.26]	0.86	[0.66, 1.11]
Neither agree nor disagree	0.88	[0.66, 1.17]	0.97	[0.73, 1.28]	1.00	[0.62, 1.60]	0.94	[0.68, 1.29]
Disagree or strongly disagree	0.64	[0.53, 0.79]	0.77	[0.64, 0.94]	0.76	[0.54, 1.06]	0.78	[0.62, 1.00]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Sense of belonging to own Aboriginal group								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	0.64	[0.56, 0.74]	0.74	[0.65, 0.85]	0.73	[0.58, 0.92]	0.75	[0.64, 0.89]
Neither agree nor disagree	0.68	[0.55, 0.84]	0.80	[0.64, 0.99]	0.80	[0.53, 1.21]	0.80	[0.63, 1.00]
Disagree or strongly disagree	0.63	[0.54, 0.73]	0.77	[0.67, 0.89]	0.87	[0.68, 1.10]	0.72	[0.60, 0.87]
Don't know	---		---		---		---	
Refusal	---		---		---		---	

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Education								
Grade 8, equivalent or lower	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Some secondary education	0.67	[0.52, 0.87]	0.82	[0.63, 1.05]	0.68	[0.44, 1.03]	0.99	[0.74, 1.32]
Secondary school diploma or equivalent	0.54	[0.43, 0.68]	0.74	[0.58, 0.93]	0.70	[0.48, 1.01]	0.81	[0.60, 1.08]
Some postsecondary education	0.53	[0.43, 0.66]	0.77	[0.61, 0.97]	0.75	[0.52, 1.06]	0.83	[0.62, 1.10]
Postsecondary certificate or diploma	0.52	[0.42, 0.64]	0.62	[0.50, 0.78]	0.60	[0.43, 0.83]	0.67	[0.52, 0.88]
Bach. Degree or univ, cert./dip/degree above bach.	0.36	[0.28, 0.46]	0.46	[0.35, 0.60]	0.34	[0.21, 0.53]	0.56	[0.40, 0.77]
Residential school attendance (or federal industrial school)								
Neither respondent nor any family members attended	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Only parent(s) or grandparent(s) attended	1.22	[0.99, 1.50]	1.27	[1.04, 1.56]	1.02	[0.72, 1.46]	1.45	[1.12, 1.86]
Only other family members attended	1.26	[0.90, 1.77]	1.29	[0.94, 1.78]	1.37	[0.84, 2.23]	1.20	[0.84, 1.71]
Only parent(s)/grandparent(s)/other family members attended	1.53	[1.26, 1.86]	1.54	[1.27, 1.85]	1.59	[1.13, 2.23]	1.49	[1.19, 1.87]
Respondent attended	1.14	[0.78, 1.67]	1.00	[0.71, 1.43]	1.12	[0.68, 1.84]	0.89	[0.53, 1.50]
Chronic conditions								
Asthma								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.76	[1.56, 2.00]	1.77	[1.56, 2.00]	1.93	[1.59, 2.35]	1.70	[1.45, 1.98]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Arthritis (excluding fibromyalgia)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	4.00	[3.59, 4.44]	3.23	[2.84, 3.67]	3.41	[2.81, 4.14]	3.15	[2.70, 3.69]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
High blood pressure								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.15	[1.93, 2.40]	1.58	[1.40, 1.78]	1.52	[1.26, 1.84]	1.64	[1.41, 1.90]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Chronic bronchitis/Emphysema/COPD								

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.97	[2.63, 3.36]	2.25	[1.98, 2.55]	2.87	[2.40, 3.43]	1.82	[1.55, 2.15]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Diabetes								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.51	[2.24, 2.82]	1.86	[1.65, 2.09]	1.89	[1.57, 2.28]	1.82	[1.56, 2.13]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Heart disease								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.26	[1.98, 2.58]	1.70	[1.50, 1.93]	1.42	[1.15, 1.75]	1.97	[1.68, 2.31]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Intestinal or stomach ulcers								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.37	[2.01, 2.80]	2.06	[1.74, 2.42]	2.30	[1.79, 2.95]	1.91	[1.55, 2.34]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Bowel disorders								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.59	[2.30, 2.92]	2.22	[1.98, 2.49]	2.25	[1.79, 2.83]	2.22	[1.94, 2.53]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Mood disorder								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	3.11	[2.79, 3.46]	3.10	[2.80, 3.43]	3.21	[2.69, 3.83]	3.03	[2.68, 3.42]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Anxiety disorder								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.72	[2.45, 3.01]	2.98	[2.70, 3.29]	3.15	[2.64, 3.75]	2.88	[2.56, 3.23]
Don't know	---		---		---		---	
Refusal	---		---		---		---	

Note: aPR – adjusted prevalence ratio; Each independent variable was modeled individually adjusted for age group and sex. The stratified male and female only models were adjusted for age group. Selected variables were informed by the Métis social determinants of health presented in the 2023 Métis National Council report.

--- As per Statistics Canada’s dissemination guidelines, underlying cell counts below 10 cannot be reported

CHAPTER FIVE

PREVALENCE AND FACTORS ASSOCIATED WITH PAIN-RELATED DISABILITIES AMONG INUIT IN CANADA IN 2017: A CROSS-SECTIONAL STUDY

5.1 ABSTRACT

Using data from the 2017 Aboriginal Peoples Survey, we examined the prevalence and factors associated with pain-related disabilities (PRDs) among Inuit in Canada. Self-reported data were collected from 2,972 Inuit respondents ≥ 15 years. PRDs were defined as ‘sometimes’, ‘often’, or ‘always’ experiencing activity limitations due to pain from a long-term condition lasting \geq six months. We computed the prevalence of PRDs [95% CI] overall, and by geographic location, age, sex, type and number of co-existing disabilities. Modified Poisson regression with robust variance estimation was used to model the association between Inuit social determinants of health and PRDs. Person-level and bootstrap weights were applied for all analyses. Among Inuit, 11.1% [10.0, 12.4] reported PRDs. Females [13.4% (11.8, 15.1)], individuals 55+ [23.7% (21.6, 25.9)], and those who lived outside Inuit Nunangat [17.1% (14.1, 20.5)] experienced higher prevalence of PRDs. Prevalence increased with the number of disabilities – highest among those with co-existing physical disabilities. Additionally, higher education, residential school attendance, and those who experienced difficulties related to food, housing, employment, and health were more likely to report PRDs. Characteristics which may increase the risk of PRDs need to be shared with Inuit stakeholders to guide next steps for awareness, advocacy, services and interventions.

5.2 INTRODUCTION

In 2017, approximately one in every five Inuit experienced disability.¹ In this population, pain-related disabilities defined as experiencing pain that sometimes, often or always limit daily activities were the most common.¹ Although these estimates were similar to the non-Indigenous population in Canada, previous studies suggest that the prevalence of disabilities is higher among Inuit children and adults compared to the non-Indigenous population.^{2, 3} Moreover, limited evidence is available on potential risk factors for pain-related disabilities among Inuit in Canada. In Canada, the Inuit population represents a distinct group with origins in Arctic lands. In 2016, of the 65,025 who exclusively reported being Inuit in the national census, almost three-quarters resided within Inuit Nunangat, the Inuit homeland – consisting of four regions: Nunavut, Nunavik, Nunatsiavut, and Inuvialuit.^{4, 5}

Understanding present-day Inuit health and disability requires reflecting on the impact of colonial history in shaping health inequities that continue to be experienced. Starting in the 1700s and going into the late 1800s, the overharvesting of whales by Europeans in the north negatively affected the Inuit way of life.^{6, 7} Many depended on harvesting activities (e.g., bowhead whale, musk ox, caribou) for economic reasons and as a food source.^{6, 7} This early contact also introduced alcohol and diseases previously foreign and non-existent among Inuit communities such as measles, influenza, syphilis, and tuberculosis – some of which continue to have lasting impacts on Inuit populations today.^{6, 7} Moreover, in the 1900s, forced relocation in some instances directly resulted in the death of Inuit, who were unfamiliar with the harsh living conditions of the High Arctic.^{8, 9} Other forced relocations to settlements by the Canadian government led to inadequate housing and overcrowding, which in present-day has been linked to increased respiratory tract infections and other chronic health conditions.⁶ Preterm births and infant mortality have also been

reported to be higher among Inuit compared to other Indigenous groups and the non-Indigenous population.¹⁰

The geographical distribution of Inuit living in Inuit Nunangat plays an important role in shaping health outcomes experienced by individuals.^{11, 12} For instance, due to the medical staff shortage in the north,¹¹ many Inuit Nunangat residents must travel long distances outside Inuit Nunangat to access health services.¹² This leads to systemic discrimination, travelling alone, feeling unsafe or lacking culturally relevant supports and services.^{12, 13} These experiences are further exacerbated for Indigenous women, due to inequities in the social determinants of health.¹⁴ Collectively, these historical and contemporary experiences, and the lack of health services and supports, have increased the risk of chronic illness and long-term disabilities. Very little information is available to inform the etiology of pain-related disabilities among Inuit and new research must be grounded in Inuit-specific understandings of pain and disability, which differ from Western perspectives.

The cultural dissonance created by applying Western frameworks of disability to Inuit populations,¹⁵ calls for the investigation of pain-related disabilities through a holistic lens. With historical and contemporary colonial forces imposing changes on Inuit ways of life, Inuit communities have been resilient in preserving their values, culture, and language.⁶ In areas such as Nunavut, disability is defined broadly to include physical and mental conditions, developmental limitations and sensory impairments, mobility issues, and substance use disorders.¹⁵ Additionally, similar to other Indigenous practices and shared beliefs, Inuit cultural views can act as an important guiding force in shaping lives.¹⁶ For example, when a child is born, it is believed that the newborn will take on the soul or spirit of a recently deceased relative.¹⁶ This includes the belief that the

child will have specific skills, traits or physical characteristics similar to that of their namesake – with it, deserving the same treatment and respect.¹⁶

In this light, Inuit view every individual contributing to society through their unique strengths, and Inuit have expressed concerns that the current paradigm of disability is a colonial construct which is at odds with Indigenous perspectives.^{15, 17, 18} This highlights the need to measure disability with tools that reflect Inuit understandings of pain-related disability, and be measured with cultural sensitivity. However, the measurement of pain-related disabilities among Inuit population in Canada have not been validated. Furthermore, although we use the term “disability” to align with existing literature, we acknowledge that it may conflict with Inuit perspectives, where such concepts may not reflect lived experiences or community values. This remains a broader issue in research and highlights the need for ongoing dialogue and development of frameworks which are culturally relevant and community informed. Therefore, we partnered with an Indigenous Advisory Committee of diverse membership, and using the Inuit social determinants of health proposed by Inuit Tapiriit Kanatami, our study aimed to: 1) determine the prevalence of pain-related disabilities among Inuit in Canada in 2017; 2) explore the factors associated with pain-related disabilities in the Inuit population, and 3) investigate whether these associations varied by sex.

5.3 METHODS

5.3.1 Engagement and collaboration with an Indigenous Advisory Committee

Our research team initially included five individuals with settler heritage and a Mississauga Ojibwe Elder and Knowledge-Keeper from a First Nation community. Early in the design of the study, the Elder suggested the formation of an Indigenous Advisory Committee (IAC). Potential

Indigenous partners were identified through existing networks and invited to join the team as collaborators. The IAC included individuals who brought diverse First Nations and Métis perspectives residing throughout Canada from the provinces of Ontario, Manitoba, and Nova Scotia. While our capacity to ensure Inuit representation on the IAC was limited, we were fortunate to collaborate with an Inuit Health Advisor and Researcher. Through our meetings, we gained valuable insight into the Inuit Qaujimajatuqangit (IQ) principles – a set of values that guide the Inuit way of life,²¹ which deepened our understanding of the importance of grounding this work within the Inuit social determinants of health.²² This approach strengthens the relevance and applicability of the project for Inuit communities. Engagement with the IAC was consistent throughout this work via virtual meetings and emails. The diverse perspectives of members informed the methodology, analysis, interpretation of findings, and dissemination strategies of the overall project.

The IAC worked with the research team, and as co-authors provided important and meaningful perspectives to the project. The guidance from the IAC highlighted the importance of avoiding a pan-Indigenous approach – and sharing the First Nations, Inuit, and Métis findings through a distinction-based approach. In this paper we describe the Inuit findings.

5.3.2 Study design

We present our paper following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (Appendix D.1), which provides reporting guidance for observational studies.²³ Ethical approval was obtained from the Ontario Tech Research Ethics Board (REB # 16845) (Appendix B.2).

We conducted the analysis of a cross-sectional study using data from those who self-identified as Inuit on the 2017 Aboriginal Peoples Survey. This national survey conducted by Statistics Canada offers insights into the social, economic, and health conditions of Indigenous peoples in Canada to inform future services and programs.²⁴ It is also considered the official source of disability information among First Nations living off-reserve, Inuit, and Métis people.¹ Although the cross-sectional nature of the data does not support determining cause-and-effect relationships, it allows for the exploration of the prevalence of pain-related disabilities across various factors, revealing trends and patterns of associations at the population level.

5.3.3 Participants

The analyses described in this paper focused on those who self-identified as Inuk (Inuit). The entirety of the sample selected for the 2017 APS utilized a complex multiple-phase stratified random sampling design with the sampling frame stratified by geography, age, and Indigenous identity for representativeness across First Nations living off-reserve, Inuit, and Métis people.²⁴ Further sub-stratification considered household sampling type, census response method, and Indigenous identification.²⁴ Individuals were invited to participate in the 2017 APS through online electronic and paper formats. This was based on responses they had previously submitted to the 2016 Canadian census of population long-form questionnaire.²⁴

Participants sampled for the 2017 APS met the following inclusion criteria: 1) 15 years or older; 2) living in private dwellings; and 3) identifying as having Indigenous identity or ancestry, Status Indian (Registered or Treaty Indian), or a member of a First Nation/Indian band.²⁴ The final sample excluded those with only Indigenous ancestry. An overall response rate of 70.1% was

obtained and a total of 20,849 First Nations living off-reserve, Inuit, and Métis respondents were included in the public use microdata file, of which 2,972 were Inuit respondents.

5.3.4 Data Collection

Data were collected from the participants by trained interviewers who administered the survey through a computer-assisted personal or computer-assisted telephone interview environment.²⁴ Survey administration was available in English, French, Inuktitut and Inuinnaqtun.²⁴ We accessed the 2017 APS public use microdata file (PUMF) via the secure Ontario Data Documentation, Extraction Services and Infrastructure (ODESI) digital repository platform available to researchers at Canadian academic institutions.²⁵ The PUMF contains de-identified data which researchers cannot link back to respondents.

5.3.5 Outcome

Pain-related disability, a binary variable (yes/no) was self-reported, and measured using the following questions within the Disability Screening Questions (DSQ) from the health section of the 2017 APS: 1) *“Do you have pain that is always present?”*; 2) *“Do you have periods of pain that reoccur from time to time?”*; and 3) *“How often does this pain limit your daily activities?”*

Participants who answered “yes” when asked questions 1 and/or 2, and “sometimes”, “often”, or “always” to question 3 were categorized as having a pain-related disability.²⁶ These questions were placed within the context of pain due to a long-term condition lasting six months or more.²⁶

5.3.6 Factors associated with pain-related disabilities

Our selection of factors potentially associated with pain-related disabilities was guided by the social determinants of Inuit health in Canada.²² We selected this framework for its holistic nature and ability to capture key factors identified by Inuit.²² This framework developed by Inuit Tapiriit Kanatami (ITK) reports 11 domains identified as key social determinants of Inuit health: quality of early childhood development, culture and language, livelihoods, income distribution, housing, personal safety and security, education, food security, availability of health services, mental wellness, and the environment.²² Discussions with an Inuit Health Advisor and Researcher highlighted the interconnection between these determinants. Certain variables had the potential to be categorized in more than one of the broad areas. As such, this process led to the identification of 27 main variables. Variables included those related to demographics, location of residence, food security, housing, language, sense of belonging, income, employment, labour, health behaviours and tendencies, education, general health, mental health, health care, and residential school attendance. Appendix D.2 lists the survey questions used within the 2017 APS to measure the aforementioned factors and the corresponding domain each was mapped to from the 11 social determinants of Inuit health.

5.3.7 Statistical analysis

Given the descriptive nature of the results (not inferential), we used percentages to describe the characteristics of the entire Inuit sample, and by the outcome, pain-related disabilities. For all analyses, we applied person-level survey and bootstrap weights provided by Statistics Canada to account for the robust and complex survey design.²⁴ Bootstrap replicate weights were generated for each survey respondent to derive accurate confidence intervals. We used the statistical software R to conduct the analyses.²⁷

We computed the prevalence of pain-related disabilities overall and stratified by geographic residence (inside or outside Inuit Nunangat), age (15-18/ 19-24/ 25-34/ 35-44/ 45-54/ 55 and over), and sex (male/ female), including 95% confidence intervals (CIs). We also examined prevalence by the number (one/ two or three/ more than three) and types of co-existing disabilities (i.e., seeing, hearing, mobility, flexibility, dexterity, cognitive and mental health). Less than 1% of responses were coded as ‘not stated’ for the outcome and these were included in the denominator for prevalence estimates.

We used modified Poisson regression with robust variance estimation to estimate prevalence ratios (PRs) and corresponding 95% CIs for the association between each pre-selected factor and pain-related disability.²⁸ First, we built univariable models to explore the crude association between each a priori selected variable and pain-related disability. Next, each model was adjusted for age (age categories) and sex (male and female). Recognizing the intersectionality between Indigeneity, disability, and sex/gender,^{14, 29} we conducted additional stratified analyses by sex, adjusting for age to explore whether associations persisted or differed between groups.

Given that this is a cross-sectional study not intended to support causal inference, we present PRs to illustrate the direction and magnitude for each association. We report 95% CIs to reflect the statistical precision of each estimate. Rather than interpreting results based solely on statistical significance, we describe all associations using language that reflects both the point estimate and the precision of the estimate. For example, when the PR meaningfully differs from 1.00 but the CI includes 1.00, we use the phrase “may be associated” to indicate a potential relationship with limited precision.

In regression models, for the outcome and independent variables, missing data – non-response categories such as “not stated” and “valid skip” were excluded from the analysis.

5.4 RESULTS

5.4.1 Sample characteristics

Our sample included 2,972 survey respondents representing 44,032 Inuit after applying person-level weights. Table 5.1 presents the full descriptive characteristics of the sample as a whole and stratified by pain-related disability status. Most respondents lived in Inuit Nunangat (71.4%). More than half were female (53.2%), employed (52.8%), and daily smokers (55.6%). The majority did not have unmet health care needs (82.0%) and could understand or speak an Indigenous language (80.2%). Over one-third self-reported good general health (38.2%) and good mental health (36.4%). About 40.3% lived in households of five or more people. The largest age group was those 25-34 years (22.4%), while the smallest was those 15-18 years (11.1%). Inuit with pain-related disabilities were more likely to be female (63.7%), aged 55 years or older (36.9%), hold at least a postsecondary certificate or diploma (31.5%), and not in the labour force (52.8%) (Table 5.1).

5.4.2 Prevalence of pain-related disabilities

In Canada, 11.1% [10.0, 12.4] of Inuit reported pain-related disabilities. Table 5.2 shows that those living outside the Inuit homeland reported a higher prevalence of pain-related disabilities compared to those living inside Inuit Nunangat [17.1% vs 8.8%]. Females experienced a higher prevalence than males [13.4% vs 8.6%]. Additionally, pain-related disabilities increased with age, as those 55 years and older experienced the highest prevalence [23.7% (21.6, 25.9)]. These differences in prevalence estimates in part informed our decision to adjust the regression models

for age and sex, and to stratify by sex to explore whether associations differed between males and females.

In Table 5.3, among those with more than three different types of co-existing disabilities, over ninety-percent experienced pain-related disabilities [92.4%; 95% CI: 89.3, 94.6]. The highest prevalence of pain-related disabilities was in those with co-existing disabilities related to flexibility [82.6%; 95% CI: 78.4, 86.1], while the lowest was in those with hearing disabilities [51.1%; 95% CI: 43.2, 58.8].

5.4.3 Association between factors informed by the social determinants of Inuit health in Canada and pain-related disabilities

Demographic-related

The sex-and age- adjusted models suggest a gradient in the prevalence ratios for the association between age and pain-related disabilities, with the strength of the association increasing as age group increased in years. For example, those 55 years or older (vs 15-18 years) were much more likely to experience pain-related disabilities [PR=11.44; 95% CI: 6.30, 20.78] (Table 5.4). Females (vs males), those living outside the Inuit homeland (vs inside), and those with some postsecondary education (vs with a grade 8 education or less) were also more likely to report pain-related disabilities. Moreover, respondents who attended residential schools were more likely to report pain-related disabilities than those without a personal or familial history of residential school attendance [PR=1.22; 95% CI: 1.05, 2.03].

We found that health behaviours and tendencies and variables related to personal safety and security, were associated with pain-related disabilities. Specifically, those who consumed

alcohol 2 to 3 times a week (vs those who had a drink less than once a month) were less likely to report pain-related disabilities [PR=0.61; 95% CI: 0.39, 0.94]. However, those who did not smoke (vs daily smokers) may be slightly more likely to report pain-related disabilities [PR=1.08; 95% CI: 0.88, 1.34]. Also, those who had contemplated suicide in the past year were much more likely to have pain-related disabilities [PR=3.74; 95% CI: 2.73, 5.13]. In regards to drug use, our univariable model suggests that those who did not use drugs (vs those who did) may be more likely to report pain-related disabilities [PR=1.20; 95% CI: 0.95, 1.52]. Interestingly, our adjusted model suggests perhaps an opposite direction in the strength and magnitude of the association with respondents less likely to report pain-related disabilities [PR=0.87; 95% CI: 0.66, 1.13].

Food security and housing

Variables related to food security and housing suggested that those who experienced severe food insecurity (vs food secure) [PR=1.70; 95% CI: 1.33, 2.18], and who were dissatisfied or very dissatisfied with their housing conditions (vs very satisfied) [PR=1.48; 95% CI: 1.11, 1.98] were more likely to have pain-related disabilities (Table 5.4). In particular, those who attributed their dissatisfaction to high costs, problems with their house, or other external factors may have been more likely to report pain-related disabilities (Table 5.5). Additionally, Inuit living in households of five or more people may be less likely to report pain-related disabilities compared to those living alone [PR=0.75; 95% CI: 0.54, 1.04].

Income distribution and livelihoods

Inuit with a personal or employment income of \$70,000 or more /year were less likely to have pain-related disabilities than those whose earnings were less than \$5,000 (Table 5.4). Moreover, individuals not in the labour force were more likely to report pain-related disabilities

than those employed [PR=1.86; 95% CI: 1.45, 2.38]. This association continued regardless of whether or not these individuals participated in other traditional labour activities such as hunting, fishing, trapping, gathering wild plants, making clothing, carvings or jewellery. Those who work part-time (vs full-time) may also be more likely to have pain-related disabilities [PR=1.14; 95% CI: 0.72, 1.81]. In terms of occupation type, we found those in sales and services occupations were much more likely to report pain-related disabilities than those in management-related jobs [PR=4.33; 95% CI: 2.23, 8.40].

Culture and language

In regard to participating in Indigenous group events/activities or feeling a sense of belonging, those who disagreed with these statements were more likely to report pain-related disabilities than those who strongly agreed. Furthermore, Inuit who understood or spoke an Indigenous language tended to be less likely to report pain-related disabilities compared to those who could not [PR=0.82; 95% CI: 0.63, 1.06] (Table 5.4).

Mental wellness and availability of health services

Finally, those with worse overall health and mental health were more likely to report pain-related disabilities. Specifically, we found there to be a clear PR gradient across the categories of both variables with the strongest PRs among those reporting poor health [PR=12.66; 95% CI: 7.25, 22.10] or mental health [PR=8.48; 95% CI: 5.77, 12.45] (Table 5.4).

Moreover, those without a mental health-related condition, or a regular medical doctor were less likely to report pain-related disabilities than those with either. However, frequent change in doctors was one common reason for being without a regular medical doctor, and these

individuals may have been more likely to report pain-related disabilities [PR=1.17; 95% CI: 0.82, 1.67] (Table 5.5).

Those who had a mental health consultation [PR=2.59; 95% CI: 2.11, 3.18] or experienced unmet health care needs [PR=2.43; 95% CI: 1.96, 3.01] were more likely to report pain-related disabilities than those who had not. Particularly, those who attributed unmet health care needs to personal or other reasons may have been more likely to report pain-related disabilities, while those listing wait times or lack of availability services may be less likely to do so.

5.4.4 Sex-stratified associations

We found that most variables continued to be associated with pain-related disabilities in our age-adjusted sex-stratified analysis with no major differences between the two groups. However, we found sex differences between variables related to employment and drug use. Specifically, the association was two times stronger among males [PR=3.03; 95% CI: 2.14, 4.28] than females [PR=1.44; 95% CI: 1.07, 1.93] for those not in the labour force (or did not engage in other traditional labour activities). For drug use, the PR may suggest an opposite direction in the strength and magnitude of the association between males and females. While males who did not use drugs appear to be more likely to have pain-related disabilities [PR=1.20; 95% CI: 0.78, 1.83], females who did not use drugs appeared to be less likely to have pain-related disabilities [PR=0.71; 95% CI: 0.51, 0.98] (Table 5.4).

5.5 DISCUSSION

In 2017, approximately one in nine Inuit in Canada reported a pain-related disability. The prevalence was higher among females, older individuals, and those living outside the Inuit homeland. It was also higher in individuals reporting co-existing disabilities, particularly those

involving flexibility, dexterity, or mobility limitations. Additional factors associated with pain-related disability included residential school attendance, higher levels of education, lower levels of health or mental health, cultural disconnection, and experiences of food, housing or economic hardship. In Canada, to our knowledge, limited studies have investigated pain-related disabilities among Inuit.²⁰

Several patterns emerged across demographic, cultural, and social variables that may help contextualize the observed associations. Literature has often described Inuit women as caregivers, responsible for nurturing and taking care of the home, and having an integral role to their families and communities.^{16, 30} These responsibilities in addition to others that may fall outside conventional expectations, can hinder a women's ability to address her own health needs, which may contribute to the higher prevalence of pain-related disabilities observed in this group. Our results also suggest pain-related disabilities were more common among older Inuit, which may reflect cumulative limitations in daily activities and functioning, or exclusion from social participation. Older Inuit populations are also more likely to have attended residential schools or had family and community members who did. As such, among Inuit 55 years and older, disability may be compounded by forms of pain beyond the physical, including mental, emotional, and spiritual suffering.³¹

Contrary to the findings above, the prevalence of pain-related disability was lower among Inuit living within Inuit Nunangat compared to those residing outside the region. While this may seem unexpected given challenges in access to physicians, nurses and rehabilitation services in Inuit Nunangat,^{11, 12} culturally relevant care such as services in Inuktitut and strong family/community support may play a protective role. This aligns with our findings suggesting

that Inuit living in larger households may benefit from increased social supports, which could mitigate the experience of pain-related disabilities. In contrast, Inuit living in outer regions may face limited access to culturally appropriate supports, and specialized services may remain inaccessible, unavailable or unaffordable.^{13, 15} Our findings highlight the interconnected nature of the Inuit social determinants of health, where individual variables often intersect across multiple domains. For example, factors related to quality of early childhood development may reflect broader issues associated with food security, housing conditions, and accessibility of health services.²² On the other hand, demographic characteristics may include domains related to the environment, education, and personal safety and security. This overlapping of domains reinforces the need for a holistic understanding of pain-related disabilities among Inuit communities, grounded within the interconnected framework of the 11 Inuit social determinants of health.

Another association of note was that between drug use and pain-related disabilities as it changed direction between the crude and adjusted models. This shift may reflect confounding by age and sex. However, the confidence intervals in both models suggest limited precision and caution in interpretation. In addition, given that APS survey respondents could report more than one type of disability, the higher prevalence of pain-related disabilities among those with flexibility, dexterity, and mobility impairments may be associated with comorbidities – particularly since musculoskeletal disorders, which frequently involve persistent pain, activity limitations and participation restrictions, are among the most common source of non-cancer related pain.³² These physical limitations may be further influenced by work-related factors linked to livelihoods and income distribution within the Inuit social determinants of health. We found those employed in sales and service occupations, jobs often characterized by high demands and low job control, more likely to have pain-related disabilities compared to those in management positions.

While occupational conditions within the labour force appear to impact the experience of pain-related disabilities, not being in the labour force also warrants further attention. Our analysis suggests that individuals out of the labour force were more likely to report pain-related disabilities, with a stronger association among men than women. This relationship may in part reflect the healthy worker effect,³³ whereas those experiencing poorer health or disability are less likely to be employed or in the workforce. It may also reflect the interplay between broader socioeconomic challenges, including lower income, food insecurity, and housing inadequacy.²²

For example, those unemployed or unable to work may experience difficulty accessing a regular medical doctor and more likely to report unmet needs. Moreover, living with pain-related disabilities can limit an individual's ability to participate in formal employment, as well as in traditional harvesting activities such hunting, fishing and trapping. In fact, a recent decline was found in participation of traditional activities among working-age Inuit, with men more likely than women to engage in these practices.³⁴ Not being able to participate in these culturally important yet physically demanding activities may lead to feelings of social exclusion, economic hardship, and lower levels of well-being, particularly for Inuit men experiencing pain-related disabilities, who have traditionally held the role of providing food, shelter and safety for their families.¹⁶

5.5.1 Strengths and limitations

Our study has several strengths. Grounding our approach in the social determinants of Inuit health, as outlined by ITK, allowed us to explore factors relevant to Inuit in Canada. In addition, collaborating with the IAC led to meaningful conversations about the value of using an Inuit-specific framework to guide factor selection. While we strived to create an inclusive and respectful

process, incorporating discussions with an Inuit Health Advisor and working toward shared decision-making, we recognize a key limitation in the limited engagement with Inuit-specific stakeholders throughout the project. As a result, the IQ principles could not be fully applied, and the interpretations offered here do not reflect the views of any specific Inuit community or organization. In addition, to ensure relevance, cultural sensitivity and clarity, all questions within the 2017 APS underwent multiple rounds of qualitative testing – including testing among those from diverse Indigenous groups.²⁴ Moreover, survey weights were carefully constructed by Statistics Canada to account for the complex survey design and minimize sampling bias.²⁴

One limiting factor to the evidence on pain-related disability among Inuit may be the absence of relevant questions in earlier cycles of the APS. Pain-related disability was introduced in the 2017 APS using the Disability Screening Questions (DSQ). However, these questions may not align with the Inuit conceptualizes of pain and disability. For instance, older Inuit in Nunavut have described that prior to colonial contact, the concept of “disability” was not commonly used, as all individuals contributed to community life in different but valued ways.¹⁵

Our study also has limitations, particularly related to potential selection bias and information bias. First, participation in government-conducted surveys among Indigenous populations, including Inuit, may be limited due to historical treatment, leading to mistrust. Also, individuals living in collective dwellings, institutions, or remote areas, may face greater health challenges or have less access to care. As a result, those who did not participate in the APS may differ from those who did, potentially leading to an underestimation of prevalence. Second, while the APS was available in Inuktitut and Inuinnaqtun, the DSQ used to measure the outcome - pain-related disabilities- have not been validated in Inuit populations (i.e., psychometric properties

unknown). This may have led to misclassification of the outcome, diluting the observed associations.

5.5.2 Future research

The findings from our analysis act as a starting point to inform future research by highlighting key Inuit social determinants of health linked to pain-related disabilities. For example, there exists an important interconnection between community, family, culture and language in shaping holistic health among Inuit.^{35, 36} As such, future work grounded in Inuit perspectives and participatory approaches, could examine how these core factors can promote well-being among Inuit living with pain-related disabilities. Moreover, stronger associations observed between selected variables and the outcome may warrant future cohort or qualitative studies developed with and for communities based on community-specific strategies. Future research should be guided by specific needs identified by Inuit through Inuit-led and Inuit-owned programs,³⁷ ensuring both usefulness and cultural relevance.

5.5.3 Implications for practice and policy

Exploring pain-related disabilities among Inuit in Canada fills an important gap in our understanding of how these disabilities are experienced. The evidence generated can be used by Inuit communities and organizations to help advocate for increased treatments and services which align with Inuit ways of knowing, healing, and being. With limited evidence currently available on the epidemiology of pain-related disabilities among Inuit in Canada, it is essential that research findings are shared with Inuit governments, organizations, and communities to inform appropriate next steps.

For *practice*, this requires trained health care providers who understand the determinants of Inuit health and can deliver effective care tailored to their unique needs. This may include, but is not limited to, resources in Inuktitut and Inuinnaqtun, and/or the integration of land-based programs and initiatives to support healthy aging and overall health.

For *policy*, this means co-developing legislation with Inuit communities and organizations through open, honest, and meaningful dialogue.³⁸ This approach aligns with the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which recognizes the rights of Indigenous peoples to be active participants in the decision-making process on matters which pertain to them.³⁹ Similarly, the National Inuit Strategy on Research (NISR), emphasizes Inuit self-determination, priorities and knowledge to shape research and policy.⁴⁰ Working with Inuit partners to improve access to supports and services in remote and rural areas for those living with pain-related disabilities can help increase awareness, reduce stigma, and enhance overall health and well-being.

5.6 CONCLUSION

We found pain-related disabilities to be more common among Inuit who experienced certain demographic, cultural, and social characteristics, including sex, age, residence outside Inuit Nunangat, and the presence of co-existing disabilities. Applying an Inuit-specific social determinants of health lens can assist Inuit governments and organizations in identifying characteristics that may warrant further investigation, based on their priorities and the needs of their communities.

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Table 5.1. Sample characteristics of Inuit, overall and those with and without pain-related disabilities (weighted)

	Overall	With pain-related disabilities	Without pain-related disabilities	Not stated
n (%)	44032	4907	38507	618
Age				
15-18	4891 (11.1)	---	4658 (12.1)	---
19-24	7059 (16.0)	417 (8.5)	6582 (17.1)	---
25-34	9869 (22.4)	848 (17.3)	8951 (23.2)	---
35-44	7533 (17.1)	790 (16.1)	6634 (17.2)	---
45-55	7040 (16.0)	944 (19.2)	6006 (15.6)	---
55 and over	7641 (17.4)	1810 (36.9)	5677 (14.7)	154 (25.0)
Sex				
Male	20603 (46.8)	1779 (36.3)	18584 (48.3)	240 (38.9)
Female	23429 (53.2)	3128 (63.7)	19923 (51.7)	378 (61.1)
Residence inside or outside of Inuit Nunangat				
Inside Inuit Nunangat	31457 (71.4)	2758 (56.2)	28392 (73.7)	307 (49.7)
Outside Inuit Nunangat	12575 (28.6)	2150 (43.8)	10115 (26.3)	311 (50.3)
Education				
Grade 8, equivalent or lower	5969 (13.6)	768 (15.6)	5121 (13.3)	---
Some secondary education	9572 (21.7)	663 (13.5)	8841 (23.0)	---
Secondary school diploma or equivalent	5965 (13.5)	508 (10.3)	5432 (14.1)	---
Some postsecondary education	5240 (11.9)	874 (17.8)	4332 (11.3)	---
Postsecondary certificate or diploma	10633 (24.1)	1548 (31.5)	9056 (23.5)	---
Bachelor Degree or university, cert./dip/degree above bachelors	1723 (3.9)	227 (4.6)	1485 (3.9)	---
Valid skip	3789 (8.6)	192 (3.9)	3578 (9.3)	---
Not stated	1142 (2.6)	128 (2.6)	661 (1.7)	353 (57.1)
Food security status				
Food secure	15288 (34.7)	1502 (30.6)	13659 (35.5)	---
Moderate food insecurity	16512 (37.5)	1777 (36.2)	14488 (37.6)	247 (40.0)
Severe food insecurity	11169 (25.4)	1618 (33.0)	9411 (24.4)	---
Not stated	1063 (2.4)	---	948 (2.5)	---
Housing conditions - satisfaction level				
Very satisfied	9508 (21.6)	1006 (20.5)	8386 (21.8)	---
Satisfied	21422 (48.6)	2195 (44.7)	18967 (49.3)	260 (42.1)
Neither satisfied nor dissatisfied	2219 (5.0)	139 (2.8)	2009 (5.2)	---
Dissatisfied or very dissatisfied	10463 (23.8)	1520 (31.0)	8844 (23.0)	---
Don't know	388 (0.9)	---	269 (0.7)	---
Refusal	---	---	---	---

	Overall	With pain-related disabilities	Without pain-related disabilities	Not stated
Not stated	---	---	---	---
Number of persons in household				
One person	3491 (7.9)	500 (10.2)	2932 (7.6)	---
Two persons	6923 (15.7)	1276 (26.0)	5497 (14.3)	---
Three persons	7938 (18.0)	1059 (21.6)	6797 (17.7)	---
Four persons	7852 (17.8)	764 (15.6)	6984 (18.1)	---
Five or more persons	17735 (40.3)	1299 (26.5)	16237 (42.2)	200 (32.3)
Not stated	---	---	---	---
Have a regular medical doctor				
Yes	14587 (33.1)	2473 (50.4)	11933 (31.0)	182 (29.4)
No	29020 (65.9)	2423 (49.4)	26375 (68.5)	223 (36.0)
Don't know	194 (0.4)	---	172 (0.4)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Healthcare needed but not received				
Yes	7200 (16.4)	1603 (32.7)	5597 (14.5)	---
No	36124 (82.0)	3265 (66.5)	32554 (84.5)	305 (49.4)
Don't know	438 (1.0)	---	346 (0.9)	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Ability to understand or speak an Indigenous language				
Yes	35326 (80.2)	3718 (75.8)	31342 (81.4)	267 (43.2)
No	8345 (19.0)	1190 (24.2)	7105 (18.4)	---
Refusal	---	---	---	---
Not stated	308 (0.7)	---	---	248 (40.1)
Active in Indigenous group events and activities				
Strongly agree	8896 (20.2)	957 (19.5)	7908 (20.5)	---
Agree	13766 (31.3)	1480 (30.2)	12066 (31.3)	221 (35.7)
Neither agree nor disagree	3122 (7.1)	403 (8.2)	2708 (7.0)	---
Disagree or strongly disagree	13505 (30.7)	1756 (35.8)	11591 (30.1)	---
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Don't know	196 (0.4)	---	185 (0.5)	---
Sense of belonging to own Indigenous group				
Strongly agree	20867 (47.4)	2186 (44.5)	18577 (48.2)	---
Agree	12789 (29.0)	1459 (29.7)	11145 (28.9)	185 (29.9)
Neither agree nor disagree	1762 (4.0)	306 (6.2)	1455 (3.8)	---
Disagree or strongly disagree	3991 (9.1)	644 (13.1)	3214 (8.3)	---
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Don't know	---	---	---	---

	Overall	With pain-related disabilities	Without pain-related disabilities	Not stated
Total 2016 personal income				
Less than \$5000	8718 (19.8)	566 (11.5)	8106 (21.1)	---
\$5000 to \$9,999	3581 (8.1)	484 (9.9)	3086 (8.0)	---
\$10,000 to \$19,999	6957 (15.8)	1436 (29.3)	5485 (14.2)	---
\$20,000 to \$29,999	4739 (10.8)	691 (14.1)	4048 (10.5)	---
\$30,000 to \$39,999	3941 (9.0)	467 (9.5)	3463 (9.0)	---
\$40,000 to \$49,999	2756 (6.3)	259 (5.3)	2496 (6.5)	---
\$50,000 to \$69,999	3772 (8.6)	338 (6.9)	3434 (8.9)	---
\$70,000 and over	5342 (12.1)	382 (7.8)	4960 (12.9)	---
Not stated	4227 (9.6)	284 (5.8)	3428 (8.9)	515 (83.3)
Total 2016 employment income				
Less than \$5000	4638 (10.5)	472 (9.6)	4166 (10.8)	---
\$5000 to \$9,999	1961 (4.5)	150 (3.1)	1811 (4.7)	---
\$10,000 to \$19,999	3186 (7.2)	346 (7.1)	2840 (7.4)	---
\$20,000 to \$29,999	3297 (7.5)	328 (6.7)	2958 (7.7)	---
\$30,000 to \$39,999	2897 (6.6)	310 (6.3)	2587 (6.7)	---
\$40,000 to \$49,999	1844 (4.2)	171 (3.5)	1673 (4.3)	---
\$50,000 to \$69,999	2823 (6.4)	251 (5.1)	2572 (6.7)	---
\$70,000 and over	4697 (10.7)	317 (6.5)	4380 (11.4)	---
Valid skip	13909 (31.6)	2343 (47.7)	11441 (29.7)	---
Not stated	4781 (10.9)	219 (4.5)	4080 (10.6)	483 (78.1)
Labour force status				
Employed	23246 (52.8)	2002 (40.8)	21058 (54.7)	186 (30.1)
Unemployed	4220 (9.6)	290 (5.9)	3873 (10.1)	---
Not in labour force	16241 (36.9)	2590 (52.8)	13404 (34.8)	247 (40.0)
Not stated	326 (0.7)	---	172 (0.4)	---
Type of job				
Management occupations	1124 (2.6)	---	1067 (2.8)	---
Business, finance, administration	3479 (7.9)	241 (4.9)	3238 (8.4)	---
Natural and applied sciences	773 (1.8)	---	705 (1.8)	---
Health occupations	594 (1.3)	---	464 (1.2)	---
Occupations in education, law, social, community	4403 (10.0)	492 (10.0)	3880 (10.1)	---
Occupations in art, culture, recreation, sport	830 (1.9)	---	760 (2.0)	---
Sales and service occupations	6372 (14.5)	645 (13.1)	5669 (14.7)	---
Trades, transport, equipment operators	4007 (9.1)	---	3847 (10.0)	---
Natural resources, agriculture	871 (2.0)	---	741 (1.9)	---
Occupations in manufacturing and utilities	647 (1.5)	---	599 (1.6)	---
Valid skip	20729 (47.1)	2894 (59.0)	17403 (45.2)	432 (69.9)
Not stated	203 (0.5)	---	---	---
Full-time or part-time work				

	Overall	With pain-related disabilities	Without pain-related disabilities	Not stated
Full-time employment	17673 (40.1)	1454 (29.6)	16118 (41.9)	---
Part-time employment	5052 (11.5)	452 (9.2)	4547 (11.8)	---
Valid skip	20729 (47.1)	2894 (59.0)	17403 (45.2)	432 (69.9)
Not stated	578 (1.3)	---	439 (1.1)	---
Labour force status with participation in other traditional labour activities				
Labour force participant, participant in other labour...	21645 (49.2)	1871 (38.1)	19595 (50.9)	179 (29.0)
Not in labour force, participant in other labour activities	12190 (27.7)	1785 (36.4)	10333 (26.8)	---
Labour force participant, did not participate in other...	5796 (13.2)	421 (8.6)	5323 (13.8)	---
Not in labour force, did not participate in other labour...	4021 (9.1)	805 (16.4)	3071 (8.0)	---
Not stated	380 (0.9)	---	185 (0.5)	---
Frequency of drinking alcohol in the past 12 months				
Less than once a month	8048 (18.3)	1130 (23.0)	6841 (17.8)	---
1 to 3 times a month	11177 (25.4)	1162 (23.7)	9982 (25.9)	---
Once a week	3834 (8.7)	262 (5.3)	3556 (9.2)	---
2 to 3 times a week	3665 (8.3)	314 (6.4)	3330 (8.6)	---
More than 3 times a week or every day	1414 (3.2)	---	1313 (3.4)	---
Valid skip	15158 (34.4)	1917 (39.1)	13071 (33.9)	170 (27.6)
Don't know	169 (0.4)	---	---	---
Refusal	---	---	---	---
Not stated	519 (1.2)	---	244 (0.6)	264 (42.8)
Type of smoker				
Daily	24484 (55.6)	2450 (49.9)	21710 (56.4)	324 (52.4)
Occasionally	2726 (6.2)	277 (5.6)	2449 (6.4)	---
Not at all	16591 (37.7)	2180 (44.4)	14285 (37.1)	---
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Drug use in the past 12 months				
Yes, used drugs	14194 (32.2)	1475 (30.1)	12658 (32.9)	---
No, did not	24849 (56.4)	3099 (63.1)	21663 (56.3)	---
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Not stated	443 (1.0)	---	---	273 (44.1)
Thoughts of suicide				
Never seriously contemplated suicide	30436 (69.1)	2921 (59.5)	27358 (71.0)	---
Has seriously contemplated suicide but not in the last 12 months	6017 (13.7)	1012 (20.6)	4989 (13.0)	---
Has seriously contemplated suicide in the last 12 months	2628 (6.0)	674 (13.7)	1942 (5.0)	---

	Overall	With pain-related disabilities	Without pain-related disabilities	Not stated
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Not stated	405 (0.9)	---	170 (0.4)	235 (38.0)
Presence of a mental health-related condition				
Yes	7491 (17.0)	2053 (41.8)	5326 (13.8)	---
No	36123 (82.0)	2844 (58.0)	33091 (85.9)	188 (30.4)
Not stated	419 (1.0)	---	---	318 (51.4)
Mental health consultation past 12 months				
Yes	8815 (20.0)	1848 (37.7)	6916 (18.0)	---
No	30338 (68.9)	2747 (56.0)	27434 (71.2)	---
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Don't know	---	---	---	---
Refusal	---	---	---	---
Not stated	---	---	---	---
Health status (self-perceived)				
Excellent	7538 (17.1)	185 (3.8)	7264 (18.9)	---
Very good	11211 (25.5)	727 (14.8)	10408 (27.0)	---
Good	16811 (38.2)	1653 (33.7)	14958 (38.8)	200 (32.4)
Fair	6250 (14.2)	1389 (28.3)	4739 (12.3)	---
Poor	2096 (4.8)	954 (19.4)	1051 (2.7)	---
Don't know	---	---	---	---
Mental health status (self-perceived)				
Excellent	7860 (17.9)	395 (8.0)	7389 (19.2)	---
Very good	10586 (24.0)	959 (19.5)	9599 (24.9)	---
Good	16021 (36.4)	1798 (36.6)	14030 (36.4)	---
Fair	3987 (9.1)	1059 (21.6)	2848 (7.4)	---
Poor	883 (2.0)	385 (7.8)	476 (1.2)	---
Valid skip	4547 (10.3)	301 (6.1)	4049 (10.5)	197 (31.8)
Don't know	---	---	---	---
Refusal	---	---	---	---
Residential school attendance (or federal industrial school)				
Respondent attended	5142 (11.7)	1093 (22.3)	3986 (10.4)	---
Only parent(s) or grandparent(s) attended	4921 (11.2)	448 (9.1)	4473 (11.6)	---
Only other family members attended	4400 (10.0)	571 (11.6)	3819 (9.9)	---
Only parent(s)/grandparent(s)/other family members attended	10829 (24.6)	1065 (21.7)	9670 (25.1)	---
Neither respondent nor any family members attended	8486 (19.3)	775 (15.8)	7662 (19.9)	---
Not stated	10254 (23.3)	955 (19.5)	8896 (23.1)	404 (65.3)

--- As per Statistics Canada's dissemination guidelines, underlying unweighted cell counts below 10 cannot be reported

Table 5.2. Overall prevalence of pain-related disability among Inuit and by sex, age and geographic region of residence

	Prevalence [95% CI]
Overall	11.1 [10.0, 12.4]
Sex	
Male	8.6 [7.0, 10.7]
Female	13.4 [11.8, 15.1]
Age	
15-18 years	---
19-24 years	5.9 [4.5, 7.8]
25-34 years	8.6 [6.2, 11.8]
35-44 years	10.5 [7.4, 14.7]
45-54 years	13.4 [10.2, 17.5]
55 and over	23.7 [21.6, 25.9]
Geographic region of residence	
Inside Inuit Nunangat	8.8 [7.8, 9.9]
Outside Inuit Nunangat	17.1 [14.1, 20.5]

--- As per Statistics Canada's dissemination guidelines, underlying unweighted cell counts below 10 cannot be reported

Table 5.3. Prevalence of pain-related disability among Inuit by different type and number of disabilities

Disability types	Prevalence [95% CI]
Seeing	61.7 [53.7, 69.2]
Hearing	51.1 [43.2, 58.8]
Mobility	78.6 [73.6, 82.9]
Flexibility	82.6 [78.4, 86.1]
Dexterity	74.3 [61.9, 83.7]
Cognitive	56.5 [47.2, 65.4]
Mental health-related	58.3 [49.9, 66.2]
Number of disabilities	
One disability type	31.7 [26.1, 37.9]
Two or three disability types	78.5 [73.6, 82.8]
More than three disability types	92.4 [89.3, 94.6]

Table 5.4. Age- and sex- adjusted prevalence ratios of associations between pain-related disability and selected variables, and sex-stratified models adjusted for age only, among Inuit (2017 APS)

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Food security								
Food secure	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Moderate food insecurity	1.10	[0.87, 1.40]	1.22	[0.98, 1.53]	1.06	[0.76, 1.47]	1.32	[0.97, 1.78]
Severe food insecurity	1.48	[1.14, 1.92]	1.70	[1.33, 2.18]	1.91	[1.34, 2.74]	1.58	[1.14, 2.20]
Housing conditions – satisfaction								
Very satisfied	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Satisfied	0.97	[0.72, 1.29]	1.08	[0.82, 1.43]	1.27	[0.78, 2.08]	0.98	[0.70, 1.37]
Neither satisfied nor dissatisfied	0.60	[0.41, 0.89]	0.69	[0.47, 1.02]	---		---	
Dissatisfied or very dissatisfied	1.37	[1.01, 1.85]	1.48	[1.11, 1.98]	1.63	[0.95, 2.80]	1.37	[0.99, 1.92]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Number of persons in household								
One person	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Two persons	1.29	[0.86, 1.94]	1.31	[0.89, 1.93]	1.22	[0.64, 2.33]	1.42	[0.88, 2.27]
Three persons	0.92	[0.64, 1.35]	1.08	[0.75, 1.55]	0.95	[0.53, 1.70]	1.20	[0.74, 1.96]
Four persons	0.68	[0.44, 1.03]	0.91	[0.61, 1.35]	0.94	[0.55, 1.63]	0.91	[0.53, 1.56]
Five or more persons	0.51	[0.37, 0.70]	0.75	[0.54, 1.04]	0.71	[0.44, 1.13]	0.80	[0.50, 1.26]
Have a regular medical doctor								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	0.49	[0.40, 0.60]	0.61	[0.50, 0.75]	0.51	[0.36, 0.71]	0.68	[0.53, 0.86]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Health care needed but not received (past 12 months)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.44	[1.97, 3.02]	2.43	[1.96, 3.01]	2.88	[2.03, 4.08]	2.15	[1.65, 2.80]
Don't know	---		---		---		---	
Refusal	---		---		---		---	
Geographical location								
Inside Inuit Nunangat	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Outside Inuit Nunangat	1.98	[1.58, 2.48]	1.71	[1.36, 2.13]	2.05	[1.37, 3.07]	1.54	[1.20, 1.98]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Ability to understand or speak an Aboriginal language								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.74	[0.55, 0.99]	0.82	[0.63, 1.06]	0.84	[0.54, 1.32]	0.79	[0.57, 1.10]
Active in Aboriginal group events and activities								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	1.01	[0.80, 1.29]	1.19	[0.94, 1.51]	1.36	[0.92, 2.01]	1.11	[0.82, 1.51]
Neither agree nor disagree	1.20	[0.74, 1.94]	1.45	[0.92, 2.27]	---		1.36	[0.77, 2.40]
Disagree or strongly disagree	1.22	[0.85, 1.75]	1.45	[1.05, 2.00]	1.76	[1.03, 3.01]	1.29	[0.91, 1.85]
Don't know	---		---		---		---	
Sense of belonging to own Aboriginal group								
Strongly agree	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Agree	1.10	[0.85, 1.43]	1.26	[0.98, 1.61]	1.24	[0.88, 1.74]	1.27	[0.91, 1.78]
Neither agree nor disagree	1.65	[0.89, 3.06]	1.79	[1.05, 3.04]	---		2.27	[1.33, 3.86]
Disagree or strongly disagree	1.59	[1.06, 2.37]	1.89	[1.26, 2.83]	2.49	[1.32, 4.72]	1.49	[1.02, 2.19]
Don't know	---		---		---		---	
Income								
Total 2016 personal income								
Less than \$5000	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
\$5000 to \$9,999	2.08	[1.32, 3.28]	1.50	[0.97, 2.32]	2.48	[1.29, 4.75]	1.09	[0.61, 1.95]
\$10,000 to \$19,999	3.18	[2.10, 4.81]	1.94	[1.30, 2.89]	2.79	[1.47, 5.29]	1.58	[0.97, 2.59]
\$20,000 to \$29,999	2.23	[1.43, 3.50]	1.34	[0.88, 2.06]	1.12	[0.56, 2.24]	1.43	[0.85, 2.42]
\$30,000 to \$39,999	1.82	[1.06, 3.12]	1.05	[0.62, 1.77]	1.31	[0.62, 2.78]	0.93	[0.46, 1.89]
\$40,000 to \$49,999	1.44	[0.83, 2.52]	0.83	[0.46, 1.47]	0.70	[0.36, 1.36]	0.90	[0.44, 1.82]
\$50,000 to \$69,999	1.37	[0.84, 2.24]	0.79	[0.49, 1.28]	0.92	[0.45, 1.89]	0.74	[0.39, 1.38]
\$70,000 and over	1.10	[0.69, 1.74]	0.62	[0.39, 0.98]	0.60	[0.30, 1.22]	0.65	[0.36, 1.17]
Total 2016 employment income								
Less than \$5000	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
\$5000 to \$9999	0.75	[0.41, 1.38]	0.70	[0.38, 1.30]	---		---	
\$10000 to \$19999	1.07	[0.58, 1.95]	0.86	[0.49, 1.50]	---		1.21	[0.64, 2.28]
\$20000 to \$29999	0.98	[0.55, 1.76]	0.71	[0.39, 1.28]	---		0.81	[0.38, 1.73]
\$30000 to \$39999	1.05	[0.53, 2.10]	0.70	[0.37, 1.35]	---		0.90	[0.41, 1.99]
\$40000 to \$49999	0.91	[0.48, 1.75]	0.60	[0.30, 1.20]	---		---	
\$50000 to \$69999	0.87	[0.48, 1.58]	0.59	[0.32, 1.09]	---		---	
\$70000 and over	0.66	[0.39, 1.14]	0.43	[0.24, 0.78]	0.31	[0.13, 0.75]	0.51	[0.25, 1.02]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Employment								
Labour force status								
Employed	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Unemployed	0.80	[0.56, 1.14]	1.05	[0.74, 1.49]	1.23	[0.76, 1.99]	1.02	[0.64, 1.64]
Not in the labour force	1.86	[1.50, 2.32]	1.86	[1.45, 2.38]	3.03	[2.14, 4.28]	1.44	[1.07, 1.93]
Type of job								
Management occupations	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Business, finance, administration	2.32	[1.08, 4.99]	2.27	[1.05, 4.93]	---		1.77	[0.77, 4.06]
Natural and applied sciences	---		---		---		---	
Health occupations	---		---		---		---	
Occupations in education, law, social, community	3.76	[1.79, 7.92]	3.58	[1.72, 7.44]	---		3.69	[1.72, 7.92]
Occupations in art, culture, recreation, sport	---		---		---		---	
Sales and service occupations	3.41	[1.81, 6.45]	4.33	[2.23, 8.40]	5.46	[1.54, 19.30]	3.94	[1.95, 7.96]
Trades, transport, equipment operators	---		---		---		---	
Natural resources, agriculture	---		---		---		---	
Occupations in manufacturing and utilities	---		---		---		---	
Employment type								
Full-time employment	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Part-time employment	1.09	[0.68, 1.76]	1.14	[0.72, 1.81]	---		1.27	[0.76, 2.13]
Labour force status with participation in other labour activities (other activities such as, hunting, fishing, trapping, gathering wild plants, making clothing, making cravings, jewellery)								
Labour force participant, participant in other labour	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Not in the labour force, participant in other labour activities	1.69	[1.33, 2.15]	1.68	[1.27, 2.22]	2.43	[1.64, 3.60]	1.39	[1.01, 1.93]
Labour force participant, did not participate in other	0.84	[0.52, 1.35]	0.86	[0.55, 1.34]	0.74	[0.45, 1.21]	0.94	[0.53, 1.68]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Not in the labour force, did not participate in other labour	2.38	[1.76, 3.21]	2.12	[1.55, 2.89]	3.63	[2.32, 5.68]	1.49	[1.00, 2.21]
Health behaviours and tendencies								
Frequency of drinking alcohol in the past 12 months								
Less than once a month	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
1 to 3 times a month	0.74	[0.52, 1.05]	0.78	[0.54, 1.13]	0.84	[0.48, 1.49]	0.75	[0.48, 1.17]
Once a week	0.48	[0.30, 0.79]	0.45	[0.27, 0.75]	0.53	[0.25, 1.11]	---	
2 to 3 times a week	0.61	[0.40, 0.92]	0.61	[0.39, 0.94]	0.64	[0.33, 1.22]	0.61	[0.36, 1.01]
More than 3 times a week or every day	---		---		---		---	
Don't know	---		---		---		---	
Refusal	---		---				---	
Type of smoker								
Daily	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Occasionally	1.00	[0.68, 1.47]	1.01	[0.69, 1.48]	1.63	[0.95, 2.81]	---	
Not at all	1.31	[1.06, 1.60]	1.08	[0.88, 1.34]	1.12	[0.77, 1.62]	1.07	[0.82, 1.39]
Don't know	---		---		---		---	
Drug use in the past 12 months								
Yes, used drugs	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No, did not	1.20	[0.95, 1.52]	0.87	[0.66, 1.13]	1.20	[0.78, 1.83]	0.71	[0.51, 0.98]
Thoughts of suicide								
Never seriously contemplated suicide	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Has seriously contemplated suicide but not in the last 12 months	1.75	[1.34, 2.28]	1.89	[1.46, 2.46]	2.23	[1.48, 3.38]	1.74	[1.26, 2.40]
Has seriously contemplated suicide in the last 12 months	2.67	[1.96, 3.64]	3.74	[2.73, 5.13]	5.02	[2.69, 9.37]	3.31	[2.39, 4.58]
Demographics								
Age								
15-18	1.00	[Reference]	1.00	[Reference]				
19-24	2.87	[1.50, 5.51]	2.90	[1.51, 5.55]	---		---	
25-34	4.17	[2.10, 8.28]	4.19	[2.11, 8.31]	---		---	
35-44	5.13	[2.53, 10.39]	5.15	[2.55, 10.37]	---		---	

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
45-54	6.55	[3.41, 12.59]	6.44	[3.35, 12.38]	---		---	
55 and over	11.65	[6.42, 21.14]	11.44	[6.30, 20.78]	---		---	
Sex								
Male	1.00	[Reference]	1.00	[Reference]				
Female	1.55	[1.21, 2.00]	1.47	[1.14, 1.90]	---		---	
Education								
Grade 8, equivalent or lower	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Some secondary education	0.54	[0.39, 0.74]	0.78	[0.54, 1.13]	0.93	[0.57, 1.55]	0.71	[0.46, 1.10]
Secondary school diploma or equivalent	0.66	[0.39, 1.10]	0.93	[0.57, 1.52]	1.33	[0.64, 2.79]	0.76	[0.41, 1.39]
Some postsecondary education	1.29	[0.93, 1.79]	1.64	[1.17, 2.29]	2.17	[1.35, 3.49]	1.33	[0.85, 2.08]
Postsecondary certificate or diploma	1.12	[0.85, 1.47]	1.21	[0.91, 1.61]	1.03	[0.70, 1.50]	1.31	[0.89, 1.92]
Bach. Degree or univ. cert./dip/degree above bach.	1.02	[0.52, 1.98]	1.03	[0.55, 1.90]	---		---	
Presence of a mental health-related condition								
Yes	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
No	0.28	[0.23, 0.35]	0.24	[0.20, 0.29]	0.23	[0.16, 0.32]	0.25	[0.20, 0.32]
Mental health consultation through telephone past 12 months (with anyone)								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	2.32	[1.89, 2.84]	2.59	[2.11, 3.18]	3.13	[2.14, 4.56]	2.35	[1.80, 3.05]
Don't know	---		---		---		---	
Refusal	---		---				---	
Health status (self-perceived)								
Excellent	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Very good	2.62	[1.42, 4.86]	2.32	[1.26, 4.28]	2.15	[0.68, 6.80]	2.29	[1.08, 4.86]
Good	4.00	[2.33, 6.88]	3.27	[1.89, 5.66]	4.92	[1.61, 15.08]	2.53	[1.29, 4.93]
Fair	9.11	[5.20, 15.97]	6.84	[3.87, 12.08]	7.79	[2.53, 23.94]	6.08	[3.21, 11.50]
Poor	19.13	[11.15, 32.82]	12.66	[7.25, 22.10]	22.49	[7.58, 66.73]	8.70	[4.58, 16.54]
Don't know	---		---		---		---	
Mental health status (self-perceived)								
Excellent	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Very good	1.79	[1.23, 2.62]	1.73	[1.18, 2.54]	1.00	[0.59, 1.71]	2.17	[1.29, 3.67]
Good	2.24	[1.61, 3.12]	2.15	[1.55, 2.98]	2.27	[1.44, 3.58]	2.07	[1.31, 3.27]

SELECTED VARIABLES	Univariable models		Adjusted model (age & sex)		Male only (age-adjusted)		Female (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Fair	5.35	[3.64, 7.87]	5.62	[3.79, 8.34]	7.79	[4.35, 13.97]	4.69	[2.89, 7.63]
Poor	8.81	[6.10, 12.73]	8.48	[5.77, 12.45]	---		8.36	[5.24, 13.32]
Don't know	---		---		---		---	
Refusal	---		---				---	
Residential school attendance (or federal industrial school)								
Neither respondent nor any family members attended	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Only parent(s) or grandparent(s) attended	0.99	[0.56, 1.76]	1.22	[0.70, 2.11]	---		1.26	[0.67, 2.38]
Only other family members attended	1.42	[0.94, 2.13]	1.23	[0.84, 1.80]	1.83	[0.89, 3.75]	1.02	[0.65, 1.61]
Only parent(s)/grandparent(s)/other family members attended	1.08	[0.72, 1.62]	1.36	[0.90, 2.07]	1.90	[0.87, 4.14]	1.15	[0.73, 1.82]
Respondent attended	2.34	[1.62, 3.39]	1.22	[1.05, 2.03]	2.43	[1.27, 4.63]	1.12	[0.77, 1.63]

Note: aPR – adjusted prevalence ratio; Each independent variable was modeled individually adjusted for age group and sex. The stratified male and female only models were adjusted for age group. Selected variables were informed by the social determinants of Inuit health in Canada (Inuit Tapiriit Kanatami, 2014).

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Table 5.5. Age- and sex- adjusted prevalence ratios of associations between pain-related disability and selected variables for subgroup analysis, and sex-stratified models adjusted for age only, among Inuit (2017 APS)

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Reasons for housing dissatisfaction								
<i>Crowded/not enough space</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.62	[0.43, 0.90]	0.76	[0.52, 1.11]	0.66	[0.32, 1.34]	0.81	[0.52, 1.26]
Don't know	---		---		---			
<i>High costs</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.21	[0.81, 1.82]	1.10	[0.74, 1.65]	---		1.43	[0.97, 2.12]
Don't know	---		---		---			
<i>Problems – run down/need many repairs, poor insulation, presence of mould or mildew, presence of unwanted pests such as mice, bedbugs or cockroaches</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.58	[0.99, 2.52]	1.45	[0.91, 2.32]	1.53	[0.69, 3.37]	1.43	[0.80, 2.56]
Don't know	---		---		---			
<i>Other (location, safety concerns, problems with landlord, neighbours or other tenants, other)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.39	[0.98, 1.98]	1.28	[0.91, 1.80]	1.08	[0.60, 1.97]	1.37	[0.92, 2.03]
Don't know	---		---		---			
Reasons for not having a regular medical doctor								
<i>No doctors in the area</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.05	[0.79, 1.40]	1.01	[0.76, 1.33]	1.04	[0.66, 1.66]	0.99	[0.69, 1.42]
Don't know	---		---		---		---	

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Refusal	---		---		---			
<i>Not tried to contact one</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.74	[0.37, 1.45]	1.13	[0.57, 2.21]	---		---	
Don't know	---		---		---		---	
Refusal	---		---		---			
<i>Receiving care elsewhere</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	---		---		---		---	
Don't know	---		---		---		---	
Refusal	---		---		---			
<i>Doctors always changing</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.33	[0.92, 1.93]	1.17	[0.82, 1.67]	0.96	[0.59, 1.56]	1.34	[0.88, 2.03]
Don't know	---		---		---		---	
Refusal	---		---		---			
<i>Other (not taking new patients, left or retired, other)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.13	[0.68, 1.87]	1.10	[0.67, 1.82]	---		1.50	[0.82, 2.77]
Don't know	---		---		---		---	
Refusal	---		---		---			
Reasons for unmet health care needs								
<i>Cost</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	---		---		---		---	
Don't know	---		---		---		---	
Refusal	---		---		---			
<i>Not avail./Wait times too long</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	0.95	[0.66, 1.36]	0.87	[0.61, 1.24]	0.69	[0.38, 1.27]	1.00	[0.65, 1.54]
Don't know	---		---		---		---	

SELECTED VARIABLES	Univariable model		Adjusted model (age & sex)		Male only (age-adjusted)		Female only (age-adjusted)	
	PR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]	aPR	[95% CI]
Refusal	---		---		---			
<i>Personal (felt it would be inadequate; too busy; didn't get around to it; decided not to seek care; personal/family responsibilities; dislikes doctors/afraid)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.05	[0.69, 1.58]	1.22	[0.82, 1.81]	---		1.09	[0.69, 1.71]
Don't know	---		---		---		---	
Refusal	---		---		---			
<i>Other (didn't think it was necessary, other)</i>								
No	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]	1.00	[Reference]
Yes	1.17	[0.82, 1.66]	1.13	[0.80, 1.61]	---		1.00	[0.64, 1.57]
Don't know	---		---		---		---	
Refusal	---		---		---			

Note: aPR – adjusted prevalence ratio; Each independent variable was modeled individually adjusted for age group and sex. The stratified male and female only models were adjusted for age group. Selected variables were informed by the social determinants of Inuit health in Canada (Inuit Tapiriit Kanatami, 2014).

--- As per Statistics Canada's dissemination guidelines, underlying cell counts below 10 cannot be reported

CHAPTER SIX

DISCUSSION

6.1 SUMMARY OF THE THESIS

In collaboration with members of the Indigenous Advisory Committee (IAC), I conducted a review of the existing evidence to better understand how pain-related disabilities affected First Nations, Inuit, and Métis peoples in Canada. This work focused on synthesizing measures of frequency, factors associated, and the experience of pain-related disabilities. Two studies were identified: an epidemiological study detailing the prevalence of pain-related disabilities among First Nations people living off-reserve, Inuit, and Métis, and a qualitative study exploring lived experiences of the impact of pain on functioning. These studies highlighted a lack of comprehensive data on pain-related disabilities among Indigenous peoples in Canada. Sharing the results with the IAC prompted the sharing of stories and reflections. Members were not surprised by the identified gaps (i.e., lack of studies retrieved). Rather, the findings affirmed their lived experiences of how pain is often minimized by health care professionals. They described a persistent disconnect between how pain is understood within Western, clinical frameworks and how it is experienced and expressed in Indigenous contexts. From a colonial perspective, this disconnect stems from health professionals and researchers lacking a full understanding of the diverse ways pain and disability are experienced by Indigenous peoples. From an Indigenous perspective, this has led to their pain often being dismissed, misunderstood, or overlooked.

To help fill the identified knowledge gap, I analyzed the 2017 Aboriginal Peoples Survey (APS) to determine the prevalence of and factors associated with pain-related disabilities among First Nations people living off-reserve, Inuit, and Métis. The findings revealed that approximately

1 in 5 First Nations people living off-reserve, 1 in 5 Métis, and 1 in 9 Inuit reported pain-related disabilities. These disabilities were more common among females, older adults, and those with multiple co-existing disabilities. Geographical variation in prevalence for First Nations people living off-reserve and Métis was minimal. However, Inuit residing outside Inuit Nunangat reported higher estimates of pain-related disabilities. I found a range of demographics, socioeconomic, health, historical, and cultural factors associated with pain-related disabilities in each group. The selection and interpretation of these variables was informed by three distinct health frameworks specific to First Nations, Inuit, and Métis peoples. Ongoing dialogue with members of the IAC was essential in deepening my understanding of these frameworks and for mapping the variables in the survey with the determinants described.

6.2 SITUATING THE STUDY WITHIN A NATIONAL CONTEXT

The overall aim of my thesis was to determine the prevalence of, and explore the factors associated with pain-related disabilities among Indigenous peoples in Canada. This line of inquiry was important because pain is the leading cause of disability not only among First Nations people living off-reserve, Inuit, and Métis,¹ but also within the broader Canadian population.² However, contextualizing the findings of my thesis requires that I first and foremost situate this research within colonial history. The long-lasting impacts of colonial policies and practices have contributed to the systemic inequities which continue to shape the health and well-being of Indigenous peoples.³ These inequities are crucial to understanding the higher prevalence of pain-related disabilities among certain Indigenous populations, and they must be considered when comparing patterns and trends.

Situating the findings of my thesis within a national context, data from the 2017 Canadian Survey on Disability indicates that 14.5% of Canadians aged 15 years and older were living with pain-related disabilities.² The national prevalence is lower than that observed among First Nations people living off-reserve (22.1%) and Métis (20.4%), but higher than the estimate reported among Inuit (11.1%).² Moreover, across First Nations people living off-reserve, Inuit, Métis, and the general Canadian population, certain demographic patterns remain consistent. For instance, women reported a higher prevalence of pain-related disabilities compared to men, and prevalence increased with age in all populations.² Other similar overall trends were also observed between the three Indigenous groups and the general Canadian population, with individuals facing challenges related to education, employment, and income more likely to report pain-related disabilities, and vice versa.⁴ This comparison provides a national level perspective of the Indigenous-specific estimates, helping to identify areas where there may be similarities and where more work is needed to bridge any existing health gaps.

These findings align with the Truth and Reconciliation Commission's Calls to Action 18–24, which specifically address health inequities experienced by Indigenous peoples in Canada. Call to Action 19, in particular urges the federal government in working together with Indigenous peoples to establish measurable goals to close the gaps in health outcomes between Indigenous and non-Indigenous communities, and to report on long-term trends.⁵ Many of these gaps are rooted in the past and current impacts of colonialism, which continue to shape health and social conditions for First Nations, Inuit, and Métis peoples.^{6,7}

It is also equally important to recognize and build on areas of strength. For example, among First Nations peoples living off-reserve and Métis respondents, community involvement, such as volunteering was associated with a lower likelihood of reporting pain-related disabilities, while among Inuit, the ability to speak an Indigenous language may possibly appear to be a protective factor.

However, as emphasized through discussions with members of the IAC, many Indigenous communities do not wish to be compared with the general population. Such comparisons may reinforce deficit-based narratives and fail to account for the distinct historical context which has given rise to the current health realities experiences by Indigenous communities. It is also important to recognize that the general population does not equate to the 'gold standard' for comparison. As such, while such comparisons are common in epidemiology and public health, they do not align well with Indigenous knowledge systems. Rather, Indigenous communities may seek to understand their own realities within their own contexts, grounded in their identity, history, traditions, and lived experiences.⁸

6.3 STUDY STRENGTHS AND LIMITATIONS

The scoping review and epidemiological analyses of the 2017 APS presented various methodological considerations. Both used a strength-based approach in an attempt to decolonize epidemiological and evidence-based methodologies through active engagement with the IAC to ground this work in Indigenous perspectives where possible. Regarding my scoping review, the search strategy was rigorously developed with an experienced health sciences librarian, peer-

reviewed for comprehensiveness, and included both academic and grey literature. I worked with the IAC to identify community-specific terminology to be integrated within the search strategy. For the 2017 APS, Statistics Canada worked with First Nations, Inuit, and Métis peoples throughout the development of the survey questions and the inclusion of survey weights. For example, to mitigate information bias, all questions in the APS were rigorously tested and refined through multiple rounds of consultations with subject matter experts and most importantly, with individuals from diverse Indigenous groups.⁹ This process aimed to ensure that the survey content was clearly understood, relevant and culturally appropriate. To address potential selection bias, survey weights were developed in consideration of the different stages of recruitment and the construction of the sampling frame. This included stratification by geographical location, age group and Indigenous group, as well as sub-stratification based on form type, respondent type, and Indigenous identification.⁹ These steps were taken to increase the representativeness of the sample.

Though my thesis has strengths, it is not without its limitations. In my scoping review, a potential source of bias is the manner through which pain-related disabilities were defined. Because I tackled a construct that had received little attention in the past, it is possible that the definitions were not representative of all Indigenous populations. The variability in how pain and disability are described and experienced by Indigenous communities may have led to the exclusion of relevant literature which may have used culturally-specific language. My analysis of the 2017 APS, may have been impacted by information and selection bias. The validity and reliability of the questions used in the APS is unknown. Differences in how the language used within the survey was interpreted, and the cultural framing of concepts such as pain and disability may have led to non-differential misclassification of the outcomes – potentially diluting the strength of measured

associations. Furthermore, systemic mistrust in government led surveys may have led to non-response and selection bias.¹⁰ Finally, because the survey focused on those living in private dwellings, the exclusion of certain subgroups from other living conditions, it is possible the recruitment process may have led to an underestimation of the prevalence of pain-related disabilities. One example would be those living in institutional settings, such as long-term care facilities. These individuals are often at increased risk of deteriorating health and may not receive the rehabilitation care needed.^{11, 12} In turn, they may continue to experience pain and functional limitations.

Despite these limitations, extensive involvement with members of the IAC helped ground the research conducted for my thesis within Indigenous perspectives. Therefore, beyond the methodological considerations, a key strength of my work was ethical engagement with members of the IAC. The active role of the IAC and the use of Indigenous-specific frameworks increased the relevance of the findings. However, given my best efforts towards meaningful collaboration, themes in relation to data sovereignty and governance, important principles when working with Indigenous data, reflect broader challenges when working with data collected from government run surveys.

6.3.1 Reflections on data sovereignty and governance when working with data collected through Statistics Canada

Indigenous data sovereignty refers to the rights of Indigenous peoples to govern all aspects of the collection, ownership, and application of data in regards to their communities, aligning with

their laws, values, and self-determined priorities.¹³⁻¹⁵ Closely linked with this is the concept of Indigenous data governance which emphasizes Indigenous stewardship. The 2017 APS falls short of fully embodying these principles. Although Indigenous community members were consulted in the development of the survey, the data are ultimately owned and controlled by the federal government through Statistics Canada.

Analyzing the 2017 APS as the primary data source for my thesis required not only technical familiarity with the dataset but also a critical and reflective understanding of its historical context. The APS is a national, post-census survey developed and administered by Statistics Canada in partnership with Indigenous stakeholders. While it represents one of the most comprehensive sources of information on the social and economic conditions of First Nations people living off-reserve, Inuit, and Métis in Canada, it is also shaped by the legacies of colonial data practices. The questions asked—what is included, how they are framed, and what is left out—are reflective of dominant knowledge systems that have historically positioned Indigenous peoples as subjects of research rather than self-determined partners in knowledge creation. For example, the 2017 APS does not include First Nations individuals living on-reserve, for whom health-related data collection is through the First Nations Information Governance Centre. Early discussions with the IAC emphasized the need to clearly specify the off-reserve focus of the findings to avoid overgeneralizing to all First Nations communities. In addition, the ability of survey questions to capture the diversity and nuances of Indigenous experiences with pain and disability, may be difficult, in particular as they relate to land, language, community, culture and the experience of residential schools—dimensions not easily quantified within conventional data and surveys. These

points were further discussed in subsequent meetings both before and after the analysis for Objective 3.

The APS provides population-level insights for First Nations people living off-reserve, Inuit, and Métis with the intent for it to be used to support and inform Indigenous priorities. However, this cannot be done without Indigenous engagement. Although the APS does not explicitly require user engagement with Indigenous communities, upon much reflection such engagement should be considered essential and required for all users. Working with this data therefore required remaining attentive to whose voices are present, whose are absent, and how the data can be interpreted in ways that are respectful of First Nations people living off-reserve, Inuit, and Métis.

Quantitative estimates such as those from the 2017 APS can play a powerful role in shaping not only how Indigenous communities are perceived by others, but also how they come to understand and represent themselves within dominant health discourses.⁸ For this reason, it is essential that research involving Indigenous populations be guided by their perspectives and priorities from the very beginning. My thesis was conducted in collaboration with an IAC, whose involvement from project onset was critical to ensuring that this work was grounded in a meaningful way, reflective of the realities faced by Indigenous peoples. Given that the data from the 2017 APS can be used to inform policy and funding decisions at government levels, the consequences of misinterpreting or oversimplifying the findings can have significant ramifications⁸. Statistics by themselves often only provide one side of the story. Without the interweaving of Indigenous knowledge systems, voices, and lived experiences, the constructs and

numbers risk being read incorrectly or in isolation. A more complete and respectful understanding of pain-related disabilities among Indigenous peoples requires that the data be situated within these stories and histories.

6.4 SIGNIFICANCE OF THE WORK

My thesis contributes to the unique and developing body of knowledge on disability by centering Indigenous perspectives within epidemiological research on pain-related disabilities in Canada. By integrating Indigenous health frameworks and working in partnership with the IAC, my research applied an innovative, strength-based approach historically underused in epidemiological studies. Working in partnership with the IAC enabled co-leadership and co-production of knowledge. These findings provide an essential starting point for evidence-informed dialogue on how pain-related disabilities affect Indigenous peoples, highlighting the need for inclusive and culturally relevant health policies.

Engagement with the IAC was integral to shaping the direction and interpretation of this research from the outset, ensuring that it was both culturally grounded and methodologically sound. Co-production began prior to the scoping review, with initial meetings dedicated to exploring the meaning of disability and pain from the perspectives and lived experiences of IAC members. These early discussions led to a review of the proposed research questions and objectives, during which time important language changes were made. For example, replacing the term *burden* with *extent*, and adjusting Objective 3 to refer broadly to "factors" rather than "personal and environmental factors," following advice to use group-specific Indigenous frameworks that reflect cultural and historical realities of First Nations, Inuit, and Métis peoples.

Prior to beginning each research objective, proposed methodologies were reviewed in meetings with the IAC, with feedback incorporated and returned for further input. For the scoping review, members contributed to decisions on search terminology, appropriate databases, and search engines, and were invited to join sessions with the health sciences librarian to co-develop the search strategy. This strategy was reviewed by the IAC before proceeding with PRESS review and screening. Once screening was completed, the included studies and preliminary findings were shared in a follow-up meeting, where members reflected on their relevance and meaning. These reflections were then incorporated into the final manuscript.

Engagement also shaped the quantitative components of the research. In meetings focused on understanding and applying the APS data, IAC members raised important considerations around data sovereignty and governance, prompting the inclusion of these themes in the dissertation write-up. Similarly, a meeting dedicated to Indigenous health frameworks informed the decision to adopt three distinct, group-specific approaches, replacing an initial plan to use a single integrated framework. This shift also led to changes in the analytical approach for Objective 3, moving from a full multivariable model to individual univariable models, better aligning with First Nations, Inuit, and Métis informed research priorities and interpretation.

While these examples do not reflect the full scope of engagement, they illustrate how the IAC's ongoing involvement shaped the research in meaningful and concrete ways, moving beyond consultation to support genuine co-development throughout the project.

As Canada continues in its commitment to applying the principles of equity, diversity and inclusion, it becomes imperative to understand pain-related disabilities through Indigenous worldviews which reflect the diversity of First Nations, Inuit, and Métis peoples. Building respectful, reciprocal relationships with Indigenous peoples, communities and other stakeholders is necessary to guide ethical research design and implementation.^{16, 17} As Canada approaches 10 years since the release of the Truth and Reconciliation Commission's 94 calls to action,⁵ these findings offer an opportunity to collaborate with Indigenous communities, organizations, and governments (i.e., The Assembly of First Nations, Métis National Council, Inuit Tapiriit Kanatami) to advance reconciliation through data which supports Indigenous-led health initiatives and community-driven priorities.

6.4.1 Implications for health practice and policy

While the cross-sectional nature of the findings limits the ability to draw causal inferences or track change over time, my dissertation can offer valuable insights into the current landscape of pain-related disabilities among First Nations people living off-reserve, Inuit, and Métis. By highlighting patterns and associations, the findings may help identify potential areas for further investigation, advocacy, or program development in alignment with health priorities. While not community-specific, this work can contribute to broader Indigenous priorities by offering a foundation upon which future Indigenous-led, locally driven research can build. Ultimately, this work aimed to open space for meaningful ongoing dialogue.

There is a need for both health practice and policy to centre around the history, perspectives, rights, and priorities of First Nations, Inuit, and Métis peoples. For practice, this

means having healthcare providers capable of delivering equitable and accessible care in a culturally sensitive manner. This includes the need for more Indigenous health professionals trained in both Western medical practices and traditional healing approaches, as well as the meaningful inclusion of Elders, Traditional Healers, traditional medicines, and cultural practices as integral components of care. For non-Indigenous providers, this requires understanding the unique histories, experiences, and strengths of Indigenous peoples. Healthcare for individuals living with pain-related disabilities must extend beyond biomedical approaches to address broader aspects of functioning and well-being. This requires recognizing the ongoing impacts of colonialism, racism, and systemic barriers and finding solutions to including the integration of traditional healing practices, land-based programs, and supports delivered in Indigenous languages.¹⁸ It is also critical that pain-related disabilities not be addressed in isolation but through a holistic and interconnected lens, particularly in collaboration with First Nations, Inuit, and Métis governments and organizations, who are best positioned to guide service models that reflect the priorities of the communities which they serve.

For those involved in designing national surveys, these findings highlight the importance of culturally aligned instruments which reflect Indigenous worldviews, values, and lived experiences. This involves engaging Indigenous communities in defining what should be measured, how questions are framed, and what concepts are meaningful. Moreover, this requires collaborative approaches to survey design that respect Indigenous knowledge systems and avoid imposing Western constructs as universal. Equally important is ensuring Indigenous data stewardship through frameworks such as OCAP®, IQ principles, and Métis data governance protocols, which promote community ownership, control, and use of the data in ways that advance

self-determined priorities. Without these shifts, national surveys may risk continuing to misrepresent or overlook Indigenous realities. Furthermore, there remains the need for policies that are informed by Indigenous data, grounded in nation-specific or community-identified priorities, which are developed in partnership with Indigenous peoples to ensure that they are culturally relevant and equitable.

6.5 FUTURE RESEARCH

The findings of the four papers highlight the importance of future research that is not only inclusive of Indigenous voices, but led by Indigenous voices. This work must attempt to move beyond deficit-based narratives and be grounded in cultural strengths, resilience, and self-determination. To achieve this, epidemiological and evidence-based research must be designed in ways that meaningfully reflect the worldviews, priorities, and knowledge systems of First Nations, Inuit, and Métis peoples.

This includes the integration of Indigenous-specific determinants of health and the development of culturally grounded, strength-based participatory methodologies grounded in lived experiences. Further work is needed to explore how Indigenous frameworks, particularly those developed by Indigenous organizations can be effectively applied within epidemiological, population, and community health research contexts. Several areas for future exploration were informed through the ongoing dialogue with members of the IAC throughout the course of my thesis, and include:

- Understanding Indigenous community- and Nation-specific priorities – the lived experiences of First Nations, Inuit, and Métis people, and examining how cultural elements, such as language, land-based healing, and the sharing of intergenerational knowledge affect pain and disability experiences.
- Policy-relevant research that evaluates the effectiveness of Indigenous-specific health programs, particularly those targeting chronic pain and disability and delivered through Indigenous-led or government-supported services.
- Further application and refinement of Indigenous-developed frameworks in public, population, and community health research, to enhance their utility and relevance in diverse health contexts.

Indigenous health research must align with Nation- or community-led strategies that promote data sovereignty, capacity-building, and knowledge mobilization. Supporting these priorities will help generate evidence that is both useful to policy makers and meaningful to Indigenous leadership working to improve health and well-being in their communities.

Looking back, I recognize that while I attempted to ground this work in a strength-based approach, even with strong partnerships and meaningful guidance from the IAC, working with colonial datasets continues to risk reinforcing dominant often deficit-based narratives if Indigenous frameworks are not centered from the very beginning. While I did my best to approach this work respectfully and reflexively, I have come to understand that truly challenging the underlying

assumptions of Western knowledge systems requires more than inclusion. It demands a fundamental shift toward Indigenous-led approaches in both design and interpretation.

6.5.1 Knowledge translation

The integrated knowledge translation framework (iKT),¹⁹ was central to my thesis (as discussed in section 1.4 of the Introduction). From the onset, my work was grounded in an iKT approach working in partnership with the IAC. This collaborative process allowed my research to align with Indigenous health priorities, ways of knowing, and preferred methods of communication. Throughout this project the IAC played an important role in shaping dissemination strategies. Together, the following key audiences were identified to engage with to share the findings:

- Government officials and policy makers
- Healthcare providers and front-line workers
- Educational institutions
- Indigenous health services and organizations
- Communities at the grassroots level

Recognizing the importance of storytelling and visual imagery in Indigenous knowledge systems, the IAC recommended the use of a visual KT tool to communicate the findings in a more accessible and culturally meaningful way, noting that peer-reviewed publications are often inaccessible to Indigenous communities and rarely shared back after project completion. This led to a collaboration with a Gitksan Artist by the name of Elena Sterritt, with whom we are working

to co-create three visual graphics (two of which have been completed to date and can be found in Appendix E 6.1 and 6.2) to represent the key findings from the analysis of the 2017 APS. Throughout this collaborative process with Elena to date, I have learned that effective knowledge translation extends beyond simply conveying information. It is about building relationships and honouring different ways of knowing. Elena's storytelling through the visuals created helped me realize that art can act as a conduit to carry knowledge created from epidemiological studies, which is meaningful and resonates with Indigenous perspectives. This visual KT piece not only enhances our understanding of pain-related disabilities, but also honours Indigenous ways of telling, seeing, and sharing knowledge.

Most importantly, working with Elena throughout the dissemination of findings, I was able to stay true to the principles of *Etuaptmumk*, which brings together the strengths of both Indigenous and Western knowledge systems. As I reach the completion of my thesis, I recognize that KT remains an ongoing process. I will continue to walk alongside the IAC and other partners, responding to new opportunities for engagement so that this work may support Indigenous peoples in ways that are meaningful and lasting.

6.6 CLOSING REFLECTIONS AND CONCLUDING IN A GOOD WAY

In this instance it feels more appropriate to close my work similarly to how it was started, in a way that honours the relationships, stories, and teachings which have shaped it from the beginning. It has been a profound honour and privilege to work alongside the members of the IAC throughout this research journey. Your willingness to share stories, knowledge, and lived experiences with generosity and openness has deeply influenced both the direction and the spirit of this work. I carry immense responsibility and gratitude for the trust you placed in me and the

relationships we have built along the way. I am so very grateful for all that you have taught me – lessons which extend far beyond the boundaries of my thesis. Thank you for showing me that it is not only possible, but essential to weave Indigenous perspectives into the field of epidemiology, creating work that is not only rigorous but meaningful. You have taught me that as the next generation of scientists and researchers, we carry a responsibility to question long-standing, conventional methods and to seek out more inclusive and innovative approaches. In doing so, we begin to reclaim research as a place where diverse ways of knowing can thrive. It is with humility and kindness that I acknowledge this is not the end but a continuation in my journey of learning. I promise to remain committed to nurturing these relationships and the work we have done together in a good way moving forward.

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Appendices

Appendix A.

A.1 Accepted and published manuscript in the Canadian Journal of Public Health

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ORIGINAL ARTICLE



Prevalence, incidence, and factors associated with pain-related disabilities, and experiences of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada: A scoping review

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Abstract

Objectives To describe the prevalence, incidence, factors associated with pain-related disabilities, and experiences of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada.

Methods We conducted a scoping review of the literature. The search strategy, developed with a health sciences librarian, included Indigenous-specific and health peer-reviewed databases, and grey literature for studies from inception to May 23, 2023. We included epidemiological, qualitative, and mixed-methods studies assessing pain-related disability outcomes among First Nations, Inuit, and Métis peoples in Canada.

Synthesis We screened 5902 citations from the peer-reviewed databases, of which 86 were screened as full-text items, and 49 were screened separately from grey literature sources. Two relevant items were retrieved. In 2017, an epidemiological study reported point prevalence estimates of pain-related disability lasting 6 months or more as follows: 11.4% among Inuit, 20.7% among Métis, and 22.2% among off-reserve First Nations people, with higher prevalence in women than in men. In 2002, a qualitative study highlighted emergent themes related to “difficulty coping with pain” and “suffering” among Cree adults with disabilities from the Mushkegowuk Territory. No studies reported on the incidence or factors associated with pain-related disability.

Conclusion Our scoping review found two studies on pain-related disabilities among Indigenous peoples in Canada. Continued collaboration with Indigenous partners is required to contextualize these findings and determine appropriate next steps.

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Résumé

Objectifs Décrire la prévalence et l'incidence de l'invalidité attribuable à la douleur, les facteurs associés et les expériences de limitations dues à la douleur chez les membres des Premières Nations, les Inuits et les Métis au Canada.

Méthode Nous avons mené une étude de champ de la littérature. Notre stratégie de recherche, élaborée avec une bibliothécaire en sciences de la santé, incluait des bases de données examinées par les pairs portant sur les questions autochtones et sur la santé, ainsi que la littérature grise, pour les études menées jusqu'au 23 mai 2023. Nous avons inclus les études épidémiologiques, qualitatives et à méthodes mixtes qui évaluaient les résultats cliniques de l'invalidité attribuable à la douleur chez les membres des Premières Nations, les Inuits et les Métis du Canada.

Synthèse Nous avons sélectionné 5902 citations provenant des bases de données examinées par les pairs, dont 86 en texte intégral; nous en avons sélectionné 49 autres provenant de la littérature grise. Deux articles pertinents ont été récupérés. Une étude épidémiologique de 2017 présentait des estimations de la prévalence ponctuelle de l'invalidité attribuable à la douleur durant depuis six mois ou plus; cette prévalence était de 11,4% chez les Inuits, de 20,7% chez les Métis et de 22,2% chez les membres des Premières Nations hors des réserves; elle était plus élevée chez les femmes que chez les hommes. Une étude qualitative de 2002 dégageait des thèmes émergents liés à la «difficulté de gérer la douleur» et à la «souffrance» chez les adultes crûs handicapés sur le territoire Mushkegowuk. Aucune étude ne portait sur l'incidence de l'invalidité attribuable à la douleur ni sur les facteurs associés.

Conclusion Notre étude de champ a relevé deux études sur l'invalidité attribuable à la douleur chez les peuples autochtones au Canada. Une collaboration soutenue avec des partenaires autochtones sera requise pour contextualiser les constatations et déterminer les prochaines mesures qu'il convient de prendre.

Keywords Pain · Disability · Indigenous health · Canada · Epidemiology

Mots-clés Douleur · Invalidité · Santé autochtone · Canada · Épidémiologie

Introduction

Due to the devastating effects of colonization in Canada, First Nations, Inuit, and Métis peoples (henceforth referred to as Indigenous where applicable) are disproportionately affected by disability, with higher rates reported in Indigenous populations compared to non-Indigenous counterparts (Hahmann et al., 2019; Ng, 1996; Rivas Velarde, 2015). Living with disability can cause significant discomfort and pain, and conversely, pain itself can cause considerable disability. While disability and pain are closely interconnected, the body of literature regarding disability related to pain among First Nations, Inuit, and Métis peoples in Canada remains scarce. A recent scoping review identified the literature largely investigated pain conditions, while a review examining works in and outside of Canada reported a higher proportion of pain experienced by Indigenous peoples compared to non-Indigenous populations (Bailey et al., 2023; Jimenez et al., 2011). Although pain is highly prevalent (Barnabe et al., 2017; Hitchon et al., 2020; Latimer et al., 2018), little is known about the impact of pain on functioning, participation, and activities of daily living among First Nations, Inuit, and Métis peoples in Canada.

One factor contributing to this is that the construct of disability is dynamic and multifaceted. For many, it encompasses the relationship among body structures and functions, daily activities, and social participation, in interaction with personal and environmental factors (World Health

Organization, 2001). As such, according to Western models, disability can arise when functioning is limited due to a health condition (World Health Organization, 2001). In contrast, among certain First Nations, Inuit, and Métis languages and communities, the term “disability” often does not exist or holds different meaning, and those born with different abilities are celebrated for their uniqueness (Indigenous Advisory Committee, personal communication, November 16, 2022; Roberts, 2022). For some, these abilities are meant to be viewed as gifts that serve a purpose in strengthening the community as a whole (Shackel, 2008; Stienstra et al., 2018). Hence, multiple realities can play a role in understanding the construct of disability. Moreover, the conceptualization of pain can extend beyond the context of physical sensations, interconnecting with emotional, social, and spiritual aspects of an individual (Barkwell, 2005). However, the predominance of Eurocentric knowledge paradigms has created a hierarchy between Western approaches and Indigenous knowledge. Thus, to understand pain-related disability among First Nations, Inuit, and Métis peoples in Canada, we must first consider the effects of historical and contemporary colonialism.

Indigenous peoples are those who are descendants of the original (first) inhabitants of the land (Government of Canada, 2024). Historically, the treatment of Indigenous peoples in Canada has been one of oppression, genocide, pain, exploitation, and racial discrimination increasing within the healthcare system (Allan & Smylie, 2015). Colonial

processes have often resulted in a lack of Indigenous perspectives being part of decisions and policies pertaining to the health and well-being of First Nations, Inuit, and Métis, and urban Indigenous communities (Ladner, 2009). Living with disability often requires access to tailored community services, as well as health and rehabilitation services (Corso et al., 2022). However, Indigenous peoples with pain-related disabilities may face additional barriers to adequately accessing care. These barriers include, but are not limited to, discrimination and systemic racism, limited opportunities often resulting in financial barriers, limited access to and availability of health professionals, services and equipment, and scarcity of services in rural and urban areas (Rivas Velarde, 2015; Addressing Racism Review, 2020).

The effects of colonialism, the legacy of residential schools involving the forced removal of children from their communities, and the ban of cultural practices have had detrimental effects, which continue to be felt throughout multiple generations (Truth & Reconciliation Commission of Canada, 2015; Wilk et al., 2017; Woolford, 2009). Contemporary colonialism continues to prevail through the invasive control of non-Indigenous procedures, rules, and standards embedded within all levels of government. Alfred and Corn-tassel (2005) write of colonial processes that actively persist in "... trying to eradicate their existence as peoples through the erasure of the histories and geographies that provide the foundation for Indigenous cultural identities and sense of self" (p. 598). As such, colonialism has led to an unequal distribution of resources, supports, and power that has given rise to differences in opportunities available for First Nations, Inuit, and Métis peoples. This has created barriers towards achieving optimal health, particularly for those with pain-related disabilities. In their 2020 report, the Canadian Pain Task Force describes a higher incidence of pain and pain-related disability among Indigenous peoples than in non-Indigenous populations. The report further describes symptoms related to chronic pain as a primary reason for seeking healthcare among Indigenous peoples; however, due to systemic racism and discrimination within the healthcare system, many Indigenous people do not get the care they need (Canadian Pain Task Force, 2020). As such, for those living with pain-related disabilities, these barriers to seeking and receiving healthcare can have profound implications on the health and well-being of Indigenous peoples who may be faced with an unsafe environment and fearful to seek necessary care when needed (Graham et al., 2023; Monchalin et al., 2020).

For too long, Indigenous voices and perspectives have been excluded from conversations pertaining to their own health (Corso et al., 2022). Investigating pain-related disabilities through respectful and active engagement with First Nations, Inuit, and Métis peoples further supports the underpinnings on which the 94 calls to action issued by the

Truth and Reconciliation Commission of Canada (2015) were built. Exploring this area of research offers insights into a novel field of literature, allowing us to significantly contribute towards understanding the epidemiology of pain-related disabilities through an evidence-informed dialogue with Indigenous peoples. This in turn can contribute towards developing effective and equitable healthcare access, delivery, and services grounded in community priorities to reduce pain-related disabilities. Working collaboratively with an Indigenous Advisory Committee, and guided by the Mi'kmaq principles of *Etuaptmumk* (Two-Eyed Seeing) in which both Indigenous and Western knowledge and ways of knowing are used (Marshall et al., 2018), we conducted a scoping review to identify and synthesize the peer-reviewed and grey literature to describe the prevalence, incidence, and factors associated with pain-related disabilities, and experiences of limitations in activities, functioning, or participation due to pain among First Nations, Inuit, and Métis peoples in Canada.

Review questions

Our scoping review addressed the following research questions: (1) What is the prevalence of disability related to pain among Indigenous peoples in Canada?; (2) What is the incidence of disability related to pain among Indigenous peoples in Canada?; (3) What factors are associated with pain-related disabilities among Indigenous peoples in Canada?; and (4) What are the experiences of limitations in activities, functioning, or participation due to pain among Indigenous peoples in Canada?

Inclusion criteria

Population

We included studies of peoples from First Nations, Inuit, Métis, and urban Indigenous nations and communities of any age in Canada. If the study included Indigenous and non-Indigenous participants, stratified results by Indigenous identity needed to be available.

Concept

Eligible studies investigated pain-related disabilities, which were defined as experiencing limitations in functioning, daily activities, or participation due to pain (World Health Organization, 2001). This included disability related to any conditions associated with pain, self-reported or medically diagnosed. While pain can present in any form (e.g. physical, emotional, mental, or spiritual), it had to be linked to disability to be eligible for our review. We excluded studies

which focused on the prevalence or incidence of pain-related conditions (e.g. rheumatoid arthritis) that did not report on pain-related disability.

Context

Studies conducted in Canada during any year or within any setting which reported on the prevalence, incidence, factors, or experiences associated with pain-related disabilities were included.

Types of sources

With the specificity of the research questions above, eligible studies met the following criteria: (1) epidemiological studies (cross-sectional studies to estimate prevalence or associated factors; cohort or ecologic studies to estimate prevalence, incidence or associated factors; case-control studies to estimate associated factors); (2) qualitative studies to describe experiences of limitations in activities, functioning, or participation due to pain; we also included qualitative studies to inform the analysis of epidemiological studies regarding variables to consider when understanding potential factors associated with pain-related disabilities; or (3) mixed-methods studies. We excluded the following publication types from the overall evidence synthesis: case series, case reports, narrative reviews and systematic reviews, scoping reviews, randomized controlled trials, commentaries, guidelines, letters, editorials, books and book chapters, meeting abstracts, lectures, cadaveric or animal studies. However, we manually reviewed the reference lists of relevant narrative, scoping and systematic reviews, conference abstracts, and book chapters to determine whether any articles included may be eligible in answering our research questions.

Methods

We selected a scoping review as a starting point to understand the breadth and depth of the current landscape of the pain-related disability literature among Indigenous peoples in Canada, and identify the type of evidence available and gaps in knowledge to inform future research initiatives (Munn et al., 2018). The conduct of our scoping review was guided by the JBI methodology for scoping reviews (Peters et al., 2020) and according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist (Tricco et al., 2018). Our scoping review protocol was registered a priori with Open Science Framework (OSF) Registries (<https://doi.org/10.17605/OSF.IO/TSH5W>).

Search strategy

We developed our search strategy with an experienced health sciences librarian, along with a second librarian who independently reviewed our strategy using the Peer Review of Electronic Search Strategies Checklist (McGowan et al., 2016). We searched both Indigenous-specific (Informit Indigenous Collection) and health peer-reviewed databases—MEDLINE (Ovid), EMBASE (Ovid), CINAHL (EBSCO), PubMed, PsycINFO (Ovid), and Scopus for epidemiological, qualitative, and mixed-methods studies—with no limits placed on publication years or language. We defined keyword search terms and concept groups related to pain, disability, and Indigenous peoples in Canada. The initial search strategy was developed using subject headings specific to Ovid MEDLINE and then adapted to the other databases (Appendix A).

We followed the methodology proposed in the *Cochrane Handbook* to identify relevant grey literature, and as such searched reports, dissertations, and theses (through key organizations, websites, and ProQuest Dissertations and Theses Global database) (Lefebvre et al., 2022). When searching the grey literature, we used Grey Matters Checklist (CADTH, 2019), along with other documentation strategies to guide the conduct of our grey literature search for published and unpublished studies (Fuller & Lenton, 2018). Appendix B outlines the detailed strategies used to organize the grey literature search.

Study/source of evidence selection

We used a two-phase screening process (phase I: titles/abstracts and phase II: full-text) to identify eligible studies and literature. Prior to phase I, AD, JV, and HY pilot tested the screening of titles/abstracts with 100 randomly selected citations to discuss any disagreements or inconsistencies prior to screening. Reviewers needed to achieve $\geq 80\%$ agreement during pilot testing before completing title/abstract screening. Pairs of trained reviewers independently screened all items (AD/JV, and AD/HY) in phase I and phase II to identify relevant studies. We similarly screened the grey literature in a two-phase process. Any disagreements throughout the peer-reviewed database and grey literature screening process were discussed, with the paired reviewers reaching consensus. We used EPPI-Reviewer (version 6.15.0.2) to manage all phases of the review process (Thomas et al., 2022). Full-text studies which did not meet the inclusion criteria were excluded, with reasons for their exclusion provided in Appendix C.

Data extraction

One reviewer extracted data from eligible studies and built evidence tables. We extracted the following information from relevant studies: author, year, years of observation, study aim, design and mode of administration, sample participants, age, sex/gender, sociodemographic and health characteristics, Indigenous population or community, geographical region, pain-related disability outcome measure, comparison population, and adjustment variables. We extracted estimates of prevalence and incidence, and measures of association for associated factors (where applicable and provided). We also extracted themes in relation to describing limitations in activities, functioning, or participation due to pain. The data extracted were verified independently by a second reviewer.

Data analysis and presentation

We computed the inter-rater reliability using the Cohen's kappa statistic and percentage of agreement between reviewers for the titles/abstract and full-text screening. From the charted data, we narratively summarized the characteristics of the included studies organized by data first describing epidemiological studies on the prevalence of pain-related disability, the incidence of developing a pain-related disability, and factors associated. Next, we provided relevant information from qualitative (e.g., themes) and mixed-methods studies on individuals reporting limitations in activities, functioning, or participation due to pain.

Indigenous Advisory Committee

We conceptualized our scoping review using elements of an integrated knowledge translation approach (Canadian Institutes of Health Research (CIHR), 2015). An Indigenous Advisory Committee (IAC) was established and consisted of a respected Elder and traditional knowledge holder, and Indigenous healthcare professionals and researchers, who are knowledge-users themselves, with expertise within the realm of Indigenous health and well-being. The IAC worked collaboratively with the research team in the development of the review methodology to review the research questions, concept groups, and key search terms, as well as the search strategy. The IAC had representation from First Nations, Métis, rural, and urban Indigenous individuals, all of whom resided in different geographical areas within Canada. In addition, the IAC provided guidance on additional databases and sources of grey literature to be searched, reviewed materials, and provided reflections on the included studies, and guidance on knowledge translation and next steps. The teachings and reflections shared influenced our thinking and shaped the interpretation of our findings. With each

Indigenous community having its own identity, history, and culture, we acknowledge that while it was not possible to engage members from all communities, we strive to work with and identify a diverse group of individuals who brought complementary knowledge to the IAC in consideration of the physical, mental, emotional, and spiritual dimensions of health and functioning.

In collaboration with the IAC, the findings of this review were discussed with its members in order to contribute towards the development of an evidence-informed program of research to further understand pain and disability among Indigenous peoples in Canada. During meetings with the IAC, the study protocol, plan for analysis, and interpretation of results were discussed. In addition to working with the IAC to discuss the dissemination of findings through appropriate knowledge translation activities, we consulted with the Canadian Chiropractic Association (CCA), a national organization which works to address and advocate for the musculoskeletal health needs of all, to actively share our findings with Canadian chiropractors and chiropractic organizations. We also worked with the IAC and CCA to identify the implications of the findings for healthcare professionals, along with next steps.

Study protocol deviation

Our review protocol registered on OSF Registries indicated we would explore disability related to painful conditions, specifically: (1) What is the prevalence of disability related to painful conditions among Indigenous peoples in Canada?; (2) What is the incidence of disability related to painful conditions among Indigenous peoples in Canada?; and (3) What factors are associated with pain-related disabilities among Indigenous peoples in Canada? However, after consultations with the IAC, our research questions 1 and 2 were modified prior to the review being initiated to state "disability related to pain" in lieu of "painful conditions". This revision was made because experiencing pain-related disability may not solely be restricted to those with a painful condition. Additionally, given that our search included qualitative studies, a fourth objective was added to clarify the purpose of including qualitative study designs within the research objectives stated.

We updated our scoping review methodology to follow the guidance provided by the most recent *JBIM Manual for Evidence Synthesis* (Peters et al., 2020), which builds on the six-stage approach described by Arksey and O'Malley and recommendations by others (Arksey & O'Malley, 2005; Levac et al., 2010; O'Brien et al., 2016). As such, a preliminary search for existing and in-progress scoping or systematic reviews on the topic was not identified through the Cochrane Database of Systematic Reviews and JBI Evidence Synthesis. Moreover, because our initial screening yielded

only one epidemiological study, we re-screened the 829 citations that were initially excluded based on study design to include case reports and case-series (hypothesis-generating designs), and theses. As a result, we identified one (Master's thesis) that met our inclusion criteria.

Results

We retrieved 9812 citations from the peer-reviewed literature of which 86 full-text items were reviewed for eligibility, and 49 from the grey literature (Fig. 1). For the titles/abstracts screened by paired reviewers, the percentage of agreement was greater than 95% with corresponding kappas of 0.55 [95% CI (0.42, 0.68)] and 0.76 [95% CI (0.66, 0.86)] for the two reviewing pairs. Screening of full-text items in phase II yielded perfect agreement. Of those, two were included in our review: a national cross-sectional study which reported the prevalence of pain-related disabilities among First Nations people living off reserve, Métis and Inuit (*objective 1*) (Hahmann et al., 2019), and a qualitative study which explored the lived experiences of Cree adults living with disabilities from the Mushkegowuk Territory (*objective 4*) (Robarts, 2002). No studies

reported the incidence of pain-related disability, or factors associated (*objectives 2 and 3*).

During full-text screening, we excluded most citations because they did not report on pain-related disability (Appendix C).

Epidemiological studies

The prevalence of pain-related disabilities

The cross-sectional study conducted by Statistics Canada (Hahmann et al., 2019) used the Disability Screening Questions (DSQ) introduced in the 2017 Aboriginal Peoples Survey to measure the prevalence of disability among First Nations people living off reserve, Métis and Inuit 15 years and older. The authors reported that the point prevalences of pain-related disabilities lasting 6 months or more were 11.4% among Inuit, 20.7% among Métis, and 22.2% among First Nations people living off reserve (Hahmann et al., 2019) (Table 1). Within this study, the DSQ asked about any form of pain. The prevalence estimates for First Nations people living off reserve and Métis were higher than those for the non-Indigenous comparison group (14.2%).

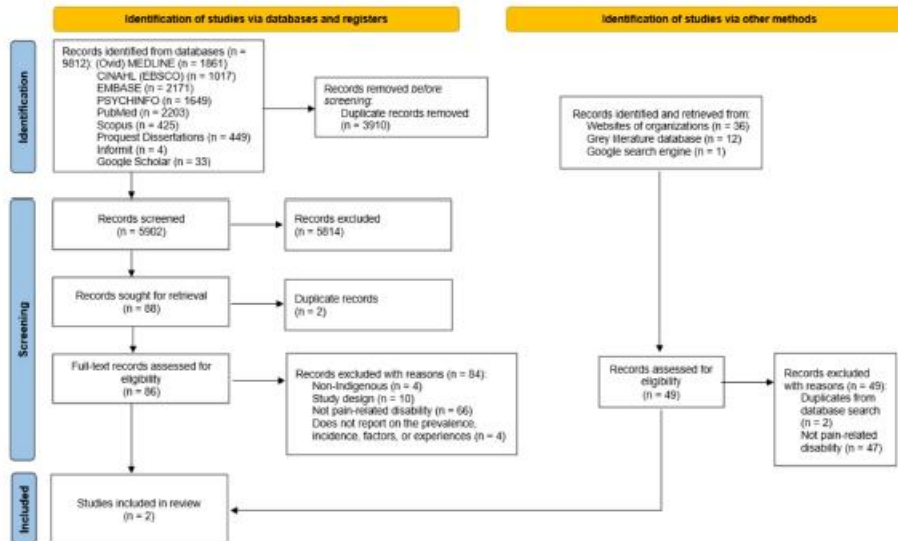


Fig. 1 Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram for scoping reviews showing identification and selection of included studies

Table 1 Data extraction table for scoping review on the prevalence, incidence, and factors associated with pain-related disabilities, and experience of limitations due to pain among First Nations, Inuit, and Métis peoples in Canada

Publication	Study characteristics		Sample characteristics		Outcome measure	Comparison population	Pain-related disability estimates			
	Years of observation	Aim	Design and mode of administration	Recruitment and sample				Age	Sex, gender	Indigenous group
Hahmann et al., 2019	Data collection period: January 16 – August 15, 2017	To provide an overview of disability prevalence estimates among First Nations people living off reserve, Métis, and Inuit	Cross-sectional Computer-assisted personal interviews and computer-assisted telephone interviews	Complex multi-phase stratified random sampling design *Indigenous participants who completed the survey: n = 23,946	15 years and older	Not provided	First Nations people living off reserve, Métis, and Inuit Throughout Canada	Disability Screening Questions (DSQ) within the 2017 Aboriginal Peoples Survey	Non-Indigenous	Prevalence: First Nations people living off reserve 22.2% [95% CI not provided] Métis 20.7% [95% CI not provided] Inuit 11.4% [95% CI not provided] Sex-specific: First Nations people living off reserve Men 17.4% [95% CI not provided] Women 26.2% [95% CI not provided] Métis Men 17.2% [95% CI not provided] Woman 24.0% [95% CI not provided] Inuit Men 8.8% [95% CI not provided] Women 13.7% [95% CI not provided]

Table 1 (continued)

Publication	Study characteristics		Sample characteristics		Outcome measure	Comparison population	Pain-related disability estimates		
	Years of observation	Aim	Design and mode of administration	Recruitment and sample				Age	Sex, gender
Roberts, 2002	Data collection period: September to December 2001	To explore the lived experiences and understand the needs of Cree adults with disabilities living in remote communities of the Mushkegowuk Territory	Ethnography Focus groups, semi-structured interviews and focus group discussions Participant observation Facilitated visual techniques with participants, such as impact drawings, social mapping, fish and rocks drawing exercise, flowcharts, and Venn diagrams	Volunteer, nonnative, and snowballing strategies Persons with disabilities ($n = 31$) Healthcare professionals and community spokespeople ($n = 15$) Caregivers ($n = 15$)	28–38 years Not available 20–60 years	Male ($n = 13$) Female ($n = 18$) Not available Not available	Cree Mushkegowuk Territory (4 remote communities; Moosonee, Moosonee Factory, Atkasook, and Kashechewan)	**Themes Not applicable	Themes related to pain-related disability for participants living with disabilities: Difficulty coping with pain Suffering

*Information obtained from supplementary documentation. Eligible Indigenous respondents: 34,176, and Indigenous participants who completed the survey: $n = 23,946$. Response rate: 70.1% (response rate during collection includes the total number of respondents divided by the total number of eligible units)

**This thesis presents the following emergent themes from case descriptions of select Mushkegowuk Territory community members living with disabilities: (1) ineffective help-seeking behaviour (waiting for help, not asking for help); (2) ineffective/inadequate community response to disability; (3) difficulty coping with pain; (4) isolation; (5) suffering; and (6) losing hope

In addition, the single cross-sectional study reported that women reported a higher prevalence of pain-related disabilities as compared with men (Hahmann et al., 2019). This finding was consistent among the three groups, First Nations people living off reserve (women 26.2%, men 17.4%), Métis (women 24.0%, men 17.2%), and Inuit (women 13.7%, men 8.8%). The prevalence estimates for First Nations people living off reserve and Métis were higher than those for the non-Indigenous comparison group (women 16.1%, men 12.2%).

The incidence of pain-related disabilities

No studies reported the incidence of pain-related disability.

Factors associated with pain-related disabilities

No studies reported factors associated with pain-related disability.

Qualitative and mixed-method studies

The experiences of limitations in activities, functioning, or participation due to pain

Roberts (2002) conducted a qualitative ethnographic study using participatory development methods to understand the lived experiences of Cree adults with disabilities from communities in the Mushkegowuk Territory. Focus groups and semi-structured interviews were conducted with 31 people with disabilities, 15 caregivers, and 15 community spokespersons and healthcare professionals. From the case descriptions of individuals living with disabilities, two (of the six) emergent themes spoke towards experiences of limitations in activities, functioning, or participation due to pain. These two themes were "Difficulty coping with pain" and "Suffering". Additionally, the impact of pain was an underlying notion throughout this thesis.

Discussion

To our knowledge, this article is the first comprehensive review in Canada to investigate the peer-reviewed and grey literature exploring the prevalence, incidence, and factors associated with pain-related disabilities, and any experiences of limitations in activities, functioning, or participation due to pain among First Nations, Inuit, and Métis peoples. Our scoping review found only two studies: one with pain-related disability prevalence estimates for First Nations out of community, Métis, and Inuit from different geographical locations throughout Canada, and another which shed light on important themes with regard to the impact of pain

on functioning for Cree adults living with disabilities from communities in the Mushkegowuk Territory. No studies reporting on the incidence or factors associated were found.

Previous systematic reviews summarized the measures of occurrence for pain-related conditions such as rheumatic diseases and multiple sclerosis among Indigenous populations in the Americas (Canada, the United States, Latin America), Australia, and New Zealand (McDougall et al., 2017; Robers et al., 2023). Further reviews explored pain without focusing on disability or functioning. For example, Jimenez et al. (2011) found 12 studies which focused on the epidemiology of pain among American Indian, Alaska Native, and Aboriginal peoples, two of which reported prevalence estimates for painful conditions, such as arthritis among adult First Nations in the province of Manitoba, and dental caries among First Nation preschool children in the Inuvik Region. Additionally, Julien et al.'s (2018) review of the non-cancer pain literature identified ten studies that reported prevalence estimates of chronic non-cancer pain in general or condition-specific among Aboriginal people in Canada. However, a key feature differentiating our review from those previous ones is that these reviews did not focus on the disability experienced due to pain (i.e. limitations in functioning or activities, or participation restrictions).

In addition, through our discussions with the IAC, the few studies retrieved further reinforced Indigenous perspectives that their pain continues to be minimized, not taken seriously, nor validated in the research literature. It remains largely unknown whether current outcome measures used for pain are reflective of the true pain experienced by Indigenous peoples given that pain manifests itself in many different forms, from physical to emotional, mental, and spiritual. Given the low number of studies in our review, we hypothesize the subjective nature of pain and the diverse understanding of disability within First Nations, Inuit, and Métis communities as a contributing factor to the current gap in the literature. Therefore, the findings of our scoping review highlight the importance for healthcare professionals to acknowledge and recognize the different ways pain and disability can be expressed. Accounting for these differences can prevent experiences of pain and disability from being devalued, dismissed as inconsequential, minimized, or misinterpreted.

Strengths and Limitations

Our scoping review, developed in collaboration with the Indigenous Advisory Committee, takes a strength-based and decolonized approach to centre Indigenous voices. Other strengths include using a systematic methodology to search the literature and working with a health sciences librarian to develop a robust search strategy, which was peer-reviewed by a second librarian. We conducted a comprehensive search

of various databases, including both peer-reviewed and grey literature. Furthermore, we utilized the health science search filters by the University of Alberta library, which contain an extensive set of Indigenous-specific search filters per province and territory in Canada (University of Alberta, 2023). All reviewers underwent training with a pilot screening exercise prior to commencing the phase I title and abstract screening.

We also acknowledge the limitations of our scoping review. Our selection criteria focused on studies conducted in Canada and on studies that investigated pain-related disability. Therefore, the results of our review may not be generalizable to other Indigenous populations. The concepts of "pain" and "disability" have varying meanings among different Indigenous communities, which may result in the potential omission of community-specific terminology used to describe these concepts. Furthermore, given the diversity among First Nations in and out of community, Métis, and Inuit groups, and urban Indigenous peoples, it is possible that certain terms used to describe specific nations, communities, bands, or tribes may not have been captured. To mitigate this, we worked with members of the IAC during the development of the search strategy to integrate Indigenous terminology and perspectives from the onset. Finally, while the IAC had representation from First Nations, Métis, and urban Indigenous individuals, this committee did not include direct representation from Inuit communities, despite our efforts.

Implications for research, practice, and policy

Although the prevalence of pain-related disability among Indigenous peoples in Canada is not well documented, it is known that the prevalence of other types of disabilities and overall disability is higher among Indigenous peoples than among non-Indigenous populations (Hahmann et al., 2019; Ng, 1996). Moreover, the study by Hahmann et al. (2019) included in our scoping review found that pain-related disabilities were the most prevalent type of disability among the ten different types measured in the 2017 Aboriginal Peoples Survey.

Given these findings, we make a specific call to action for those involved in Indigenous health research and care. It is crucial to recognize the importance of incorporating First Nations, Inuit, and Métis methodologies and perspectives (King et al. 2009). Researchers, healthcare providers, and policymakers must work collaboratively *with and for* communities to address and remove barriers to care and improve access to supports and services. For researchers, this means designing studies that are culturally relevant and inclusive of Indigenous ways of knowing. For healthcare

providers, it involves being aware of and sensitive to the unique experiences and needs of Indigenous patients with pain-related disabilities. For policymakers, it is essential to develop policies that support equitable access to healthcare and resources for Indigenous communities. By working together and prioritizing the inclusion of Indigenous voices and knowledge systems, we can develop more effective and equitable healthcare practices and policies that reduce pain-related disabilities and improve overall health outcomes for First Nations, Inuit, and Métis peoples.

Conclusion

Our scoping review identified two studies addressing pain-related disabilities among First Nations, Inuit, and Métis peoples in Canada. The limited number of studies highlights a substantial knowledge gap. Addressing this research gap is urgent. Researchers, healthcare professionals, and policy makers must move beyond colonial frameworks and actively engage with Indigenous communities to co-create knowledge and develop culturally relevant solutions. In doing so, we can gain a more accurate understanding of the true extent of pain-related disabilities and work towards more effective and equitable healthcare practices and policies, ultimately improving health outcomes for Indigenous populations across Canada.

Contributions to knowledge

What does this study add to existing knowledge?

- Our scoping review highlights a substantial knowledge gap in understanding the epidemiology of pain-related disabilities among Indigenous peoples in Canada.
- From the two studies retrieved, though the quantitative study helped provide prevalence estimates to understand how many may be living with pain-related disabilities, the qualitative study sheds light on other study designs which could potentially inform this area of research.

What are the key implications for public health interventions, practice, or policy?

- Given the lack of evidence available in the literature, we must collaboratively work with Indigenous communities, grassroots organizations, and those with lived experiences to co-design public health intervention, practices, and policies which support those living with pain-related disabilities, enable our knowledge to grow, and continue to move forward this important dialogue.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.17269/s41997-025-01047-z>.

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Author contributions AD, DT, CC, SHJ, AJS, and PC contributed to the conception, design, and methodology of the scoping review. JLW provided guidance related to the conception, design, and methodology of the scoping review. KM developed the search strategy and conducted the peer-review database searches. Review and input on the search strategy and data extraction were provided by AD, DT, JLW, CC, SHJ, AJS, and PC. The grey literature searches were conducted by AD with guidance from KM. AD was the main reviewer for the screening of articles and data extraction. JV and HY were the second reviewers for the screening of articles. JV was the second reviewer to verify the data extraction table. The original draft was written by AD with input and revisions from PC. All authors reviewed and revised the manuscript for important intellectual content, approved the final submitted version, and agreed to be accountable for all aspects of the work.

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Data availability Detailed search strategy provided in the supplementary material Appendix A.

Code availability EPPI-Reviewer version 6.15.0.2 to manage all studies throughout the review process.

Declarations

Conflict of interest The authors declare no competing interests.

Ethics approval Not applicable.

Consent to participate Not applicable.

Consent for publication Not applicable.

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A.2 Search strategy

<h1>CMCC Library</h1>	<h2>Prevalence, incidence and factors associated with pain-related disability among Indigenous peoples in Canada: a scoping review</h2>
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Database & Platform: Ovid MEDLINE

Years of search: Inception - current **Languages:** No limit

Date search run: APRIL 5 2023

Number of records retrieved: 1845

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions

- 1 Indigenous Peoples/
- 2 Health Services, Indigenous/
- 3 Indians, North American/
- 4 Inuits/
- 5 Indigenous Canadians/
- 6 (indigenous* or aboriginal* or "first nations" or "first nation" or inuit* or inuk* or metis* or michif* or "Native people" or "native peoples").mp.
- 7 exp Canada/
- 8 ((turtle* adj island*) or canad* or nunavut* or yukon* or (northwest adj1 territor*) or (british adj1 columbia*) or alberta* or saskatchewan* or manitoba* or ontario* or quebec* or new brunswick or prince edward island or nova scotia or newfoundland or toronto* or vancouver* or montreal* or ottawa* or calgary* or edmonton* or winnipeg* or regina* or hamilton* or halifax*).mp.
- 9 1 or 2 or 3 or 4 or 6
- 10 7 or 8
- 11 9 and 10
- 12 5 or 11
- 13 (((exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (exp Medicine, Traditional/ not Chinese.mp.) or exp Shamanism/ or (Athapaskan or Saukteaux or Wakashan or Cree or Aboriginal* or Indigenous* or Metis or "off-reserve" or "on reserve" or First Nation or First Nations or Amerindian or (urban adj3 (Indian* or Native* or Aboriginal*)) or ethnomedicine or country food* or residential school* or shaman* or traditional medicine* or traditional heal* or traditional food* or medicine man or medicine woman or autochtone* or (Native adj1 (man or men or women or woman or boy* or

girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands)).mp.) and (exp British Columbia/ or (British Columbia or Colombie Britannique or Williams Lake or Vernon or White Rock or Salmon Arm or Quesnel or Powell River or Port Moody or Port Hardy or Port Coquitlam or Port Albernie or Pitt Meadows or Penticton or New Westminster or Nanaimo or Kelowna or Kamloops or Fort St John or Fernie or Enderby or Dawson Creek or Coquitlam or Chilliwack or Campbell River or Tumbler Ridge or Skidegate or Sandspit or Queen Charlotte or Port Clements or Kitimat or Hudsons Hope or Haida Gwaii or Fort St James or Fort Nelson or Dease Lake or Pouce Coupe or Chetwynd or Gransile or Atlin or Alexis Creek or Sooke or Cache Creek or Chehalis or Cheslatta or Kingcome Inlet or Kitwanga or Iskut or Kyuqot or Kanaka or Clo-oose or Nicomen or Liard River or Mount Currie or Keremos or Matsqui or Nanaimo or Tahsis or Gitwinkshilkw or Osoyoos or Popkum or Sechelt or Skookumchuk or (Siska not Karol) or Barriere or Spuzzum or Sumas or Saanichton or Tsawwassen or Ucluelet or Quadra or Nemaiah Valley or ((Windermeer or Victoria or Vancouver or Terrace or Soda Creek or Surrey or Prince George or Prince Rupert or Parksville or Nelson or Merritt or Langley or Langford or Kimberley or Greenwood or Grand Forks or Duncan or Cranbrook or Courtenay or Colwood or Burnaby or Bonaparte or Armstrong or Abbotsford or Castlegar or Vanderhoof or Valemout or Stewart or Smithers or McBride or Massett or MacKenzie or Houston or Hazelton or Burns Lake or Fraser Lake or Alkali Lake or Ashcroft or Boston Bar or Spences Bridge or Port Douglas or Chase or Litton or Mill Bay or Lomcolith or D'Arcy or Sidney or Agassiz or Harrison Mills or Invermere or Telegraph Creek or Hope or Boothroyd or Trail) and Canad*))).mp.)) or (Duneza or Dunne-za or Dakelh or Babine or Wet'suwet'en or Haida or Sto:lo or Staulo or Stahlo or "Fraser River Indians" or Coast Salish or Kaska or Ktunaxa or Kootenay or Kwakwaka'wakw or Gitxsan or Gwich'in or Gwitich'in or Gitksan or Gwitchin or Gwichin or Kutchin or Tsimshian or Musqueam or St'at'imc or In-SHUCK-ch or Lil'wat or Lillooet or Nisga'a or Nuu-chah-nulth or Nootka or Nuxalk or Sekani or Wuikinuxv or Secwepemc or Sinixt or Skwxwu7mesh or (Tagish not meteorite) or Tahitan or Tahltan or Haisla or ((Nicola or Kitimat or Beaver or Okanagan or Sechelth) adj3 (man or men or boy or boys or girl or girls or adult* or youth* or adolescent* or Nation or people* or Indians* or tribe* or tribal* or band* or bands)) or (Carrier adj3 (Nation or Nations or Indians* or tribe* or tribal*)) or (Tsilhqot'in or Cowichan or Chilcotin or Nlaka'pamux or Tlingit or Tsetsaut or Oweekeno or Kwakiutl or Heiltsuk or Bella Bella or Saulteaux or Bella Coola or Shuswap or quamish or Stl'atl'imx or Stl'atl'imc or Stlatiumh or Slatemuk or Dane-zaa or Tsattine or Tutchone or Tuchone or Akisq'nuk or Esdilagh or Acho Dene Koe or Dene-tha or Adams Lake or Ahousaht or Aitchelitz or Beecher Bay or Blueberry River or Tsleil-Waututh or Burrard or Cacli'p or Canim Lake or Canoe Creek or Dog Creek or Cheam or Chawathil or Aishihi or Chehalis or Chemainus or Cheslatta or Comox or Da'naxda'xw or Ditidaht or Doig River or Dzawada'enuxw or Ehattesah or Esketemc or Esquimalt or Gitanmaax or Gitanyow or Gitsegukla or Gitwangak or Gitxaala or Glen Vowell or Gwa'sala or Gwawaenuk or Hagwilget or Halalt or Halq'emeylem or Hesquiaht or Homalco or Hupacasath or Hul'quimi'num or Ka:'yu:'k't'h or Che'k'tles7et'h or Katzie or Kispiox or Kitselas or Kitsumlamun or Klahoos or Kluskus or Lhoosk'uz or K'omoks or Kwadacha or Kwaw-kwaw-a-pilt or Kwiakah or Kwicksutaineuk or Kwikwentlem or Lakahahmen or Lax-kw'alaams or Leq'a:mel or Lheidli-T'enneh or Lhatko or Lyackson or Malahat or Mamalilikulla or Matsqui or Metalakatla or Moricetown or Mowachaht or Muchalaht or Musqueam or Nadleh or Nak'azdli or 'Namgis or Sununeymuxw or Nanoos or Nazko or Nee-Tahi-Buhn or Neskonlith or Nisga'a or Nisgaa or Nooaitch or N'quatqua or Nuxalk or Ostlq'emeylem or Pacheedath or Pauquachin or Penelakut or Qayqayt or Quatsino or Saik'uz or Samahquam or Scowlitz or Semiahmoo or Shackan or Shxwha:y or Shw'ow'hamel or Simpcw or (Siska not Karol) or Skatin or Skawahlook or Skin Tye or Skowkale or Skuppah or Skwah or Sliammon or Soowahilie or Spallumcheen or Squiala or Stelat'en or Taku River or T'it'qet or Tla-o-qui-aht or Tlatlasikwala or Tl'azt'en or Tl'etinqox-t'in or Tlowitsis or Toosey or Toquaht or Tsartlip or Tsawataineuk or Tsawout or Tsay Keh Dene or Tsesahat or Tseycum or Tsi Del Del or Ts'kw'aylaxw or Tsleil-Waututh or T'souke or Tzeachten or Uchcklesah or Ulkatcho or We Wai Kai or Cape Mudge or Wuikinuxv or Xaxli'p or Yaakweakwoose or Yekooche)).mp.) not (isotope* or radiocarbon* or geology* or stratigraph* or Wisconsin or Michigan or Beaver County or (Alaska not (Alaska and (Canada or British Columbia))))).mp. not (animals not (humans and animals)).sh. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

14 (Opaskawayak or Little Saskatchewan or Fisher River Cree or Peguis or Sagkeeng or Roseau River or Norway House or Sapotaweyak or Wuskwi Siphik or Skownan or Dauphin River or Pinaymootang or Kinonjeoshtegon or O-Chi-Chak-Ko-Sipi or Tootinaowaziibeeng or Lake Manitoba or Keeseekoowenin or

Waywayseecappo or Birdtail Sioux or Canupawakpa or Dakota Tipi or Brokenhead Ojibway or Northlands Nursing Station or Lac Brochet or Sayisi Cree or Tadoule Lake or Brochet or O-Pipon-Na-Piwin or South Indian Lake or Mathias Colomb or Pukatawagan or Tataskweyak or York Landing or Nisichawayasihk or Nelson House or Shamattawa or Bunibonibee or Manto Sipi or God's River or God's Lake or Red Sucker Lake or St Theresa Point or Wasagamack or Pauingassi or "Berens River" or Bloodvein).mp. or ((Sandy Bay or Long Plan or Sioux Valley or Fox Lake or War Lake or Pine Creek or Lake St Martin or Hollow Water or Little Black River or Rolling River or Dakota Plains or Swan Lake or Oxford House or Cross Lake or Split Lake or Barren Lands or Garden Hill or Poplar River or Little Grand Rapids).mp. and (exp Canada/ or Canad*.mp.)) or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or First Nation.mp. or First Nations.mp. or Metis.mp. or (traditional adj1 (medicine* or heal* or food* or health*)),mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve*".mp. or country food*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.) and (exp Manitoba/ or Manitoba*.mp. or Winnipeg.mp. or Brandon.mp. or St Boniface.mp. or Dauphin.mp. or Flin Flon.mp. or Morden.mp. or Portage la Prairie.mp. or Selkirk.mp. or Steinbach.mp. or Thompson.mp. or Winkler.mp.)) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

15 ((Ahtahkakoop or Asimakaniseekan or Amisk Lake First Nation* or Assiniboine First Nation* or Beardy or Big River First Nation* or Birch Portage or Bittern Lake or Budd's Point or Mamawetan or Carry the Kettle or Canoe Lake or Carrot River or Chicken First Nation* or Kelsey Trail Health or Sunrise Health or Prince Albert Parkland Health or Day Star or Dipper Rapids or Eagles Lake First Nation* or Elak Dase or English River First Nation* or Prairie North Health or Fishing Lake First Nation* or Flying Dust First Nation* or Fond du Lac or Four Portages or Fox Point First Nation* or Athabasca Health Authority or Gordon First Nation* or Grandmother's Bay or Hatchet Lake or Hay First Nation* or Ils a la Crosse or James Smith First Nation* or Joseph Bighead or Kawacatoose or Kahkewistahaw or Key First Nation* or Kinistin or Kinookimaw or Kitsakie or Knee Lake First Nation* or La Loche First Nation* or La Plonge or Lac La Hache or Lac La Ronge or Little Black Bear or Little Bone First Nation or Little Hills First Nation* or Little Pine First Nation* or Little Red River or Lucky Man or Makao or Makaw or Meadow Lake First Nation* or Ministikwan or Minoahchak or Mirond Lake or Mistawasis or Montreal Lake First Nation* or Moosomin First Nation* or Morin Lake or Mosquito-Grizzley Bear's or Muscowpetung or Muskeg Lake First Nation* or Muskeg River First Nation* or Muskoday or Muskowekwan or Nekaneet or New Thunderchild or Cypress Health or Ocean Man or Ochapowace or Okanese or Okemasis or Old Fort First Nation* or One Arrow or Onion Lake or Opawakoscikan or (Pasqua not wheat) or Peepeekisis or Pelican Lake First Nation* or Pelican Narrows First Nation* or Peter Ballantyne or Peter Pond First Nation* or Pheasant Rump or Piapot or Potato River or Poundmaker First Nation* or Primeau Lake First Nation* or Red Earth First Nation* or Red Pheasant or Sakimay or Seekaskootch or Shesheep or Standing Buffalo or Starblanket or Tumor Lake or Wahpeton or Wapachewanak or Wa-Pii or Moos-Toosis or Waterhen or Willow Bunch or Witchekan or Wood Mountain or Yellowquill or Yellow Quill or (northern Saskatchewan not (uranium or selenium))).mp. or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or (Indigenous* or Aboriginal* or Amerindian* or Autochtone* or First Nation or First Nations or Metis or Michif or Urban Indian* or "on reserve" or "off reserve*" or country food* or residential school* or shaman* or medicine m?n or medicine wom?n or Buffalo River or Island Lake or Lean Man or Pine Bluff or Salteaux or Saulteaux or Sandy Narrows or Shoal Lake or Southend or Stanley or Sturgeon or Sucker River or Sweetgrass or White Bear or White Cap or Woody Lake or Cree or Dene or Chipewyan or Dakota or Algonquian).mp. or (traditional adj1 (medicine* or heal* or food* or health*)),mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands or reserve or reserves or treaty)).mp.) and (exp Saskatchewan/ or (Saskatchewan* or Sask or Regina or Estevan or Moose Jaw or Saskatoon or Lloydminster or Swift Current).mp.)) not (exp Medicine, Chinese Traditional/ or populus.mp. or India.mp. or Wisconsin.mp. or exp Plant Extracts/ or poplar.mp. or rats.mp. or veterinary.mp. or ve.fs.)

16 ((Aakom Kiyii or Alexis Cardinal River or Alexis Elk River or Alexis Nakota Sioux or Allison Bay or Assineau River or Atikameg or Athabasca Chipewyan or Beaver First Nation or Beaver Lake Cree or Bearspaw or Beaver

Ranch or Bigstone Cree or Bistcho Lake or Blood Tribe or Cadotte Lake or Carajou Settlement or Chateh or Chiniki or Chipewyan Prairie or Cold Lake First Nations or Dene Tha or Desmarais Settlement or Dog Head or Driftpile or East Prairie or Elizabeth Settlement or Enilda or Enoch Cree or Duncans First Nation or Ermineskin or Fort Chipewyan or Frog Lake or Garden Creek or Goodfish Lake or Gregoire Lake or Grouard or Heart Lake or Hobbema or Hokedhe or Horse Lake* or Janvier Health or Jere Ghalil or Jean Dor or John Dor or Kainai or Kainaa or Kapaweno or Kee Tas Kee Now or Kehewin or Ki Tue or Kapaweno or Kikino or Kinuso or Jackfish Point or Little Buffalo or Little Red River Cree or Loon Prairie or Louis Bull or Lubicon Lake Indian Nation or Maggie Willier or Makaoo or Maskwacis or Meander Health or Mikisew or Nakota or Nakoda or Namur Lake or OChiese or Old Fort or Paddle Prairie or Paul Band or Paul First Nation or Peace Point or Peavine Settlement or Peigan or Peerless Lake or Peerless Trout or Piikani or Pikuni or Pikani or Puskiakiwenin or Red Earth Creek or Saddle Lake or Samson Cree or Sarcee or Sawridge Band or Siksika or Siksikawa or Sao-kitapiiksi or Stoney First Nation or Stoney Tribe or St Isadore or Sturgeon Lake Cree or Tasttine or Tallcree or Tall Cree or Thabacha or Thebathi or Tsuu Tina or Tsu Tue or Tsu Kadhe or Unipouheos or Utikoomak or Wabasca or Wesley Band or ((Alexander or Athabasca or Beaver Lake or Blue Quill* or Cold Lake or Duncans or Enoch or Fort McKay or Fort McMurray or Loon River or Paul or Smiths Landing or Sucker Creek or Sunchild or Swan River or Whitefish Lake) adj2 (First Nation* or tribe or Indian*))).mp. or (exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or First Nation.mp. or First Nations.mp. or Dene.mp. or Blackfoot.mp. or Anishinaabe.mp. or Assiniboine.mp. or Metis.mp. or Mischif.mp. or Mitchif.mp. or Metif.mp. or Metchif.mp. or Bois-brule*.mp. or Mixed-blood*.mp. or Half Breed*.mp. or halfbreed*.mp. or (traditional adj1 (medicine* or heal* or food* or health*))).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve".mp. or country food*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.)) and (Beaver Lake or Brownvale or Fort McMurray or Edmonton or Calgary or Hythe or Slave Lake or Valleyview or Fort Vermilion or Morinville or Glenevis or Lac La Biche or Cold Lake or Rocky Mountain House or Duffield or Brocket or Morley or Whitecourt or Amber River or Big Horn or Buck Lake or Charles Lake or Collin Lake or Cornwall Lake or Cowper Lake or Devils Gate or Eden Valley or Fox Lake or Little Red River or Hay Lake or Lesser Slave Lake or Bonneyville or Loon Lake or Wetaskiwin or Pigeon Lake or Lake Athabasca or Fort McLeod or Barrhead or Stony Plain or Sturgeon Lake or High Prairie or Swampy Lake or Upper Hay River or Wabamun or Trout Lake or Whitefish Lake or Winefred Lake or Nordegg or Boyer River or Calling Lake or Berwyn or Fort Chipewyan or Black Diamond or Fishing Lake or Gift Lake or Kananaskis or Medicine Hat or Ponoka or Stand Off or StandOff or Alberta).mp.

17 (exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Shamanism/ or exp Medicine, Traditional/ or exp Ethnopharmacology/ or American Native Continental Ancestry Group/ or (Abenaki or Abenakis or Abitibiwiinni or Akwesasne* or Atikamek* or "Barriere Lake" or Betsiamite* or Cacouna or Chisasibi or Coucoucache or "Eagle Village" or Eastmain or Essipit* or Ekuanitshit* or Gespeg or Gessapegiag* or Huron-Wendat or "Huronne Wendat" or Essipit or Inuit or Inuk or Kahnawake or Kahnawa?ke or Kanesatake or Kawawachikamach* or Kebaowek or Kipawa or Kitcisakik or Kitigan Zibi or Kuujuaq or "Lac Romanie" or "Lac John" or "Lac Simon" or Listuguj* or "Long Point First" or Maliotenam or Maliseet or Malecite* or Mamit Innuat or Mamuitun or Manawan or Mashteuiatsh or Matimekush* or Matimekosh* or Mawiami or Migmaw or Mig Maw or Mi?gmawei or Mingan or Mistissini* or Montagnais or Naskapi* or Natashquan* or Nemiscau or Nemaska* or Obedjiwan or Odanak or Opitciwa* or dopitciwa* or Ouje?Bougoumou or Pakuashipi* or Pessamit* or Pikogan or "Rapid Lake" or Salluit or Schefferville or Sept-Iles or Takuaihan or "Uashat Mak" or "Mani-Utenam" or Temiscaming or imiskaming or Ungava or Uashat or "Unamen Shipu" or Waban-Aki or Waskaganish or Waswanipi or Wemindji or Wemotaci or Wendat* or Wendake or Whapmagoostui or Wolinak or Kitcisakik or "Pakua Shipu" or "Pakua Shipi" or Winneway or (People* adj (autochtone* or indigene* or premier* or racine* or natif*)) or "Premiere Nation" or "First Nation" or "First Nations" or Metis or Cree or Algonquin* or Algonquian* or Anishinabe* or Anishinaabeg* or autochton* or Inuit* or Innu or Innus or Innue or Micmac or Mic?Mac or Mi?gmaq or Mi?kmaq or Mowhawk or (urban adj3 (Indian* or Native* or Aboriginal*)) or (Native adj3 (american or man or men or women or woman or boy* or girl* or children or people* or indian* or Nation or tribe* or tribal or band or bands or groups or communit* or population* or health)) or indigenous* or Aboriginal* or autochtone* or treaty or on-reserve or "off reserve" or country food* or Shaman* or (traditional adj (medicine or heal*)) or residential school*).mp.) and (exp Quebec/ or (montreal or "trois rivieres" or quebec* or "james bay" or "baie

james" or Laval or Gatineau or Longueuil or Sherbrooke or Saguenay or Doncaster or Levis or Terrebonne or Mascouche or I?Estrie* or Lanaudiere or I?Outaouais* or Capitale-Nationale or Chaudiere-Appalaches or Cote-Nord or Gaspé* or Mauricie or Monteregeie or Laurentides or Bas-Saint-Laurent or Saint-Laurent or Nunavik).mp. or (QC or quebec).in.)

18 ((Aamjiwnaang or Pikwakanagan or (Animbiigoo adj Zaagi?igan adj Anishinaabek*) or Wauzhushk Onigum or Naongashiing or Anishnabekwe or Anishnawbe* or "ARMSTRONG SETTLEMENT" or Aroland or ASSABASKA or "Atikameksheng Anishnawbek" or Attawapiskat or "Aundeck-Omni-Kaning" or Batchewana or "Bearfoot Onondaga" or "Bijnjitiwabik Zaaging" or Bimose or "Bingwi Neyaashi" or Bkejwanong or "chapleau cree" or dokis or Eabametoong or "Fox Lake Cree" or (moravian adj2 thames) or Ginoogaming or "Kasabonika Lake" or Kashechewan or KABAPIKOTAWANGAG or Keewaytinook or Kee?Way?Win or "Kiashke Zaaging" or Kitchenuhmaykoosib or Konadaha Seneca or Koocheching or Magnetawan or Matachewan or Mattagami or "MacDowell Lake" or M?Chigeeng or Mishkeegogamang or Missanabie or Mitaanjigaming or Stanjikoming or Mocrebec or (Mohawks adj (Akwesasne or Gibson)) or "Moose Cree" or Naicatchewenin or Namaygoosisagagun or Naotkamegwanning or Neskantaga or Nibinamik or Nigigoosiminikaaning or Nipissing or OBADJIWAN or Obashkaandagaang or "Washagamis Bay" or Ochiichagwe Bibigo?ining or Onigaming or Parmachene or Sabaskong or Sagamok or (Oneida Nation adj2 Thames) or Shawanaga or Sheguiandah or Sheshegwanning or Taykwa Tagamou or Temagami or Wabaseemoong or Wabauskang or "Wabigoon Lake" or Wahgoshig or Wahnapiatae or "Wahta Mohawks" or Wapekeka or Wasauksing or Wauzhushk Onigum or Wawakepewin or Webequie or Weenusk or Wikwemikong or ((Ardoch or Algonquin or Beausoleil or "big grassy" or "Iskatewizaagegan 39 Independent" or beaverhouse or "brunswick house" or "buffalo point" or caldwell or "cat lake" or Couchiching or "Curve Lake" or "deer lake" or delaware or "duck lake" or "Eagle Lake" or Thames or "Fort William" or "Garden River" or "Grassy Narrows" or Hiawatha or Henvey Inlet or Hornepayne or "Gull Bay" or "King Fisher" or (Lac adj Mille adj Lacs) or (Lac adj Croix) or "Long Lake" or Magnetawan or "Marten Falls" or "Martin Falls" or Mississauga or "New Credit" or "Moose Deer Point" or Munsee?Delaware or "Muskrat Dam" or "North Caribou Lake" or "North Spirit Lake" or Northwest Angle or Sioux Narrows or Pays Plat or Pic Mobert or "Red Rock" or "Sachigo Lake" or "Sandy Lake" or "Savant Lake" or Saugeen or Seine River or Serpent River or "Shoal Lake" or Stony Point or Stony Point or "Grand River Territory" or "Slate Falls" or Whitefish River or Whitesand or "Whitewater Lake" or "Wunnumin Lake") adj2 first nation*).mp. or (exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Shamanism/ or exp Medicine, Traditional/ or exp Ethnopharmacology/ or American Native Continental Ancestry Group/ or (Peuple adj (autochtones or indigenes or premier or racing or natif*)).mp. or ("Premiere Nation" or "First Nation" or "First Nations" or Metis or chippewas or Cree or Algonquin* or Algonquian* or Anishinabe* or Anishnabeg or Anishinaabe* or autochthon* or Inuit* or Innu or Innus or Innue or Micmac or Mic?Mac or Mi?gmaq or Mi?kmaq or Mowhawk or Ojibw* or Cayuga).mp. or (urban adj3 (Indian* or Native* or Aboriginal*)).mp. or ((Native not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) adj3 (american or man or men or women or woman or boy* or girl* or children or people* or indian* or Nation or tribe* or tribal or band or bands or groups or communit* or population* or health)).mp. or ((indigenous* not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) or Aboriginal* or (autochon* not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) or treaty or on-reserve or off-reserve or country food* or Shaman* or (traditional adj (medicine or heal*)) or residential school*).mp.)) and (exp Ontario/ or (ontario or toronto or ottawa or sarnia or london or hamilton or windsor or roseneath or "golden lake" or beardmore or "christian island" or "Cedar Point" or morson or "bay of quinte" or "bear island" or "Bearskin Lake" or "whitefish lake" or naughton or "little current" or "Kirkland lake" or "big island" or macdiarmid or "thunder bay" or wallaceburg or chapleau or leamington or "georgina island" or "CAPE CROKER" or "FOX LAKE" or "CHIEF'S POINT" or "Constance Lake" or "Curve Lake" or "deer lake" or "duck lake" or "Eagle Lake" or "ENGLISH RIVER" or Rama or Erie St?Clair or "FACTORY ISLAND" or "Flying Post" or "FORT ALBANY" or "FORT HOPE" or "Fort Severn" or "Fort William" or Wiarton or Southampton or Saugeen or Muncy or Calstock or "Fort Frances" or "FRENCH RIVER" or Thamesville or Monteville or "Eabamet Lake" or Nipigon or "Georgian Bay" or "Long Lac" or "Long Lake" or Grassy Narrows or Keene or Pickerel or Hornepayne or Glebe Farm or "GOULAIS BAY" or Grey? Owen Sound or GROS CAP or "Shoal Lake" or Kashechewan or INDIAN RIVER or "King Fisher Lake" or "Big Trout Lake" or "Sandy Lake" or "Fort Frances" or "Lac Seul" or "LAKE HELEN" or (LAKE adj WOODS) or Hudson or Britt or Okoki Post or "MANITOU RAPIDS" or gogama or "McDowell Lake" or "Red Lake" or Wawa or "New Osnaburgh" or "Garden River" or "Blind River" or Hagersville or "Port Perry" or "Moose Factory" or Cornwall or Deseronto or Mactier or Muncey or Delvin or Pawitik or "Whitefish Bay" or

"Landsdowne House" or "Summer Beaver" or "Weagamow Lake" or "North Spirit Lake" or "Rainy Lake" or "Rainy River" or "Sioux Narrows" or Keewating or Kenora or "Sault Ste Marie" or "Nestor Falls" or "Heron Bay" or Southwold or "Pays Plat" or Mobert or "Pic River" or "Moon River" or Massey or "Sachigo Lake" or "Savant Lake" or Cutler or Nobel or Sheshegwaning or Kejick or Ohsweken or "Slate Falls" or Cochrane or "Lake Tamagami" or Thessalon or Whitedog or "Ear Falls" or Dryden or Matheson or Bala or Capreol or "Angling Lake" or "Parry Sound" or "Sioux Lookout" or Webequie or Peawanuk or "Birch Island" or Armstrong or "Wunnumin Lake" or Silverwater or Walpole Island or WINISK).mp.)

19 ((Carcross or (Tagish not meteorite*) or Champagne First Nation or Aishihik or Ehdiitat or Nacho Nyak Dun or Gwichya or Little Salmon or Carmacks or Nihtat or Selkirk First Nation or Ta'an Kwach'an or Tetlitt or Tr'ondek Hwech'in or White River First Nation or Vuntut or Yellowknives or (Hare adj2 (man or men or woman or women or child* or youth* or adult* or people* or person or persons or tribe or tribal or band or bands)) or Tanana or Tanana or Tutchone* or Denesuline or Tahltan or MacKenzie Valley or Old Crow or "Upper Liard" or "Eagle Plains" or "Keno City" or Carcross or Teslin or "Fort Selkirk" or Carmacks or Haines Junction or Dawson City).mp. or ((Canad*.mp. or exp Canada/) and (Beaver Creek or Pelly or Destruction Bay or Watson Lake).mp.) or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or Metis.mp. or First Nation.mp. or First Nations.mp. or exp Inuit/ or Inuit*.mp. or Chipewyan.mp. or Kaska.mp. or Kaskas.mp. or Tlingit.mp. or Dene.mp. or Gwich'in.mp. or Gwichin.mp. or Gwitchin.mp. or Kutchin*.mp. or Sahtu.mp. or Tli Cho.mp. or Tli Cho.mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve* or country food*".mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or treaty.mp. or treaties.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.) and (exp Yukon Territory/ or Yukon*.mp. or ((Beaufort Sea or Whitehorse) and Canad*).mp.)) not ((exp Alaska/ or Alaska*.mp.) not ((exp Alaska/ or Alaska*.mp.) and (exp Yukon/ or Yukon*.mp.)) not (Yukon-Kuskok* or lepus or geology* or stratigraphi* or subduction* or volcan* or Holocene or pleistocene).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

20 (((exp Medicine, Traditional/ not Chinese.mp.) or exp Shamanism/ or exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (Inuit* or Eskimo* or Esquimau* or Athapaskan or Gwich'in or Metis or Inuvialuktun or Cree or Aboriginal* or Indigenous* or off-reserve or on-reserve or First Nation or First Nations or Amerindian or (urban adj3 (Indian* or Native* or Aboriginal*)) or ethnomedicine or country food* or residential school* or shaman* or traditional medicine* or traditional heal* or traditional food* or medicine man or medicine woman or autochtone* or treaty or (Native adj1 (man or men or women or woman or boy* or girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands))).mp.) and (exp Northwest Territories/ or Northwest Territories.mp. or NWT.mp. or Yellowknife.mp. or Western Arctic.mp.)) or (Aklavik or Banks Island or Behchoko or Rae Edzo or Colville Lake or De Cho or Deline or Denendeh or Fort Good Hope or Fort Liard or Fort McPherson or Fort McPherson or Fort Providence or Fort Providence or Fort Simpson or Fort Smith or Gameti or Hay River or Inuvik or Jean Marie River or Lutselk'e or Norman Wells or Paulatuk or Sachs Harbour or Trout Lake or Tsiigehtchic or Tuktoyaktuk or Tulita or Tulit'a or Ulukhaktok or Victoria Island or Whati or Wha Ti or Wrigley or (Hare adj2 (man or men or boy or boys or girl or girls or adult* or youth* or adolescent* or Nation or people* or Indians* or tribe* or tribal*)) or Slavey or Chipewyan or Tli Cho or Dogrib or Yellowknives or Dene or Sahtu or Inuvialuit* or Inuinnaqtun).mp.) not ((fort smith adj1 ar*).mp. or ((rabbit* or lepus or lemming* or fox or foxes or wolf or wolves or (wrigley adj1 (n or g or forcep*))).mp. or ve.fs.)) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

21 (exp Nunavut/ or Nunavut.mp. or Eastern Arctic.mp. or Alert Bay.mp. or Alexandra Fiord.mp. or Amadjuak.mp. or Aquiatulavik Point.mp. or Arctic Bay.mp. or Arviat.mp. or Baffin Island.mp. or Baker Lake.mp. or Bathurst Inlet.mp. or Belcher Islands.mp. or Bylot Island.mp. or Cambridge Bay.mp. or Iqaluttuttiaq.mp. or Cape Dorset.mp. or Cape Dyer.mp. or Cape Smith.mp. or Charlton Depot.mp. or Chesterfield Inlet.mp. or Clyde

River.mp. or Coral Harbour.mp. or Craig Harbour.mp. or Dundas Harbor.mp. or Ellesmere Island.mp. or Ennadai.mp. or Eskimo Point.mp. or Fort Conger.mp. or Fort Hope.mp. or Fort Ross.mp. or Gjoa Haven.mp. or Grise Fiord.mp. or Hall Beach.mp. or Hazen Camp.mp. or Igloodik.mp. or Ikaluit.mp. or Iqaluit.mp. or Isachsen.mp. or Kekerten.mp. or Kimmirut.mp. or King William Island.mp. or Kipisa.mp. or Kitikmeot or Kivalliq.mp. or Kivitoo.mp. or Kugaaruk.mp. or Kugluktuk.mp. or Maguse River.mp. or Nanasivik.mp. or Nottingham Island.mp. or Nuwata.mp. or Padlei.mp. or Padloping Island.mp. or Pangnirtung.mp. or Perry Island.mp. or Pond Inlet.mp. or Port Burwell.mp. or Qoloqtaaluk.mp. or Qikiqtarjuaq.mp. or Rankin Inlet.mp. or Read Island.mp. or Repuile Bay.mp. or Resolute Bay.mp. or Resolution Island.mp. or Sanikiluaq.mp. or Taloyoak.mp. or Tanquary Camp.mp. or Tavani.mp. or Thom Bay.mp. or Umingmaktok.mp. or Victoria Island.mp. or Wager Bay.mp. or Whale Cove.mp. or Eastern Arctic.mp. or ((Lupin or Polaris or Eureka or Fullerton) and Canad*).mp.) not (exp behavior, animal/ or exp ecosystems/ or exp endangered species/ or (sediment* or mantle or basalt* or cretaceous* or fossil* or paleo* or geolog* or stratigraph* or glaci* or refugia* or moraine* or pliocene or gravity or methylmercury or hydrolog* or hydrogeol* or volcan* or mesospher* or inferomet* or habitat* or animal behavior* or endangered species).mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

22 (exp Indians, North American/ or exp Health Services, Indigenous/ or Metis.mp. or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or Metis.mp. or First Nations.mp. or First Nation*.mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve*".mp. or country food*.mp. or residential school*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp. or Montagnais.mp. or Maliseet.mp. or Naskapi*.mp. or Mi'kmaq.mp. or Micmac.mp. or Mic mac.mp. or Migmaw.mp. or Mig maw.mp. or Beothuk*.mp.) and (((Fredrickton or Moncton or New Jersey).mp. and (exp Canada/ or Canad*.mp.)) or exp New Brunswick/ or (New Brunswick* not ("New Brunswick NJ" or New Jersey or ferment*)).mp. or Nouveau Brunswick.mp. or Big Hole Tract.mp. or Metepenagiag.mp. or Eel Ground First Nation.mp. or Buctouche.mp. or Esgeoopetitj.mp. or Burnt Church.mp. or Devon Reserve.mp. or St Mary's First Nation.mp. or Eel River Reserve.mp. or Eel River Bar.mp. or Fort Folly Indian Point Reserve.mp. or Indian Island First Nation.mp. or Indian Ranch Reserve.mp. or Kingsclear.mp. or St John River Valley Tribal Council.mp. or Oromocto.mp. or Pabineau.mp. or Pokemouche.mp. or Mawiw.mp. or (Red Bank adj2 Reserve).mp. or Richibucto.mp. or St Basile.mp. or Madawaska.mp. or Soegao.mp. or Tabusintac.mp. or Tobique.mp. or Wolastoqiyik.mp. or Woodstock First Nation.mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

23 (((((Indigenous* or Aboriginal* or Amerindian* or Autochtone* or First Nation or First Nations or (traditional adj1 (medicine* or heal* or food* or health*)) or Urban Indian* or "on reserve" or "off reserve*" or country food* or shaman* or medicine m?n or medicine wom?n or (native* or Indian or Indians)) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)) or Montagnais or Maliseet or Naskapi* or Mi'kmaq or Micmac or Mic mac or Migmaw or Mig maw or Beothuk*).mp. or exp Health Services, Indigenous/ or exp Indians, North American/ or Metis.mp. or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/) and (((Wolfville or Middleton or Kentville or Berwick or Inverness or New Waterford or Sackville or Springhill or Halifax or Dartmouth or Truro or New Glasgow or Sydney or Canso or Guysborough or Parrsboro or Pictou or Liverpool or Lunenburg or Amherst) and Canad*).mp. or exp Nova Scotia/ or Nova Scotia*.mp. or Nouvelle Ecosse.mp. or Pictou Landing.mp. or Bear River.mp. or Boat Harbour.mp. or Annapolis Royal.mp. or Antigonish.mp. or Baddeck.mp. or Cheticamp.mp. or Cape Breton.mp. or Neil's Harbour.mp. or Glace Bay.mp. or Tatamagouche.mp. or Sheet Harbour.mp. or Cambridge Reserve.mp. or Annapolis Valley First Nation.mp. or Chapel Island First Nation.mp. or Cole Harbour.mp. or Eskasoni.mp. or Fisher's Grant.mp. or Franklin Manor.mp. or Paq'tnkek.mp. or (Glooscap adj1 (First Nation or reserve)).mp. or Acadia First Nation.mp. or Gold River Reserve.mp. or Horton Reserve.mp. or Shubenacadie First Nation.mp. or Indian Brook Reserve.mp. or Wagmatcook.mp. or Waycobah.mp. or Millbrook First Nation.mp. or Malagawatch.mp. or Medway

River.mp. or Membertou.mp. or Merigomish.mp. or Musquodoboit.mp. or New Ross Reserve.mp. or Pennal Reserve.mp. or Pomquet.mp. or Poonhook.mp. or Sheet Harbour.mp. or St Croix Reserve.mp. or Summerside Reserve.mp. or Sydney Reserve.mp. or Truro Reserve.mp. or We'koqma'q.mp. or Wycocomagh.mp. or Wildcat Reserve.mp. or Yarmouth Reserve.mp.) not (geology or geologic or stratigraphy* or animal* or cat or cats or kitten or deer or bird* or dog or dogs or feline or canine or bovine or equine or porcine or pig or piglet or swine or rat or rats or horse or horses or mouse or mice).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

24 ((exp Indians, North American/ and Canad*.mp.) or Indigenous Canadians/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (Athapaskan or Saulteaux or Wakashan or Cree or Dene or Inuit or Inuk or Inuvialuit* or Haida or Ktunaxa or Tsimshian or Gitksan or Gitksan or "Nisga'a" or Haisla or Heiltsuk or Oweenkeno or "Kwakwaka'wakw" or "Nuu chah nulth" or "Tsilhqot'in" or Dakelh or "Wet'suwet'en" or Sekani or Dunne-za or Dene or Tahltan or Kaska or Tagish or Tutchone or Nuxalk or Salish or St'at'imc or Stl'atl'imx or Stl'atl'imc or Nlaka'pamux or Okanagan or "Sec wepmc" or Secwepemc or Tlingit or Anishinaabe or Blackfoot or Nakoda or Tasttine or "Tsuu T'ina" or "Tsuut'ina" or "Gwich'in" or Han or Algonquin or Nipissing or Ojibwa or Potawatomi or Innu or Maliseet or "Mi'kmaq" or Micmac or Passamaquoddy or Haudenosaunee or Cayuga or Mohawk or Oneida or Onondaga or Seneca or Tuscarora or Wyandot or Aboriginal* or Indigenous* or Metis or red road or "on reserve" or off-reserve or First Nation or First Nations or Amerindian).mp. or (urban adj3 (Indian* or Native* or Aboriginal*)).mp. or ethnomedicine.mp. or country food*.mp. or residential school*.mp. or ((exp Medicine, Traditional/ or traditional medicine*.mp.) not Chinese.mp.) or exp Shamanism/ or shaman*.mp. or traditional heal*.mp. or traditional food*.mp. or medicine man.mp. or medicine woman.mp. or autochtone*.mp. or (Native* adj1 (man or men or women or woman or boy* or girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands)).mp.) and (exp Canada/ or (Canad* or British Columbia or Colombie Britannique or Alberta or Saskatchewan or Manitoba or Ontario or Quebec or Nova Scotia or New Brunswick or Newfoundland or Labrador or Prince Edward Island or Yukon Territory or NWT or Northwest Territories or Nunavut or Nunavik or Nunatsiavut or NunatuKavut).mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]

25 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24

26 Disability Evaluation/

27 Disabled Persons/

28 "Activities of Daily Living"/

29 "Quality of Life"/

30 Functional Status/

31 Mobility Limitation/

32 Physical Functional Performance/

33 exp "International Classification of Functioning, Disability and Health"/

34 (disabilit* or disabl*).ti,ab,kw.

35 impair*.ti,ab,kw.

36 (functioning* or functional*).ti,ab,kw.

37 (activit* adj2 (limit* or restrict*)).ti,ab,kw.

38 (participat* adj2 (limit* or retriect*)).ti,ab,kw.

39 (function* adj2 (outcome* or limit* or restrict*)).ti,ab,kw.

40 (mobility* adj3 (restrict* or limit* or loss* or lose* or losing* or lost*)).ti,ab,kw.

41 (restrict* adj2 back).ti,ab,kw.

42 (HRQOL* or HAQ or Health Assessment Questionnaire).ti,ab,kw.

43 (PROMIS or Patient Reported Outcomes Measurement Information System).ti,ab,kw.

44 (PROM or PROMS or patient reported outcome measure).ti,ab,kw.

45 (PSFS or Patient Specific Functional Scale).ti,ab,kw.

46 oswestry*.ti,ab,kw.

47 Roland-Morris*.ti,ab,kw.
48 (WHO-DAS* or WHODAS* or WHO DAS).ti,ab,kw.
49 Pain Disability Index.ti,ab,kw.
50 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44
or 45 or 46 or 47 or 48 or 49
51 Chronic Pain/
52 exp Pain/
53 exp Neuralgia/
54 Sciatica/
55 Pain Management/
56 Pain Clinics/
57 Pain Measurement/
58 (pain* or allodyn* or analges* or anesth* or anaesth* or causalg* or dysesthes* or hyperalg* or
hyperesthes* or hyperpath* or hypoalges* or hypoesthes* or neuralg* or ache or aches or headache*
metatarsalg* or arthralg* or neuritis* or neuropath* or nocicept* or "noxious stimulus" or paresthes* or
sensitization* or emotion* or mental* or psycholog* or physical* or intergenerat* or spirit*).ti,ab,kw.
59 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58
60 25 and (50 or 59)
61 (comment or editorial or letter or review or systematic review or guideline or practice guideline or case
reports or randomized controlled trial).pt.
62 exp Animals/
63 exp Humans/
64 62 not 63
65 60 not (61 or 64)

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions 1946 to February 07, 2024

#	Searches	Results
1	Indigenous Peoples/	1427
2	Health Services, Indigenous/	4229
3	Indians, North American/	15151
4	Inuits/	4075
5	Indigenous Canadians/	130
6	(indigenous* or aboriginal* or "first nations" or "first nation" or inuit* or inuk* or metis* or michif* or "Native people" or "native peoples").mp.	60374
7	exp Canada/	184933
8	((turtle* adj island*) or canad* or nunavut* or yukon* or (northwest adj1 territor*) or (british adj1 columbia*) or alberta* or saskatchewan* or manitoba* or ontario* or quebec* or new brunswick or prince edward island or nova scotia or newfoundland or toronto* or vancouver* or montreal* or ottawa* or calgary* or edmonton* or winnipeg* or regina* or hamilton* or halifax*).mp.	346848
9	1 or 2 or 3 or 4 or 6	71761
10	7 or 8	346848
11	9 and 10	8521
12	5 or 11	8521
13	((((exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (exp Medicine, Traditional/ not Chinese.mp.) or exp Shamanism/ or (Athapaskan or Saukteaux or Wakashan or Cree or Aboriginal* or Indigenous* or Metis or "off-reserve" or "on reserve" or First Nation or First Nations or Amerindian or (urban adj3 (Indian* or Native* or Aboriginal*)) or ethnomedicine or country food* or residential school* or shaman* or traditional medicine* or traditional heal* or traditional food* or medicine man or medicine woman or autochtone* or (Native adj1 (man or men or women or woman or boy* or girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands))).mp.) and (exp British Columbia/ or (British Columbia or Colombie Britannique or Williams Lake or Vernon or White Rock or Salmon Arm or Quesnel or Powell River or Port Moody or Port Hardy or Port Coquitlam or Port Albernie or Pitt Meadows or Penticton or New Westminster or Nanaimo or Kelowna or Kamloops or Fort St John or Fernie or Enderby or Dawson Creek or Coquitlam or Chilliwack or Campbell River or Tumbler Ridge or Skidegate or	1182

<p>Sandspit or Queen Charlotte or Port Clements or Kitimat or Hudsons Hope or Haida Gwaii or Fort St James or Fort Nelson or Dease Lake or Pouce Coupe or Chetwynd or Gransile or Atlin or Alexis Creek or Sooke or Cache Creek or Chehalis or Cheslatta or Kingcome Inlet or Kitwanga or Iskut or Kyuqot or Kanaka or Clo-oose or Nicomen or Liard River or Mount Currie or Keremos or Matsqui or Nanaimo or Tahsis or Gitwinkshilkw or Osoyoos or Popkum or Sechelt or Skookumchuk or (Siska not Karol) or Barriere or Spuzzum or Sumas or Saanichton or Tsawwassen or Ucluelet or Quadra or Nemaiah Valley or ((Windermeer or Victoria or Vancouver or Terrace or Soda Creek or Surrey or Prince George or Prince Rupert or Parksville or Nelson or Merritt or Langley or Langford or Kimberley or Greenwood or Grand Forks or Duncan or Cranbrook or Courtenay or Colwood or Burnaby or Bonaparte or Armstrong or Abbotsford or Castlegar or Vanderhoof or Valemount or Stewart or Smithers or McBride or Massett or MacKenzie or Houston or Hazelton or Burns Lake or Fraser Lake or Alkali Lake or Ashcroft or Boston Bar or Spences Bridge or Port Douglas or Chase or Litton or Mill Bay or Lomcolith or D'Arcy or Sidney or Agassiz or Harrison Mills or Invermere or Telegraph Creek or Hope or Boothroyd or Trail) and Canad*).mp.)) or (Duneza or Dunne-za or Dakelh or Babine or Wet'suwet'en or Haida or Sto:lo or Staulo or Stahlo or "Fraser River Indians" or Coast Salish or Kaska or Ktunaxa or Kootenay or Kwakwaka'wakw or Gitxsan or Gwich'in or Gwitch'in or Gitksan or Gwitchin or Gwichin or Kutchin or Tsimshian or Musqueam or St'at'imc or In-SHUCK-ch or Lil'wat or Lillooet or Nisga'a or Nuuchahnulth or Nootka or Nuxalk or Sekani or Wuikinuxv or Secwepemc or Sinixt or Skwxwú7mesh or (Tagish not meteorite) or Tahltan or Tahltan or Haisla or ((Nicola or Kitimat or Beaver or Okanagan or Sechelth) adj3 (man or men or boy or boys or girl or girls or adult* or youth* or adolescent* or Nation or people* or Indians* or tribe* or tribal* or band* or bands)) or (Carrier adj3 (Nation or Nations or Indians* or tribe* or tribal*)) or (Tsilhqot'in or Cowichan or Chilcotin or Nlaka'pamux or Tlingit or Tsetsaut or Oweekeno or Kwakiutl or Heiltsuk or Bella Bella or Saúlteaux or Bella Coola or Shuswap orquamish or Stl'at'imx or Stl'at'imc or Stlatiumh or Slatemuk or Dane-zaa or Tsattine or Tutchone or Tuchone or Akisq'nuk or Esdilagh or Acho Dene Koe or Dene-tha or Adams Lake or Ahousah or Aitchelitz or Beecher Bay or Blueberry River or Tseil-Waututh or Burrard or Cacli'p or Canim Lake or Canoe Creek or Dog Creek or Cheam or Chawathil or Aishihi or Chehalis or Chemainus or Cheslatta or Comox or Da'naxda'xw or Ditidaht or Doig River or Dzawada'enuxw or Ehattesah or Esketemc or Esquimalt or Gitanmaax or Gitanyow or Gitsegukla or Gitwangak or Gitxaala or Glen Vowell or Gwa'sala or Gwawaenuk or Hagwilget or Halalt or Halq'emeylem or Hesquiaht or Homalco or Hupacasath or Hul'quimi'num or Ka:'yu:'k't'h or Che'k'tles7et'h or Katzie or Kispiox or Kitselas or Kitsumlamun or Klahoos or Kluskus or Lhoosk'uz or K'omoks or Kwadacha or Kwaw-kwaw-a-pilt or Kwiakah or Kwicksutaineuk or Kwikwentlem or Lakahahmen or Lax-kw'alaams or Leq'a:mel or Lheidli-T'enneh or Lhatko or Lyackson or Malahat</p>

	<p>or Mamalilikulla or Matsqui or Metalakatla or Moricetown or Mowachaht or Muchalaht or Musqueam or Nadleh or Nak'azdli or 'Namgis or Sununeymuxw or Nanoos or Nazko or Nee-Tahi-Buhn or Neskonlith or Nisga'a or Nisgaa or Nooaitch or N'quatqua or Nuxalk or Ostlq'emeylem or Pacheedath or Pauquachin or Penelakut or Qayqayt or Quatsino or Saik'uz or Samahquam or Scowlitz or Semiahmoo or Shackan or Shxwha:y or Shw'ow'hamel or Simpcw or (Siska not Karol) or Skatin or Skawahlook or Skin Tyee or Skowkale or Skuppah or Skwah or Sliammon or Soowahilie or Spallumcheen or Squiala or Stelat'en or Taku River or T'it'qet or Tla-o-qui-aht or Tlatlasikwala or Tl'azt'en or Tl'etinqox-t'in or Tlowitsis or Toosey or Toquaht or Tsartlip or Tsawataineuk or Tsawout or Tsay Keh Dene or Tseshaht or Tseycum or Tsi Del Del or Ts'kw'aylaxw or Tseil-Waututh or T'souke or Tzeachten or Uchcklesah or Ulkatcho or We Wai Kai or Cape Mudge or Wuikinuxv or Xaxli'p or Yaakweakwioose or Yekooche)).mp.) not (isotope* or radiocarbon* or geology* or stratigraph* or Wisconsin or Michigan or Beaver County or (Alaska not (Alaska and (Canada or British Columbia))))).mp. not (animals not (humans and animals)).sh. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	
14	<p>(Opaskawayak or Little Saskatchewan or Fisher River Cree or Peguis or Sagkeeng or Roseau River or Norway House or Sapotaweyak or Wuskwi Siphik or Skownan or Dauphin River or Pinaymootang or Kinonjeoshtegon or O-Chi-Chak-Ko-Sipi or Tootinaowaziibeeng or Lake Manitoba or Keeseekoowenin or Waywayseecappo or Birdtail Sioux or Canupawakpa or Dakota Tipi or Brokenhead Ojibway or Northlands Nursing Station or Lac Brochet or Sayisi Cree or Tadoule Lake or Brochet or O-Pipon-Na-Piwin or South Indian Lake or Mathias Colomb or Pukatawagan or Tataskweyak or York Landing or Nisichawayasihk or Nelson House or Shamattawa or Bunibonibee or Manto Sipi or God's River or God's Lake or Red Sucker Lake or St Theresa Point or Wasagamack or Pauingassi or "Berens River" or Bloodvein).mp. or ((Sandy Bay or Long Plan or Sioux Valley or Fox Lake or War Lake or Pine Creek or Lake St Martin or Hollow Water or Little Black River or Rolling River or Dakota Plains or Swan Lake or Oxford House or Cross Lake or Split Lake or Barren Lands or Garden Hill or Poplar River or Little Grand Rapids).mp. and (exp Canada/ or Canad*.mp.)) or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or First Nation.mp. or First Nations.mp. or Metis.mp. or (traditional adj1 (medicine* or heal* or food* or health*))).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve*").mp. or country</p>	703

	<p>food*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.) and (exp Manitoba/ or Manitoba*.mp. or Winnipeg.mp. or Brandon.mp. or St Boniface.mp. or Dauphin.mp. or Flin Flon.mp. or Morden.mp. or Portage la Prairie.mp. or Selkirk.mp. or Steinbach.mp. or Thompson.mp. or Winkler.mp.)) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	
15	<p>((Ahtakakoop or Asimakaniseekan or Amisk Lake First Nation* or Assiniboine First Nation* or Beardy or Big River First Nation* or Birch Portage or Bittern Lake or Budd's Point or Mamawetan or Carry the Kettle or Canoe Lake or Carrot River or Chicken First Nation* or Kelsey Trail Health or Sunrise Health or Prince Albert Parkland Health or Day Star or Dipper Rapids or Eagles Lake First Nation* or Elak Dase or English River First Nation* or Prairie North Health or Fishing Lake First Nation* or Flying Dust First Nation* or Fond du Lac or Four Portages or Fox Point First Nation* or Athabasca Health Authority or Gordon First Nation* or Grandmother's Bay or Hatchet Lake or Hay First Nation* or Ils a la Crosse or James Smith First Nation* or Joseph Bighead or Kawacatoose or Kahkewistahaw or Key First Nation* or Kinistin or Kinookimaw or Kitsakie or Knee Lake First Nation* or La Loche First Nation* or La Plonge or Lac La Hache or Lac La Ronge or Little Black Bear or Little Bone First Nation or Little Hills First Nation* or Little Pine First Nation* or Little Red River or Lucky Man or Makaoo or Makaw or Meadow Lake First Nation* or Ministikwan or Minoahchak or Mirond Lake or Mistawasis or Montreal Lake First Nation* or Moosomin First Nation* or Morin Lake or Mosquito-Grizzley Bear's or Muscowpetung or Muskeg Lake First Nation* or Muskeg River First Nation* or Muskoday or Muskowekwan or Nekaneet or New Thunderchild or Cypress Health or Ocean Man or Ochapowace or Okanese or Okemasis or Old Fort First Nation* or One Arrow or Onion Lake or Opawakoscikan or (Pasqua not wheat) or Peepeekisis or Pelican Lake First Nation* or Pelican Narrows First Nation* or Peter Ballantyne or Peter Pond First Nation* or Pheasant Rump or Piapot or Potato River or Poundmaker First Nation* or Primeau Lake First Nation* or Red Earth First Nation* or Red Pheasant or Sakimay or Seekaskootch or Shesheep or Standing Buffalo or Starblanket or Tumor Lake or Wahpeton or Wapachewanak or Wa-Pii or Moos-Toosis or Waterhen or Willow Bunch or Witchekan or Wood Mountain or Yellowquill or Yellow Quill or (northern Saskatchewan not (uranium or selenium))).mp. or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or (Indigenous* or</p>	483

	<p>Aboriginal* or Amerindian* or Autochtone* or First Nation or First Nations or Metis or Michif or Urban Indian* or "on reserve" or "off reserve*" or country food* or residential school* or shaman* or medicine m?n or medicine wom?n or Buffalo River or Island Lake or Lean Man or Pine Bluff or Salteaux or Saulteaux or Sandy Narrows or Shoal Lake or Southend or Stanley or Sturgeon or Sucker River or Sweetgrass or White Bear or White Cap or Woody Lake or Cree or Dene or Chipewyan or Dakota or Algonquian).mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands or reserve or reserves or treaty)).mp.) and (exp Saskatchewan/ or (Saskatchewan* or Sask or Regina or Estevan or Moose Jaw or Saskatoon or Lloydminster or Swift Current).mp.))) not (exp Medicine, Chinese Traditional/ or populus.mp. or India.mp. or Wisconsin.mp. or exp Plant Extracts/ or poplar.mp. or rats.mp. or veterinary.mp. or ve.fs.)</p>	
16	<p>((Aakom Kiyii or Alexis Cardinal River or Alexis Elk River or Alexis Nakota Sioux or Allison Bay or Assineau River or Atikameg or Athabasca Chipewyan or Beaver First Nation or Beaver Lake Cree or Bears paw or Beaver Ranch or Bigstone Cree or Bistcho Lake or Blood Tribe or Cadotte Lake or Carajou Settlement or Chateh or Chiniki or Chipewyan Prairie or Cold Lake First Nations or Dene Tha or Desmarais Settlement or Dog Head or Driftpile or East Prairie or Elizabeth Settlement or Enilda or Enoch Cree or Duncans First Nation or Ermineskin or Fort Chipewyan or Frog Lake or Garden Creek or Goodfish Lake or Gregoire Lake or Grouard or Heart Lake or Hobbema or Hokedhe or Horse Lake* or Janvier Health or Jere Ghalil or Jean Dor or John Dor or Kainai or Kainaa or Kapaweno or Kee Tas Kee Now or Kehewin or Ki Tue or Kapaweno or Kikino or Kinuso or Jackfish Point or Little Buffalo or Little Red River Cree or Loon Prairie or Louis Bull or Lubicon Lake Indian Nation or Maggie Willier or Makao or Maskwacis or Meander Health or Mikisew or Nakota or Nakoda or Namur Lake or OChiese or Old Fort or Paddle Prairie or Paul Band or Paul First Nation or Peace Point or Peavine Settlement or Peigan or Peerless Lake or Peerless Trout or Piikani or Pikuni or Pikani or Puskiakiwenin or Red Earth Creek or Saddle Lake or Samson Cree or Sarcee or Sawridge Band or Siksika or Siksikawa or Sao-kitapiiksi or Stoney First Nation or Stoney Tribe or St Isadore or Sturgeon Lake Cree or Tasttine or Tallcree or Tall Cree or Thabacha or Thebathi or Tsuu Tina or Tsu Tue or Tsu Kadhe or Unipouheos or Utikoomak or Wabasca or Wesley Band or ((Alexander or Athabasca or Beaver Lake or Blue Quill* or Cold Lake or Duncans or Enoch or Fort McKay or Fort McMurray or Loon River or Paul or Smiths Landing or Sucker Creek or Sunchild or Swan River or Whitefish Lake) adj2 (First Nation* or tribe or Indian*))).mp. or (exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or First Nation.mp. or First</p>	517

	<p>Nations.mp. or Dene.mp. or Blackfoot.mp. or Anishinaabe.mp. or Assiniboine.mp. or Metis.mp. or Mischif.mp. or Mitchif.mp. or Metif.mp. or Metchif.mp. or Bois-brule*.mp. or Mixed-blood*.mp. or Half Breed*.mp. or halfbreed*.mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve".mp. or country food*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.)) and (Beaver Lake or Brownvale or Fort McMurray or Edmonton or Calgary or Hythe or Slave Lake or Valleyview or Fort Vermilion or Morinville or Glenevis or Lac La Biche or Cold Lake or Rocky Mountain House or Duffield or Brocket or Morley or Whitecourt or Amber River or Big Horn or Buck Lake or Charles Lake or Collin Lake or Cornwall Lake or Cowper Lake or Devils Gate or Eden Valley or Fox Lake or Little Red River or Hay Lake or Lesser Slave Lake or Bonneyville or Loon Lake or Wetaskiwin or Pigeon Lake or Lake Athabasca or Fort McLeod or Barrhead or Stony Plain or Sturgeon Lake or High Prairie or Swampy Lake or Upper Hay River or Wabamun or Trout Lake or Whitefish Lake or Winefred Lake or Nordegg or Boyer River or Calling Lake or Berwyn or Fort Chipewyan or Black Diamond or Fishing Lake or Gift Lake or Kananaskis or Medicine Hat or Ponoka or Stand Off or StandOff or Alberta).mp.</p>	
17	<p>(exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Shamanism/ or exp Medicine, Traditional/ or exp Ethnopharmacology/ or American Native Continental Ancestry Group/ or (Abenaki or Abenakis or Abitibiwinni or Akwesasne* or Atikamek* or "Barriere Lake" or Betsiamite* or Cacouna or Chisasibi or Coucoucache or "Eagle Village" or Eastmain or Essipit* or Ekuanitshit* or Gespeg or Gesgapegiag* or Huron-Wendat or "Huronne Wendat" or Essipit or Inuit or Inuk or Kahnawake or Kahnawa?ke or Kanesatake or Kawawachikamach* or Kebaowek or Kipawa or Kitcisakik or Kitigan Zibi or Kuujjuaq or "Lac Romanie" or "Lac John" or "Lac Simon" or Listuguj* or "Long Point First" or Maliotenam or Maliseet or Malecite* or Mamit Innuat or Mamuitun or Manawan or Mashteuiatsh or Matimekush* or Matimekosh* or Mawiomi or Migmaw or Mig Maw or Mi?gmawei or Mingan or Mistissini* or Montagnais or Naskapi* or Natashquan* or Nemiscau or Nemaska* or Obedjiwan or Odanak or Opitciwa* or dopitciwa* or Ouje?Bougoumou or Pakuashipi* or Pessamit* or Pikogan or "Rapid Lake" or Salluit or Schefferville or Sept-Iles or TakuaiKan or "Uashat Mak" or "Mani-Utenam" or Temiscaming or imiskaming or Ungava or Uashat or "Unamen Shipu" or Waban-Aki or Waskaganish or Waswanipi or Wemindji or Wemotaci or Wendat* or Wendake or Whapmagoostui or Wolinak or Kitcisakik or "Pakua Shipu" or "Pakua Shipi" or Winneway or (People* adj (autochtone* or indigene* or premier* or racine* or natif*)) or "Premiere Nation" or "First Nation" or "First Nations" or Metis or Cree or Algonquin* or Algonquian* or</p>	2106

	<p>Anishinabe* or Anishinaabeg* or autochton* or Inuit* or Innu or Innus or Innue or Micmac or Mic?Mac or Mi?gmaq or Mi?kmaq or Mowhawk or (urban adj3 (Indian* or Native* or Aboriginal*)) or (Native adj3 (american or man or men or women or woman or boy* or girl* or children or people* or indian* or Nation or tribe* or tribal or band or bands or groups or communit* or population* or health)) or indigenous* or Aboriginal* or autochtone* or treaty or on-reserve or "off reserve" or country food* or Shaman* or (traditional adj (medicine or heal*)) or residential school*).mp.) and (exp Quebec/ or (montreal or "trois rivieres" or quebec* or "james bay" or "baie james" or Laval or Gatineau or Longueuil or Sherbrooke or Saguenay or Doncaster or Levis or Terrebonne or Mascouche or I?Estrie* or Lanaudiere or I?Outaouais* or Capitale-Nationale or Chaudiere-Appalaches or Cote-Nord or Gaspé* or Mauricie or Monteregie or Laurentides or Bas-Saint-Laurent or Saint-Laurent or Nunavik).mp. or (QC or quebec).in.)</p>	
18	<p>((Aamjiwnaang or Pikwakanagan or (Animbiigoo adj Zaagi?igan adj Anishinaabek*) or Wauzhushk Onigum or Naongashiing or Anishnabekwe or Anishnawbe* or "ARMSTRONG SETTLEMENT" or Aroland or ASSABASKA or "Atikameksheng Anishnawbek" or Attawapiskat or "Aundeck-Omni-Kaning" or Batchewana or "Bearfoot Onondaga" or "Bijnjitiwabik Zaaging" or Bimose or "Bingwi Neyaashi" or Bkejwanong or "chapeau cree" or dokis or Eabametoong or "Fox Lake Cree" or (moravian adj2 thames) or Ginoogaming or "Kasabonika Lake" or Kashechewan or KABAPIKOTAWANGAG or Keewaytinook or Kee?Way?Win or "Kiashe Zaaging" or Kitchenuhmaykoosib or Konadaha Seneca or Koocheching or Magnetawan or Matachewan or Mattagami or "MacDowell Lake" or M?Chigeeng or Mishkeegogamang or Missanabie or Mitaanjigaming or Stanjikoming or Mocrebec or (Mohawks adj (Akwasasne or Gibson)) or "Moose Cree" or Naicatchewenin or Namaygoosisagagun or Naotkamegwanning or Neskantaga or Nibinamik or Nigigoonsiminikaaning or Nipissing or OBADJIWAN or Obashkaandagaang or "Washagamis Bay" or Ochiichagwe Bibigo?ining or Onigaming or Parmachene or Sabaskong or Sagamok or (Oneida Nation adj2 Thames) or Shawanaga or Sheguiandah or Sheshegwanning or Taykwa Tagamou or Temagami or Wabaseemoong or Wabauskang or "Wabigoon Lake" or Wahgoshig or Wahnapiatae or "Wahta Mohawks" or Wapekeka or Wasauksing or Wauzhushk Onigum or Wawakepewin or Webequie or Weenusk or Wikwemikong or ((Ardoch or Algonquin or Beausoleil or "big grassy" or "Iskatewizaagegan 39 Independent" or beaverhouse or "brunswick house" or "buffalo point" or caldwell or "cat lake" or Couchiching or "Curve Lake" or "deer lake" or delaware or "duck lake" or "Eagle Lake" or Thames or "Fort William" or "Garden River" or "Grassy Narrows" or Hiawatha or Henvey Inlet or Hornepayne or "Gull Bay" or "King Fisher" or (Lac adj Mille adj Lacs) or (Lac adj Croix) or "Long Lake" or Magnetawan or "Marten Falls" or "Martin Falls" or Mississauga or "New Credit" or "Moose Deer Point" or Munsee?Delaware or "Muskrat Dam" or "North Caribou Lake" or "North Spirit Lake" or</p>	2794

<p>Northwest Angle or Sioux Narrows or Pays Plat or Pic Mobert or "Red Rock" or "Sachigo Lake" or "Sandy Lake" or "Savant Lake" or Saugeen or Seine River or Serpent River or "Shoal Lake" or Stony Point or Stoney Point or "Grand River Territory" or "Slate Falls" or Whitefish River or Whitesand or "Whitewater Lake" or "Wunnumin Lake") adj2 first nation*).mp. or (exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Shamanism/ or exp Medicine, Traditional/ or exp Ethnopharmacology/ or American Native Continental Ancestry Group/ or (People adj (autochtones or indigenes or premier or racing or natif*).mp. or ("Premiere Nation" or "First Nation" or "First Nations" or Metis or chippewas or Cree or Algonquin* or Algonquian* or Anishinabe* or Anishnabeg or Anishinaabe* or autochthon* or Inuit* or Innu or Innus or Innue or Micmac or Mic?Mac or Mi?gmaq or Mi?kmaq or Mowhawk or Ojibw* or Cayuga).mp. or (urban adj3 (Indian* or Native* or Aboriginal*).mp. or ((Native not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) adj3 (american or man or men or women or woman or boy* or girl* or children or people* or indian* or Nation or tribe* or tribal or band or bands or groups or communit* or population* or health)).mp. or ((indigenous* not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) or Aboriginal* or (autochon* not (bacteri* or plant* or species or micro* or biot* or strain or strains or probiotic or zoo* or geno*)) or treaty or on-reserve or off-reserve or country food* or Shaman* or (traditional adj (medicine or heal*)) or residential school*).mp.)) and (exp Ontario/ or (ontario or toronto or ottawa or sarnia or london or hamilton or windsor or roseneath or "golden lake" or beardmore or "christian island" or "Cedar Point" or morson or "bay of quinte" or "bear island" or "Bearskin Lake" or "whitefish lake" or naughton or "little current" or "Kirkland lake" or "big island" or macdiarmid or "thunder bay" or wallaceburg or chapleau or leamington or "georgina island" or "CAPE CROKER" or "FOX LAKE" or "CHIEF'S POINT" or "Constance Lake" or "Curve Lake" or "deer lake" or "duck lake" or "Eagle Lake" or "ENGLISH RIVER" or Rama or Erie St?Clair or "FACTORY ISLAND" or "Flying Post" or "FORT ALBANY" or "FORT HOPE" or "Fort Severn" or "Fort William" or Wiarton or Southampton or Saugeen or Muncy or Calstock or "Fort Frances" or "FRENCH RIVER" or Thamesville or Monteville or "Eabamet Lake" or Nipigon or "Georgian Bay" or "Long Lac" or "Long Lake" or Grassy Narrows or Keene or Pickerel or Hornepayne or Glebe Farm or "GOULAIS BAY" or Grey? Owen Sound or GROS CAP or "Shoal Lake" or Kashechewan or INDIAN RIVER or "King Fisher Lake" or "Big Trout Lake" or "Sandy Lake" or "Fort Frances" or "Lac Seul" or "LAKE HELEN" or (LAKE adj WOODS) or Hudson or Britt or Okoki Post or "MANITOU RAPIDS" or gogama or "McDowell Lake" or "Red Lake" or Wawa or "New Osnaburgh" or "Garden River" or "Blind River" or Hagersville or "Port Perry" or "Moose Factory" or Cornwall or Deseronto or Mactier or Muncy or Delvin or Pawitik or "Whitefish Bay" or "Landsdowne House" or "Summer</p>

	<p>Beaver" or "Weagamow Lake" or "North Spirit Lake" or "Rainy Lake" or "Rainy River" or "Sioux Narrows" or Keewating or Kenora or "Sault Ste Marie" or "Nestor Falls" or "Heron Bay" or Southwold or "Pays Plat" or Moberg or "Pic River" or "Moon River" or Massey or "Sachigo Lake" or "Savant Lake" or Cutler or Nobel or Sheshegwaning or Kejick or Ohsweken or "Slate Falls" or Cochrane or "Lake Tamagami" or Thessalon or Whitedog or "Ear Falls" or Dryden or Matheson or Bala or Capreol or "Angling Lake" or "Parry Sound" or "Sioux Lookout" or Webequie or Peawanuk or "Birch Island" or Armstrong or "Wunnumin Lake" or Silverwater or Walpole Island or WINISK).mp.)</p>	
19	<p>((Carcross or (Tagish not meteorite*) or Champagne First Nation or Aishihik or Ehdiiat or Nacho Nyak Dun or Gwichya or Little Salmon or Carmacks or Nihtat or Selkirk First Nation or Ta'an Kwach'an or Tetlitt or Tr'ondek Hwech'in or White River First Nation or Vuntut or Yellowknives or (Hare adj2 (man or men or woman or women or child* or youth* or adult* or people* or person or persons or tribe or tribal or band or bands)) or Tanana or Tanana or Tutchone* or Denesuline or Tahltan or MacKenzie Valley or Old Crow or "Upper Liard" or "Eagle Plains" or "Keno City" or Carcross or Teslin or "Fort Selkirk" or Carmacks or Haines Junction or Dawson City).mp. or ((Canad*.mp. or exp Canada/) and (Beaver Creek or Pelly or Destruction Bay or Watson Lake).mp.) or ((exp Indians, North American/ or exp Health Services, Indigenous/ or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or Metis.mp. or First Nation.mp. or First Nations.mp. or exp Inuit/ or Inuit*.mp. or Chipewyan.mp. or Kaska.mp. or Kaskas.mp. or Tlingit.mp. or Dene.mp. or Gwich'in.mp. or Gwichin.mp. or Gwitchin.mp. or Kutchin*.mp. or Sahtu.mp. or Tlicho.mp. or Tli Cho.mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve* or country food*".mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or treaty.mp. or treaties.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp.) and (exp Yukon Territory/ or Yukon*.mp. or ((Beaufort Sea or Whitehorse) and Canad*).mp.))) not ((exp Alaska/ or Alaska*.mp.) not ((exp Alaska/ or Alaska*.mp.) and (exp Yukon/ or Yukon*.mp.))) not (Yukon-Kuskok* or lepus or geology* or stratigraphi* or subduction* or volcan* or Holocene or pleistocene).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	163

20	<p>(((exp Medicine, Traditional/ not Chinese.mp.) or exp Shamanism/ or exp Indians, North American/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (Inuit* or Eskimo* or Esquimau* or Athapaskan or Gwich'in or Metis or Inuvialuktun or Cree or Aboriginal* or Indigenous* or off-reserve or on-reserve or First Nation or First Nations or Amerindian or (urban adj3 (Indian* or Native* or Aboriginal*)) or ethnomedicine or country food* or residential school* or shaman* or traditional medicine* or traditional heal* or traditional food* or medicine man or medicine woman or autochtone* or treaty or (Native adj1 (man or men or women or woman or boy* or girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands))).mp.) and (exp Northwest Territories/ or Northwest Territories.mp. or NWT.mp. or Yellowknife.mp. or Western Arctic.mp.)) or (Aklavik or Banks Island or Behchoko or Rae Edzo or Colville Lake or De Cho or Deline or Denendeh or Fort Good Hope or Fort Liard or Fort McPherson or Fort McPherson or Fort Providence or Fort Providence or Fort Simpson or Fort Smith or Gameti or Hay River or Inuvik or Jean Marie River or Lutselk'e or Norman Wells or Paulatuk or Sachs Harbour or Trout Lake or Tsiigehtchic or Tuktoyaktuk or Tulita or Tuli'ta or Ulukhaktok or Victoria Island or Whati or Wha Ti or Wrigley or (Hare adj2 (man or men or boy or boys or girl or girls or adult* or youth* or adolescent* or Nation or people* or Indians* or tribe* or tribal*)) or Slavey or Chipewyan or Tlicho or Dogrib or Yellowknives or Dene or Sahtu or Inuvialuit* or Inuinnaqtun).mp.) not ((fort smith adj1 ar*).mp. or ((rabbit* or lepus or lemming* or fox or foxes or wolf or wolves or (wrigley adj1 (n or g or forcep*))).mp. or ve.fs.)) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	699
21	<p>(exp Nunavut/ or Nunavut.mp. or Eastern Arctic.mp. or Alert Bay.mp. or Alexandra Fiord.mp. or Amadjuak.mp. or Aquiatulavik Point.mp. or Arctic Bay.mp. or Arviat.mp. or Baffin Island.mp. or Baker Lake.mp. or Bathurst Inlet.mp. or Belcher Islands.mp. or Bylot Island.mp. or Cambridge Bay.mp. or Iqaluktuttiaq.mp. or Cape Dorset.mp. or Cape Dyer.mp. or Cape Smith.mp. or Charlton Depot.mp. or Chesterfield Inlet.mp. or Clyde River.mp. or Coral Harbour.mp. or Craig Harbour.mp. or Dundas Harbor.mp. or Ellesmere Island.mp. or Ennadai.mp. or Eskimo Point.mp. or Fort Conger.mp. or Fort Hope.mp. or Fort Ross.mp. or Gjoa Haven.mp. or Grise Fiord.mp. or Hall Beach.mp. or Hazen Camp.mp. or Igloodik.mp. or Ikaluit.mp. or Iqaluit.mp. or Isachsen.mp. or Kekerten.mp. or Kimmirut.mp. or King William Island.mp. or Kipisa.mp. or Kitikmeot or Kivalliq.mp. or Kivitoo.mp. or Kugaaruk.mp. or Kugluktuk.mp. or Maguse River.mp. or Nanasivik.mp. or Nottingham Island.mp. or Nuwata.mp. or Padlei.mp. or Padloping Island.mp. or</p>	819

	<p>Pangnirtung.mp. or Perry Island.mp. or Pond Inlet.mp. or Port Burwell.mp. or Qoloqtaaluk.mp. or Qikiqtarjuaq.mp. or Rankin Inlet.mp. or Read Island.mp. or Repuise Bay.mp. or Resolute Bay.mp. or Resolution Island.mp. or Sanikiluak.mp. or Taloyoak.mp. or Tanquary Camp.mp. or Tavani.mp. or Thom Bay.mp. or Umingmaktok.mp. or Victoria Island.mp. or Wager Bay.mp. or Whale Cove.mp. or Eastern Arctic.mp. or ((Lupin or Polaris or Eureka or Fullerton) and Canad*).mp.) not (exp behavior, animal/ or exp ecosystems/ or exp endangered species/ or (sediment* or mantle or basalt* or cretaceous* or fossil* or paleo* or geolog* or stratigraph* or glaci* or refugia* or moraine* or pliocene or gravity or methylmercury or hydrolog* or hydrogeol* or volcan* or mesospher* or inferomet* or habitat* or animal behavior* or endangered species).mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	
22	<p>(exp Indians, North American/ or exp Health Services, Indigenous/ or Metis.mp. or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/ or Indigenous*.mp. or Aboriginal*.mp. or Amerindian*.mp. or Autochtone*.mp. or Metis.mp. or First Nations.mp. or First Nation*.mp. or (traditional adj1 (medicine* or heal* or food* or health*)).mp. or Urban Indian*.mp. or "on reserve".mp. or "off reserve*".mp. or country food*.mp. or residential school*.mp. or shaman*.mp. or medicine m?n.mp. or medicine wom?n.mp. or ((native* or Indian or Indians) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)).mp. or Montagnais.mp. or Maliseet.mp. or Naskapi*.mp. or Mi'kmaq.mp. or Micmac.mp. or Mic mac.mp. or Migmaw.mp. or Mig maw.mp. or Beothuk*.mp.) and (((Fredrickton or Moncton or New Jersey).mp. and (exp Canada/ or Canad*.mp.)) or exp New Brunswick/ or (New Brunswick* not ("New Brunswick NJ" or New Jersey or ferment*)).mp. or Nouveau Brunswick.mp. or Big Hole Tract.mp. or Metepenagiag.mp. or Eel Ground First Nation.mp. or Buctouche.mp. or Esgenoopetitj.mp. or Burnt Church.mp. or Devon Reserve.mp. or St Mary's First Nation.mp. or Eel River Reserve.mp. or Eel River Bar.mp. or Fort Folly Indian Point Reserve.mp. or Indian Island First Nation.mp. or Indian Ranch Reserve.mp. or Kingsclear.mp. or St John River Valley Tribal Council.mp. or Oromocto.mp. or Pabineau.mp. or Pokemouche.mp. or Mawiw.mp. or (Red Bank adj2 Reserve).mp. or Richibucto.mp. or St Basile.mp. or Madawaska.mp. or Soegao.mp. or Tabusintac.mp. or Tobique.mp. or Wolastoqiyik.mp. or Woodstock First Nation.mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol</p>	25

	supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]	
23	<p>(((Indigenous* or Aboriginal* or Amerindian* or Autochtone* or First Nation or First Nations or (traditional adj1 (medicine* or heal* or food* or health*)) or Urban Indian* or "on reserve" or "off reserve*" or country food* or shaman* or medicine m?n or medicine wom?n or (native* or Indian or Indians)) adj2 (person or persons or man or woman or men or women or child* or youth or youths or population* or people* or band or bands)) or Montagnais or Maliseet or Naskapi* or Mi'kmaq or Micmac or Mic mac or Migmaw or Mig maw or Beothuk*).mp. or exp Health Services, Indigenous/ or exp Indians, North American/ or Metis.mp. or exp Medicine, Traditional/ or exp Shamanism/ or exp Ethnopharmacology/) and (((Wolfville or Middleton or Kentville or Berwick or Inverness or New Waterford or Sackville or Springhill or Halifax or Dartmouth or Truro or New Glasgow or Sydney or Canso or Guysborough or Parrsboro or Pictou or Liverpool or Lunenburg or Amherst) and Canad*).mp. or exp Nova Scotia/ or Nova Scotia*.mp. or Nouvelle Ecosse.mp. or Pictou Landing.mp. or Bear River.mp. or Boat Harbour.mp. or Annapolis Royal.mp. or Antigonish.mp. or Baddeck.mp. or Cheticamp.mp. or Cape Breton.mp. or Neil's Harbour.mp. or Glace Bay.mp. or Tatamagouche.mp. or Sheet Harbour.mp. or Cambridge Reserve.mp. or Annapolis Valley First Nation.mp. or Chapel Island First Nation.mp. or Cole Harbour.mp. or Eskasoni.mp. or Fisher's Grant.mp. or Franklin Manor.mp. or Paq'tnkek.mp. or (Glooscap adj1 (First Nation or reserve)).mp. or Acadia First Nation.mp. or Gold River Reserve.mp. or Horton Reserve.mp. or Shubenacadie First Nation.mp. or Indian Brook Reserve.mp. or Wagmatcook.mp. or Waycobah.mp. or Millbrook First Nation.mp. or Malagawatch.mp. or Medway River.mp. or Membertou.mp. or Merigomish.mp. or Musquodoboit.mp. or New Ross Reserve.mp. or Pennal Reserve.mp. or Pomquet.mp. or Poonhook.mp. or Sheet Harbour.mp. or St Croix Reserve.mp. or Summerside Reserve.mp. or Sydney Reserve.mp. or Truro Reserve.mp. or We'koqma'q.mp. or Wycocomagh.mp. or Wildcat Reserve.mp. or Yarmouth Reserve.mp.)) not (geology or geologic or stratigraphy* or animal* or cat or cats or kitten or deer or bird* or dog or dogs or feline or canine or bovine or equine or porcine or pig or piglet or swine or rat or rats or horse or horses or mouse or mice).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	49
24	((exp Indians, North American/ and Canad*.mp.) or Indigenous Canadians/ or exp Inuits/ or exp Health Services, Indigenous/ or exp Ethnopharmacology/ or (Athapaskan or Sauteaux or	8958

	<p>Wakashan or Cree or Dene or Inuit or Inuk or Inuvialuit* or Haida or Ktunaxa or Tsimshian or Gitksan or Gitksan or "Nisga'a" or Haisla or Heiltsuk or Oweenkeno or "Kwakwaka'wakw" or "Nuu chah nulth" or "Tsilhqot'in" or Dakelh or "Wet'suwet'en" or Sekani or Dunne-za or Dene or Tahltan or Kaska or Tagish or Tutchone or Nuxalk or Salish or St'at'imc or St'atl'imx or St'atl'imc or Nlaka'pamux or Okanagan or "Sec wepmc" or Secwepemc or Tlingit or Anishinaabe or Blackfoot or Nakoda or Tasttine or "Tsuu T'ina" or "Tsuut'ina" or "Gwich'in" or Han or Algonquin or Nipissing or Ojibwa or Potawatomi or Innu or Maliseet or "Mi'kmaq" or Micmac or Passamaquoddy or Haudenosaunee or Cayuga or Mohawk or Oneida or Onondaga or Seneca or Tuscarora or Wyandot or Aboriginal* or Indigenous* or Metis or red road or "on reserve" or off-reserve or First Nation or First Nations or Amerindian).mp. or (urban adj3 (Indian* or Native* or Aboriginal*)).mp. or ethnomedicine.mp. or country food*.mp. or residential school*.mp. or ((exp Medicine, Traditional/ or traditional medicine*.mp.) not Chinese.mp.) or exp Shamanism/ or shaman*.mp. or traditional heal*.mp. or traditional food*.mp. or medicine man.mp. or medicine woman.mp. or autochtone*.mp. or (Native* adj1 (man or men or women or woman or boy* or girl* or adolescent* or youth or youths or person* or adult or people* or Indian* or Nation or tribe* or tribal or band or bands)).mp.) and (exp Canada/ or (Canad* or British Columbia or Colombie Britannique or Alberta or Saskatchewan or Manitoba or Ontario or Quebec or Nova Scotia or New Brunswick or Newfoundland or Labrador or Prince Edward Island or Yukon Territory or NWT or Northwest Territories or Nunavut or Nunavik or Nunatsiavut or NunatuKavut).mp.) [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]</p>	
25	12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24	12817
26	Disability Evaluation/	51617
27	Disabled Persons/	48397
28	"Activities of Daily Living"/	74146
29	"Quality of Life"/	281757
30	Functional Status/	1370
31	Mobility Limitation/	5307
32	Physical Functional Performance/	2818
33	exp "International Classification of Functioning, Disability and Health"/	880
34	(disabilit* or disabl*).ti,ab,kw.	296075

35	impair*.ti,ab,kw.	884283
36	(functioning* or functional*).ti,ab,kw.	2050231
37	(activit* adj2 (limit* or restrict*)).ti,ab,kw.	19952
38	(participat* adj2 (limit* or retriect*)).ti,ab,kw.	1969
39	(function* adj2 (outcome* or limit* or restrict*)).ti,ab,kw.	91262
40	(mobility* adj3 (restrict* or limit* or loss* or lose* or losing* or lost*)).ti,ab,kw.	9437
41	(restrict* adj2 back).ti,ab,kw.	60
42	(HRQOL* or HAQ or Health Assessment Questionnaire).ti,ab,kw.	29902
43	(PROMIS or Patient Reported Outcomes Measurement Information System).ti,ab,kw.	4699
44	(PROM or PROMS or patient reported outcome measure).ti,ab,kw.	10558
45	(PSFS or Patient Specific Functional Scale).ti,ab,kw.	986
46	oswestry*.ti,ab,kw.	10311
47	Roland-Morris*.ti,ab,kw.	1762
48	(WHO-DAS* or WHODAS* or WHO DAS).ti,ab,kw.	1016
49	Pain Disability Index.ti,ab,kw.	528
50	26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49	3294843
51	Chronic Pain/	23812
52	exp Pain/	470460
53	exp Neuralgia/	25328
54	Sciatica/	5219
55	Pain Management/	41733
56	Pain Clinics/	1635
57	Pain Measurement/	95085
58	(pain* or allodyn* or analges* or anesth* or anaesth* or causalg* or dysesthes* or hyperalg* or hyperesthes* or hyperpath* or hypoalg* or hypoesthes* or neuralg* or ache or aches or headache* metatarsalg* or arthralg* or neuritis* or neuropath* or nocicept* or "noxious stimulus" or paresthes* or sensitization* or emotion* or mental* or psycholog* or physical* or intergenerat* or spirit*).ti,ab,kw.	3236355
59	51 or 52 or 53 or 54 or 55 or 56 or 57 or 58	3376731
60	25 and (50 or 59)	2736

61	(comment or editorial or letter or review or systematic review or guideline or practice guideline or case reports or randomized controlled trial).pt.	8222872
62	exp Animals/	26955814
63	exp Humans/	21761956
64	62 not 63	5193858
65	60 not (61 or 64)	2008

A.3 Strategies for searching grey literature

Strategy 1: targeted website searching	<i>Key websites pertaining to Indigenous organizations</i>	<p>14 websites</p> <p>Including the National Collaborating Centre for Indigenous Health, First Nations, Inuit, and Métis specific organizational websites, and governmental health-related websites from CADTH Grey Matters Checklist</p>
Strategy 2: grey literature database search	<i>Key grey literature database and collections which publish Indigenous-specific content</i>	<p>3 databases</p> <p>ProQuest Dissertations and Theses Global database</p> <p>ArcticNet Publications</p> <p>Indigenous Studies Portal</p>
Strategy 3: search engine searching	<i>Relevant search engines searched using a combination of different search terms (in each search, first 100 items screened for relevance to research question)</i>	<p>Google Scholar</p> <p>Google search engine</p>
Strategy 4: knowledge experts	<i>Recommendation of key websites and databases by content experts</i>	<p>5 websites</p> <p>Additional national, Indigenous and pain-specific websites recommended by members of the IAC</p>

A.4 Studies ineligible following full-text review

1. Abbey, S. E., Hood, E., Young, L. T., & Malcolmson, S. (1991). New perspectives on mental health problems in Inuit women. *Arctic Medical Research*, 285-287.
Reason for exclusion: Not reporting pain-related disability
2. Abbey, S. E., Hood, E., Young, L. T., & Malcolmson, S. A. (1993). Psychiatric consultation in the Eastern Canadian Arctic: III. Mental health issues in Inuit women in the Eastern Arctic. *The Canadian Journal of Psychiatry*, 38(1), 32-35.
Reason for exclusion: Not reporting pain-related disability
3. Aboyeji, A. (2021). *The Association Between Ethnicity and Caregiver Health* (Master's thesis, The University of Western Ontario (Canada)).
Reason for exclusion: Not reporting pain-related disability
4. Adelson, N. (2000). Re-imagining Aboriginality: An Indigenous peoples' response to social suffering. *Transcultural psychiatry*, 37(1), 11-34. <https://dx.doi.org/10.1177/136346150003700101>
Reason for exclusion: Not reporting pain-related disability
5. Affleck, W., Oliffe, J. L., Inukpuk, M. M., Tempier, R., Darroch, F., Crawford, A., & Séguin, M. (2022). Suicide amongst young Inuit males: The perspectives of Inuit health and wellness workers in Nunavik. *SSM-Qualitative Research in Health*, 2, 100069.
<https://dx.doi.org/10.1016/j.ssmqr.2022.100069>
Reason for exclusion: Not reporting pain-related disability
6. Ahmad, A., & Gosling, J. (2021). The remoteness of pain in Canada's Indigenous peoples' collective memory. *The Lancet*, 398(10303), 841-842. DOI: 10.1016/S0140-6736(21)01685-8
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
7. Ahmed, A., Hakim, A., & Becker, A. (2018). Evaluation of eczema, asthma, allergic rhinitis and allergies among the grade-1 children of Iqaluit. *Allergy, Asthma & Clinical Immunology*, 14, 1-14.
<https://dx.doi.org/10.1186/s13223-018-0232-2>
Reason for exclusion: Not reporting pain-related disability
8. Barkwell, D. (2000). *On Ojibway cultural perspective on the illness cancer and related pain*. (Doctoral thesis, University of Manitoba (Canada)).
Reason for exclusion: Not reporting pain-related disability
9. Barkwell, D. (2005). Cancer pain: Voices of the Ojibway people. *Journal of Pain and Symptom Management*, 30(5), 454-464.
Reason for exclusion: Not reporting pain-related disability
10. Barnabe, C., Elias, B., Bartlett, J., Roos, L., & Peschken, C. (2008). Arthritis in Aboriginal Manitobans: evidence for a high burden of disease. *The Journal of rheumatology*, 35(6), 1145-1150.
Reason for exclusion: Not reporting pain-related disability
11. Barnabe, C., Hemmelgarn, B., Jones, C. A., Peschken, C. A., Voaklander, D., Joseph, L., ... & Marshall, D. A. (2015). Imbalance of prevalence and specialty care for osteoarthritis for first nations people in Alberta, Canada. *The Journal of rheumatology*, 42(2), 323-328.
Reason for exclusion: Not reporting pain-related disability
12. Barnabe, C., Crane, L., White, T., Hemmelgarn, B., Kaplan, G. G., Martin, L., & Maksymowych, W. P. (2018). Patient-reported outcomes, resource use, and social participation of patients with rheumatoid

arthritis treated with biologics in Alberta: experience of Indigenous and non-Indigenous patients. *The Journal of Rheumatology*, 45(6), 760-765.

Reason for exclusion: Not reporting pain-related disability

13. Baron, M., Riva, M., Fletcher, C., Lynch, M., Lyonnais, M. C., & Laouan Sidi, E. A. (2021). Conceptualisation and operationalisation of a holistic indicator of health for older Inuit: results of a sequential mixed-methods project. *Social Indicators Research*, 155, 47-72.
<https://dx.doi.org/10.1007/s11205-020-02592-5>
Reason for exclusion: Not reporting pain-related disability
14. Bath, B., Trask, C., McCrosky, J., & Lawson, J. (2014). A Biopsychosocial Profile of Adult Canadians with and without Chronic Back Disorders: A Population-Based Analysis of the 2009-2010 Canadian Community Health Surveys. *BioMed research international*, 2014(1), 919621.
<https://dx.doi.org/10.1155/2014/919621>
Reason for exclusion: Not reporting pain-related disability
15. Beaudin, P. G. (2012). *A contemporary socio-cultural exploration of health and healing: perspectives from members of the Oneida Nation of the Thames*. (Doctoral thesis, The University of Western Ontario (Canada)).
Reason for exclusion: Not reporting pain-related disability
16. Benoit, A. C., Cotnam, J., Raboud, J., Greene, S., Beaver, K., Zoccole, A., ... & Loutfy, M. (2016). Experiences of chronic stress and mental health concerns among urban Indigenous women. *Archives of women's mental health*, 19, 809-823. DOI: 10.1007/s00737-016-0622-8
Reason for exclusion: Not reporting pain-related disability
17. Boag, T. J. (1970). Mental health of native peoples of the Arctic. *Can Psychiatr Assoc J*, 15(2), 115-120. DOI: 10.1177/070674377001500203
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
18. Bougie, E. (2009). *Aboriginal Peoples Survey, 2006: School experiences of off-reserve First Nations children aged 6 to 14*. Statistics Canada, Social and Aboriginal Statistics Division.
Reason for exclusion: Not reporting pain-related disability
19. Bourassa, C., Blind, M., Dietrich, D., & Oleson, E. (2015). Understanding the intergenerational effects of colonization: Aboriginal women with neurological conditions—their reality and resilience. *International Journal of Indigenous Health*, 10(2), 3-20.
Reason for exclusion: Not reporting pain-related disability
20. Bowd, A. D. (2005). Otitis media: health and social consequences for aboriginal youth in Canada's north. *International Journal of Circumpolar Health*, 64(1), 5-15. DOI: 10.3402/ijch.v64i1.17949
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
21. Bruce, S.G. (1999). *Prevalence, risk factors and impact of diabetes among the western Canadian Métis*. (Doctoral dissertation, University of Manitoba).
Reason for exclusion: Not reporting pain-related disability
22. Bruce, S. G. (2000). The impact of diabetes mellitus among the Métis of western Canada. *Ethnicity & Health*, 5(1), 47-57.
Reason for exclusion: Not reporting pain-related disability
23. Bruce, S.G., Kliewer, E.V., Young, T.K., Mayer, T., Wajda, A. (2003). Diabetes among the Métis of Canada: Defining the population, estimating the disease. *Canadian Journal of Diabetes*, 27(4), 442-448.

Reason for exclusion: Not reporting pain-related disability

24. Cameron, C. M., Purdie, D. M., Kliewer, E. V., & McClure, R. J. (2005). Differences in prevalence of pre-existing morbidity between injured and non-injured populations. *Bulletin of the World Health Organization*, 83(5), 345-352.
Reason for exclusion: Non-Indigenous population and not in Canada
25. Cañizares, M., Power, J. D., Perruccio, A. V., & Badley, E. M. (2008). Association of regional racial/cultural context and socioeconomic status with arthritis in the population: a multilevel analysis. *Arthritis Care & Research*, 59(3), 399-407. <https://dx.doi.org/10.1002/art.23316>
Reason for exclusion: Not reporting pain-related disability
26. Caron, J., & Liu, A. (2010). A descriptive study of the prevalence of psychological distress and mental disorders in the Canadian population: comparison between low-income and non-low-income populations. *Health Promotion and Chronic Disease Prevention in Canada*, 30(3).
Reason for exclusion: Not reporting pain-related disability
27. Chahar Mahali, S., Beshai, S., & Wolfe, W. L. (2021). The associations of dispositional mindfulness, self-compassion, and reappraisal with symptoms of depression and anxiety among a sample of Indigenous students in Canada. *Journal of American College Health*, 69(8), 872-880.
<https://dx.doi.org/10.1080/07448481.2020.1711764>
Reason for exclusion: Not reporting pain-related disability
28. Chai, L. (2024). Disability and suicidal ideation among Indigenous adults in Canada: cultural resources as contingencies. *Archives of suicide research*, 28(2), 610-628.
<https://dx.doi.org/10.1080/13811118.2023.2199803>
Reason for exclusion: Not reporting pain-related disability
29. Chen, A., Dyck Holzinger, S., Oskoui, M., Shevell, M., Canadian Cerebral Palsy Registry, Andersen, J. (2021). Cerebral palsy in Canadian Indigenous children. *Developmental Medicine & Child Neurology*, 63(5), 614-622. <https://dx.doi.org/10.1111/dmcn.14776>
Reason for exclusion: Not reporting pain-related disability
30. Clouston, J. E. (2007). *A qualitative study of experiences of Aboriginal caregivers of children with developmental disabilities*. (Doctoral thesis, Wilfrid Laurier University (Canada)).
Reason for exclusion: Not reporting pain-related disability
31. Crowshoe, L., Dannenbaum, D., Green, M., Henderson, R., Hayward, M. N., Toth, E., & Diabetes Canada Clinical Practice Guidelines Expert Committee. (2018). Type 2 diabetes and Indigenous peoples. *Canadian journal of diabetes*, 42, S296-S306. DOI: 10.1016/j.jcjd.2017.10.022
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
32. Deodhar, J. K., Noronha, V., Muckaden, M. A., Atreya, S., Joshi, A., Tandon, S. P., ... & Prabhash, K. (2017). A study to assess the feasibility of introducing early palliative care in ambulatory patients with advanced lung cancer. *Indian Journal of Palliative Care*, 23(3), 261. DOI: 10.4103/IJPC.IJPC_19_17
Reason for exclusion: Non-Indigenous population and not in Canada
33. Destounis, B. V., MacDougall, J. C., Gisel, E., Pollitt, T., Watters, G., & Gledhill, R. (1991). The prevalence of disability in the Baffin: a model for the delivery of community-based rehabilitation. *Arctic medical research*, 30-33.
Reason for exclusion: Not reporting pain-related disability

34. Dosman, J. A., Karunanayake, C. P., Fenton, M., Ramsden, V. R., Skomro, R., Kirychuk, S., ... & Pahwa, P. (2021). Prevalence of insomnia in two Saskatchewan First Nation communities. *Clocks & Sleep*, 3(1), 98-114. DOI: <https://dx.doi.org/10.3390/clockssleep3010007>
Reason for exclusion: Not reporting pain-related disability
35. Durst, D., Bluechardt, M. H. S., Morin, G., & Rezansoff, M. (2001). *Urban aboriginal persons with disabilities: Triple Jeopardy!*. Regina: Social Policy Research Unit, University of Regina.
Reason for exclusion: Not reporting pain-related disability
36. Durst, D., South, S. M., & Bluechardt, M. (2006). Urban First Nations people with disabilities speak out. *Journal of Aboriginal Health*, 3(1), 34-43.
Reason for exclusion: Not reporting pain-related disability
37. Elias, B., Kaufert, J., Reading, J., O'Neil, J. D., Fricke, M., McDonald, G., & Thibault, J. (1999). Activity limitation and the need for continuing care. *First Nations and Inuit Regional Health Survey*. Ottawa, Canada: National Steering Committee, 137-139.
Reason for exclusion: Not reporting pain-related disability
38. Ferucci, E. D. (2008). Arthritis in indigenous populations: a neglected health disparity. *The Journal of Rheumatology*, 35(6), 956-957.
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
39. Fey, C. *Listening to Megan: Narratives of a female aboriginal youth with a disability*. (2002). (Master's thesis report, University of Saskatchewan). <https://saskschoolboards.ca/wp-content/uploads/02-06.htm#Chapter%20One>
Reason for exclusion: Not reporting pain-related disability
40. Fricke, M. (1998). Self-determination: the panacea for Canadian aboriginal people with disabilities?. *International Journal of Circumpolar Health*, 57, 719-724.
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
41. Goyal, S., Temple, V., Sawanas, C., & Brown, D. (2020). Cognitive profile of adults with intellectual disabilities from indigenous communities in Ontario, Canada. *Journal of Intellectual & Developmental Disability*, 45(1), 59-65. DOI: 10.3109/13668250.2018.1470160
Reason for exclusion: Not reporting pain-related disability
42. Hahmann, T. (2021). *Changes to health, access to health services, and the ability to meet financial obligations among Indigenous people with long-term conditions or disabilities since the start of the COVID-19 pandemic*. Statistics Canada.
Reason for exclusion: Not reporting pain-related disability
43. Hamilton, M. K. (1990). The Health and Activity Limitation Survey. Disabled aboriginal persons in Canada. *Health Reports*, 2(3), 279-287.
Reason for exclusion: Not reporting pain-related disability
44. Hamilton, S. (2008). *Work-life balance for parents with low incomes*. (Master's thesis, University of Northern British Columbia).
Reason for exclusion: Not reporting pain-related disability
45. Hop Wo, N. K., Anderson, K. K., Wylie, L., & MacDougall, A. (2020). The prevalence of distress, depression, anxiety, and substance use issues among Indigenous post-secondary students in Canada. *Transcultural Psychiatry*, 57(2), 263-274. DOI: 10.1177/1363461519861824
Reason for exclusion: Not reporting pain-related disability

46. Janzen, T. M., Saklofske, D. H., & Das, J. P. (2013). Cognitive and reading profiles of two samples of Canadian First Nations children: Comparing two models for identifying reading disability. *Canadian Journal of School Psychology, 28*(4), 323-344. <https://dx.doi.org/10.1177/0829573513507419>
Reason for exclusion: Not reporting pain-related disability
47. Knudson, S., Bird-Naytowhow, K., & Baldhead Pearl, T. (2021). Finding our 'good way': critical reflections on researching disability, connection, and community from an Indigenous perspective. *Reflective Practice, 22*(3), 306-318. DOI: 10.1080/14623943.2021.1878124
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
48. Komenda, P., Lavalley, B., Ferguson, T. W., Tangri, N., Chartrand, C., McLeod, L., ... & Rigatto, C. (2016). The prevalence of CKD in rural Canadian Indigenous peoples: results from the First Nations Community Based Screening to Improve Kidney Health and Prevent Dialysis (FINISHED) screen, triage, and treat program. *American Journal of Kidney Diseases, 68*(4), 582-590. DOI: 10.1053/j.ajkd.2016.04.014
Reason for exclusion: Not reporting pain-related disability
49. Lamoureux-Tremblay, V., Muckle, G., Maheu, F., Jacobson, S. W., Jacobson, J. L., Ayotte, P., ... & Saint-Amour, D. (2020). Risk factors associated with developing anxiety in Inuit adolescents from Nunavik. *Neurotoxicology and teratology, 81*, 106903. <https://dx.doi.org/10.1016/j.ntt.2020.106903>
Reason for exclusion: Not reporting pain-related disability
50. Larson, C., Pelchat, Y., & Trepanier, L. (1988). Neuromotor disabilities within the James Bay Cree pediatric population. *Arctic Medical Research, 47*(2), 62-66.
Reason for exclusion: Not reporting pain-related disability
51. Latimer, M., Finley, G. A., Rudderham, S., Inglis, S., Francis, J., Young, S., & Hutt-MacLeod, D. (2014). Expression of pain among Mi'kmaq children in one Atlantic Canadian community: a qualitative study. *Canadian Medical Association Open Access Journal, 2*(3), E133-E138. <https://dx.doi.org/10.9778/cmajo.20130086>
Reason for exclusion: Not reporting the prevalence, incidence, or factors/characteristics associated with pain-related disability
52. Latimer, M., Simandl, D., Finley, A., Rudderham, S., Harman, K., Young, S., ... & Francis, J. (2014). Understanding the impact of the pain experience on Aboriginal children's wellbeing: Viewing through a two-eyed seeing lens. *First Peoples Child & Family Review, 9*(1), 22-37.
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
53. Latimer, M., Rudderham, S., Lethbridge, L., MacLeod, E., Harman, K., Sylliboy, J. R., ... & Finley, G. A. (2018). Occurrence of and referral to specialists for pain-related diagnoses in First Nations and non-First Nations children and youth. *Cmaj, 190*(49), E1434-E1440.
Reason for exclusion: Not reporting pain-related disability
54. Latimer, M., Sylliboy, J. R., MacLeod, E., Rudderham, S., Francis, J., Hutt-MacLeod, D., ... & Finley, G. A. (2018). Creating a safe space for First Nations youth to share their pain. *Pain reports, 3*(7), e682. DOI: 10.1097/pr9.0000000000000682
Reason for exclusion: Not reporting the prevalence, incidence, or factors/characteristics associated with pain-related disability
55. Latimer, M., Sylliboy, J. R., Francis, J., Amey, S., Rudderham, S., Finley, G. A., ... & Paul, K. (2020). Co-creating better healthcare experiences for First Nations children and youth: The FIRST approach emerges from Two-Eyed seeing. *Paediatric and Neonatal Pain, 2*(4), 104-112. <https://dx.doi.org/10.1002/pne2.12024>
Reason for exclusion: Not reporting pain-related disability

56. Lawal, M. A., Shalaby, R., Chima, C., Vuong, W., Hrabok, M., Gusnowski, A., ... & Agyapong, V. I. (2021). COVID-19 pandemic: stress, anxiety, and depression levels highest amongst indigenous peoples in Alberta. *Behavioral Sciences*, 11(9), 115. <https://dx.doi.org/10.3390/bs11090115>
Reason for exclusion: Not reporting pain-related disability
57. Lemstra, M., Neudorf, C., Mackenbach, J., D'Arcy, C., Scott, C., Kershaw, T., & Nannapaneni, U. (2008). Risk indicators for depressed mood in youth: Limited association with Aboriginal cultural status. *Paediatrics & child health*, 13(4), 285-290. <http://dx.doi.org/10.1093/pch/13.4.285>
Reason for exclusion: Not reporting pain-related disability
58. Ling, N. M., Loadman, A. E., & Postl, B. D. (1988). Health associated risk factors for academic achievement in a group of Manitoba Indian children. *Arctic medical research*, 47, 521-525.
Reason for exclusion: Not reporting pain-related disability
59. Marrie, R. A., Leung, S., Yu, N., & Elliott, L. (2018). Lower prevalence of multiple sclerosis in First Nations Canadians. *Neurology: Clinical Practice*, 8(1), 33-39. DOI:10.1212/CPJ.0000000000000418
Reason for exclusion: Not reporting pain-related disability
60. Meatherall, B. L., Garrett, M. R., Kaufert, J., Martin, B. D., Fricke, M. W., Arneja, A. S., ... & Embil, J. M. (2005). Disability and quality of life in Canadian aboriginal and non-aboriginal diabetic lower-extremity amputees. *Archives of physical medicine and rehabilitation*, 86(8), 1594-1602. <https://dx.doi.org/10.1016/j.apmr.2004.11.026>
Reason for exclusion: Not reporting pain-related disability
61. Mehl-Madrona, L., & Mainguy, B. (2015). Mental disabilities in an aboriginal context. *Journal of Social Work in Disability & Rehabilitation*. DOI: 10.1080/1536710X.2015.1068258
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
62. Anderson, K. (2005). Minobimadziwin: The good life for Aboriginal women. *Centres of Excellence for Women's Health Research Bulletin*, 4(2), 8.
Reason for exclusion: Not an epidemiological study, qualitative or mixed-methods
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Not reporting pain-related disability

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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Non-Indigenous populations and not in Canada
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Not reporting pain-related disability
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Reason for exclusion: Non-Indigenous populations and not in Canada
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Reason for exclusion: Not reporting pain-related disability

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Reason for exclusion: Not reporting pain-related disability

81. Vang, Z. M., Chau, S., Kobayashi, K. M., Owen, M. J., McKenzie-Sampson, S., Mayrand-Thibert, J., & Brass, G. M. (2024). Pain and functional limitations among midlife and older Canadians: The role of discrimination, race, and sense of belonging. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 79(4). <https://dx.doi.org/10.1093/geronb/gbab137>

Reason for exclusion: Not reporting pain-related disability

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Reason for exclusion: Not reporting the prevalence, incidence, or factors/characteristics associated with pain-related disability

83. Wee, J. (2009). Creating a registry of needs for persons with disabilities in a Northern Canadian community: the disability registry project. *Asia Pacific Disability Rehabilitation Journal*, 20, 1-18.

Reason for exclusion: Not reporting the prevalence, incidence, or factors/characteristics associated with pain-related disability

84. Wilson, K., & Cardwell, N. (2012). Urban Aboriginal health: Examining inequalities between Aboriginal and non-Aboriginal populations in Canada. *The Canadian Geographer*, 56 (1), 98-116. DOI: 10.1111/j.1541-0064.2011.00397.x

Reason for exclusion: Not reporting pain-related disability

Appendix B

B.1 STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies* (First Nations people living off-reserve)

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract [page 54] <hr/> (b) Provide in the abstract an informative and balanced summary of what was done and what was found [page 54]
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported [pages 55-57]
Objectives	3	State specific objectives, including any prespecified hypotheses [pages 57]
Methods		
Study design	4	Present key elements of study design early in the paper [page 58]
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection [pages 58-59]
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants [pages 58-59]
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable [pages 60-61]
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group [Appendix B.3]
Bias	9	Describe any efforts to address potential sources of bias [pages 61-63]
Study size	10	Explain how the study size was arrived at [pages 59-60]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why [pages 61-63]
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding [pages 61-63] <hr/> (b) Describe any methods used to examine subgroups and interactions [pages 61-63] <hr/> (c) Explain how missing data were addressed [pages 61-63] <hr/> (d) If applicable, describe analytical methods taking account of sampling strategy [pages 61-63] <hr/> (e) Describe any sensitivity analyses [NA]
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed [page 63; and table 3.1]

		(b) Give reasons for non-participation at each stage [NA]
		(c) Consider use of a flow diagram [NA]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders [page 63]
		(b) Indicate number of participants with missing data for each variable of interest [table 3.1]
Outcome data	15*	Report numbers of outcome events or summary measures [page 63]
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included [pages 64-67]
		(b) Report category boundaries when continuous variables were categorized [NA]
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period [NA]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses [page 67]
Discussion		
Key results	18	Summarise key results with reference to study objectives [pages 68]
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias [pages 71-72]
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence [pages 68-70]
Generalisability	21	Discuss the generalisability (external validity) of the study results [pages 71]
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based [Acknowledgements]

B.2 Ontario Tech University REB Approval

Date: May 26, 2025

To: Pierre Cote

From: Research Ethics Office

REB File #: 16845

Project Title: *Exploring pain-related and mental health-related disabilities among First Nations, Inuit and Métis in Canada.*

Current Expiry: July 01, 2026

The research ethics file named above has been renewed. You are required to continue to adhere to the protocol as last reviewed and approved by Ontario Tech's Research Ethics Board (REB). This research is subject to review requirements. This research file must be renewed or closed by the current expiry date (**July 01, 2026**) by using the following forms from the [IRIS research portal](#).

- **Renewal Request Form:** All approved projects are subject to an annual renewal process. Projects must be renewed or closed by the expiry date indicated above ("Current Expiry"). Projects not renewed prior to the expiry date will be automatically suspended by the REB. If no response is received from suspended projects, the REB will permanently close your study for administrative non-compliance at the next scheduled REB meeting. Once your file has been formally closed, a new submission will be required to open a new file.
- **Change Request Form:** All changes or modifications (e.g., adding a team member or a change in methodology) to your study must be submitted via a change request form and approved by the REB.
- **Adverse or Unexpected Events Form:** Events must be reported to the REB within 72 hours with an indication of how these events affect, in the view of the principal investigator, the safety of the participants and the continuation of the protocol (e.g., unanticipated or unmitigated physical, social or psychological harm to a participant).
- **Research Project Completion Form:** This form must be completed when the research study concludes.

Always quote your REB file number (16845) on future correspondence. If you are a student researcher, your supervisor has been copied to this message.

We wish you continued success with your study.

B.3 List of variables and corresponding question text from the 2017 APS (First Nations people living off-reserve)

Question concept group	Question text
Basic needs – Household income meets household needs – Past 12 months	Overall, in the past 12 months, was your household income enough to meet your household's needs for transportation, housing, food, clothing and other necessary expenses?
Basic needs – Current ability to cover unexpected expenses	Today, could [you / your household] cover an unexpected expense of \$500 from your [own / household's] resources?
Housing – Housing conditions – Satisfaction level	How would you rate your level of satisfaction with your housing conditions?
Housing - Reason for dissatisfaction - Crowded/Not enough space	What are the reasons you are dissatisfied with your housing conditions? - Crowded /Not enough space
Housing - Reason for dissatisfaction - High costs	What are the reasons you are dissatisfied with your housing conditions? - High costs
Housing - Reason for dissatisfaction - Housing conditions	<i>Derived variable</i> "Housing conditions" include the following problems: - run down/needs many repairs - poor insulation - presence of mould or mildew - presence of unwanted pests such as mice, bedbugs or cockroaches.
Housing - Reason for dissatisfaction - Other	What are the reasons you are dissatisfied with your housing conditions? - Location (too far from work/school/stores) What are the reasons you are dissatisfied with your housing conditions? - Safety concerns What are the reasons you are dissatisfied with your housing conditions? – Problems with landlord, neighbours or other tenants What are the reasons you are dissatisfied with your housing conditions? - Other
Number of persons in household	<i>Derived variable</i> indicates the total number of persons (grouped for numbers above 4) who are living in the household at the time of the interview.
Household type	<i>Derived variable</i> Indicates the type of household based on various family or non-family types (in relation to the respondent) in the household.
Health – Regular medical doctor	Do you have a regular medical doctor?
Health care – Needed but not received – Past 12 months	During the past 12 months, was there ever a time when you felt that you needed health care but you didn't receive it?
Health care - Not received - Reason – Cost	Thinking of the most recent time, why didn't you get care? – Cost
Health care - Not received - Reason - Not avail./Wait. times too long	Thinking of the most recent time, why didn't you get care? - Not available - in the area Thinking of the most recent time, why didn't you get care? - Not available - at time required (e.g., doctor on holidays, inconvenient hours) Thinking of the most recent time, why didn't you get care? - Waiting time too long

Health care - Not received - Reason – Personal	<p><i>Derived variable</i></p> <p>"Personal reasons" include the following:</p> <ul style="list-style-type: none"> - felt it would be inadequate - too busy - didn't get around to it / didn't bother - decided not to seek care - personal or family responsibilities - dislikes doctors / afraid
Health care - Not received - Reason – Other	<p><i>Derived variable</i></p> <p>"Other" include the following:</p> <ul style="list-style-type: none"> - Doctor didn't think it was necessary - Other
Mental health consultation – Past 12 months	During the past 12 months, have you seen or talked on the telephone to anyone about problems with your emotions, mental health or use of alcohol or drugs?
Residential school attendance	<p><i>Derived variable</i></p> <p>Indicates whether the respondent and/or a family member ever attended a residential school or a federal industrial school.</p>
Helping others – Volunteer with organization – Past 12 months	In the past 12 months, how often did you volunteer for a group or organization?
Helping others – On own not with organization – Past 12 months	Now think about helping people on your own, not on behalf of an organization. For example, caring for someone's home, driving someone to an appointment, visiting the elderly, shovelling snow or unpaid babysitting. In the past 12 months, how often did you carry out any of these types of activities without pay?
Language – Understand or speak an Aboriginal language	Do you understand or speak an Aboriginal language, even if only a few words?
Belonging – Active in Aboriginal group events and activities	I am active in [First Nations / Métis / Inuit / Aboriginal] organizations, social events or cultural activities.
Belonging – Sense of belonging to own Aboriginal group	I have a deep sense of belonging to my [First Nations / Métis / Inuit / Aboriginal] group.
Total 2016 employment income	<p><i>Derived variable</i></p> <p>Employment and self-employment income includes wages, salaries, tips, taxable benefits, research grants, royalties, commissions and gratuities.</p>
Labour force status	<p><i>Derived variable</i></p> <p>Indicates whether a person was employed, unemployed, or not in the labour force.</p>
Full-or part-time employment status	<p><i>Derived variable</i></p> <p>Identifies whether a person who was employed during the reference week worked full-time or part-time.</p> <p>Part-time employment is defined as less than 30.0 hours per week; full-time is 30.0 hours or more per week.</p>
Labour force status with participation in other labour activities	<p><i>Derived variable</i></p> <p>'Other labour activities' include the following:</p> <ul style="list-style-type: none"> - hunting, fishing or trapping - gathering wild plants, such as berries, rice or sweetgrass

	- making clothing or footwear - making carvings, drawings, jewellery or other kinds of artwork
2016 Census – Census Metropolitan Area/Other Pop. Centre/Other Rural	<i>Derived variable</i> Indicates whether the person was living in a Census Metropolitan Area (CMA), other population centre, or other rural area. <ul style="list-style-type: none"> - “CMAs” are counted as large population centres (100,000 or more people). - "Other population centre" includes medium population centres (30,000 to 99,999) and small population centres (1,000 to 29,999). - "Other rural" includes all areas outside population centres, which are collectively defined as rural area.
Aboriginal identification – Status Indian (Registered or Treaty)	Are you a Status Indian, that is, a Registered or Treaty Indian as defined by the Indian Act of Canada?
Aboriginal identification – Member of a First Nation or Indian band	Are you a member of a First Nation or Indian band?
Age group of respondents	<i>Derived variable</i>
Sex of respondents	<i>Derived variable</i>
Highest level of educational attainment	<i>Derived variable</i>
Chronic conditions - Asthma	Do you have asthma?
Chronic conditions - Arthritis (excluding fibromyalgia)	Do you have arthritis, excluding fibromyalgia?
Chronic conditions - High blood pressure	Do you have high blood pressure?
Chronic conditions - Chronic bronchitis/Emphysema/COPD	Do you have chronic bronchitis, emphysema or chronic obstructive pulmonary disease or COPD?
Chronic conditions – Diabetes	Do you have diabetes?
Chronic conditions - Heart disease	Do you have heart disease?
Chronic conditions - Mood disorder	Do you have a mood disorder such as depression, bipolar disorder, mania or dysthymia?
Chronic conditions - Anxiety disorder	Do you have an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder?
Chronic conditions - Intestinal or stomach ulcers	Do you have intestinal or stomach ulcers?
Chronic conditions - Bowel disorders	Do you have a bowel disorder such as Crohn’s Disease, ulcerative colitis, Irritable Bowel Syndrome or bowel incontinence?

Note – Derived variables are new variables which are constructed by Statistics Canada using one or more existing variables. These variables are created through the application of logical or mathematical operations. As such, there is no specific question text made available.

Appendix C

C.1 STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies* (Métis)

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract [page 96] (b) Provide in the abstract an informative and balanced summary of what was done and what was found [page 96]
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported [pages 97-99]
Objectives	3	State specific objectives, including any prespecified hypotheses [page 99]
Methods		
Study design	4	Present key elements of study design early in the paper [page 100]
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection [page 100-101]
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants [pages 100-101]
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable [pages 101-102]
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group [pages 101-102; Appendix C.2]
Bias	9	Describe any efforts to address potential sources of bias [page 102-103]
Study size	10	Explain how the study size was arrived at [page 101]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why [page 102-103]
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding [page 102-103] (b) Describe any methods used to examine subgroups and interactions [page 102-103] (c) Explain how missing data were addressed [page 102-103] (d) If applicable, describe analytical methods taking account of sampling strategy [page 102-103] (e) Describe any sensitivity analyses [NA]
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed [NA] (b) Give reasons for non-participation at each stage [NA] (c) Consider use of a flow diagram [NA]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders [page 104; Table 4.1] (b) Indicate number of participants with missing data for each variable of interest [Table 4.1]
Outcome data	15*	Report numbers of outcome events or summary measures [page 104; Tables 4.2 and 4.3]
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included [Table 4.4]

		(b) Report category boundaries when continuous variables were categorized [NA]
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period [NA]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses [page 107; Table 4.4]
Discussion		
Key results	18	Summarise key results with reference to study objectives [pages 108]
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias [pages 110-111]
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence [pages 108-109]
Generalisability	21	Discuss the generalisability (external validity) of the study results [pages 111]
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based [Acknowledgements]

C.2 List of variables and corresponding question text from the 2017 APS (Métis)

Question concept group	Question text
Food security status	Derived variable Indicates the level of food security in the household
Basic needs – Household income meets household needs – Past 12 months	Overall, in the past 12 months, was your household income enough to meet your household’s needs for transportation, housing, food, clothing and other necessary expenses?
Basic needs – Current ability to cover unexpected expenses	Today, could [you / your household] cover an unexpected expense of \$500 from your [own / household’s] resources?
Housing – Housing conditions – Satisfaction level	How would you rate your level of satisfaction with your housing conditions?
Household type	<i>Derived variable</i> Indicates the type of household based on various family or non-family types (in relation to the respondent) in the household.
Health – Regular medical doctor	Do you have a regular medical doctor?
Health care – Needed but not received – Past 12 months	During the past 12 months, was there ever a time when you felt that you needed health care but you didn’t receive it?
Consulted a health professional in the last 12 months	<i>Derived variable</i> Indicates whether a person has seen or talked to at least one health professional in the past 12 months about their physical, emotional or mental health. Health professionals include the following: Family doctor, pediatrician, general practitioner, nurse, or any other medical doctor such as a surgeon, allergist, orthopaedist, urologist, gynaecologist, psychiatrist.
Mental health consultation – Past 12 months	During the past 12 months, have you seen or talked on the telephone to anyone about problems with your emotions, mental health or use of alcohol or drugs?
Helping others – Volunteer with organization – Past 12 months	In the past 12 months, how often did you volunteer for a group or organization?
Helping others – On own not with organization – Past 12 months	Now think about helping people on your own, not on behalf of an organization. For example, caring for someone’s home, driving someone to an appointment, visiting the elderly, shovelling snow or unpaid babysitting. In the past 12 months, how often did you carry out any of these types of activities without pay?
2016 Census – Census Metropolitan Area/Other Pop. Centre/Other Rural	<i>Derived variable</i> Indicates whether the person was living in a Census Metropolitan Area (CMA), other population centre, or other rural area. <ul style="list-style-type: none"> - “CMAs” are counted as large population centres (100,000 or more people). - "Other population centre" includes medium population centres (30,000 to 99,999) and small population centres (1,000 to 29,999). - "Other rural" includes all areas outside population centres, which are collectively defined as rural area.
Total 2016 personal income	<i>Derived variable</i> Personal income sources are:

	<ul style="list-style-type: none"> - Employment or self-employment (including wages, salaries, tips, commissions and gratuities) - Government income (e.g., employment insurance, provincial or municipal assistance or welfare, Old Age Security and Guaranteed Income Supplement, child tax benefit) - Pensions and annuities - Other sources such as child support, spousal support, scholarships, etc.
Total 2016 employment income	<p><i>Derived variable</i></p> <p>Employment and self-employment income includes wages, salaries, tips, taxable benefits, research grants, royalties, commissions and gratuities.</p>
Labour force status	<p><i>Derived variable</i></p> <p>Indicates whether a person was employed, unemployed, or not in the labour force.</p>
Number of months since last worked	<p><i>Derived variable</i></p> <ul style="list-style-type: none"> - Respondents who had a job or business in the previous week but were absent because of seasonal layoff, temporary layoff due to business conditions, or due to job being casual with no work currently available; and - Respondents who did not have a job or business in the previous week but who indicated having worked at a job or business previously.
Full-or part-time employment status	<p><i>Derived variable</i></p> <p>Identifies whether a person who was employed during the reference week worked full-time or part-time.</p> <p>Part-time employment is defined as less than 30.0 hours per week; full-time is 30.0 hours or more per week.</p>
Labour force status with participation in other labour activities	<p><i>Derived variable</i></p> <p>‘Other labour activities’ include the following:</p> <ul style="list-style-type: none"> - hunting, fishing or trapping - gathering wild plants, such as berries, rice or sweetgrass - making clothing or footwear - making carvings, drawings, jewellery or other kinds of artwork
Alcohol – Drank in the past 12 months	<p>During the past 12 months, how often did you drink alcoholic beverages?</p> <p>A "drink" is defined as:</p> <ul style="list-style-type: none"> - one bottle or can of beer or a glass of draft - one glass of wine or a wine cooler - one drink or cocktail with 1 1/2 ounces of liquor
Smoking – Type of smoker	<p>At the present time, do you smoke cigarettes daily, occasionally or not at all?</p>
Drug use – past 12 months	<p><i>Derived variable</i></p>

	Indicates whether a person has used marijuana, cannabis, hashish, prescription drugs for recreational purposes or street drugs (such as cocaine, speed, solvents or steroids)
Age group of respondents	<i>Derived variable</i>
Sex of respondents	<i>Derived variable</i>
Language – Understand or speak an Aboriginal language	Do you understand or speak an Aboriginal language, even if only a few words?
Belonging – Active in Aboriginal group events and activities	I am active in [First Nations / Métis / Inuit / Aboriginal] organizations, social events or cultural activities.
Belonging – Sense of belonging to own Aboriginal group	I have a deep sense of belonging to my [First Nations / Métis / Inuit / Aboriginal] group.
Highest level of educational attainment	<i>Derived variable</i>
Residential school attendance	<i>Derived variable</i> Indicates whether the respondent and/or a family member ever attended a residential school or a federal industrial school.
Chronic conditions - Asthma	Do you have asthma?
Chronic conditions - Arthritis (excluding fibromyalgia)	Do you have arthritis, excluding fibromyalgia?
Chronic conditions - High blood pressure	Do you have high blood pressure?
Chronic conditions - Chronic bronchitis/Emphysema/COPD	Do you have chronic bronchitis, emphysema or chronic obstructive pulmonary disease or COPD?
Chronic conditions – Diabetes	Do you have diabetes?
Chronic conditions - Heart disease	Do you have heart disease?
Chronic conditions - Mood disorder	Do you have a mood disorder such as depression, bipolar disorder, mania or dysthymia?
Chronic conditions - Anxiety disorder	Do you have an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder?
Chronic conditions - Intestinal or stomach ulcers	Do you have intestinal or stomach ulcers?
Chronic conditions - Bowel disorders	Do you have a bowel disorder such as Crohn’s Disease, ulcerative colitis, Irritable Bowel Syndrome or bowel incontinence?

Note – Derived variables are new variables which are constructed by Statistics Canada using one or more existing variables. These variables are created through the application of logical or mathematical operations. As such, there is no specific question text made available.

Appendix D

D.1 STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies* (Inuit)

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract [page 133] <hr/> (b) Provide in the abstract an informative and balanced summary of what was done and what was found [page 133]
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported [pages 134-136]
Objectives	3	State specific objectives, including any prespecified hypotheses [pages 136]
Methods		
Study design	4	Present key elements of study design early in the paper [pages 137]
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection [pages 138]
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants [pages 139]
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable [pages 139-140]
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group [Appendix D.2]
Bias	9	Describe any efforts to address potential sources of bias [pages 140-141]
Study size	10	Explain how the study size was arrived at [page 138-139]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why [pages 139-141]
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding [pages 140-141] <hr/> (b) Describe any methods used to examine subgroups and interactions [pages 140-141] <hr/> (c) Explain how missing data were addressed [pages 140-142] <hr/> (d) If applicable, describe analytical methods taking account of sampling strategy [pages 140-142] <hr/> (e) Describe any sensitivity analyses [NA]
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed [page 142]

		(b) Give reasons for non-participation at each stage [NA]
		(c) Consider use of a flow diagram [NA]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders [pages 142]
		(b) Indicate number of participants with missing data for each variable of interest [Table 5.1]
Outcome data	15*	Report numbers of outcome events or summary measures [Tables 5.1 – 5.3]
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included [pages 143-146]
		(b) Report category boundaries when continuous variables were categorized [NA]
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period [NA]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses [pages 146]
Discussion		
Key results	18	Summarise key results with reference to study objectives [page 146-147]
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias [pages 149-150]
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence [pages 147-149]
Generalisability	21	Discuss the generalisability (external validity) of the study results [pages 149-151]
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based [Acknowledgements]

D.2 List of variables and corresponding question text from the 2017 APS (Inuit)

Inuit-specific determinants	Mapped APS question concept group	Question text
<i>Quality of early childhood development; Food security</i>	Food security status	Derived variable Indicates the level of food security in the household
<i>Quality of early childhood development; Housing</i>	Housing – Housing conditions – Satisfaction level	How would you rate your level of satisfaction with your housing conditions?
	Housing - Reason for dissatisfaction - Crowded/Not enough space	What are the reasons you are dissatisfied with your housing conditions? - Crowded /Not enough space
	Housing - Reason for dissatisfaction - High costs	What are the reasons you are dissatisfied with your housing conditions? - High costs
	Housing - Reason for dissatisfaction - Housing conditions	<i>Derived variable</i> "Housing conditions" include the following problems: - run down/needs many repairs - poor insulation - presence of mould or mildew - presence of unwanted pests such as mice, bedbugs or cockroaches.
	Housing - Reason for dissatisfaction - Other	What are the reasons you are dissatisfied with your housing conditions? - Location (too far from work/school/stores) What are the reasons you are dissatisfied with your housing conditions? - Safety concerns What are the reasons you are dissatisfied with your housing conditions? – Problems with landlord, neighbours or other tenants What are the reasons you are dissatisfied with your housing conditions? - Other
<i>Quality of early childhood development; Housing</i>	Number of persons in household	<i>Derived variable</i> indicates the total number of persons (grouped for numbers above 4) who are living in the household at the time of the interview.
<i>Quality of early childhood development; Availability of health services</i>	Health – Regular medical doctor	Do you have a regular medical doctor?
	No regular medical doctor - Reason - No doctors in area	Why do you not have a regular medical doctor? - No medical doctors available in the area
	No regular medical doctor - Reason - Not tried to contact one	Why do you not have a regular medical doctor? - Have not tried to contact one

	No regular medical doctor - Reason - Receiving care elsewhere	Why do you not have a regular medical doctor? - Receiving care elsewhere (e.g., walk-in clinic, nursing station)
	Health - No regular medical doctor - Reason - Doctors always changing	Why do you not have a regular medical doctor? - Doctors always changing in the area/no permanent doctors available
	No regular medical doctor - Reason – Other	Why do you not have a regular medical doctor? - Medical doctors in the area are not taking new patients / Had a medical doctor who left or retired / Other
<i>Quality of early childhood development; Availability of health services</i>	Health care – Needed but not received – Past 12 months	During the past 12 months, was there ever a time when you felt that you needed health care but you didn't receive it?
	Health care - Not received - Reason – Cost	Thinking of the most recent time, why didn't you get care? – Cost
	Health care - Not received - Reason - Not avail./Wait. times too long	Thinking of the most recent time, why didn't you get care? - Not available - in the area Thinking of the most recent time, why didn't you get care? - Not available - at time required (e.g., doctor on holidays, inconvenient hours) Thinking of the most recent time, why didn't you get care? - Waiting time too long
	Health care - Not received - Reason – Personal	<i>Derived variable</i> "Personal reasons" include the following: - felt it would be inadequate - too busy - didn't get around to it / didn't bother - decided not to seek care - personal or family responsibilities - dislikes doctors / afraid
	Health care - Not received - Reason – Other	<i>Derived variable</i> "Other" include the following: - Doctor didn't think it was necessary - Other
<i>Environment</i>	Residence inside or outside of Inuit Nunangat	<i>Derived variable</i> Indicates if the person was residing inside or outside of Inuit Nunangat at the time of the 2016 Census.
<i>Culture and language</i>	Language – Understand or speak an Aboriginal language	Do you understand or speak an Aboriginal language, even if only a few words?
<i>Culture and language</i>	Belonging – Active in Aboriginal group events and activities	I am active in [First Nations / Métis / Inuit / Aboriginal] organizations, social events or cultural activities.
<i>Culture and language; Personal safety and security</i>	Belonging – Sense of belonging to own Aboriginal group	I have a deep sense of belonging to my [First Nations / Métis / Inuit / Aboriginal] group.
<i>Livelihoods; Income distribution</i>	Total 2016 personal income	<i>Derived variable</i> Personal income sources are:

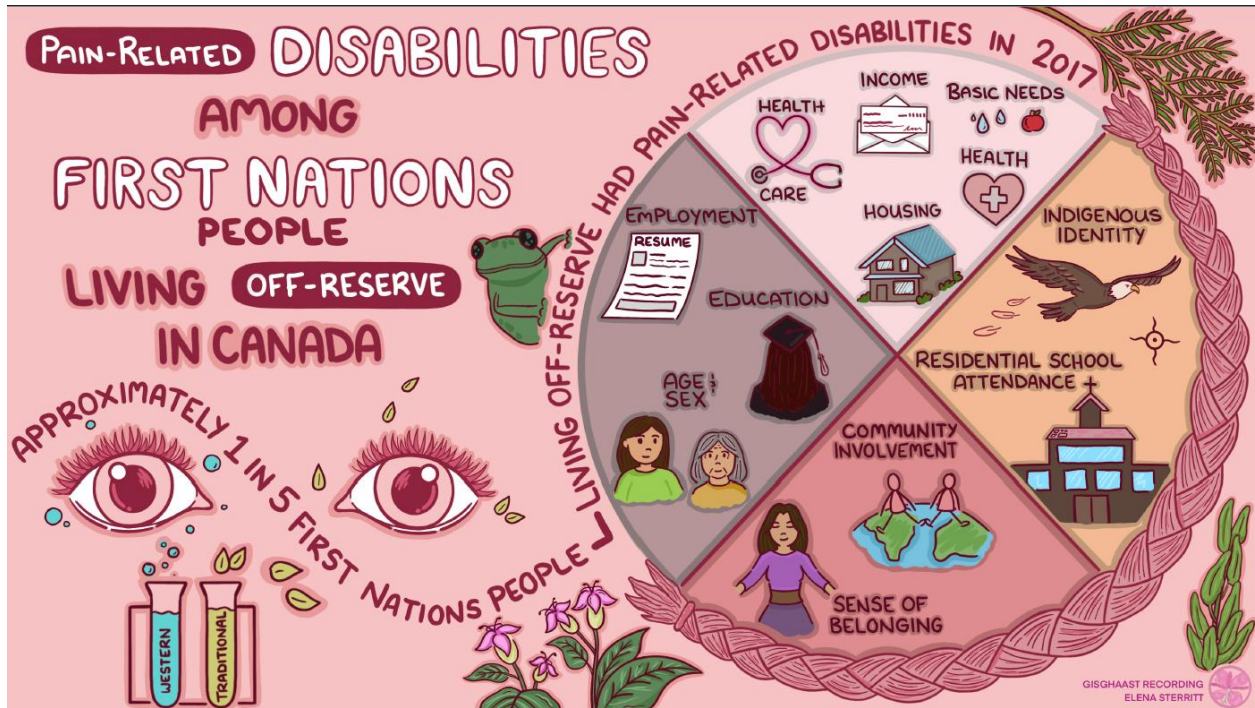
		<ul style="list-style-type: none"> - Employment or self-employment (including wages, salaries, tips, commissions and gratuities) - Government income (e.g., employment insurance, provincial or municipal assistance or welfare, Old Age Security and Guaranteed Income Supplement, child tax benefit) - Pensions and annuities - Other sources such as child support, spousal support, scholarships, etc.
<i>Livelihoods; Income distribution</i>	Total 2016 employment income	<p><i>Derived variable</i></p> <p>Employment and self-employment income includes wages, salaries, tips, taxable benefits, research grants, royalties, commissions and gratuities.</p>
<i>Livelihoods</i>	Labour force status	<p><i>Derived variable</i></p> <p>Indicates whether a person was employed, unemployed, or not in the labour force.</p>
<i>Livelihoods</i>	Occupational category	<p><i>Derived variable</i></p> <p>Indicates the broad occupational category that an employed or self-employed person's work is classified in, according to the National Occupational Classification (NOC) 2016.</p>
<i>Livelihoods</i>	Full-or part-time employment status	<p><i>Derived variable</i></p> <p>Identifies whether a person who was employed during the reference week worked full-time or part-time.</p> <p>Part-time employment is defined as less than 30.0 hours per week; full-time is 30.0 hours or more per week.</p>
<i>Livelihoods</i>	Labour force status with participation in other labour activities	<p><i>Derived variable</i></p> <p>'Other labour activities' include the following:</p> <ul style="list-style-type: none"> - hunting, fishing or trapping - gathering wild plants, such as berries, rice or sweetgrass - making clothing or footwear - making carvings, drawings, jewellery or other kinds of artwork
<i>Personal safety and security</i>	Alcohol – Drank in the past 12 months	<p>During the past 12 months, how often did you drink alcoholic beverages?</p> <p>A "drink" is defined as:</p> <ul style="list-style-type: none"> - one bottle or can of beer or a glass of draft - one glass of wine or a wine cooler - one drink or cocktail with 1 1/2 ounces of liquor

<i>Personal safety and security</i>	Smoking – Type of smoker	At the present time, do you smoke cigarettes daily, occasionally or not at all?
<i>Personal safety and security</i>	Drug use – past 12 months	<i>Derived variable</i> Indicates whether a person has used marijuana, cannabis, hashish, prescription drugs for recreational purposes or street drugs (such as cocaine, speed, solvents or steroids)
<i>Personal safety and security</i>	Thoughts of suicide	<i>Derived variable</i> Indicates whether a person has seriously considered committing suicide and whether they have attempted to do it in the past 12 months.
<i>Personal safety and security</i>	Age group of respondents	<i>Derived variable</i>
<i>Personal safety and security</i>	Sex of respondents	<i>Derived variable</i>
<i>Education</i>	Highest level of educational attainment	<i>Derived variable</i>
<i>Personal safety and security</i>	Presence of a mental health-related condition	<i>Derived variable</i> Indicates whether or not a person has a mental health-related condition: emotional, psychological or mental health conditions, such as anxiety, depression, bipolar disorder, substance abuse, anorexia, etc.
<i>Availability of health services</i>	Mental health consultation – Past 12 months	During the past 12 months, have you seen or talked on the telephone to anyone about problems with your emotions, mental health or use of alcohol or drugs?
<i>Mental wellness</i>	Health - Status (self-perceived)	In general, would you say your health is... ?
<i>Mental wellness</i>	Mental health - Status (self-perceived)	In general, would you say your mental health is... ?
<i>Mental wellness</i>	Residential school attendance	<i>Derived variable</i> Indicates whether the respondent and/or a family member ever attended a residential school or a federal industrial school.

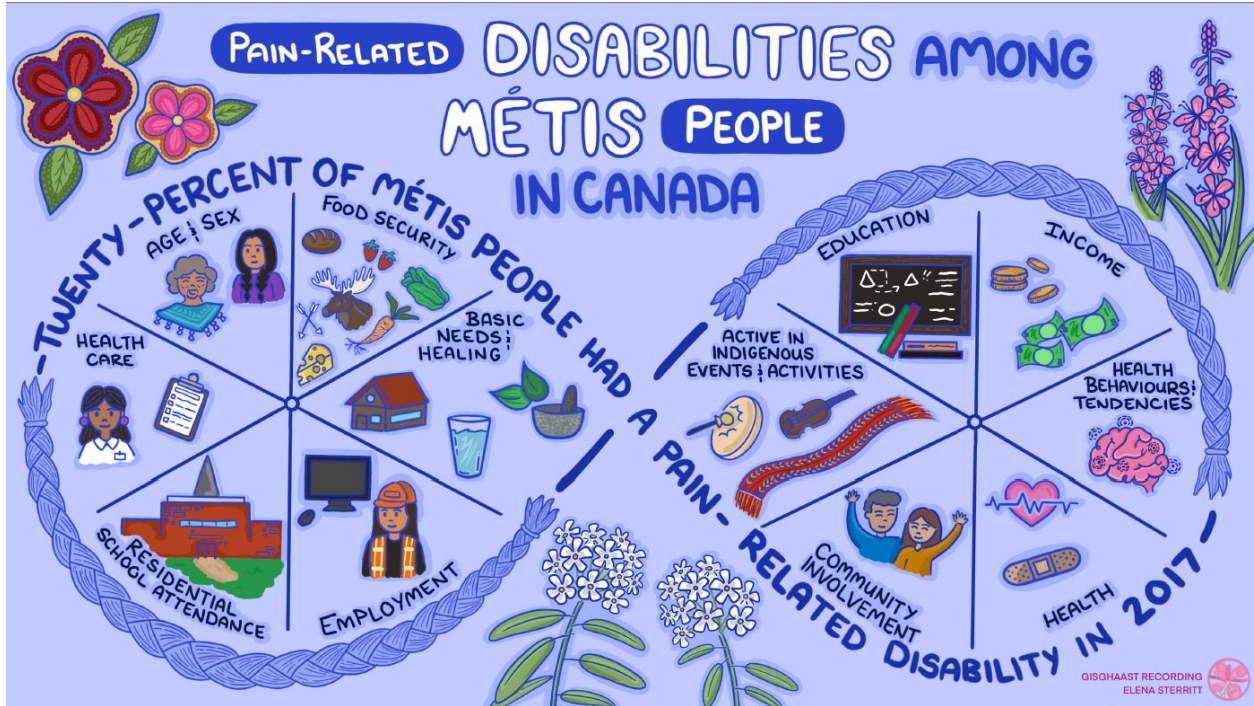
Note – Derived variables are new variables which are constructed by Statistics Canada using one or more existing variables. These variables are created through the application of logical or mathematical operations. As such, there is no specific question text made available.

Appendix E

E.1 Graphic illustration of findings specific to First Nations people living off-reserve



E.2 Graphic illustration of findings specific to Métis people



E.3 Graphic illustration of findings specific to Inuit

