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Educational Outcomes of Students Living in Remote Reserve Communities: Complex and Multifaceted Indigenous Poverty

Kristen Anderson

Saiqa Azam

Memorial University

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Abstract

Poverty impacts the mental, physical, social and emotional health and wellbeing of individuals, particularly Indigenous children and adolescents living in remote reserve communities. Within many diverse ways to conceptualize poverty, Indigenous poverty stems from the detrimental traumas resulting from colonialism, continued systemic racialization, removal of cultural identity and loss of self-determination. Residential schools and other colonial policies and traumas have eroded Indigenous culture, language and ways of life. Ongoing systemic and environmental racism, discrimination and stereotyping lend to the continued cycle of poverty for Indigenous people living in Canada, with those living on reserve experiencing the most extreme effects on their life and academic success. This article reviews the literature to draw attention to the impacts of complex and multifaceted Indigenous poverty on educational outcomes for those Indigenous students living on reserve. Overall, students who experience poverty experience negative impacts on their physical, mental, cognitive and emotional development, functioning and processing, resulting in lower educational and academic outcomes and a more likely chance that they will continue to experience poverty as adults. In the context of Indigenous ways of being, living in poverty can cause a disconnection from the land, culture and identity so integral to their being.



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Introduction

The purpose of this review of secondary literature seeks to draw attention to the many ways in which poverty impacts the educational outcomes of Indigenous students living in remote reserve communities within Canada. Namely, poverty significantly impacts an individual's developmental health, as well as their mental and emotional wellbeing; all of which play a significant part in the education of Indigenous students in remote reserve communities.

Despite being among developed countries, a significant number of Canadians are living in poverty, where poverty refers to lack of resources to “provide the necessities of life—food, clean water, shelter” (Okalow, 2023). According to the Canadian Poverty Institute (2024), in 2021,

7.3% of the Canadian population was living in poverty. Among these, 1.7% of the Canadian population was living in deep poverty ... [while] 5.7% was living in shallow poverty. In addition, 6.9% of the Canadian population were living in households with incomes just above the poverty line ... [and 14.3 %] Canadians were living either in or at risk of poverty. (Canadian Poverty Institute, 2024), p. 3)

Poverty rates for children in Canada have further increased; Canada ranks 19th out of 39 countries of the same stature (UNICEF, 2023). According to Sarangi et al. (2024), one in five children lives in poverty, and this number increases if we go to the north inhabited by the Indigenous people. Further, this number rises when it comes to single parents, minority groups and Indigenous people. Similarly, Indigenous people living on a reserve face poverty and related outcomes in their lives. Poverty influences the challenges students face in their classrooms. “Persistent socioeconomic disadvantage has a negative impact on the life outcomes” and education outcomes of many Canadian children (Ferguson et al., 2007), especially Indigenous youth living in remote locations and reserve lands. Poverty has been defined in many different ways, and it is essential to understand these various conceptualizations to unpack the complex factors causing poverty and their profound impacts on Indigenous students' educational outcomes.

Generally, poverty is viewed as economic marginalization and is often measured by the concept of a poverty line, which defines the poor as not having enough income to meet their everyday needs. Poverty is also defined as an inability to afford or access resources to enjoy or maintain a minimal or acceptable standard of living and consumption (Black, 2002; Mansur et al., 2013). This perspective of poverty usually considers the ‘poverty line’ as a reference to measure poverty; a poor person is defined as one who does not have enough income to meet their daily needs. This concept of poverty varies from country to country, along with acceptable standards of living and income levels. Therefore, in international contexts, another measure of poverty is access to food, which can be assessed by measuring malnutrition. Similarly, literacy or access to education and access to health services are considered indicators of poverty.

The United Nations (UN) Administrative Committee on Coordination (ACC) provided a socioeconomic perspective on poverty. According to them, being poor means “not having enough to feed and clothe a family, a school or clinic to go to, not having the land on which to grow one's food, and/or a job to earn one's living . . . [and] access to credit” (UN, 1998, para 3). Further highlighting the social impacts of poverty, the UN considered poverty resulting in “denial of choices and opportunities” lacking a “basic capacity to participate effectively in society” (UN, 1998, para 3). Also, poverty may result in “insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living in

marginal or fragile environments, without access to clean water or sanitation.” (UN, 1998, para 3).

A more comprehensive perspective of poverty, which defines it in terms of “deprivation in well-being” beyond income and spending capacity, has become popular recently (Haughton & Khandker, 2009, p. 1). This view of poverty focuses on the individual's capability to function in society, considering that poor people often lack key capabilities such as inadequate income, education, or health, resulting in feeling powerless and marginalized.

In addition to the above views, we perceived/conceived ‘Indigenous poverty’ that stems from the detrimental traumas resulting from colonialism, continued systemic racialization, removal of cultural identity and loss of self-determination (Baijius and Patrick 2019, p. 5). Duignan and colleagues (2022), discuss the dispossession of traditional lands, and how confinement to reserve communities in remote and barren regions in Canada continues the track of marginalization experienced by Indigenous people. Furthermore, the chronic underfunding of programs and services has significantly limited infrastructure development, provision of potable water, health care, mental health support, education and employment within Indigenous communities. Residential schools, and other colonial policies and traumas have eroded Indigenous culture, language and ways of life. Ongoing systemic and environmental racism, discrimination and stereotyping lend to the continued cycle of poverty for Indigenous people living in Canada, with those living on reserve experiencing the most extreme effects (Baijius & Patrick, 2019; Duignan et al., 2022) on their life and academic success. “On-reserve Indigenous people are experiencing the lowest levels of health, education, and economic resources” (Louie & Gereluk, 2021, para. 7).

The literature on poverty and its impact on students’ educational success and outcomes is abundant. However, little focus has been given to the individual factors or indicators of poverty and how they impact students' academic success or otherwise. These discussions are critical when understanding the impact of poverty on Indigenous youth, particularly those living in geographically remote reserve communities and dealing with multifaceted challenges which impact their educational outcomes. These multifaceted challenges have emerged from a history of colonialism and systemic racism; Indigenous peoples in Canada have suffered a loss of identity, self-determination, as well as the loss of traditional cultural ways of life due to the creation of and confinement to reservation lands or segregated communities (UBC, 2009). The loss of traditional ways of life, the impacts of decades worth of environmental harm and injustice, resource extraction, residential schools, and blatant disregard for the stewardship of the land, water, and life, have left an indelible mark of generational trauma which impacts Indigenous students living on reserves decades later (Duignan et al., 2022; Latchmore et al., 2018). These complex and multi-layered challenges not only affect the health and well-being of Indigenous children but also impact the ability of Indigenous children living in remote reserve communities to engage in their education and attain educational success (FNIGC, 2020).

To frame an understanding of the issue of poverty in rural Indigenous communities in Canada, we trusted Tribal Critical Race Theory (TribCRT), which is a subset of Critical race theory conceptualized by Brayboy (2005), who merged personal experiences, Indigenous identity, and intellectual ideas from scholars of colour, and expanded Critical Race Theory (CRT) to not only discuss the issues with societal structures but to create a roadmap for marginalized communities to honour their traditional ways of being, knowing, and doing with a goal to survive and thrive.

Critical race theory (CRT) challenges dominant ideologies and unpacks forms of oppression within a society such as race, class, and gender (Yosso, Smith, Ceja, & Solórzano, 2009). However, despite focusing on the implication of race and racism in the society, CRT has limitations in understanding and addressing issues in rural Indigenous communities due to lack of focus on the “endemic nature of colonization” as well as the “endemic nature of racism” (Brayboy, 2005, p. 427). TribCRT shifts analysis of social and educational issues on colonialism, in addition to race and racism, particularly, disrupting the consequences of colonialism for Indigenous students in urban settings or remote Indigenous communities. The TribCRT scholars have documented and analyzed colonial history, specifically, the role of educational policies and practices in the colonization of the minds and hearts of Indigenous youth by eradicating indigenous languages, and destroying their economic, social, legal, political and education systems (Lomawaima & McCarty, 2002).

To begin this understanding, this paper provides background context for Indigenous poverty in terms of living conditions Indigenous individuals experience living in remote reserve communities, including inequitable access to safe drinking water, food insecurity, and lack of adequate housing, which have plagued Indigenous communities across Canada for decades.

Brayboy (2021, p. 92) recommended nine components of TribCRT, in the context of the United States of America’s Indigenous people and communities. We have listed these nine components here, in general:

1. Colonization is endemic.
2. Policies toward Indigenous peoples are rooted in imperialism, colonization, white supremacy, and a desire for material gain.
3. Indigenous peoples occupy a liminal space that accounts for both the political and the racialized nature of our identities.
4. Indigenous peoples have a desire to obtain and forge tribal sovereignty, tribal autonomy, self-determination, and self-identification.
5. The concepts of culture, knowledge, and power take on new meaning when examined through an Indigenous lens.
6. Governmental policies and educational policies toward Indigenous peoples closely follow each other toward a problematic goal of assimilation.
7. Tribal philosophies, beliefs, customs, traditions, and visions for the future are central to understanding the lived realities of Indigenous peoples; they also illustrate the differences and adaptability among individuals and groups.
8. Stories are not separate from theory; they make up theory and are, therefore, real and legitimate sources of data and ways of being.
9. Theory and practice are connected in deep and explicit ways such that scholars must work towards social change. while the latter emphasizes the in our society.

We will use these components to discuss the findings of this paper in terms of identifying what poverty looks like and how poverty in the form of inequitable access to safe drinking water, food insecurity, and inadequate housing adversely impacts the educational outcomes of Indigenous students living in remote reserve communities in Canada.

This review paper, which utilizes secondary research literature, sought to answer the questions:

1. How does poverty present in remote Indigenous reserve communities in Canada?
2. How do the components of poverty impact the educational outcomes of Indigenous students living in remote reserve communities in Canada?

Methods

The method of searching used in this literature review involved sourcing and reviewing relevant informational databases such as Scopus, PubMed, Web of Science, ProQuest, EBSCO, Science Direct, JSTOR, and Google Scholar, in order to identify articles and publications with a specific focus on poverty within on-reserve Indigenous communities. In order to narrow the search for the pertinent data, Scopus, PubMed, JSTOR, Google Scholar, EBSCO, Science Direct, ProQuest and Web of Science were searched using the following string: “(*poverty**) AND (*First Nations**) AND/OR (*Indigenous**) AND (*housing**) AND (*on-reserve**) AND/OR (*food insecurity**) AND (*educational success**) AND/OR (*educational achievement**) AND (*boil water advisory**) AND (*Northern remote community**)”. Search filters were set to peer-review, and a publication date range was set to 2010 so as to incorporate recent perspective changes and maximize information accuracy. Due to the specific context of the topic of this literature review being within on-reserve Indigenous communities in Canada, literature from organizations such as the Assembly of First Nations (AFN), the First Nations Child and Family Caring Society, the Yellowhead Institute, and the National Collaborating Centre for Indigenous Health (NCCIH) were also utilized.

Findings

First, we explicate the concept of poverty in remote Indigenous reserve communities in Canada to present the unique situation and related indicators of poverty by organizing ideas into three parts: (1) inequitable access to clean drinking water, (2) food insecurity, and (3) inadequate housing. Then, the impact of these three aspects of poverty on Indigenous youth living on reserve will be discussed.

Poverty in Remote Indigenous Reserve Communities

As Black and McBean (2017) remark, it is no secret that the living conditions in remote Indigenous reserve communities have been disastrous for decades. From a lack of clean drinking water and decades-long boil water advisories to a lack of access to food especially traditional food sources, and inadequate housing, which is overcrowded and infested with mould; Indigenous children living in remote reserve communities are living a third world existence in a first world country (p. 249). The climate for Indigenous children living in remote reserve communities contrasts strongly with the conditions highlighted in the UN Convention on the Rights of the Child, which stipulates that every child has the right to adequate housing, nutritious foods, and clean drinking water (Batal, 2001, p. 134). Due to the continued failure of the Canadian government to provide basic needs to remote reserve communities, the children are subjected to persistent generational neglect, hampering their ability to achieve educational outcomes. Our review explored three forms of poverty prevalent in remote reserve communities. We have organized the existing literature in Table 1 to show three predominant poverty indicators in Indigenous communities, especially in remote reserve communities.

Table 1*Three Critical Indicators: Poverty in Remote Indigenous Reserve Communities*

Year	Author(s)	Three Poverty Indicators		
		Lack of Clean Drinking Water	Food Insecurity	Inadequate Housing
2001	Alaimo, Olson, & Frongillo		X	
2005	Jyoti, Frongillo & Jones		X	
2012	Greenwood & de Leeuw	X	X	X
2013	Basdeo & Bharadwaj	X		
2015	Ruiz-Castell et al.,		X	X
2017	National Collaborating Centre for Aboriginal Health			X
2018	Pepin, Muckle, Moisan, Forget-Dubois & Riva			X
2018	Bharadwaj & Bradford	X		
2019	Beedie et al.	X	X	X
2020	Dantas de Oliveira, et al.,		X	
2021	Batal, et al.,		X	
2020	Duignan, Moffat & Martin-Hill	X		

Impact of Poverty on Indigenous Youth Living in Remote Reserve Communities

The literature on poverty and its impact on students' educational success and outcomes shows that Indigenous youth, especially those living on reserve, experience the most extreme effects that are mostly negative (Baijius & Patrick, 2019; Duignan et al., 2022). In the sections below, we discuss these effects in terms of three critical indicators described above: (1) inequitable access to clean drinking water, (2) food insecurity, and (3) inadequate housing.

Inequitable Access to Clean Water and Educational Outcomes

A lack of resources on remote Indigenous reserves has been an ongoing issue across Canada for many years. The United Nations states that access to safe drinking water is a basic human right to sustain life. "The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. [Access to safe drinking water is] a right to life and to human dignity" (United Nations, n.d.).

Contamination and Water Quality

In many remote Indigenous communities, the water source has higher than acceptable levels of contaminants such as E. Coli and heavy metals like iron, barium and mercury resulting in do-not-consume or boil water advisories (Basdeo & Bharadwaj, 2013, p. 2). "The incidence of

waterborne infections in First Nations communities is 26 times the national average” (Basdeo & Bharadwaj, 2013, p. 2). Bradford and colleagues (2016), noted that several remote Indigenous reserve communities, such as Kashechewan Cree First Nation community near James Bay, ON are experiencing high levels of *E. coli* bacteria (p. 12) resulting in a worsening of common skin conditions like scabies and impetigo (Basdeo & Bharadwaj, 2013, p. 2). Residents living in these reserve communities feel they cannot trust the quality of water from their taps and rely on bottled water as a reliable drinking water source. Individuals living in reserve communities, whether remote or close to more urban communities, suffer the same mistrust of the quality of their water sources. Neskantaga, a remote First Nation reserve community 450 kilometres from Thunder Bay, Ontario, has remained under a boil water advisory for the past twenty-eight years: the longest boil water advisory for any First Nation community in Canada. Northwest Angle 33 has been under advisory since 2001; residents living on the Eabametoong First Nation (Fort Hope, ON), have not been able to drink or cook with the water from their taps without boiling it since 2001, and those living in Starblanket First Nation in Manitoba have not been able to access clean water since 2007, amongst other communities (Council of Canadians, n.d.). The Canadian Government (2023) claims that water advisories are put in place in order to inform residents that the water from a particular source is not safe to drink (para. 2). Without access to clean, safe drinking water, students may suffer poor hygiene and physical illness therefore affecting school attendance which may adversely impact educational outcomes.

Contamination and causes of this form of poverty - the lack of access to clean drinking water include mining and resource extraction, hydroelectric development, farming and waste pollution; all of these factors have had a detrimental impact on the land and environment disrupting the traditional way Indigenous people live on and connect with the land (Duignan et al., 2022; Lucier et al., 2023). In 2023, Mergler and colleagues published findings in an article which details the link between high levels of mercury in the water in Grassy Narrows First Nation and the high rate of suicide in the community. High mercury levels in the water sources stemmed from a lack of environmental oversight which allowed a private company to diffuse effluent containing toxic mercury into the river for decades. As a direct result, pregnant women who consumed the fish contaminated with mercury, birthed children who experienced social-emotional behavioral problems, as well as mental health issues, and increased risk of attempted suicide especially in older female children. This research has highlighted a possible link between toxic levels of mercury and triple the rate of suicide for those living in Grassy Narrows compared to non-Indigenous populations (Mergler et al., 2023, p. 077001-9).

Restrictions on Traditional Ways of Living

Loss of traditional ways of living due to water contamination. Environmental contamination causing poisoning of their food and water sources contribute to the loss of traditional diet and lifestyles (Basdeo & Bharadwaj, 2013, p. 7). Indigenous reserve communities that supported themselves through fishing, hunting, guiding, forestry and gathering wild rice, were forced to surrender their way of life. Half a century later, there are still governmental restrictions on game fishing and fish consumption due to unsafe levels of contaminants causing the communities to continue to suffer the cultural, social and health impacts of mercury contamination (Basdeo & Bharadwaj, 2013, p. 2).

A 2016 exposé by Vice News’ Hilary Beaumont reported on the delivery of bottled water to the First Nation community of Neskantaga. Each week, each household on the reserve would receive a one-point five-litre bottle of water for every two people, which they would use to cook

with, clean with and drink. “Seventy-five percent of Neskantaga’s band members are under the age of 30; most of them have never known clean water” (Beaumont, 2016, 2:02). As a result of exposure to untreated water, (e.g. during bathing or cooking) residents suffer rashes, skin infections, and gastrointestinal illness among other ailments; furthermore, there is a debilitating impact on mental, emotional and social well-being thereby impacting educational success as children experiencing illness and infection are unable to consistently attend school nor do they exude self-confidence, self-worth or a positive body image when they have skin deformities (Basdeo & Bharadwaj, 2013).

Sacredness of Water: Spiritual, Cultural and Social Importance. In traditional Indigenous culture, as Amie Craft (2019) notes, water has a deep cultural and spiritual significance. It is considered the lifeblood of the Earth, a sacred gift from the Creator connecting all things (para. 1). Because it gives and sustains life, it must be taken care of, respected, and kept pristine for future generations.

The lack of access to clean, safe water on remote Indigenous communities reflects a deeper issue relating to equity and social justice, the impacts of which go far beyond the physical ailments affecting them. Cave and McKay (2016) illustrate the importance within the social, cultural, and spiritual health of the Indigenous people across the land (para. 5). The loss of individual and cultural identity, knowledge, traditions and ways of life are immeasurable. According to Basdeo and Bharadwaj (2013, p. 3)

The ideas of place and self are completely connected from the viewpoint of Indigenous understanding. In this way, the state or health of the environment has a direct impact on the state or health of traditional Indigenous peoples living in close concert with the land.

Not only is Indigenous health interconnected with the land, within Indigenous cultural beliefs, but the idea of health is also holistic and relates to physical, mental, emotional and social wellbeing (Toulouse, 2016, p. 7). Overall, health and wellness is related to the capacity to develop a sense of being and a sense of belonging and are connected to Indigenous culture, traditions, knowledge and ways of life. “A loss of sense of place and self is a direct consequence of a disruption in the engagement of traditional ways of life” (Basdeo & Bharadwaj, 2013, p. 5).

Impacts of Food Insecurity on Educational Outcomes

The issue of food security has plagued remote Indigenous communities for many years. Access to safe, affordable and easily accessible sources of food for those living in remote Indigenous communities is essential to creating conditions conducive to optimal health, development and overall well-being. Food insecurity and diet quality, as Ruiz-Castell and colleagues (2015) note, are associated with mental, physical and emotional health and wellbeing as poor diet and nutrition are linked to various health issues in children, including developmental delays, poor mental health, and as well, have been linked to a lack of coping and resiliency skills.

Food Insecurity and Loss of Traditional Food Sources

Due to circumstances threatening the lands, waters and animals, Indigenous communities across Canada have experienced many changes to their cultural connections with the land including the growing and harvesting of traditional foods. As Batal and colleagues (2021) note, the provision of traditional foods plays a vital role in creating healthy Indigenous communities (p.

60). “Today within reserve communities, diets have changed drastically towards nutrient-poor market-based processed foods” (Shukla et al., 2019, p. 74).

When individuals cannot access safe, sufficient, and nutritiously adequate foods in socially and culturally acceptable ways, they experience poverty in the form of food insecurity. The prevalence of food insecurity in Canada at forty-eight percent was four times higher for those Indigenous living on reserve than in the ten Canadian provinces with the highest rates being in Arctic communities, with sixty-two percent of children experiencing food insecurity (Ruiz-Castell et al., 2015, p. 122-123). Food insecurity in remote Indigenous reserve communities is affected by environmental contamination, with lead, arsenic, barium, cadmium among others (Chan et al., 2019, p. 109). These food sources are not only threatened by contamination but also by climate change which affects hunting and fishing practices, loss of traditional harvesting practices and access to land (Shukla et al., 2019). In addition, there is a high prevalence of unreliable food supplies in the northern grocery stores; this is paired with reduced availability and quality of healthy non-traditional foods (Skinner et al., 2013, p. 31). This places Indigenous children at increased risk for obesity and nutrition related chronic diseases. In homes where children reside, there is a seventy-six percent increase in food insecurity than in homes without children (Batal, 2021, p. 133; Skinner et al., 2013, p. 35).

Food Insecurity and Isolation. As Batal (2022) mentions, several factors contribute to food insecurity in remote Indigenous reserve communities, one being the geographically remote and/or isolated location of the community. Thompson and colleagues (2023) explain that food insecurity is far-reaching, with Inuit reserve communities facing the highest rate of food insecurity of over sixty-three percent. “Households in more isolated communities were more likely to experience severe levels of food insecurity” (Deaton, 2019, p. 6; Library of Parliament, 2020). Adding to this, Thompson et al. (2023) point out the fact that over 120 reserve communities in the north alone, do not have road access, a barrier which contributes to increased cost of living and high shipping costs for perishable, nutritious foods. Brittain & Blackstock, (2015) note because traditional food sources and harvesting methods have been threatened, and therefore, there has been a change in the dietary habits of Indigenous people especially those living in remote reserve communities (p. 94). In a Library of Parliament report in 2020, it was noted that the increase in eating store bought processed foods has been found to not only increase the risk for chronic disease but nutrient deficiencies pose issues with fetal and childhood development.

Socio-economic Connections. Another important factor contributing to food insecurity is socio-economic status. Reading & Wein (2009), note that research shows that poverty, financial hardship, unemployment, low income and low educational attainment contribute to food insecurity. In Canada, Indigenous populations generally have a lower socio-economic status than non-Indigenous Canadians and, therefore, are particularly at risk of experiencing food insecurity. The long-lasting and ongoing effects of colonial policies diminish Indigenous people's access to resources on their traditional lands. These policies, along with forced relocations and residential schools prevented intergenerational knowledge transfer of harvesting, hunting, and of traditional eating habits (Library of Parliament, 2020, AFN, 2023). Furthermore, as White and colleagues (2012) explain, access to traditional foods is further affected by the presence of contaminants in the environment. As traditional ways of living would enable Indigenous people to hunt and gather from the land, a decline in access to safe, sufficient traditional foods, means these communities rely on importing food.

Food Insecurity and Loss of Traditional Cultural Knowledge

The Gwich'in community in Canada's Northwest Territories, harvest local game such as porcupine, caribou, moose, Dall sheep, bear, rabbit, beaver, muskrat, squirrel, fish such as whitefish, char, trout as well as birds like duck, geese, spruce hen, and swan along with wild edible plants. Kuhnlein (2014), states that because Indigenous food systems include sociocultural teachings about harvesting, processing and the healing and nutritional properties of the traditional foods, traditional knowledge keeping of food systems guides oral traditions and cultural values. "Knowledge keepers spoke to a deep connection to food that is metaphysical and culturally inherent to their identities. The interviews highlight their personal, communal, and spiritual relationships with food" (Shukla, 2019, p.79).

The Land as Medicine. For the Indigenous people living on reserve communities, food security means accessing traditional wild food sources as well as allowing individuals to engage in traditional methods of accessing this food through hunting, fishing, gardening, or edible plant harvesting. For the Indigenous people, food is medicine for the mind, body, and spirit. Food security also means that the land, water and animals must be healthy. Shukla (2019) states, without the knowledge and ability to practice sustainable growing and harvesting of traditional foods and the ability to preserve cultural traditions, food insecurity will continue to exist within these communities (p. 82). Blackstock (2001) notes that Indigenous elders and knowledge keepers have noticed many environmental changes over the course of their lives which has resulted in a challenge in accessing quality traditional food sources. The pollution of water sources, land, and forest degradation as well as a decline in land and water animal populations affects access to traditional food sources (p. 12). Because the land provides food which is a source of medicine, it holds significant cultural and spiritual value and as Shukla (2019) states is "integral to one's identity and overall physical, mental, emotional, and spiritual health and wellbeing" (p. 90-91). Lucier and colleagues (2020) note that Indigenous people have a lasting relationship with water. Indigenous elders and knowledge keepers acknowledge there is a responsibility to take care of the land as all life is dependent upon it.

Impacts of Inadequate Housing on Educational Outcomes

Brittain & Blackstock, (2015) note the inadequate food and water crisis in remote Indigenous communities is part of a greater issue: the mental and physical health and emotional well-being of Indigenous peoples living in these remote reserve communities (p. 88). Canada Mortgage and Housing (2013) states that acceptable housing is "adequate in condition, suitable in size, and affordable". Accordingly, the National Collaborating Centre for Aboriginal Health (2017) points out that housing is adequate if it does not "require any major repairs, has enough bedrooms for the size and make-up of resident households" (para. 8). The lack of adequate housing on reserve is dire.

Inadequate Housing and Proximal Health

Weston (2019) notes that those Indigenous children living on reserve, experiencing inadequate housing, are almost twice as likely to die before their first birthday. Additionally, Garneau's Standing Committee Report (2022) observed that many homes on reserve pose a hazard to human health due to mould, including black mould. As Weston (2019) supports, Indigenous children living on reserve in these conditions are hospitalized frequently due to lung infections and illness associated with mould exposure. Compounding this is the strain on the mental, physical and emotional health and well-being of all Indigenous people living on reserve in inadequate and

substandard housing. The National Collaborating Centre for Aboriginal Health (2017) points out that in comparison to non-Indigenous Canadians, Indigenous people deal with the worst housing conditions in the country (para. 1). Furthermore, Hunter & Schwab (1998) note that overcrowding affects sleep quality. Poor sleep quality and patterns may mean children are tired and may be more disengaged in their learning as well as possibly exhibit symptoms of emotional and behavioural dysregulation. This, in turn, may contribute to experiences of failure and may further increase the likelihood of non-attendance. Approximately fifty-two percent of Inuit living in Nunavut, are living in overcrowded households with thirty-four percent of the total Nunavik population being under the age of fourteen (Pepin et al., 2018, p. 2). Those Indigenous individuals living on reserve are dealing with overcrowding in homes, poorly maintained homes, and buildings being in constant disrepair: “According to the 2008 Canadian Community Health Survey, more Northern Aboriginal children aged 12- to 17-year-old live in overcrowded households than Southern Aboriginal or non-Aboriginal people” (Pepin et al., 2018, p. 2). Often there are multiple families living in one home. “Almost half of households had two families living under the same roof with an average of 5 people living in each home. Many homes were multi-generational with extended family or multiple families living together” (Skinner et al., 2013, p. 34). Overcrowding occurs concurrently with deleterious housing conditions. More than twenty-four percent of Indigenous housing is either overcrowded or in need of major repairs (Kovesi et al. 2022, p. 80; Pepin et al., 2018, p. 2). In Canada’s Arctic region, the homes are not only insufficient but also poorly built to handle the harsh weather conditions, falling quickly into disrepair (Pepin et al., 2018, p. 1).

Inadequate Housing and Social Wellbeing

Guenther and colleagues (2019) note, that regarding overcrowding, contributing factors to many familial and social problems include abuse, violence, suicide, alcoholism and addictions, which break down families and negatively affect mental health and put children at risk. The emotional impact of living in a dilapidated unit is demoralizing. In his 2022 report, Garneau notes adequate and affordable housing is essential for the academic success of Indigenous children. Appropriate housing fosters healthy individuals, a healthy social environment and good academic performance (Skinner et al., 2013, p. 34; Kovesi et al., 2022, p. 84).

Inadequate Housing and Mental and Emotional Wellbeing

In addition to negatively impacting the mental, emotional and physical wellbeing of Indigenous students living in remote reserve communities, a lack of adequate housing further impacts individual sense of cultural identity and belonging. Overcrowded living conditions negatively impact self-esteem, increase the prevalence of suicidal ideations, and is associated with depression, anxiety especially among 10 to 15-year-old children (Pepin et al., 2018, p. 2). Those children who experience poverty at a younger age for a sustained period (birth to age 9), are more likely to show signs of learned helplessness at the beginning of adulthood. Furthermore, social adversities experienced in the adolescent years, including household overcrowding, increase the risk of a poor trajectory in adulthood (Pepin et al., 2018, p. 2).

Impacts of Poverty on Overall Development and Educational Outcomes

So why do these issues matter? How are these issues impacting the educational outcomes of Indigenous children living in these remote reserve communities across Canada? The impacts of poverty are far-reaching and have effects on children's physical, cognitive, social and behavioural development. Dantas de Oliveria and colleagues (2020, p. 2), confound the impacts of poverty on

academic achievement and educational outcomes are many, from the inability to meet cognitive developmental milestones to language delays and problems with literacy and numeracy comprehension as well as physical ailments preventing attendance in school to mental health issues causing suicide crises. As Reading & Wein (2009) note, these impacts affect student achievement in the form of engagement in education and motivation for learning, ultimately affecting their future socio-economic status come adulthood. Without a high school diploma, these children are at risk of continuing to experience living below the poverty rate, a cycle which perpetuates itself. As Perry Bellegarde, Chief of the Federation of Saskatchewan Indian Nations in 2014, noted, living in inadequate and overcrowded housing has many negative impacts on overall health for children. Not only are communicable diseases spread more easily, but overcrowding means the lack of space for children to play and study, increasing tension leading to strain on the mental, emotional, and physical wellbeing of all individuals living there. The Native Women's Association (2018) points out that inadequate housing also creates a lack of safe alternatives for children and family members experiencing violence and domestic abuse (p. 15).

Poverty and Cognitive Development

As previously noted by Mergler and colleagues (2023), Indigenous individuals living in remote reserve communities are experiencing poverty in the form of inequitable access to clean, safe water. Consuming water contaminated with high levels of toxic heavy metals impacts the typical development of the brain. Atypical development and malformation of the brain's structure, as Mergler and colleagues (2023) note, lead to increases in suicidal ideation, issues with social-emotional and behavioural regulation as well as mental health concerns among Indigenous individuals living in remote reserve communities.

Alaimo and colleagues (2001), noted that delays in motor skills, cognitive deficits, and decreases in school performance are a result of food insecurity and malnutrition (p. 44). Poverty and malnutrition deficits are also linked to lower academic success. Approximately half of all Indigenous children living in remote reserve communities experiencing food insecurity display early literacy and speech delays as well as behavioural issues (Best Start, 2012, p. 21). In both young children and adolescent students, those Indigenous students experiencing food insecurity scored almost three points lower than their food-secure peers on the intelligence and achievement testing. "For 6- to 11-year-old children food insufficiency was significantly negatively associated with WRAT arithmetic scores" (Alaimo et al., 2001, p. 46). Furthermore, Toulouse (2016) notes that on provincial achievement testing in Ontario, Indigenous students in grade 3 scored approximately forty-seven percent while their non-Indigenous peers scored on average sixty-two percent.

Additionally, those students who experienced food insecurity consistently, were more than twice as likely to develop attendance concerns and/or repeat a grade. Dropout rates for Indigenous students, especially those living in remote reserve communities are markedly high with only thirty-nine percent of Indigenous students in remote reserve communities graduating from high school. Chandler (2010) noted a dropout rate among Indigenous students of approximately sixty percent (p. 47) and the First Nations Information Governance Centre (2020) indicated, thirty-five percent of Indigenous adolescents living on reserve repeated a grade, as well one in five reported having A's on their report card. Consequently, those students who do not meet with positive educational outcomes are "known to experience higher rates of depression, suicide, and emotional difficulties; are more likely to be involved in risky behaviours such as substance abuse, violence, and sexual

promiscuity; and are more prone incarceration than their non-Indigenous peers” (Chandler, 2010, p. 47).

Poverty and Brain Development. Research has demonstrated that those children and adolescents experiencing poverty in terms of inequitable access to water, food insecurity and inadequate housing, display differences in structural and functional brain development, particularly in relation to social-emotional regulation, sensori-motor development, memory, executive functioning and cognitive processing, a critical aspect of learning, communicating, and academic achievement (Hair et al., 2015). Physiologically, the influence of poverty on educational outcomes is mediated by structural brain development. Hair and colleagues (2015) note that the volume of Gray matter in children who experience poverty, was significantly impacted affecting development which is detrimental to children’s academic achievement and educational outcomes. “A growing number of studies have used neuroimaging and found smaller volumes in the frontal and temporal lobes for children and adolescents living in poverty” (Hair et al., 2015, p. 3). Poverty and lack of nutrition have a direct impact on the temporal lobe which is connected to language development, and the frontal lobe which is connected to executive functioning. Cognitive and executive deficits in these areas during the developmental stages in both childhood and adolescence, may account for as much as twenty percent of children’s achievement deficits as the brain exhibits “atypical structural development in several critical areas, including total gray matter” (Hair et al., 2015, p. 8). The development of these brain structures and processes are imperative for learning, as Engle & Black (2008) note, in order to meet with educational success, students are required to exhibit sustained attention, cognitive flexibility, comprehension, decoding and numerical processing (p. 243).

Poverty and Social-Emotional Development

Poverty, specifically in the form of food insecurity impacts behaviour. Jyoti and colleagues (2005) posit that food insecurity affects academic performance and social skills in children. As Egeland and colleagues (2010) purport, those kindergarten students living in food-insecure homes, an estimated fifty-six percent, demonstrated impaired achievement outcomes in literacy and numeracy, a decline in social-emotional skills as well as significantly greater risks of psychosocial dysfunction and behavioral and attention problems (p. 2835). The associated factors such as decreased levels of positive behavior and greater levels of social behavior problems all impact future academic success (Egeland et al., 2010, p. 2835).

As hunger and malnutrition can cause irritability, distractibility, emotional dysregulation and anxiety, students who suffer from food insecurity are also more likely to have psychosocial difficulties. Additionally, these students are almost twice as likely to have difficulty getting along with others, 4 times as likely to have no friends and almost 3 times as likely to be suspended (Alaimo et al., 2001, p. 46). Food insecurity and a lack of nutrition innately affect the development and school readiness of children. Johnson & Markowitz (2018), discuss how school readiness reflects a child’s ability to meet with successful educational outcomes academically, and socially-emotionally. In order for students to exhibit school readiness, appropriate motor development milestones must be met, age-appropriate social knowledge and competence as well as, age-appropriate language skills and cognitive skills must be present (Greenwood & de Leeuw, 2012 p. 382).

Poverty and Overall Well-being

As a marker of social determinants of health, the impacts of poverty are linked to health disparities (Best Start, 2012, p. 21). Indigenous children and adolescents who are malnourished and lack access to clean, safe drinking water are more likely to have a compromised immune system, suffer from colds, viruses, experience general malaise, headaches and health concerns such as anemia and kidney disease (Best Start, 2012, p. 21). In addition to living in overcrowded and run-down housing placing strain on mental and emotional well-being, experiencing food insecurity is also linked to a number of mental health issues including low self-esteem, inability to concentrate, shame, moodiness and behavioural problems (Best Start, 2012, p. 21). Alongside negatively impacting mental health and social and emotional wellbeing, experiencing food insecurity further exacerbates strained living conditions putting Indigenous students living in remote reserve communities at risk of developing diabetes, heart disease and other conditions as they get older which may prevent them from attending school, therefore negatively affecting their educational outcomes (Best Start, 2012).

Discussion

The findings presented in the above sections provide some insight into the detrimental ways poverty impacts the educational success of Indigenous students living in remote reserve communities. As Brayboy (2021) noted, the effects of colonization have and continue to have detrimental impacts on Indigenous culture, communities, people and identities. Due to the deep and lasting impacts colonization and having their place in the world defined within a lens of colonization, generations of Indigenous people across Canada struggle to understand their place, culture and identity. Many interrelated themes of poverty, water, food, and housing emerged that helped to unpack multifaceted impact on the educational outcomes and success of Indigenous students living in remote reserve communities of which may not be fully comprehensible at the moment. As Brayboy (2021) goes on to mention, when it comes to Indigenous people, educational policies mirror governmental policies and “lead toward the problematic goal of assimilation” (p. 95). This effort to coerce Indigenous people into fitting into a non-Indigenous way of life through the creation of systems which fail to acknowledge Indigenous ways of living and knowing have left many nations to fend for themselves in rebuilding not only physical communities but also an understanding of identity, connection to culture and how to live within a modern society.

Many studies on the impact of poverty on educational outcomes provide information from a singular context, often from a non-Indigenous perspective. There is ample research reporting on the issue of lower educational outcomes. However, very few studies have discussed poverty and its generational impacts on educational outcomes and the success of Indigenous youth living in remote communities. Considering this, there continue to be gaps within the context of how poverty plays a part in impacting Indigenous students’ educational outcomes, specifically those who live in remote Reserve communities.

Researchers in the area of poverty have not considered Indigenous communities within Canada on a large scale. Some studies have involved specific Indigenous communities in various provinces and territories, and the results gained have been compared with those of studies involving non-Indigenous children living in Canada. Due to the fact the information is not compared in a relative means, therein lies a bias. In order for data to be taken holistically, it should be compared in relation to a similar make up between Indigenous and non-Indigenous contextual research.

Although the findings presented provide insight as to how water contamination and lack of access to clean, safe water impacts educational success, it is worth exploring the impact of environmental contamination, for example, air pollution and how the loss of traditional lands reflects on educational outcomes. To address this gap, it is also worth exploring how poor water quality affects communities outside of those who have known issues with mercury or lead, for instance. Large bodies of research have noted how important the spiritual aspect of water is within Indigenous culture; therefore, it is crucial to understand how the interplay between poor water quality and lack of access to traditional food sources impacts mental health. Furthermore, research has shown malnutrition causes impaired brain development; it is worth understanding other impacts it can have on the brain. Additionally, as these communities are remote and often lack access to adequate and timely medical care, understanding the intersection between mental health and suicide crises in many communities impacts educational outcomes is also worth exploring.

The interplay of family dynamics and educational outcomes is complex, with far-reaching consequences for these marginalized communities. Inadequate and overcrowded housing places strain on the mental health of all living within the household by increasing stress, anxiety, depression, which can increase suicidal ideation among other mental health related illnesses and concerns. Another gap identified is the impact parenting/guardianship has on the educational outcomes of those students living in remote reserve communities. Removal of parents from the home (or vice versa with children) due to substance abuse and addiction can leave lasting impacts, likewise with those Indigenous students who are raised by their grandparents as well as those in foster care both on and off reserve.

Determining these impacts can provide insight into the challenges that impact Indigenous students on remote reserve communities. In understanding this, we can work to create more appropriate culturally responsive programs, policies and solutions which better support Indigenous students. This information can also be extrapolated to those non-Indigenous students living in rural areas within Canada.

Conclusion and Recommendations

Poverty in terms of inequitable access to clean drinking water, food insecurity, and inadequate housing has negative impacts on the educational outcomes of Indigenous students living in remote reserve communities from increased absenteeism, difficulties in processing and comprehending literacy and math, low test scores, as well as poor self-regulation and aggressive behaviour resulting in suspensions. In addition, poverty has a deleterious effect on children's physical, mental, social and emotional development as well as cognitive and executive functioning. High food insecurity rates place stress on child development as malnutrition contributes to the lag in physiological development of the brain in turn negatively impacting academic performance and health. A lack of adequate housing puts strain on children and adolescents in that they do not have individual space in which to grow and develop. Additionally, overcrowding leads to anxiety, depression, abuse and a general feeling of a lack of safety - physically, mentally and emotionally.

As a basic need to sustain life, a lack of access to clean, safe drinking water not only negatively impacts nutrition, development, and hygiene but also removes a connection to culture and identity for Indigenous people. Traditional knowledge systems and ways of knowing are integral in accessing and using water. A lack of access to clean, safe water sources places

Indigenous individuals, children and adolescents especially, in a position to continue to experience a lack of self-determination and identity. A disconnection from the land plays a severely detrimental effect on student engagement in their daily lives which affects their life trajectory.

Without an education, Indigenous students are less likely to obtain higher education and provide for themselves, their family and community. Lack of education increases the likelihood individuals will remain living in some state of poverty, reciprocally poverty often leads to poor education and decision-making, negative health effects and lower wellbeing overall.

Limitations

The focus of this review was to explore poverty and its impact on Indigenous students living on reserve in remote communities in Canada. So, in determining what articles to include in this review, articles, research and information which focused solely on off-reserve issues regarding poverty and education were excluded from this review. Due to this fact, this information cannot be contextualized in the concept of challenges and impacts that off-reserve individuals face. It should be noted that the research and information presented in this literature review is also focused on those remote Indigenous reserve communities solely within Canada.

Additionally, while it is recognized that this paper as by its focus on poverty related to food, water and housing and their impacts on educational outcomes in remote Indigenous communities, it does exclude factors such as a lack of appropriate/culturally relevant curriculum, significant challenges with regard to recruiting and retaining quality teachers, as well as frequent school closures causing loss of instructional time. Furthermore, due to a lack of employment opportunities post-graduation in many communities, there may be a critical correlation between motivation to attend school, future employment opportunities and perceived quality of life in adulthood.

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Authors

Kristen Anderson received a Master of Education at Memorial University of Newfoundland in Curriculum, Teaching and Learning. She obtained her bachelor's degrees in both Visual Arts and Education from Lakehead University. Alongside working as a part-time professor at Confederation College, she is a secondary school teacher. In addition, Kristen also works as a research assistant within the Faculty of Nursing at Lakehead University. She is interested in continuing her post-graduate work in the areas of intersectionality, Indigenous health, poverty, food sovereignty and education.

Dr. Saiqa Azam is an Associate Professor of science education at the Faculty of Education, Memorial University of Newfoundland, Canada. She employs narrative approaches to study and document pedagogical content knowledge (PCK) of science teachers. She has been interested in the issues of equity, diversity, and inclusion (EDI) and how these issues interplay to create barriers for learning and teaching science, focusing on addressing oppression and creating equitable learning environments for all learners in science classrooms. Her recent research has focused on science teachers' topic-specific pedagogical content knowledge related to students' diversity in science classrooms, culturally relevant science teaching, and becoming inclusion educators.

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