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Grassroots activism by individuals and organizations like Leesee Papatsie and Feeding My Family has brought national and international attention to the challenges facing many Indigenous communities in regards to the high cost of food in the Far North. While extremely important, the current struggles faced by Inuit communities in northern Canada are only one piece of the story. The histories of Indigenous foodways and practices are vast and traverse multiple geographies and spaces (urban and rural, northern and southern, land and water, etc.) Indigenous foodways include diverse worldviews and epistemologies; incorporate different land management activities/strategies; feature the many patterns and practices of survivance, resistance, and resurgence; combine Indigenous and Western food systems and practices; and encompass the imposition of colonial and corporate policy and governmentality.

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image: En'owkin Centre Breastfeeding Art Expo

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Editorial

Special issue on Indigenous Food

Ellen Desjardins*

In the spring of 2016, I had a conversation with Dr. Kelly Skinner at the University of Waterloo which led to the mutual decision that we work towards a special issue of *Canadian Food Studies* on Indigenous Food. She was well connected with Canadian researchers, writers, activists, and artists on this topic, and felt that there was a plethora of potentially publishable material for such an issue. From the journal's perspective, an Indigenous focus would embody important and relevant aspects of food culture, politics, knowledge, history, world views, and practices that should be featured and honoured in a special issue.

For the *Canadian Food Studies* journal we have, from the beginning, emphasized our commitment to diversity of expression that can broadly range from original research to narratives to audio-visual works. Our aim is to build a body of voices, knowledges, and other materials that represents the community, academic, and individual contexts of food studies.

Dr. Skinner brought together a group of co-guest editors, all named in their editorial in this issue. The call for papers began with:

> Grassroots activism by individuals and organizations like *Leesee Papatsie* and *Feeding My Family* has brought national and international attention to the challenges facing many Indigenous communities in regards to the high cost of food in the Far North. While extremely important, the current struggles faced by Inuit communities in northern Canada are only one piece of the story. The histories of Indigenous foodways and practices are vast and traverse multiple geographies and spaces (urban and rural, northern and southern, land and water, etc). Indigenous foodways include diverse worldviews and epistemologies; incorporate different land management activities/strategies; feature the many patterns and practices of survivance, resistance, and resurgence; combine Indigenous and Western food systems and practices; and

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> encompass the imposition of colonial and corporate policy and governmentality.

The resulting submissions carried forth and expanded upon these ideas and more. For this we thank the authors and the guest editors. We hope you enjoy and benefit from the collective contributions in this special issue.

The editorial team appreciates the continued collaboration with the CAFS Journal Governance Committee, established in June 2016: Rebecca Schiff, Jennifer Brady, and Kristin Lowitt. We thank the University of Waterloo for providing our OJS online platform, which has been improved just prior to the release of this issue.

2018 Editorial Team

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Guest Editorial

From bitter to sweet: Continuing the conversation on Indigenous food sovereignty through sharing stories, engaging communities, and embracing culture

Kelly Skinner[a*], Tabitha Robin Martens[b], Jaime Cidro[c], and Kristin Burnett[d]

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> Food for us comes from our relatives, whether they have wings or fins or roots...that is how we consider food. Food has a culture. It has history. It has stories. It has relationships that tie us to our food.
> -Winona LaDuke, 2012

The desire to undertake a special issue on Indigenous Food arose during a conversation that took place between the co-editors following a panel on the same topic at the annual conference of the Native American Indigenous Studies Association in 2015. The panel contained a mixture of conversations that focused on the meanings and relationships of Indigenous peoples with land and food; the efforts and importance of re-knowing and re-defining those relationships through stories centred around community and family; and the ways in which settler colonialism operates to undermine Indigenous food sovereignty at both the structural and epistemological levels.

As Indigenous and settler academics we sought works that spoke to Indigenous foodways and practices in their vastness, while also traversing multiple geographies and spaces (urban and rural, northern and southern, land and water). We also looked for pieces that explored Indigenous foodways and diverse worldviews and epistemologies; incorporated different land management activities or strategies; featured the many patterns and practices of survival, resistance, and resurgence; combined Indigenous and Western food systems and practices; and encompassed the imposition of colonial and corporate policy and governmentality.

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The call for papers to *Canadian Food Studies* was well received, and served as an important measure of how rich and diverse scholarship in the field has become. Submissions ranged in content from explorations of the meanings and operationalization of Indigenous Food Sovereignty (IFS) by communities and Nations, the implications of climate change on food access and harvesting and the work of communities to establish priorities and best practices, to the insidiousness of settler colonialism. Indeed, it is a welcome situation where Dawn Morrison's seminal work on Indigenous Food Sovereignty (Morrison, 2011) is iconic rather than isolated and singular. The contributors for this issue come from a diverse range of disciplinary backgrounds ranging from public health, anthropology, nutrition, to Indigenous Studies and employ and draw on a broad range of methodologies.

Significantly, the editors and guest editors of the special issue wanted to illuminate Indigenous food issues and practices in a way that meaningfully incorporated the voices and perspectives of Indigenous peoples and that also extended these considerations to include Indigenous methodologies like storywork, the importance of situating self and culture, and reflexive praxis (Absolon & Willett, 2005; Graveline, 2000; Hart, 2010; Kovach, 2010; Archibald, 2008). It is essential that academia, and by extension academic publishing, be more inclusive of Indigenous methodologies and accept and adopt different ways of writing and thinking about issues and topics that diverge from the dominant and colonial framework. The de-colonizing process has to be about more than just articles written by Indigenous scholars, but acknowledging and incorporating Indigenous methodologies in a meaningful manner that is not tokenistic. Relegating pieces that adopt such methodologies to commentaries, perspectives, or narratives unworthy of peer review imposes and privileges a certain type of knowledge and way of doing things that perpetuates colonial paradigms. Drawing on the eloquent words of Tabitha Robin Martens' piece in this issue, we must see that the "relationships that need to be cultivated should include gratefulness. The land, the sun, the sky, and moon and stars and everything connected within and around that are what gives us life. Life deserves respect. It deserves a moment of your time, a moment of your heart, to say thank you. The relationships that need to be cultivated must include looking inward, offering outward: kindness, respect, honour." Following Martens' advice will enable us to move forward in a good way. We appreciate the hard work and efforts of the journal editorial team at *Canadian Food Studies* to ensure that this special issue came to fruition, and their openness to including a variety of submission types and viewpoints.

In particular, the issue seeks to draw attention to works that explore Indigenous Food Sovereignty and highlights community perspectives through the explicit inclusion of Indigenous people and their organizations into the research process. Jaime Cidro, Tabitha Robin Martens, Lynelle Zahayko, and Herenia Lawrences's article entitled "First Foods as Indigenous Food Sovereignty: Country Food and Breastfeeding Practices in a First Nations Community in Manitoba" is a great example of this praxis in action. While involved in a different but related research project, community members and researchers noticed significant and important themes emerging from conversations on dental caries that required further exploration. Thus, in concert with community members, Cidro et al. explored the often overlooked role that infant feeding

practices and traditions play in IFS. Conventional discussion of IFS regularly fail to consider the role and place of children in the reclamation of IFS, and instead focus principally on adult participation in land and water based harvesting activities. The authors encourage us to consider the embodied nature of IFS and to see first foods and breast feeding as "examples of Indigenous food sovereignty, and part of a living culture." Notably, this piece shows us how community-led research is organic and shaped by the needs and interests of community members; often leading to unexpected and important insights into other interconnected matters.

Continuing with research in Manitoba, the article "Access and affordability of 'healthy' foods in northern Manitoba? The need for Indigenous food sovereignty" by Mengistu Wendimu, Annette Desmarais, and Tabitha Robin Martens examines the availability and affordability of healthy foods in 15 First Nations communities in northern Manitoba and seven non-First Nations urban centres. Through the collection of food costs in 37 stores and six focus groups, Wendimu and colleagues consider the implications of higher food prices for individuals and communities. They found that lack of access to an all-weather road significantly influences food prices and that despite the Nutrition North Canada subsidy, many healthy foods remain unaffordable, with limited availability of healthy foods in First Nations communities in northern Manitoba that are significantly higher in cost than in Winnipeg or non-First Nations urban centers. The authors stress the importance of access to traditional food as critical for food security and for conversations beyond food security with "the need for a more substantial and profound transformation that includes decolonizing food systems and building Indigenous food sovereignty."

The "En'owkin Centre Breastfeeding Art Expo" review by Karen Graham, Rhonda Camille, and Tracey Kim Bonneau shows the beauty of breastfeeding through an exhibition of six one-of-a-kind community art projects by Indigenous and non-Indigenous artists in British Columbia. The aim of the art expo is to increase awareness of the benefits of breastfeeding as well as build understanding and support for breastfeeding across cultures, families, ages, and genders. The larger Breastfeeding Art Expo is an exhibition of 15 large community art projects and 65 independent artworks celebrating the benefits of breastfeeding. Graham, Camille, and Kim Bonneau walk us through the En'owkin Expo as it features a stunning selection of six Indigenous art pieces including plaster casts, photographs, quilting, drawing, digital illustration, and painting.

"Healthy Roots: Sharing Stories Rooted in Haudenosaunee Knowledge to Grow Indigenous Foodways and Promote Well-Being," by Kelly Gordon, Hannah Neufeld, and Adrianne Lickers, traces a community based initiative with the Haudenosaunne that used language to center, define, and inspire program objectives. Entsisewata'kari:teke (Mohawk) and Esa:do:gwe: (Cayuga) meaning "you will become healthy again" encouraged community members to undertake a 90-day challenge that integrated traditional foods and activities while fostering interconnectedness. The initiative focused on preparing and consuming only those foods available on Turtle Island prior to the arrival of settlers. In doing so the program, for the

community, fostered culture pride and emphasized the importance of re-knowing and relearning the ways of their ancestors in ways that made sense in a contemporary context.

The concept of re-knowing leads us to Tabitha Robin Martens' article, "Reflections: Indigenous Food, Culture, and Relationships." Martens' work is extremely important and brings together many of the themes raised in other articles included in this special issue. Of particular importance is the strength and resilience of community and family and the need to connect and draw on those strengths in order to identify how and where we need to move forward. As Martens advises us to consider as we "venture into the world of Indigenous food- the colonial history and traumas, the ceremonies and beauty, the destruction to the land and every other thread to this spider web of conversation- we must acknowledge that we, too, only know a tiny particulate of sand." Each article in this collection serves as a tiny particulate of sand that moves us forward to see and understand the many patterns and practices of survival, resistance, and resurgence of Indigenous peoples and Nations (Simpson, 2011).

"Toward Anti-Colonial Food Policy in Canada? (Im)Possibilities within the Settler State" by Lauren Kepkiewicz and Sarah Rotz encourage readers to consider critically the relationship that the current settler food movement has with Indigenous people and Nations. In particular, the authors draw on the contradictions evident between the development of a national food policy (a process currently underway) and IFS. Kepkiewicz and Rotz critique the ways in which settlers participate in the food movement and caution how the development of a national food policy will most likely serve to "reify colonial structures and relationships." The authors challenge us to consider the language we employ when discussing these issues because language carries with it power and meaning and words and phrases like "inclusion" and "giving voice" prevent meaningful relationship building that is rooted in equity, respect, and kindness.

Working with community members in the Inuvialuit Settlement Region (ISR), Northwest Territories, Tiff-Annie Kenny, Myriam Fillion, Sonia Wesche, Julian MacLean, and Hing Man Chan tried to prioritize existing food security initiatives to provide a basis for developing a comprehensive food security strategy for the ISR. Using the major determinants of food security (availability, access, quality, and utilization) the authors examine the three interrelated dimensions of the Inuit food system: country food, market food, and locally-produced food. The authors identified a total of 30 initiatives within the ISR. The article illuminates that food (in)security is a complex and multi-faced issue and despite the many programs that exist the situation remains a public health crisis suggesting that incorporating community input and priorities is essential for addressing the problem. This article offers a possible framework for program evaluation and complementarity.

The article by Andrew Spring entitled "Climate Change, Community Capitals, and Food Security: Building a More Sustainable Food System in a Northern Canadian Boreal Community," uses a participatory action research methodology to look the Ka'a'gee Tu First Nation (KTFN) located in Kakisa, NWT to identify threats to the community's food system. Identifying these threats will help with the development of community-based solutions that build on existing strengths and foster the resiliency and transformation of food systems to climate

change. By identifying transformative projects that were important to enhancing food availability, the community is actively defining their own food system. Climate change has communities deeply concerned about their continued ability to harvest traditional foods from their territories and to address these growing challenges, and band council and community members used their knowledge and expertise in concert with researchers to determine their own priorities and solutions.

Moving south in the geographic area that came to be known as Canada, the next article, "Exploring Homelessness and a Re-Emerging Food System," looks at the ways in which Indigenous people experience homelessness in Prince George, British Columbia but continue to employ the practices of IFS. Julia Russell and Margot Parkes found that people expressed Indigenous values of caring, cooperation, and respect despite the precarity of their housing situations. Indeed, Russell and Parkes found that "those participants who were sharing food, were motivated by being able to provide food for others, and felt empowered by this through respect and collaboration. Participants that were growing food were actively reinserting themselves within their food system." These collective/community practices of caring and sharing stand in stark contrast to the emergency services offered by the settler state which are highly individualized and parsimonious.

In "Aboriginal Isn't Just About What Was Before, It's What's Happening Now: Perspectives of Indigenous Peoples on their Contemporary Diets" Lise Luppens and Elaine Power complicate our understandings of "traditional foods" and the landscape of cultural adaptation and fusion. Luppens and Powers spoke with community members about the significance, meanings, and values of the foods they ate and found that concepts of what constituted "tradition" were much more complicated and often included foods from other cultures. Indeed, this fusion can be seen in the adoption of foods from other cultures into feasting and potlatch ceremonies, two community-based practices that serve essential roles in ensuring community cohesion and well-being. Largely traditional foods were identified as "those that are familiar and meaningful to their families and community." Clearly, further work on the ways in which food and foodways have changed over time needs to be undertaken.

Finally, we conclude with an expression of gratitude to everyone who contributed to this special issue and recognize that we are scattered across the country in the territories of First Nations, Inuit, and Métis people. We are here to share some of the work and stories that have emerged through colonialism.

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Perspective

Responsibilities and reflections: Indigenous food, culture, and relationships

Tabitha Robin Martens

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Abstract

Understanding Indigenous food systems requires positioning ourselves in our own understanding of Indigenous food, culture, and place. The resurgence of Indigenous culture occurring around food, and the protection and revitalization of Indigenous food systems must be documented with a commitment to Indigenous values, worldviews and perspectives. This commentary offers insight into how we can do so.

Keywords: Indigenous food; Indigenous culture; Indigenous relationships; traditional knowledge; storytelling

My story

A few years ago, I practiced casting at the beach with a friend and accidentally caught a fish, unaware there were hooks on my line. When my line dipped into the water, I assumed it was yet another snag, but as I started reeling in I realized there was a fish on my line. The fish had hooked hard, and was thrashing as we struggled to get its slippery body off of the line. Panic struck, I held my head in my heads as my friend released the fish back into the water. It slid back into the water, but slowly floated on its back towards the shore. My friend waded into the water, taking the fish into his hands and turning it right side up, again and again, as it continued to

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struggle. It took a few tries of coaxing that little Walleye back into the water, and all of the time I held my breath.

Tansi. It is our practice to offer ourselves first, because it is our truth: it is what we know best. I have told you a small story to describe who I am and how I think, but it is missing key pieces.

The name my parents gave me is Tabitha. I am a mixed ancestry Cree Iskwe, with family in the Interlake Region of Manitoba, specifically Fisher River Cree and Peguis First Nations. I am also Icelandic and Irish. My families met through fishing in Lake Winnipeg and the surrounding rivers, the Fisher River, and the Icelandic River. I feel a close connection to the lake. My ancestors were fishermen—fisher people—and the waters are part of my homeland. I am an active harvester, a student, and a teacher. I work in and around Indigenous food cultures, land, and relationships, often referred to as Indigenous food sovereignty.

I consider myself to be both a student of university and a student of my culture. The land is, perhaps, my most important teacher. As a student I am constantly learning, and the more I learn, the less I know. An Elder once shared with me a presentation he gave to an elementary school class. After listening to the Elder speak, a young boy raised his hand and asked the Elder how he knew so much. The Elder asked the young boy to head outside and bring in a small cup of sand. Upon receiving the sand, the Elder reached into the cup and held out one grain of sand. He said, "this is how much I know." I love this lesson. It reminds me to be humble, honest, and true. Here, then, is what I know: a tiny particulate of one grain of sand.

It's personal, the work I do. It is about me and my people and my ancestors and the children and the unborn and the land that holds us together. I fear the threats that face Lake Winnipeg, my home waters, the land where I go to meet family and friends. It is a place that holds my family's history, and it tells me how I got here. I can hear the thrum of water as waves rise up from the lake, the sheer of wind as it moves across water. I feel the movement of a thousand years on the shores of Lake Winnipeg deep into my bones. It is a moody lake, calm, but stormy. It is a metaphor for the history of my peoples.

As we venture into the world of Indigenous food—the colonial history and traumas, the ceremonies and beauty, the destruction to the land and every other thread to this spider web of conversation—we must acknowledge that we, too, only know a tiny particulate of sand. Of course, there is potential for learning. But it must come from our people. It must come from the harvesters, the Elders, the wisdom keepers, healers, helpers, and activists. It must be led by, for, and with Indigenous peoples. It is important to acknowledge what we know and what we don't know, and that we are learning. We are extending across boundaries, academic and otherwise, to bring together stories and voices from the land. Those stories hold so much for us to learn from. Stories, in my culture, are some of our greatest teachers.

Long ago, I received an important teaching from a Grandfather: for everything you take from the land, you give first. This teaching meant so much to me as a young woman. It felt intuitive, thoughtful and most importantly, right. It allowed me to consider the myriad ways we view the land, and the bounty that comes from it. Though I had studied science and the

environment in my undergrad years, it was focused on learning how to consume less, recycle more, and to be careful and considerate to promote sustainable development. It wasn't until I turned to my traditional teachers that I discovered a new land ethic: reciprocity.

We all have a relationship to the land. It may not be considered on a daily basis; but when you reflect how you are able to go about your day, you realize the land is the center of all of your needs. The relationships that need to be cultivated should include gratitude. The land, the sun, the sky, moon, and stars, and everything connected within and around that, are what gives us life.

Life deserves respect. It deserves a moment of your time, a moment of your heart, to say "thank you". The relationships that need to be cultivated must include looking inward, offering outward: kindness, respect, honour. When we think of the gift of clean water, or the life of an animal—life that has been given to us so that we may thrive—how do we not step back and re-consider our relationship to food and the world around us?

In my teaching, I offer tobacco to the land to acknowledge this moment. I sing, or pray, or protest. I write letters to government, and bring news of activism into the classrooms I teach. These are my offerings to the land and to my people. What are yours?

On the day I accidentally caught a fish, I felt so many things. Mostly I felt that this wasn't right. I hadn't offered my tobacco. I hadn't said "hello". I hadn't said "thank you, I am grateful for your life". I had a freezer full of fish at home, had shared it with others, received more in return; but I wasn't in need. I hadn't upheld my responsibility to the land, to my ancestors, to creation.

Every day my understanding of Indigenous food sovereignty changes, deepens, and grows. The more time I spend on the land, the more I see connections between the past, present, and future of Indigenous food systems. As I listen to stories and share in conversations, those threads of a spider web tug, and my heart moves along with it. This is both hard work, and heart work. It means looking back and stepping forward, a scary but satisfying proposition for anyone, but especially for those whose pasts are wrought with grief and trauma. For those whose people have been scarred and starved because of food—because of a need and desire to not be hungry, to stand up for the land, to practice a way of life that is inherent to who we are—this work means putting your heart on the line every day.

It is a blessing to be here, in this movement, in this moment where we are having these conversations and talking about the work that we do. I am grateful that there are entire dialogues, books, conferences, and journals dedicated to having conversations around Indigenous food, land, and culture. There are so many stories that need to be told and heard. We need to work at listening with our hearts and our minds, and to be fully present for these moments. I believe in clean water, soil, food, and air. They are connected. You cannot have one without the other. I believe in my people. I believe that our people are paving the way, fighting the good fight towards making other people accountable to our collective need for clean water, soil, food, and air; but there is much work to do. Access to clean water, soil, food and air is our need and our right. We have a right to practice our culture. Moreover, we have a responsibility to practice our culture. We have a responsibility to protect the land. When we harvest, we do so as a

responsibility. When we stand up for the loss of traditional lands, for the contamination of water, for the high rates of diabetes and cancer that are tied to our food systems, we do so because we have made a deal with creation. For every gift given, we offer back. We ensure the future of our food systems through careful and sustainable practices; through harmony with our surroundings. We have been born into that responsibility. It is part of who we are.

Indigenous food sovereignty represents a movement, one where we are re-defining our food systems and revitalizing our culture, one that is political and dynamic and hard. There is no more hiding our traditional food. No more hiding the stories of communities that do not have access to fresh, safe water or fresh, safe food. There will be no more hiding, period. This movement, and the people that surround them are not going to go away. We are here. And there is a small army of land-based folks—grandmothers, grandfathers, activists and knowledge keepers—who will ensure that. We will, and are, coming together: for the future and the past and the present. I feel honoured to be part of a group that is committed to such a worthy cause. Indeed, it's the only way I can think of to move forward.

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Perspective

Toward anti-colonial food policy in Canada? (Im)possibilities within the settler state

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Abstract

This perspective piece teases out some of the tensions between the development of a national food policy, which has gained significant traction in Canada over the past few years, and Indigenous food sovereignty, which long predates the Canadian government and its policies, and has a rich history and current practice of organizing. Drawing from our observations and discussions at conferences, workshops, and events, and pointing to key aspects of discourse commonly embedded in such discussions, we critically reflect on how settler engagements with Indigenous peoples in developing a national food policy may reify, rather than dismantle, colonial relationships. Additionally, we emphasize the importance of process and the ability for settlers to accept discomfort and incommensurability if we are to move towards spaces that embody solidarity, respect, and resistance.

Keywords: Indigenous food sovereignty, national food policy, Indigenous food systems, settler colonialism, policy development, discourse

Introduction

During a recent roundtable discussion about a national food policy led by a panel of settler academics and community organizers, a settler audience member noted the need to consider how

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food policy frameworks are often rooted in colonial assumptions and discourses—a point that has been raised by Indigenous activists and academics many times before. This prompted comments from other settler audience members about the need to "include," "give voice to" and "involve" Indigenous peoples in developing a national food policy. As the conversation wrapped up, one of the panelists asked, "How can we use conflict as a tool in the process?" Another asked, "What are the conversations we want to have as Canadians about food?" Within this paper we examine how these comments are representative of broader themes and exchanges that we, as young settler academics and activists, have observed while attending food conferences, gatherings, and policy conversations that are often dominated by settler peoples. To do so, we look to the work of Indigenous scholars and activists for guidance, as well as drawing on our own learning experience as settlers within Canadian food movement spaces.

In the following sections, we aim to question the possibility of a national food policy as a space to (re)build Indigenous-settler relationships. Instead, we suggest that such a policy may work to reify colonial structures and relationships. At the same time, we want to encourage the uncomfortable conversations that have arisen in relation to a national food policy, in order for settlers to problematize Canadian state structures and to take concrete actions to support Indigenous resurgence and resistance. In making these arguments, we recognize that we are rooted in a white settler worldview, and as Rose (1997) notes, our perspectives can only offer partial knowledges and never-complete understandings. We are not experts, but our intention is to offer the following as part of a broader conversation about Indigenous-settler relations in order to better hold ourselves and our communities accountable to Indigenous nations.

Inclusion

Anti-colonial and anti-racist scholars and activists have shown that the language of inclusion must be used with caution (e.g. Jodi Byrd, Kimberlé Crenshaw, bell hooks, Bonita Lawrence, and Lee Maracle). On one hand, this language often implies welcoming and working together. On the other, dominant groups, such as those the two of us occupy (i.e. white, settler, able-bodied), often use "inclusion" to call for the participation of marginalized groups without engaging with the ways such invitations require the transformation of underlying social, economic, and political power structures that preclude meaningful participation. The language of inclusivity often reinforces certain norms and centers certain bodies—bodies that often look similar to our own. For example, in a recent policy brief that calls "for a focus on farm renewal, business development and labour in the next agriculture policy framework," one of the recommendations is to "expand the definition of 'beginning and young farmer' to encompass all new entrants, including those not from farming backgrounds, second careerists, Indigenous Peoples and New Canadians" (Food Secure Canada [FSC], 2016a, p.2). The discourse of inclusion here is meant to broaden who is considered a farmer, but in doing so it positions communities such as new Canadians and Indigenous peoples in relation to an unnamed but assumed norm (Lorde, 2007): young white Canadian citizens from a rural background.

This positioning centers white bodies as farmers while failing to engage with the history and continuing agrarianism of Indigenous nations. For example, the Haudenosaunee began farming long before European settlers arrived, cultivating crops such as corn, beans, and squash for centuries (Monture, 2014). Furthermore, the positioning of farmers as white fails to appreciate the ways in which the colonial government (the same government posed to establish a national food policy) has, and continues to, suppress Indigenous agrarianism as well as other forms of food provisioning. For instance, in the Prairie West and southern Ontario, Indigenous farmers who practiced western style agriculture were prevalent throughout the 1800's. As they began selling their crops, settlers felt threatened and implemented a number of amendments to the Indian Act, including the permit system, which restricted agricultural sales by Indigenous Nations (Carter, 1990; Government of Canada, 1881). Additionally, Indigenous farmers were effectively banned from using agricultural machinery, which, alongside rapid land loss by encroaching settler farming and lumber interests, made it nearly impossible for them to continue to farm (Bateman, 1996; Carter, 1990).

These policies restricted Indigenous peoples from accessing land across Canada, making it increasingly difficult for them to hunt and gather. Together with resource exploitation and legislated famine, this amounted to no less than a "state-sponsored attack on indigenous communities" (Carter, 1990; Daschuk, 2013, p. 114). Meanwhile, the same Indigenous land appropriation enabled the establishment of the white, male-centered system of "conventional" agriculture—land that was not the Crown's to give away to white-European immigrants in the first place. Together with colonial institutions, policies, and discourses that constructed Indigenous peoples as outsiders who must "adopt dominant middle-class Canadian social and moral codes and pro-capitalist values," these forces aimed to eradicate Indigenous nations and transcend colonialism by naturalizing white male settlers as "Indigenous," exalted national subjects (Bohaker & Iacovetta, 2009, p. 427; Thobani, 2000, 2007).

In this context, settler people such as ourselves need to consider the ways that inclusion has been used to co-opt Indigenous peoples into the Canadian colonial project. Maracle (2003) explains that "constitutional inclusion [of Indigenous peoples] has only served to maintain the colonial history and practice of dismantling Indigenous national governments by sanctioning colonial rule" (p. 310). Byrd (2011) further elaborates that "inclusion into the multicultural cosmopole, built on top of indigenous lands, does not solve colonialism: that inclusion is the very site of the colonization that feeds U.S. empire" (p. 10). In relation to food, settler governments have long sought to "include" Indigenous communities in settler foodways in order to gain and maintain control over Indigenous lands and peoples. Therefore, we feel it is necessary to ask how a national food policy will ensure that it does not do the same, while also understanding how it has done so in the past through policies and programs like the Indigenous version of Canada's food guide (Burnett, Hay, & Chambers, 2015).

We also want to highlight the problematics of asking for Indigenous involvement in a consultation process for which the frames of reference have already been set and which is led by a colonial government. The federal Agricultural Minister has been mandated with leading the

policy, using a "collaborative style of leadership within the federal government and with other levels of government" while at the same time committing to "a renewed, respectful and inclusive Nation-to-Nation process to advance progress on priorities identified by First Nations" (FSC, 2016b). Following Thobani (2000), we suggest that by maintaining a colonial structure and process, the policy will produce colonial (and in turn racist) outcomes, as Canada's immigration policies have repeatedly done.

Within these colonial structures we ask: is a nation-to-nation relationship possible if the process is directed, controlled, and organized by only one nation? Particularly when one nation-state continues to enforce its own legal and political systems over all nations within this relationship? While settler recognition of nation-to-nation relationships is a change in *discourse* from an earlier rhetoric of assimilation, the political structures and decision-making processes remain the same. Coulthard (2014) raises these concerns in his argument that the Canadian state's shift from discourses of exclusion and assimilation to recognition and accommodation continue to reproduce "configurations of colonialist, racist, patriarchal state power" (p. 3). Following Fanon, Coulthard explains that "in situations where colonial rule does not depend solely on the exercise of state violence, its reproduction instead rests on the ability to entice Indigenous peoples to *identify*, either implicitly or explicitly, with the profoundly *asymmetrical* and *nonreciprocal* forms of recognition either imposed on or granted to them by the settler state and society" (p. 25).

For example, while many assume that the government's implementation of the comprehensive land claims policy is a step in the right direction for Indigenous rights and title, the "inherently colonial nature of the land 'claims' process" has reduced it to an act of municipalisation for First Nations, wherein monetary settlements are offered for Indigenous compliance while the state maintains control over Indigenous lands (Lawrence & Dua, 2005, p. 125). Nor is this issue limited to bureaucratic government or corporate projects. Well intentioned scholarship, activism, and programming that supports issues of environmental justice, for instance, may slip into what Paperson (2014) describes as "settler environmentalism" without careful attention to how and for whose identities environmentalism is carried out. In turn, the implications of certain "solutions," such as renewable energy and local food, get taken for granted or naturalized by non-Indigenous people. The role of the government often goes unproblematized, erasing Indigenous people's ongoing relations with the state, ranging from planning and urban redevelopment to land conservation and agri-food governance.

Our concern is that a national food policy has the potential to become another tool to subsume Indigenous peoples within the colonial state system and undermine Indigenous self-determination. For instance, governments at all levels have long ignored Indigenous calls to change relationships, including honouring nation-to-nation agreements and returning land to Indigenous nations. It is unclear how a national food policy that follows the same colonial structure (as policies and procedures related to, for instance, land claims) offers different outcomes than what Indigenous peoples continue to encounter. Too often decision-makers and bureaucrats lack an understanding of settler colonization. At the same time, political and

corporate lobbying works to maintain settler control over lands and resources, leading to decisions that ignore Indigenous perspectives and maintain settler control. Much of this is made possible because the state uses notions of "inclusion" to build policies and programs *about* Indigenous peoples that are created and informed *by* settlers, *for* settlers. As two settlers writing about critiques that we think other settlers need to hear, we recognize the potential for a similar danger. However, we attempt to shift the academic gaze that often falls on Indigenous communities toward our own communities of settler activists and academics, while taking guidance from the work of Indigenous scholars and activists.[1]

From this perspective, we ask ourselves and other settlers the following question: how can a national food policy structure itself and its processes differently? We suggest that an answer begins with understanding that food justice work is not about including those who are marginalized in nation-state projects spearheaded by white settler people. Rather, it is about supporting the work and resistance happening for over 500 years within Indigenous communities, including dismantling settler government structures. We also suggest that settlers, ourselves included, radically reimagine politics in order to better engage in nation-to-nation relationships, taking guidance from Indigenous governance systems about what these relationships might look like, as Simpson has argued (2011). Moreover, following Corntassel and Gaudry (2014) we suggest that it is necessary for settlers to understand how everyday actions make us complicit in—and help to reproduce—the structures and institutions that marginalize certain communities in the first place.

Giving voice

Here we want to address the frequent use of the phrase "giving voice" when referring to the "inclusion" of marginalized groups. For us, this phrase fails to recognize the obvious truth that marginalized communities have their own voices, and have continually articulated the most important and complex understandings of oppression. The phrase also fails to recognize that dominant groups are often the root of the problem: that it is settler ears who refuse to listen, often due to our positionality within structures of colonialism, capitalism, and patriarchy. Furthermore, "giving voice" suggests that dominant groups, rather than marginalized communities, produce liberatory politics. In contrast, we suggest discarding moves to "give voice" and instead underline the possibilities of breaking down structures that work to deafen ears in the first place, while taking action that is directed by the struggles of marginalized communities.

Indigenous activists and knowledge holders have very clearly articulated how Indigenous food systems are the basis of all people's food systems on Turtle Island, emphasizing the ways that food is sacred (Coté, 2016; Manson, 2013; Martens, 2015; Morrison, 2011; Peoples' Food Policy Project [PFPP], 2011, p. 10). Indigenous peoples have also clearly underlined how colonialism has undermined Indigenous food systems through the creation of public and private

[1] Strega and Brown (2015) suggest that academics "reverse the gaze" as one aspect of anti-oppressive research.

land as well as economic projects, such as "hydro development that prevents the migration of fish" (PFPP, 2011, p. 10). In spite of colonial projects and policies that undermine Indigenous access to food systems, Indigenous peoples continue to feed their communities. For example, in the Kawartha Lakes region of Ontario, the Nishnaabeg harvest and process Manoomin (wild rice) despite difficulties related to pollution, private property, changing water levels, and settler entitlement to waterways (Simpson, 2016). Similarly, after succeeding in negotiating their Treaty hunting rights, which is limited to six days per year in Short Hills Provincial Park, the Haudenosaunee's annual harvest has been met with sharp criticism and protest from the white settler community (Fraser, 2016). Meanwhile, the Haudenosaunee continue to articulate the role that the traditional hunt plays in Indigenous food sovereignty, self-determination, and resurgence.

In these ways and many more, Indigenous nations continue to articulate and engage with their food systems, identifying issues and building more equitable sustainable food systems. Why then does the discourse of "giving voice" to Indigenous peoples persist within discussions about a national food policy? Why are so many settlers unaware of the rich and varied discussions about these issues by Indigenous peoples? Following numerous Indigenous scholars, we suggest that settler colonialism is based in the logic that "Indigenous peoples ultimately disappear as peoples," and part of the way this logic expresses itself is through colonial structures that work to deafen settler ears (Lawrence & Dua, 2005, p. 123). Settler moves to "give voice" to Indigenous peoples, are therefore based in logics that attempt to erase Indigenous presence, resistance, and knowledge. These moves also contribute to settler colonial logics and perceptions that historicize Indigenous food provisioning as a thing of the past or, at best, emphasize the affects of colonialism but not the 500 years of Indigenous resistance and resurgence.

Meanwhile, settlers use various means to undermine Indigenous struggles to maintain their food systems, including settler protests over traditional hunting and the destruction of land and habitat. As well, settler institutions demand that Indigenous peoples access their foods through the same unsustainable industrial food system that settlers built and benefit from. For a food policy to meaningfully shift this irony in ways that prioritize Indigenous resurgence, the *structure* of the policy development process needs to be deconstructed in order to be Indigenous-centred, no matter how uncomfortable ceding power may feel for the colonial state. Additionally, we underline the problematics of scaling a policy at the nation-state level as it reifies Canadian state power over Indigenous nations who have developed diverse food provisioning practices and protocols over many centuries, and which are specific to place.

Involvement

Thirdly, we want to tease out some of the tensions around settler calls to involve Indigenous peoples in developing governmental policies, such as a national food policy. In one sense, it would be ideal for settlers to develop policy in collaboration with Indigenous nations. However, when settlers ask for (and increasingly expect) this involvement, we need to be clear about the

context and relation within which we are asking for Indigenous involvement. The Canadian government's relationship to Indigenous nations continues to be one of violence rooted in the logic of Indigenous elimination: settler colonialism "destroys to replace" with the primary goal of obtaining land and denying Indigenous self-determination (Wolfe, 2006). Settler colonial logics allow settlers to feel "at home" (Morgensen, 2011), as though we/they have rightful claim to land and resources.

This entitlement is operationalized and made material through mechanisms such as settler legal systems, property regimes, and education systems that reinforce the belief that Turtle Island was vacant and the Canadian state is legitimate. In these ways, settler colonialism uses "policies of direct extermination, displacement, or assimilation" to erase Indigenous nationhood and sovereignty "so that settler nations can seamlessly take their place" (Lawrence and Dua, 2005, p. 123). For example, in a context where Indigenous peoples are only recently considered to be "included" in the category of new farmers and within a nation-state that considers agriculture to be "king" (Agriculture and Agri-Food Canada [AAFC], 2015), the seemingly innocuous claims that "new farmers" and "youth and young farmers" are "the future of Canada's agriculture and agri-food sector" (AAFC, 2016; FSC 2016c) positions white settler farmers as "the future," while ignoring both the agrarian and non-agrarian food provisioning practices of Indigenous peoples and the futures they are building.

It is therefore important for settlers to understand how state calls for the involvement of Indigenous peoples in white western society are often violently enforced through policies of assimilation. As noted earlier, while government attempts to involve Indigenous peoples in agriculture programs designed to "civilize" and control, governmental policies have actively prevented and eroded the viability of Indigenous agriculture while simultaneously blaming Indigenous peoples for their failure to succeed at farming (Carter, 1990). Policies of assimilation with the goal of elimination continue today, "couched in the language of development, opportunity, and incorporation, which is characterised by a preoccupation with inclusion rather than a logic of separation" (Burnett et al., 2015, p. 3). Burnett, Hay, and Chambers (2015) explain how this elimination is apparent in government health and nutrition programs that attempt to maintain control over Indigenous foodways, while at the same time blaming Indigenous communities for their inability to choose the "right" foods and participate in food systems based on the industrial market economy.

It is therefore crucial to consider what it means to ask for Indigenous involvement in the development of government policies. For settlers, involvement might feel like a step toward reconciliation. However, are settlers actually giving up power if we enter into a process with pre-formed frameworks, scales, and limits in place? Additionally, how might these frameworks, scales, and limits impact Indigenous work around decolonization that involves repatriating Indigenous land and ways of life? Regarding Indigenous involvement in national food policy development, it is essential for settlers to ask: a national strategy for what and for whom? It is often assumed that national policies address everyone's needs (typically couched in vague language such as "the public"), when in reality, that would be impossible without, for instance,

demanding equal rights for migrant food workers and returning lands to Indigenous peoples, demands that may feel indeterminate and uncomfortable for many white settlers.

In writing this article, we ask ourselves and our settler food communities: what is the purpose of Indigenous involvement? Is it to reaffirm settler ideas and ways forward? Does Indigenous involvement open settlers to challenging the legitimacy of the settler state and settler entitlement to lands and "rights" to determine food systems? Or does Indigenous involvement merely allow settlers to feel better about processes we control, lending legitimacy while soothing settler conscience? If in the process of developing a national food strategy, settlers are looking for affirmation or are unwilling to challenge our "right" to define food systems in Canada, we risk performing what Tuck and Yang (2012) call "settler moves to innocence." These moves "are those strategies or positionings that attempt to relieve the settler of feelings of guilt or responsibility without giving up land or power or privilege, without having to change much at all" (p. 14). Instead, settlers are often credited "for being so sensitive or self-aware," thus increasing their own credibility, professional standing and ability to work with marginalized groups (ibid.). Yet, as Tuck and Yang explain, settler moves to innocence "only serve the settler" (ibid.).

Possible ways forward

What does this mean for those interested in developing food policy in Canada while working within current colonial structures? We suggest critically questioning settler desires and discourses to "include, give voice to, and involve" Indigenous peoples. We also echo Indigenous activists and academics who emphasize that process is vital. For example, the *First Principles Protocol for Building Cross-Cultural Relationships* (FPP) emphasizes the importance of establishing principles for "guid[ing] the work of individuals and organizations involved in the People's Food Policy Project" (2010). These principles are meant to establish a process, or a way for people to work together and build relationships. This protocol is a "living document" with the possibility for continued revisions, demonstrating the importance of figuring out how we will relate to one another *before* beginning to speak about policy.

Questions that might be helpful for settlers to consider when thinking about establishing protocol and process may include: How do we work in a way that respects nation-to-nation relationships? And perhaps more uncomfortably, how do settlers build meaningful relationships with Indigenous nations and lands, especially when decolonization becomes, as Tuck and Yang (2012) describe, incommensurable with settler processes and objectives, requiring white settlers to cede power, land, and privilege? In thinking through these questions, the FPP (2010) acknowledges that colonial injustices are ongoing while emphasizing Indigenous self-determination and resurgence. The FPP also states that "the relationship between governments and Indigenous people is colonial in nature" and that colonialism is a global phenomenon related to neoliberal economies and trade policies. In this context, the protocol commits to changing these institutions and engaging in "activities and policy creation that is not *about* Indigenous

peoples' food systems, but that *learns from and is informed by* the experiences and expertise gained through a multi-millennia of practice."

From our perspective, moving food work forward is premised on the actions and resistance of Indigenous nations, and directed by their visions of liberation and decolonization. This might mean creating a food policy for Canada that works together but separate from Indigenous nations and their frameworks for food sovereignty, or it may mean multiple regional policies are developed by different Indigenous nations (including those already developed). Additionally, it likely involves learning from the transformative work of groups such as the Working Group on Indigenous Food Sovereignty in British Columbia, the Northern Manitoba Food, Culture, and Community Collaborative, and other grassroots groups involved in this work. For example, the Indigenous Circle of the PFPP lays out several policy suggestions including giving back and designating lands for Indigenous hunting, fishing, and gathering, prioritizing Indigenous access over recreational land use, and providing comprehensive funding and resources to Indigenous nations to regenerate their diverse and varied food systems (FSC, 2011). However, the Circle also notes, "while these are short-term food security solutions, permanent solutions must lie within the domain of inherent sovereignty to our lands and ways of life" (ibid.). Following this understanding of government policy as a short-term tool for addressing immediate issues of access, we emphasize the *impossibility* of a national Canadian food policy as a space for decolonization precisely because it is a policy overseen and enforced by a colonial government. Decolonizing such a policy is impossible without repatriating lands to Indigenous nations and ceding governing power and jurisdiction to Indigenous nations.

As the People's Food Policy Project stresses, Indigenous peoples speak for themselves, an assertion that applies to all aspects of this discussion. Significantly, the addition of a seventh pillar of food sovereignty—food is sacred—can guide our work through its emphasis that "food, water, soil, and air are not viewed as 'resources' but as sources of life itself" (PFPP, p. 9). This pillar demands that settlers reimagine relationships to land and food, particularly in relation to regimes that require these to be treated as commodities, including private property regimes, production-based food systems, and market economies. To advance these recommendations, settlers have a responsibility to "deepen our understanding and work towards respectful relationships" (FPP, 2010). Pragmatically, this necessitates a process that identifies and moves away from colonial assumptions around policy structure and governance, which must start by asking hard questions about what ceding colonial power requires, both on paper and in practice.

Documents such as the *PFPP Discussion Paper on Indigenous Food Sovereignty* (FSC, 2011) and the FPP (FSC, 2010) provide space to consider how these conversations have developed, and offer insights for moving forward. The challenge is how we, as people who are non-Indigenous to this land, resist the structures of settler colonialism that benefit us in various (and often deceiving) ways. Settlers have a responsibility to hold uncomfortable conversations and consider painful options and, further, to remain reflexive about how deeply and unconsciously privilege can permeate within us. Rooted in this reflexive approach, settlers have a responsibility to support Indigenous struggles for land and food systems, rather than continuing

to forward settler visions for future food systems. Our hope is that through these personal and collective actions, settlers can move (and often stumble) towards spaces that embody solidarity, respect, and resistance.

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Original Research Article

First foods as Indigenous food sovereignty: Country foods and breastfeeding practices in a Manitoban First Nations community

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Abstract

As a concept and in practice, Indigenous food sovereignty (IFS) offers insights into the social, cultural, and environmental challenges of a deficient food system. The associated poor health outcomes of this system include infant and child health issues such as early childhood caries and childhood obesity, and are a grave concern in many First Nations communities. Extant research has failed to consider the role of infant feeding traditions as an element of Indigenous food sovereignty. Breastfeeding and country food (also called traditional food or cultural food) consumption among infants has been long practiced in First Nations communities, resulting in healthier infants. The research described in this article originated with a research project called the Baby Teeth Talk study (BTT). This is a community-based trial which is testing a pre-natal/post-natal behavioural and preventive intervention for early childhood caries (ECC) among pregnant First Nations women and their infants in urban and on-reserve communities in Ontario and Manitoba. In Norway House Cree Nation, located in northern Manitoba, research participants shared stories on the methods used by caregivers for oral health care, including breastfeeding promotion. This paper reviews the literature relating to IFS, breastfeeding, and the introduction of country food to infants. Through the voices of grandmothers in one community in northern Manitoba, Canada, we connect the introduction of country food and breastfeeding to the larger IFS movement and positive health outcomes for infants, and improve the conceptualization and practice of IFS.

Keywords: breastfeeding, First Nations, infant feeding, Indigenous food sovereignty, country food, infant oral health

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Introduction

Indigenous Food Sovereignty (IFS) is a term that has only recently become conceptualized in research, but has long been practiced in First Nations communities (Morrison, 2011). Food sovereignty, or the increased control over food systems, has special resonance for First Nations people whose rights continue to be eroded despite the existence of treaties. As a concept and in practice, IFS offers insight into the challenges of a deficient food system that includes high prices for fruits and vegetables and other items in local stores, changes in the availability of traditional foods due to access issues, landscape changes, and concerns about the health of the soil, plants, and wildlife, to name a few (Skinner, 2006; Willows, 2005).

Numerous studies have highlighted the disparity between First Nations communities and non-First Nations communities with regards to food security. First Nations households, both on reserve and off, face higher levels of food insecurity than non-First Nations households. While food security considers issues around access and availability of food, it has been criticized for failing to appropriately capture the importance of traditional foods. Where food security ensures people have enough food to eat, Indigenous food sovereignty argues for active participation in Indigenous food systems so that the mind, body, and spirit are nourished (Martens, 2015).

Food issues are certainly linked to the alarming rates of poor health outcomes plaguing First Nations people in Canada. Type 2 diabetes (Reeds et al., 2016), cardiovascular disease (Tobe, Maar, Roy, & Warburton, 2015) and hypertension (Reading, 2015) are all examples of health issues that have emerged in recent decades that can be traced to larger social determinants of health, including food security and more broadly IFS. Infant and child health issues such as early childhood caries and childhood obesity are a grave concern in many First Nations communities. In First Nations communities, these health issues can be placed in a larger social, political, economic and cultural context of food sovereignty.

The extant research has not, to date, considered the role of infant feeding traditions as an element of Indigenous food sovereignty. Breastfeeding and “country food” (also called traditional food or cultural food) consumption among infants has been long practiced in First Nations communities resulting in healthy infants and children who grew to be healthy adults. Recent research in Canada has looked at food programs in First Nations communities as examples of IFS. For instance, the Urban Aboriginal Garden Project in British Columbia has been documented (Mundel & Chapman, 2010), while country foods initiatives, like those in Tukisigiarvik in Nunavut and northern Manitoba have been examined as well (Lardeau, Healey, & Ford, 2011; Thompson, Kamal, Alam, & Wiebe, 2012). However, these studies focused on adult participation, and there is no mention of the importance of early food sovereignty, *in utero*, for infants and young children.

As with all components of First Nations food systems, the processes of colonization including the reserve land structure, residential schools, and the Sixties Scoop have all interrupted these traditional infant feeding practices such as breastfeeding and the early introduction of country food. This has impacted the ability of First Nations communities not only

to practice IFS as being connected to their larger cultural practices, but identify the loss of Indigenous infant feeding practices as an integral part of what Chandler and Dunlop refer to as "cultural wounds" which impacts identity formation (2014, p. 78).

The basis for this research comes from discussion around culturally based interventions for early childhood caries (ECC) which emerged during a research project being led by Dr. Herenia P. Lawrence at the University of Toronto, called the Baby Teeth Talk study (BTT). The BTT is an on-going community-based ECC trial which is testing a multi-component pre-natal and post-natal behavioural and preventive intervention among pregnant First Nations women and their infants living in urban and on-reserve communities in Ontario and Manitoba (Lawrence et al., 2004; 2008; 2016). In Norway House Cree Nation, a community located in northern Manitoba, research participants began sharing stories with the community researchers on the methods used by caregivers in terms of oral health care, including breastfeeding promotion. As a result, an additional research project was formulated to look at these cultural approaches to infant feeding and oral health practices, with a focus on integrating these approaches into community programs for the current population of parents. A wide range of themes related to infant feeding emerged. An unanticipated finding was the issue of IFS and first foods for infants.

Cultural continuity is embedded in IFS principles and practice and are especially poignant when they are operationalized beginning with a new life. Breastfeeding and early introduction of country foods not only reinforces cultural continuity but also addresses issues of food insecurity which many Indigenous communities face, especially in rural, remote and northern communities. This paper highlights the importance of resituating IFS by looking at breastfeeding and the introduction of country foods through a brief review of literature. By incorporating the voices of grandmothers in one community in northern Manitoba, Canada, we can make the connection between the introduction of country food and breastfeeding to the larger IFS movement and positive health outcomes for infants and young children and resituate the conceptualization and practice of IFS.

Indigenous food sovereignty

As a written theory Indigenous food sovereignty is based on the concept of food sovereignty. Food sovereignty was first defined in a visible way by La Via Campesina, an international movement of small-farm workers, peasant, and Indigenous peoples as a response to power struggles in the global food system[1]. The protection and redistribution of land are key to food sovereignty, along with the recognition that Indigenous people should have the right to be on the land to produce food (Martens, 2015). Food sovereignty aims to link production with consumption, and argues for the sustainable use of land through local and traditional knowledge.

[1] See, for example, Desmarais's 2007 book *Globalization and the Power of Peasants: La Vía Campesina*. Halifax, NS: Fernwood Publishing.

These concepts are not new to First Nations communities; however, over time, First Nations food systems and relationships with the land have been altered through the impacts of colonization and other traumatic experiences such as residential schools and the Sixties Scoop (Martens, 2015). Indeed, the loss of knowledge around traditional food harvests and resource management practices is seen as an impact of the "exposure of First People to colonialism and imperial pressures" (Turner & Turner, 2008). The introduction of processed foods along with landscape changes such as climate change; contamination and hydro development have further altered these food systems, and help to understand the motivations of the IFS movement. Morrison (2008) defines an Indigenous food system as "land, soil, water, air and culturally important plant, fungi and animal species that have sustained Indigenous peoples over thousands of years of participating in the natural world" (p. 5). These food systems are sustained through active participation by people; indeed, the demonstrated use of a food or land system has been required for a number of court cases pertaining to First Nations land rights (Morrison, 2011).

Despite the Indigenous origins of food sovereignty through La Via Campesina, the potential of IFS to address food insecurity and create cultural continuity has not been addressed in the literature (Rudolph & McLachlan, 2013). In Canada, the IFS movement was popularized through the People's Food Policy Program, whose Indigenous Circle proposed four important characteristics of IFS: to return to the agreements of the treaties and reform and redistribute land; to include the Indigenous concepts of harmony with nature in resource-based policy; to address the socioeconomic determinants that are negatively affecting Indigenous health; and to rebuild the relationships between Indigenous peoples and other stakeholders (PFPP, 2010). Morrison (2011) expanded on these characteristics, explaining four principles of IFS: there is a sacred responsibility to the land that must be prioritized over colonial law; community needs should be self-determined; active participation in a food system is necessary; and that policy reform is required to guide and support these principles.

Expressions of IFS through community gardens, country foods programs, culture camps and community food harvesting programs have been documented in recent years. Vazquez's (2011) work with the Oneida Nation of Wisconsin, in the United States, promoted food system revitalization. Mundel and Chapman (2010) reported participants in the Urban Aboriginal Community Garden in British Columbia, Canada viewed the project as decolonization because it helped to reduce dependence. IFS research has also been documented by Rudolph and McLachlan (2013) who share the need for politicized sovereignty to achieve Indigenous food sovereignty in a northern Manitoba First Nations community. Kamal and Thompson (2013) have documented an Indigenous food movement in O-Pipon-Na-Piwin Cree Nation, Manitoba. IFS has also been looked at through a community economic development framework as a way to remove some food production from the market and reclaim local access (Thompson et al., 2011). However, none of this documented work points to the earliest practices of IFS; that is, breastfeeding and the consumption of country foods in infants and has generally been overlooked because breastfeeding tends to be considered a health practice rather than part of a food system.

Breastfeeding

Breastmilk is an infant's first nourishment. This gift from mother to child provides more than nutritional sustenance. It is considered the ideal food for infants, and the link between breastfeeding and breastmilk and a range of other health issues for children is well known. Research has demonstrated that infants who are breastfed have fewer respiratory tract (Holberg et al., 1991; Wright, Holberg, Martinez, Morgan, & Taussig, 1989) and ear infections (Duncan, Holberg, Wright, Martinez & Taussig, 1993), diarrheal based illnesses (Wright, Bauer, Naylor, Sutcliffe, & Clark, 1998), and asthma (Wright, Holberg, Taussig, & Martinez, 2001). In remote, rural communities "breast milk is the most secure and economically advantageous" way to feed infants (Willows & Batal, 2013, p. 41). Breast milk is an important aspect of food security, especially in communities where access to market food is economically prohibitive, and where access to traditional country food is a challenge due to environmental contamination, decline of species, costs of procurement, and availability of hunters in the family (Willows & Batal, 2013).

The low proportion of breastfed babies in Indigenous communities must be considered within the larger cultural context of the loss of infant feeding traditions (Dodgson & Struthers, 2003). Long standing policies and programs that have attempted to assimilate First Nations children such as residential schools have had long standing impacts to childrearing practices. The impact of residential schools resulted in a generational disconnect which inhibited the transfer of "traditional child rearing and infant feeding ways" (Dodgson & Struthers, 2003, p. 55) because former residential school students would have been taught that their traditional ways were inferior to those of the newcomers. In the early 1900s, there was a gradual move away from breastfeeding in favour of bottle feeding worldwide. This related to concerns over insufficient caloric intake for babies, the physical burden of breastfeeding for women (weight loss and fatigue), as well as the influx of women entering the workforce (Ward, 2000). Related to this was the medicalization of childbirth experienced by women during the early part of the 1900s (Dodgson & Struthers, 2003). Since the 1970s, women from remote, rural communities in Canada have been required to evacuate to hospitals in larger communities or cities. This mandatory policy has shown a cascade of negative social consequences including decreased breastfeeding (Olson & Couchie, 2013).

The move towards the apparent convenience associated with bottle feeding resulted in a decline in the practice of breastfeeding for several more years until the mid-1900s where a resurgence of breastfeeding occurred. This return to breastfeeding reflected a disillusionment towards the actual conveniences associated with bottle feeding as well as a concern for the over medicalization of feeding babies (Ward, 2000). First Nations women and their babies, however, did not return to breastfeeding at the same rates as other non-First Nations Canadians at this time, and rates continue to remain low. Health Canada reports that overall 87.3 percent of all Canadian mothers breastfeed or tried to breastfeed their last child, and the initiation rates since 2003 remain stable (Health Canada, 2012). Health Canada also surveyed off reserve [Aboriginal] Indigenous women and notes that their breastfeeding initation rates were lower at 77.8 percent

than non-[Aboriginal] Indigenous mothers. The World Health Organization recommends exclusive breastfeeding for the first 180 days, and complementary feeding starting at the age of six months with continued breastfeeding to the age of two or beyond (WHO, 2009).

In Manitoba First Nations, there has been a steady decline in breastfeeding and recent statistics indicate that from 2002/03 to 2008/2010 there was an 11.1 percent reduction (54 percent to 42.9 percent) in breastfeeding for any length of time (AMC, 2012). This is much lower than the provincial statistics, which indicate that 80 percent of Manitoba women initiated breastfeeding in 2010, although only half were still breastfeeding after the age of six months (Manitoba Health, 2011). The Chief Public Health Officer's Report on the Health of Manitobans also notes that "breastfeeding rates are lower in the north and in low-income areas" (Manitoba Health, 2011, p. 72).

Martens (2012) discusses the importance of knowledge and attitudes around breastfeeding among First Nations adolescents in Manitoba. In Marten's work on education interventions among youth, First Nations female participants showed a large increase in breastfeeding beliefs and a large decrease in bottle feeding beliefs and a small to medium increase in breastfeeding attitudes. This type of intervention identified the importance of adolescent breastfeeding education which would result in youth who "were more aware of the positive benefits of breastfeeding, less embarrassed about seeing women breastfeed in public, and more willing to encourage and support people in the choice to breastfeed" (Martens, 2012, p. 254). Oneha and Dodgson (2009) discuss the role of social support for Native Hawaiian mothers as being critical in not only initiating breastfeeding, but persisting. They also describe the traditional practice of breastfeeding among Native Hawaiians as a natural expectation, so women and people observing a woman breastfeeding was not unusual. Native Hawaiians also consider spiritual components to breastfeeding such as rituals and prayers to improve lactation, which functioned as a source of reassurance (Oneha & Dodgson, 2009).

Country foods

Country food (also called traditional food or cultural food) was the first table food for First Nations infants up until recent years. While these terms are frequently used inter-changeably, the term traditional is to be considered with caution. As Luppens (2009) noted, it is difficult for researchers that are outsiders to ascribe the term "traditional" to the group in question when there is no experience with what that term describes. Moreover, the term is not flexible, in that foods that are store-bought (salmon or berries, for example) are not considered traditional despite their historic use, because they were purchased. Foods that have been used since European contact, such as flour, are also not considered traditional despite the hundreds of years of use. Country food refers mainly to food that is wild-harvested including wild meat (moose meat, deer, bison), fish, birds, sea mammals, berries and other plants (Power, 2008). Compared to market food, country food is "more nutrititious and more nutrient-dense" and is an important part of the diet for many First Nations people (Power, 2008, p. 96). For many remote, rural First Nations

communities, the reliance on country food has diminished despite soaring costs of store bought food, which is often flown into communities because of the lack of road access. There is an abundance of literature which points to the connection between increased store bought food and the onset of chronic and lifestyle related disease such as type 2 diabetes, obesity and heart related illness (Kuhnlein & Receveur, 1996). Cultural food goes beyond sustenance and nutrition for many First Nations people:

> Traditionally, Aboriginal diets and consumption patterns arose from complex and holistic food systems that provided health benefits beyond nutrition. Culture—a determinant of health, is intricately tied to traditional Aboriginal foods. Not only are traditional food valued from cultural, spiritual and health perspectives, but the activities involved in their acquisition and distribution allow for the practice of cultural values such as sharing and cooperation. (Earle, 2011, p. 3)

The effects of colonization on the relationship to food has been extensive. As Vernon describes, it is imperative to examine this "ruptured relationship" in order to understand "food's power in community building given historical realities that have informed current relationships to food" (Vernon, 2016, p. 138). Willows, Veugelers, Raine, and Kuhle (2011) discuss the link between food, culture and spirituality:

> The cultural worldview held by some Aboriginal peoples is that traditional food by its very nature is health promoting and good to eat. For this reason, in addition to nourishing the body, traditional food—as compared to commercial food—has the advantage of nourishing the mind and spirit, being an anchor to culture and personal well-being, and is an essential agent to promote holistic health. (Willows et al., 2011, p. 6)

In a study about the beliefs around weight gain during pregnancy and lactation among Northern Cree women, the role of country food as an agent of health promotion was discussed. Within the Cree context of health *miyupimaatisiiun*, or "being alive well", the vision of health extends beyond physiological health and encompasses a much more holistic model, including the role of culture and spirituality (Adelson, 2000). Vallianatos et al. (2006) describe the role of traditional food for mother and infants, "these foods connote more than just health. They also symbolize Cree culture or way of life" (p. 12).

The health benefits for infants and children in consuming country foods have been found in parts of northern Canada (Egeland, Pacey, Cao, & Sobol, 2010). Infant consumption of country food is an important means to avoid market based foods such as iron fortified cereals which are costly in remote, northern communities. Willows and Batal (2013) suggest "wild meats, many of which were, and continue to be, part of traditional Aboriginal child feeding practices are a culturally appropriate alternative" (p. 44). Relatedly, the concerns over insufficient Vitamin D in breastmilk is often a reason women will provide complementary foods such as country food to infants. The Canadian Paediatric Society recommends that all breastfed

infants who live above the 55th parallel receive Vitamin D supplementation during periods of the year where the sun is lessened (Godel et al., 2007). The concern over diminished Vitamin D is also linked to childhood rickets. The need for Vitamin D supplementation was confirmed in a study by Willows, Dewailly, and Gray-Donald (2000) in James Bay Cree women and infants living above the 53rd parallel in Quebec. While the supplementation of Vitamin D can be a challenge, this can be offset by the promotion of country food. Dodgson and Struthers (2003) noted that soups, soft foods, and jerky were given during the first year when teething. In terms of weaning, it was also noted that Ojibwe babies were not weaned at specific time periods, and instead the mothers took their cue from the infant in deciding when it was time to stop breastfeeding (Dodgson & Struthers, 2003). Their participants did note that weaning was done if the mother became pregnant, as it was believed that breasfeeding during pregnancy could "hurt the pregnancy" (Dodgson & Struthers, 2003, p. 58).

Methodology

Research in First Nations communities generally requires the establishment and maintenance of trusting relationships (Wilson, 2008). A research relationship was already established with the Norway House Cree Nation Health Division and the investigators as a part of the BTT study. Based on the discussions of interim BTT study findings, and some of the conversations between the community researchers and participants on traditional cultural approaches, a further research partnership was created with Norway House Cree Nation Health Division. This topic required a qualitative approach and involved interviews and focus groups. Using a participatory research approach, we engaged in a partnership with the Norway House Cree Nation Health Division who assisted with the development of research questions, as well as participant recrutiment. As well, a local community member was hired who was also one of the community researchers for the BTT study.

During two one week intensive periods, a total of 20 interviews were held, as well as four focus groups. The participants were primarily grandmothers and great grandmothers. Some of whom were former and current primary health care providers in various capacities, both in traditional health as in the biomedical field. Most of the participants practiced or used traditional medicine or "Indian medicine". Preliminary findings were presented in large and small group formats as well as one-on-one with stakeholders in the community which assisted with analysis. Knowledge transfer continues to take place as we work towards developing community-based intervention programming in the various mother/child/family programs in the community.

Grounded theory (Strauss & Corbin, 1994) methodology was used in this project because this approach is particularly suitable when little is known about a topic, such as First Nations approaches to infant feeding. Creswell (1998) provides a definition of grounded theory which aligned with our research goals. Grounded theory is described as:

> …an approach that generates or discovers a theory or an abstract analytical schema of a phenomenon that relates to a particular situation. This situation is one in which individuals interact, take actions, or engage in a process in response to a phenomenon. (Creswell, 1998)

Interviews and focus groups were audio recorded, transcribed, and coded using NVIVO qualitative analysis software. Interview and focus group questions primarily focused on child birthing practices, the role of culture and family in supporting infants, oral health practices and infant feeding practices such as breastfeeding, although this paper focusses on only some of these themes. Interviews were primarily conducted in English, although in some cases the participants chose to speak in Cree, in which case an interpreter was used. The community researcher was well known in the community as working in the area of maternal and children's health in various programs, and she was able to solicit participants through her own networks as well as by using the local radio station. A First Nations undergraduate student from the local university also participated in gathering the data, conducting analysis and writing of this paper (LZ). Another First Nations graduate student with expertise in IFS is the second co-author on this paper (TM). This research was approved under the University of Winnipeg Human Ethics Review Board. In addition, Norway House Cree Nation approved this project put forward by the local Health Division.

Findings and discussion

Healthy infant feeding traditions are embedded in cultural approaches to childrearing. However, dramatic changes in infant feeding were identified by the research participants as being connected to larger shifts away from cultural based childrearing. The findings indicated that the reliance on medical advice around infant feeding, coupled with the drastic changes in maternal diet including the diminished consumption of country foods, and the influence of processed, high sugar, high sodium food, the low prevalence of breastfeeding, as well as an overall lack of education on infant feeding practices have shaped the "culture" of unhealthy infant feeding in the community. These changes in infant feeding practices cannot be understood within a vacuum, and the wider social and cultural context of the community is required. This article focuses specifically on areas related to breastfeeding practices and the introduction of country food as ways in which women supported the health of their infants and promoted IFS from an early age. This article also acknowledges that there are cultural tensions that exist around these topics. The grandmothers who were interviewed describe childrearing practices embedded in traditional cultural norms earlier in time. They also describe the influence of Western-based medical advice, which often contradicted the approaches they used to rear children. The grandmothers also describe what they see today with their own children and grandchildren who are rearing children in ways that in sometimes go against Western medical

approaches to health as well as traditional approaches. What is important to consider is that cultures are not frozen but fluid. Overall, the larger influence of colonization as described by Vernon (2016) has disrupted the cultural continuity that mitigated negative health outcomes.

Breastfeeding practices

The participants within our study noted that breastfeeding was a socially acceptable practice when they were having babies. It was not uncommon to see women in the community breastfeeding in public spaces. One of our oldest respondents discussed how she would openly breastfeed:

> …at the store if he was hungry I would breastfeed right there. If there was no chair I would ask for one and say 'I want to breastfeed my baby', so they would [provide a chair]. I was not shy because everybody was breastfeeding then.

The participants considered breastfeeding as a natural practice in which they felt encouraged by their family and community. As one participant told us, "It came naturally to breastfeed. My aunt came and talked to me about it while I was pregnant on how it is important to breastfeed."

Discussion of infant feeding is intimately linked to discussions around birthing practices. Like many women living in remote, rural Canadian communities, the women of Norway House are not allowed to deliver their babies in their home community and are sent to the nearest city hospital in Thompson or Winnipeg. Until the 1970s, women in Norway House were able to birth at the community hospital unless they were assessed to have a high-risk pregnancy or potential delivery, at which time they were taken to a tertiary center for care. Due to the age of most of the respondents, they primarily gave birth in Norway House prior to the mandatory evacuation policy. They delivered their babies surrounded by their spouses, children, family and friends. For new mothers, having support from family was an essential component of healthy infant feeding practices. Some participants felt supported and well advised on childrearing when they were having children. One respondent said, "I think breastfeeding came from my grandmother. My grandmother always instilled in us that breastfeeding was the best way". Another woman (humorously) describes how she shares the importance of breastfeeding with young women, "they (Elders) always wanted the mothers to breastfeed their kids. That's why god gave you those things (breasts)! Those are not play things! That's how they explained it to you; for your babies not for your husbands!"

Mentorship from Elders including grandparents, aunties, and mothers was important for not only practicing healthy childrearing methods, but also for social support. During the time when the participants were having babies and raising children, women were living with extended families which enabled a supportive environment for childrearing. One participant describes:

> …in those days we lived with families. We didn't have a home. We had to live with my mother in law. She did a lot of teaching on how to look after my children when they get sick. …they were my great teachers.

Another respondent discussed the role of extended family:

> That was the roles of my aunties. They taught me how to take care of my babies, how to feed them, how to not to put too much stuff so they won't get stomach aches. They used to teach them how to give them water but while breastfeeding. They told me I didn't need to give them anything but my breast.

This support was described by another participant, "At the time I was having babies I had support from older ladies that have knowledge of breastfeeding".

Support and mentorship is essential for women who are initiating breastfeeding, especially if it is for the first time. Adequate support also means that women will feel more encouraged to continue breastfeeding. Oneha and Dodgson (2009) describe this cultural and emotional support as being comprised of "presence, encouragement, expertise and experience" (p. 85) from both family members as well as those in the health field. This support and mentorship also provided an opportunity for women to continue breastfeeding. One participant stated, "I learned a lot from them: the way they did it, they changed her for me; cleaned her up and they did everything for me. This helped me to continue breastfeeding." Participants also discussed trying to support their grandchildren who are now having children themselves and some of the generational gaps. As one respondent described:

> …back then you were taught to listen to what the elders tell you, you did it. You didn't question. You just did it because that was our upbringing. You don't talk back; you do the thing you're told to do and that's what I did.

Introduction of country food

The research participants discussed at length the role of country food (such as fish, moose meat, rabbit) as being an important part of the early diets of infants for several reasons including health and prevention of illness, and an appreciation for this type of food as adults. When the research participants were having babies, there was limited store bought baby food available other than infant cereal. One respondent described, "there was no baby food like what they have today."

Respondents also discussed the advice given by their doctors as conflicting with the traditional advice they were given by mothers, grandmothers and aunties.

> …they give you information on how to feed your children…not feeding them until babies are three to six months. There was no

> such thing as that. We started feeding our children at least when they were 1 month or 2 months.

One respondent discussed at length what she saw being practiced by other mothers in the community.

> I know they used to start feeding their kids early. I didn't feed my kids solid food until they were 3 months. When they turned one is when I gave them baby food or wild soup as they got older. Duck soup, goose soup, rabbit soup stuff like that. Babies did like that.

Dodgson and Struthers (2003) found similar responses where country food was given at the same time as the commencement of teething. Another respondent discussed the differences she sees in current infant feeding practices: "From my experience with my granddaughter and daughters, they follow what the health nurses tell them about not feeding them until 6 months." This recommendation would have been in line with the recommendations from the World Health Organization (2009) on the introduction of complementary foods at six months; however, the grandmother's suggestion of earlier introduction of country foods would fall below the WHO recommendations.

Respondents discussed the various ways in which they were taught to feed infants with country food. One respondent described how she ignored the recommendation of the doctors to feed her babies at a later age and instead followed the advice of her grandmother.

> We started feeding them with the food we would eat. We would chew it up for them and give it to them. There was no such thing as mashing it… we do it ourselves with our mouth. We chew it first then putting it in baby's mouth and teaching them how to eat.

This insistency in going against the recommendations of physicians is interesting and likely challenging for many health care providers to understand without an adequate cultural understanding and the larger impacts of cultural continuity for First Nations health. A study by Van Esterik (2002) shows the role of the mother as primary decision maker around appropriate times for introducing table food, particularly given the environmental and cultural dimensions of childrearing; this is also linked to the interplay between cultural norms and physician recommendations. Another respondent indicated other methods for feeding country food, "I started to give them squished table food: fish, rabbits, potatoes. They liked it. Babies will eat everything. They liked fish soup and broth. I used to put it in their bottle." One woman discussed how she alternated breastfeeding and table food feeding.

> …between breastfeeding I gave them water. I used to give them wild food with a spoon. I gave them fish water. It is when you boil white fish and make broth. They were about 4 months when I started giving them wild food.

This practice is likely linked to the issue of iron and Vitamin D and iron deficiency in northern communities described by Willows and Batal (2013).

The importance of introducing nutrient dense food such as country food (Power, 2008) is even more important, considering that women who were unable to breastfeed had little alternatives for providing adequate childhood nutrition. As the Canadian Pediatric Standards have indicated in 2007 (well after any of our participants had babies), for infants residing north of the 55th parallel, Vitamin D supplementation should be provided. Another factor is that many of the research participants had children close in age, and they would have likely weaned their babies off the breast while pregnant because of cultural beliefs around breastfeeding harming the pregnancy (Dodgson & Struthers, 2003). The early introduction of country food to the infant's diet was considered to be intimately linked to improved health and the prevention of illness. A participant stated, "It was good they were healthy. The white fish, we would make a stew out of that and feed it to our kids. They were healthy. They hardly ever got sick. Nowadays I see children get sick so easily". All the women within the study were able to identify that an infant feeding regiment based on breastmilk as well as the early introduction of country food, resulted in the best infant health outcomes.

The links between cognitive development and the consumption of country food was described by many respondents. As one participant indicated,

> I was told that your kids would be bright if you eat fish. You need it (fish) to be smart, you have to eat fish. I've seen studies today that show that mothers that eat fish have kids with high IQs. Children that eat chips have lower IQs.

Information on infant feeding was part of the knowledge transmission passed down through generations. Like traditional medicine, country food is often called "medicine" in First Nations culture because of the more holistic and spiritual perspectives on health. This is similar to what Adelson (2000) describes, "the nutritional value of meat is connected to the significance of the animal powers or spirits. The larger and more powerful animals have a greater nutritional value and are thus viewed as stronger foods" (Adelson, 2000, p. 80).

Reframing Indigenous food sovereignty to include first foods

As a means of producing and consuming foods, breastfeeding and the introduction of country foods as first foods are examples of Indigenous food sovereignty, and part of a living culture. These practices help to revitalize traditional knowledge which includes traditional childrearing practices. Respondents in this project, while they were describing infant feeding practices in the context of early childhood caries, were also talking about the ability to make choices that were considered culturally appropriate and effective methods of childrearing that in many cases are not in line with national and international recommendations on infant feeding. Breastmilk as a first food has demonstrably provided a range of health protecting factors for childhood development and health. Country foods, as described by participants, was considered an essential supplement to breastfeeding for early infants and another first foods.

These practices enabled mothers and families to adequately support their children's immediate needs, but were also a part of a larger local food system, thereby reducing reliance on a market-based food system. The women in this study stated that they belonged to larger support networks among extended family and community members that helped to guide them with breastfeeding practices as well as the acquisition of country foods. These are all tenets of Indigenous food sovereignty.

Cultural continuity has a protective influence on physical and mental health (Chandler and Lalonde, 1998) for First Nations communities. Other scholars have suggested that cultural continuity is a social determinant of health (Loppie-Reading & Wein, 2009). Cultural continuity is equally important when considering food systems. Changes in traditional food knowledge and family dynamics have resulted in the need for education and support around traditional food practices including first foods. As Morrison (2011) notes, "the Indigenous food sovereignty approach provides a model for social learning and thereby promotes the application of traditional knowledge, values, wisdom, and practices in the present day context" (p. 100). The transmission of food-related knowledge, including infant feeding practices, serves to promote cultural continuity.

The social element of these practices should not be overlooked. According to Fouts, Hewlett, and Lamb (2012), "Breastfeeding involves much more than feeding; it entails intimate social interactions that reflect cultural ideas and practices about social relationships, childcare, and child development." (p. 123). IFS is a concept to be considered, described, and supported, but caution must be used in ascribing this term to a people or a place. In the end, a community must define its own food practices and priorities, but IFS accounts must consider breastfeeding and country foods as first foods in the first steps towards the path to IFS and put cultural continuity at the heart.

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Original Research Article

Access and affordability of "healthy" foods in northern Manitoba? The need for Indigenous food sovereignty

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Abstract

Despite widespread concerns about household food insecurity experienced by Indigenous peoples, there is limited empirical evidence about the availability and prices of healthy foods in First Nations rural communities located in northern Manitoba, Canada. To fill this research gap, this study examines the availability and affordability of fresh milk, fruits, vegetables, and several other selected food items; investigates the determinants of food prices; and examines the implications of paying higher food prices for individuals and communities in northern Manitoba. The research findings are based on a survey of fifty-two food items conducted in twenty-two communities and six focus group discussions with mothers, service providers, and community leaders. Our research indicates that in addition to limited availability of healthy foods, food prices in First Nations communities were significantly higher than in Winnipeg or non-First Nations urban centers. We conclude by pointing to some policy implications emerging from this research while also signaling the need for a more substantial and profound transformation that includes decolonizing food systems and building Indigenous food sovereignty.

Keywords: High food prices; Indigenous communities; Indigenous food sovereignty

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Introduction

In 2012, approximately 4 million Canadians (12.6 percent) experienced some level of household food insecurity while the rate of food insecurity among Indigenous peoples was about 28.2 percent (Tarasuk, Mitchell, & Dachner, 2014). [1] A survey conducted with 534 households living on reserve in northern Manitoba also found that 75 percent of the survey participant households were food insecure (Fieldhouse & Thompson, 2012; Thompson et al., 2011). Following his Mission to Canada in 2012, the UN Special Rapporteur on the right to food, expressed deep concern about the severe food insecurity experienced by Indigenous peoples living on and off reserves, and in rural and urban areas (De Schutter, 2012). The Council of Canadian Academies Expert Panel that assessed Aboriginal peoples' food security status in northern Canada also stressed that food insecurity is a significant public health concern for Indigenous peoples that needs urgent attention (Council of Canadian Academies, 2014).

Though food insecurity is not a new problem, how it is currently experienced by Indigenous peoples in northern Canada differs from past experiences of fluctuating food supplies (Council of Canadian Academies, 2014). Contemporary food insecurity, as experienced by Indigenous peoples in Canada, is shaped by a long history and the ongoing processes and legacies of colonization, unresolved treaty processes, environmental dispossession and displacement, rapid environmental change, logistical challenges, changing food knowledge and preferences, and a decline in intergenerational transfer of traditional Indigenous knowledge as a result of oppressive and colonizing forces (Council of Canadian Academies, 2014; Morrison, 2011). Since traditional Indigenous food pathways have been so dramatically altered, food insecurity among Indigenous peoples is now also exacerbated by limited access to, and high prices of, 'healthy' store-bought foods (Socha, Zahar, Chambers, Abraham, & Fiddler, 2012; Willows, 2005).[2]

Despite a widespread concern about the lack of food availability and high food prices, there is limited empirical evidence about the availability and prices of healthy foods in First Nations rural communities in northern Manitoba. To fill this research gap, our study examined the availability and affordability (prices) of fresh milk, fruits, vegetables, and several other selected food items; investigated the determinants of food prices; and examined the implications of paying higher food prices for individuals and communities. We begin by presenting a brief

[1] Food security is most commonly defined as "exist[ing] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and productive life." (Food and Agriculture Organization of the United Nations [FAO], 1996). Food insecurity occurs when these conditions are not achieved. See the FAO's (2006) policy brief for a detailed discussion of the four key dimensions of food security: availability, access, utilization and stability.

[2] In this paper, we are using Canada's Food Guide (Health Canada, 2007) general explanation of 'healthy' and 'less healthy' food. That is, healthy food provides recommended amounts of nutrients such as minerals, vitamins, and energy requirements to promote optimum well-being, prevent nutrient deficiency, and reduce risk of chronic disease. 'Less healthy' food and beverages are defined as those food that are high in energy density, containing saturated fat, *trans* fat, added sugar and salt such as potato chips, energy drinks, and pop.

historical context of Indigenous peoples' food systems and the impact of colonial policies. This is followed by an explanation of the research methodology and the study communities. Next, we present the quantitative research results followed by a discussion that also includes the qualitative research findings. We conclude by highlighting some key policy implications revealed by the empirical findings.

Historical context

To more fully comprehend the current food insecurity and the related health problems experienced by Indigenous peoples in Canada, it is critical to understand Indigenous peoples' traditional food systems and the impact of colonial policies. Indigenous peoples in Canada were supported by land-based traditional foods for thousands of years before the westernization of their food systems (Haman et al., 2010). Historically, Indigenous peoples' dietary practices were highly regionally diverse and ecologically dependent. They often included varying combinations of harvesting and consuming foods from the land and water using hunting, trapping, fishing, gathering, and agriculture (Willows, 2005); some communities sourced their food primarily from animals and fish (Kuhnlein, Souedia, & Receveur, 1996) while others depended to some degree on agriculturally produced food items such as beans, maize and squash (Kuhnlein & Turner, 1991; Kwon, Apostolidis, Kim, & Shetty, 2007).

For example, in northern Canada, traditional Indigenous food systems encompassed harvesting and consumption of wildlife including: moose, caribou, and beaver; smaller fur-bearing mammals such as rabbit, mink, marten, and muskrat; different fish varieties such as whitefish, walleye, pike, suckers, burbot, and sturgeon; and wild berries such as blueberries, raspberries, gooseberries, partridge berries, plus local herbs and roots (Robidoux, Haman, & Sentha, 2009). Traditional foods are not only valued from health, cultural, and spiritual perspectives (Johnson, Nobmann, Asay, & Lanier, 2009; Kamal, Linklater, Thompson, Dipple, & Committee, 2015; Willow, 2005) but also the acquisition and distribution of traditional foods are central to practicing and strengthening cultural values through the processes of sharing and cooperation (Redwood et al., 2008).

Despite their importance, the traditional Indigenous food systems in Canada have changed significantly over time. Considerable shifts in Indigenous peoples' traditional food systems occurred in the 1800s as a result of signing treaties that led to population aggregation into permanent settlements and the establishment of the reserve system[3] (Rudolph & McLachlan, 2013). The treaties contributed significantly to the decline of Indigenous food systems while creating long-term dependency on the government that jeopardized Indigenous peoples' food

[3] The term "reserve" means "any tract or tracts of land set apart by treaty or otherwise for the use or benefit of or granted to a particular band of Indians [First Nations], of which the legal title is in the Crown, but which is unsurrendered, and includes all the trees, wood, timber, soil, stone, minerals, metals, or other valuables thereon or therein" (The Indian Act, 1876).

security and undermined local food initiatives (Rudolph & McLachlan, 2013). Not only were Indigenous peoples subjected to policies of starvation (Daschuk, 2013), but reserve lands were generally of poor quality and government policies were also introduced to ensure that reserve farmers were systematically excluded by various means from the evolving agrarian economy (Carter, 1993). The imposition of private property regimes along with new land use effectively meant that Indigenous peoples no longer had access to traditional food sources (Alfred, 2009).

There is no doubt that colonial policies have had significant economic, social, cultural, and health consequences for Indigenous peoples (Alfred, 2009; Dashuk, 2013; Harris, 2002). These were exacerbated by the institutionalized assimilation of Indigenous peoples to colonial culture and tradition that was implemented by forcibly removing Indigenous children from their parents and placing them in federally funded Indian Residential Schools (Partridge, 2010). Many residential schools used food as a tool of manipulation and coercion where starvation, malnourishment, and non-consensual nutritional experimentation were present, all while children were restricted to an entirely new diet of non-traditional foods (Mosby, 2013; Truth & Reconciliation Commission, 2015).

Because of the Indian Residential School system's enduring intergenerational negative effects on the well-being of Indigenous peoples, it is considered an act of cultural genocide and remains the source of many of the contemporary problems facing Indigenous peoples in Canada (MacDonald & Hudson, 2012). Likewise, the establishment of permanent settlements on reserves caused changes in Indigenous peoples' lifestyle and corresponding nutritional shifts (Szathmary, Ritenbaugh, & Goodby, 1987).

Indigenous peoples experienced the consequences of the colonization of their food systems in various ways including isolation, persistent poverty, food insecurity, dependency on government handouts (Alfred, 2009; McCallum, 2017), and the loss of traditional knowledge and skills related to harvesting and preparation of traditional foods (Glacken, 2008). The rapid shift from reliance on traditional foods to more energy dense store-bought processed foods has been also associated with the prevalence of chronic diseases among Indigenous communities in Canada (Haman et al., 2010). One of the main health consequences of the colonial induced nutritional transition is the significant rise in obesity and obesity-related diseases such as the increased occurrence of Type II diabetes and heart disease (Bruce, 2000; Haman et al., 2010; Johnson, Martin, & Sarin, 2002; Kuhnlein et al., 1996; Reading & Wien, 2009; Young, Reading, Elias, & O'Neil, 2000). According to Thompson et al. (2011), Indigenous peoples in northern Manitoba have the highest rate of pediatric diabetes in northern America, which is partially explained by a lack of physical and economic access to sufficient, safe and nutritious food in the region.

Despite the grave impacts of colonization, there has been a resurgence in Indigenous peoples' food systems as well as traditional knowledge, spiritual, and cultural values (Corntassel, 2012). Corntassel (2012) describes the Indigenous resurgence as "having the courage and imagination to envision life beyond the state" (p.89). He further argues that "if colonization is a disconnecting force, then resurgence is about reconnecting with homelands, cultures, and

communities" (p.97). Importantly, resurgence enables Indigenous peoples to renew their roles and responsibilities with the sustainable practices of Indigenous livelihoods, food security, community governance, and connections to the natural world, while also practicing traditional knowledge and skills and transferring these to the future generation (Corntassel, 2008). Simpson (2011) stresses that Indigenous resurgence is "a celebration that after everything, we are still here" (p.12) as expressed through a return to the lands, languages, and ceremonies of Indigenous peoples in Canada.

There are, however, important challenges to the processes of Indigenous resurgence (Haman et al., 2010). Regular and unimpeded access to traditional territories and a return to traditional food habits, spiritual and cultural practices are critical to Indigenous resurgence (Cidro & Martens, 2014). Yet, more recently, Indigenous peoples' access to their traditional territories and the availability and sustainability of traditional foods are being affected by environmental changes (Chan et al., 2010; Glacken, 2008) and growing pressure and interest in 'development' projects such as provincial and federal parks, forestry, mining, hydro, gas, and oil development (Haman et al., 2010). Haman et al. (2010) identify four key factors that may hinder or enhance the revival of traditional food systems: (1) knowledge (of traditional food harvesting, preparation, and consumption); (2) economics (e.g., costs of hunting, trapping and fishing); (3) availability/sustainability of traditional foods in local areas; and (4) access to land (e.g., for hunting, fishing, and other land-based practices). Although the resurgence of traditional food systems is absolutely key to addressing the current food insecurity and the related health issues facing Indigenous peoples, policies and programs to ensure access to affordable healthy market foods are also important, at least in the short term (Power, 2008).

Research methods

This research was approved by the Office of Research Ethics and Compliance Board at the University of Manitoba and it was conducted in collaboration with the Public Interest Law Centre (PILC) and the Manitoba Keewatinowi Okimakanak (MKO).[4]

The research proposal was presented and discussed at the MKO Chiefs' General Assembly on Health that was held in April 2016 in Thompson, Manitoba. Since this event brought together chiefs, councilors, and health directors from more than 25 First Nations communities in northern Manitoba our aim was to obtain feedback from Indigenous leaders. The

[4] PILC is a not-for-profit organization that works with marginalized populations to assist them in realizing their legal and social rights (http://legalhelpcentre.ca/public-interest-law-centre). The MKO describes itself as "a non-profit, political advocacy organization that provides a collective voice on issues of inherent, Treaty, aboriginal and human rights for the citizens of the 30 sovereign First Nations we represent." (http://www.mkonation.com/) We also consulted Food Matters Manitoba, a local long-standing non-governmental organization that hosts the Manitoba Food Charter and engages in food related social-justice work across the province (http://www.foodmattersmanitoba.ca/).

MKO chiefs in the Assembly passed a resolution in full support of the project and made suggestions for potential study communities.

Importantly, the engagement with MKO included the full participation of Mr. Brennan Manoakeesick (an Indigenous researcher and former Housing Manager and Special Projects Advisor at MKO) who assisted in the fieldwork by identifying research communities and participants, organized all logistics for holding focus groups in the communities, and facilitated the focus group discussions. MKO's participation also helped to expand the scope of the research as originally planned, to go beyond examining only the price of milk and include additional food items in the survey. The effective collaboration with MKO ensured that the research was relevant to MKO First Nations. The research proposal was also discussed with the leadership from Northlands Denesuline First Nation (NDFN) during a workshop organized by the University of Manitoba's Department of Internal Medicine (Bannatyne Campus) in April 2016.

After consulting with different stakeholders, the First Nations and non-First Nations communities in this research were purposely selected considering a wide range of criteria such as community type (First Nations versus non-First Nations), year-round access to road or extent of remoteness, geographic distribution of communities across northern Manitoba, and suggestions of specific communities that we received from the MKO chiefs. Accordingly, a total of 22 communities were selected (See Figure 1 for locations and Table 1 for community names): 15 First Nations (nine communities with a year-round road access and six communities without year-round road access) and seven non-First Nations communities (four urban centers and three rural communities).

We used a comparative mixed methods research approach involving both quantitative and qualitative methods. Quantitative data were collected using an in-store food prices survey using a survey questionnaire while qualitative data were obtained through focus group discussions. The survey questionnaire listed 52 food items grouped by food types such as dairy and meat products, fresh fruit and vegetables, non-perishable food items, and food items that are considered less nutritious. At the time of the in-store food prices data collection, 67 percent of the First Nations communities visited had only one grocery store while two First Nations communities (13 percent) had none. In First Nations communities and non-First Nations urban centers in Northern Manitoba with two or more stores, we conducted the in-store price survey in at least two stores.

In total, the in-store food prices data were collected in 37 stores (13 stores in First Nations communities with year-round road access, six stores in First Nations communities with no year-round road access, seven stores in non-First Nations communities in northern Manitoba, and 11 stores in Winnipeg). All non-First Nations communities in northern Manitoba have access to all-weather roads or train. In locations where there were more than two stores, larger stores that were considered to offer a wider food selection and lower prices were selected. The data was collected in August and early September, 2016. While prices and access to food are considered to vary by season, both accessibility and prices are generally better during summer time thus the findings presented here do not overestimate the prices and food availability constraints.

Information gathered through the focus group discussions was used to highlight the seasonal differences in food prices and availability.

Before starting the in-store food prices survey in each of the stores, permission was first obtained from store managers. In every store, food items with the lowest price were recorded. For each of the 52 food items, we recorded the brand name (if available), weight/unit, price per unit (for preferred units), and availability in the store. If the preferred unit was not available in the store, we recorded the nearest size available. In some instances when food prices were not shown on shelves, we were allowed to bring these food items to the store's checkout counter and get the price checked by store employees. If the food item on the survey list was temporarily out of stock at the time of data collection this was noted, and we recorded the price listed on the shelf or the price indicated by store employees. However, if the food item was not available in the store at all, this was recorded as NA (not available) under the price column. Where food items on the list were on sale, we recorded both the original and sale prices. The analysis presented in this report is based on the original prices because, as revealed during the focus group discussions, in First Nations communities, sales on food items are not very common.

To facilitate food prices comparisons across communities and locations, all food items were converted into a common unit of measurement (e.g., all prices per pound or grams were converted to price per kilogram). Where the First Nations communities are eligible to receive a transportation subsidy through the Nutrition North Canada (NNC) program (as was the case for six of the First Nations communities in this study), the prices after the subsidy were applied. In Manitoba, as of October 2016, 18 First Nations communities with no all-weather roads were eligible to receive a transportation subsidy through NNC program. The NNC program subsidizes perishable nutritious foods and commercially produced country (traditional) foods for eligible communities.

All the price data were entered into an excel database and analyzed using a commonly used statistical software called R statistical software. The average food prices across different locations were compared using *Tukey's* test for multiple comparisons of means.[5] An Ordinary Least Square (OLS) regression analysis was also conducted for certain food items to identify the determinants of food prices across different geographic areas.

Qualitative data on the implications of paying higher prices for food for individuals and communities (e.g., psychological, health, and emotional effects), access to stores (e.g., transportation challenges), and monthly or seasonal variation in food availability and prices were collected through six focus group discussions that were held in the four communities of Cross Lake, Chemawawin, Wasagamack, and Lac Brochet. This included four focus group discussion with mothers, and two with community service providers (e.g., daycare teachers, social workers, and health officers) and community leaders (e.g., councilors).

[5]Tukey's test is a statistical test used to compare the average of every group to the averages of every other groups simultaneously. The null hypothesis in Tukey's test is that there is no difference in the groups mean.

The First Nations communities that participated in the focus group discussions were selected in collaboration with MKO based on their geographic location (north west, far north, central and north east), and access to road (with and without all-weather road access). This selection was made with consideration that the information from the focus groups could reveal the various challenges faced by different First Nations communities in northern Manitoba, in relation to the availability and affordability of healthy foods. The focus group participants were selected in close collaboration with community leaders and health officers. Selection criteria were communicated with the councilors and health officers by the lead author and research assistant. To select the mothers who participated in the focus group discussion, criteria such as different age groups, economic status (i.e., employed and those on social assistance), and marital status (married and single mothers), were used. For the focus group with service providers, we selected experts from different departments. The open ended questions for the focus groups were developed beforehand with input from MKO staff. Participants often raised additional issues and these were also discussed as they arose.

As mentioned above, Brennan Manoakeesick, an Indigenous researcher with more than seven years of work with MKO and considerable research experience with First Nations communities in Manitoba, facilitated the focus group discussion. Prior to each discussion, we explained the research objectives, the estimated duration of the discussion, and the content of the consent form that included information about anonymity, confidentiality, and other ethical considerations. Once all participants had signed the consent form we proceeded. The focus group discussions were audio-recorded with full consent of the focus group participants; notes were also taken by the lead author. All the focus group participants were paid a small honorarium for taking the time to participate in the research and sharing their knowledge and experience. The audio recordings of the focus group discussions were analyzed using Nvivo 11 software.

Results of quantitative research

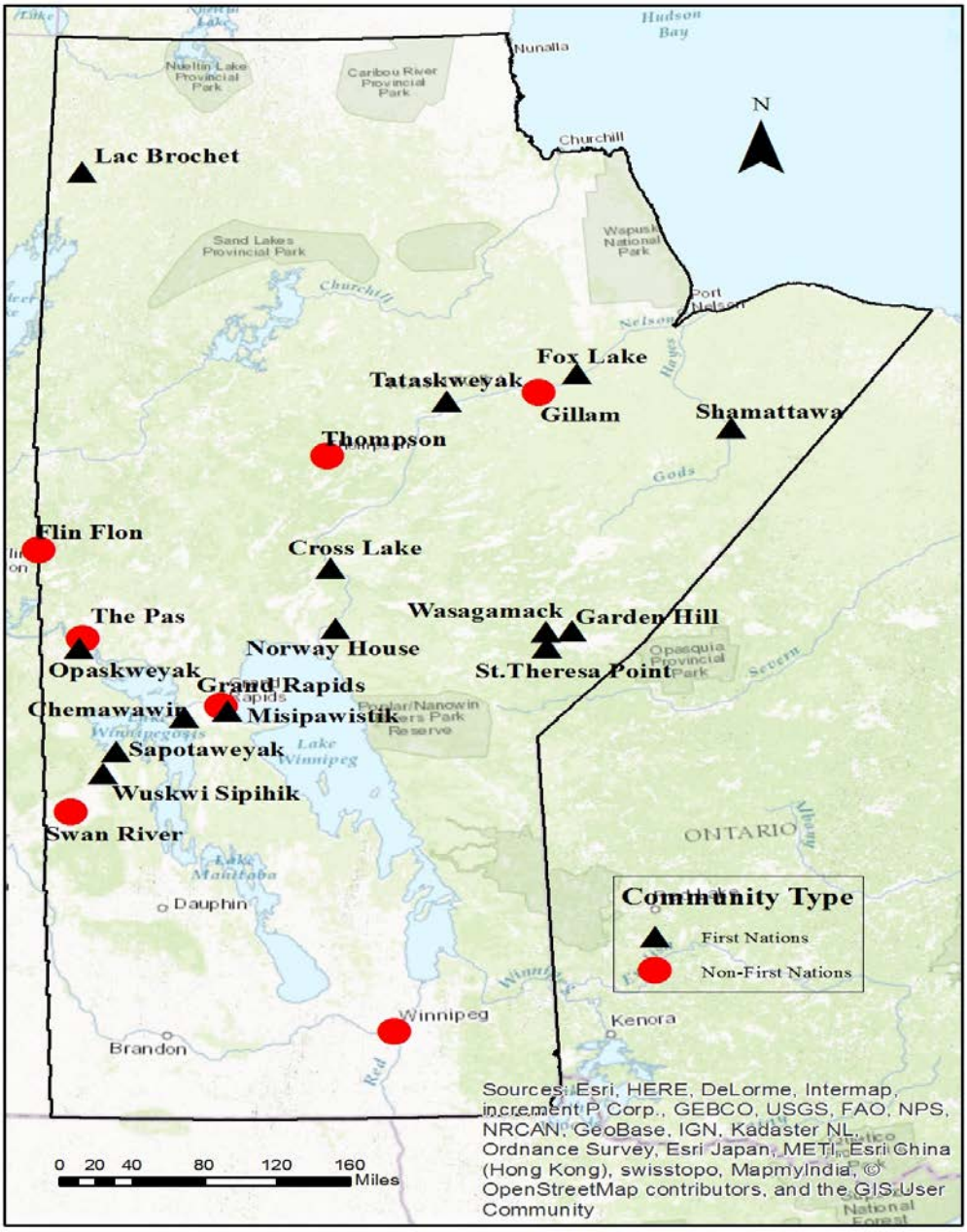
Socio-economic characteristics of the study communities

Before beginning to present the research results, it is important to understand some of the context of the communities under study. (See Table 1 for a presentation of the socio-economic characteristics of all the study communities except Stevenson Island, for which socio-economic data are unavailable.) These descriptive statistics demonstrate that the average median income in First Nations communities is nearly half of the average median household income of non-First Nation communities, while the unemployment rate and proportion of family income from government transfers are higher in First Nations communities than in non-First Nations communities.

In 2016, while the average unemployment rate among the First Nations communities considered for this study was 25.5 percent, it was only 5.8 percent for the non-First Nation

communities. Similarly, the proportion of average family income from government transfers for First Nations and non-First Nations communities were 37.3 percent and 12.1 percent, respectively. Another factor that distinguished the First Nations and non-First Nations communities considered for this study was their access to all-weather roads. About 40 percent of the First Nations communities visited for this study did not have access to all-weather roads.

Figure 1: Map of the study communities



Food availability

Table 2 shows the percentage availability of selected food items at the time of data collection. Food availability here refers to whether the stores surveyed retailed the specified food items or not. All the stores surveyed in Winnipeg and non-First Nations urban centers in northern Manitoba sold almost all of the different types of milk, except lactose-free milk for which availability in all the stores visited was very limited. In rural First Nations communities with and without access to an all-weather road, skim and lactose-free milk had the lowest availability, while the availability of low-fat (1 percent), reduced-fat (2 percent) and whole (3.25 percent) milk was higher than other milk categories in these communities. Although all the 37 stores surveyed sold at least two different types of regular milk (with different container size and fat content), lactose-free milk (any container size and fat content) was unavailable in six (40 percent) of the First Nations rural communities. Lack of access to lactose-free milk due to its unavailability in these communities has direct implications on the health of people who do not consume regular milk due to lactose intolerance.

The availability of store-bought fresh meat products was very limited in rural First Nations communities with no access to an all-weather road. More than two-thirds of the stores in the rural First Nations communities without an all-weather road did not sell fresh meat products. Although there was a significant difference in terms of freshness and quality, availability of fruits and vegetables were similar across the different study communities. The availability of less healthy foods and drinks (items high in calories, fat, sugar or salt) such as potato chips, pop, and energy drinks was high and similar across the different study communities.

Of the 52 food items surveyed, two-litre milk (2 percent), eggs, and Pepsi were the only food items that were consistently available in all the 37 stores surveyed. In almost all the stores in the rural First Nations communities that we surveyed, the shelf space allocated to less healthy foods and drinks was much larger than the space allocated to fresh fruits, vegetables, and dairy products together. The less healthy food items were primarily placed on the front shelves of the stores, while the healthy food items were mostly placed on the back shelves.

Table 1: Socio-economic characteristics of study communities

Community name	Population size	Median HH income	Government transfer (percent of income)	Unemploy-ment rate	Access to an all-weather rod	Accessible by air	Distance from Winnipeg
Lac Brochet	1090	31,759	31	38.2	No	Yes	1090
Shamattawa First Nation	1592	42,196	44	10.8	No	Yes	743
Tataskweyak Cree Nation	3,837	35,965	36	42.4	Yes	No	905
Cross Lake Cree Nation	8,482	31,745	33	22.1	Yes	Yes	770
Norway House	7,996	20,800	33	28	Yes	Yes	806
Opaskwayak Cree Nation	5,989	39,742	24	17.5	Yes	No	625
Chemawawin Cree Nation	1,860	27,219	38	20	Yes	No	450
Misipawistik Cree Nation	2,004	28,738	39	17.1	Yes	No	432
Sapotaweyak Cree Nation	2,509	15,716	41	36	Yes	No	391
Garden Hill First Nations	2,655	25.744	42	25.2	No	Yes	485
St. Theresa Point	4,221	31,925	39	25.8	No	Yes	485
Wasagamack First Nation	2,145	25,000	48	23.4	No	No	481
Grand Rapids	720	28,736	NA	NA	Yes	Yes	432
Swan River	3,750	39,989	24.9	3.2	Yes	Yes	497
Flin Flon	5,520	69,246	11.9	5.7	Yes	Yes	764
Thompson	12,730	79,162	5.5	7	Yes	Yes	762
Gillam	1,195	106,043	4.9	4	Yes	Yes	1064
The Pas	5,555	57,247	13.6	7.7	Yes	Yes	625
Winnipeg	649,995	57,925	11.6	5.9	Yes	Yes	NA
Manitoba	1,208,268	57,299	12.5	6.2	NA	NA	NA

Source: Compiled from websites of Indigenous and Northern Affairs Canada (2016), and Statistics Canada (2011) and Google Map (for the distance from Winnipeg).

Table 2: Percentage of food availability in the stores in the study communities

Food Item	Winnipeg (11 stores)	Non-First Nations urban centers in northern Manitoba (7 stores)	Communities with all-weather roads (13 stores)	First Nations communities without all-weather roads (6 stores)
Skim milk (1 litre)	100.0	100.0	38.5	16.7
Low-fat milk (2 litre)	100.0	71.4	53.8	83.3
Fat-reduced milk (2 litre)	100.0	100.0	100.0	100.0
Whole milk (4 litre)	100.0	100.0	100.0	83.3
Lactose-free milk (1 litre)	81.8	85.7	7.7	16.7
Chocolate milk (4 litre)	90.9	85.7	69.2	66.7
Ground Beef	100.0	100.0	84.6	33.3
Chicken Breast	100.0	85.7	69.2	16.7
Chicken thighs	90.9	85.7	53.8	16.7
Pork Chops	100.0	71.4	61.5	33.3
Eggs	100.0	100.0	100.0	100.0
Apple	100.0	85.7	84.6	83.3
Banana	100.0	85.7	84.6	83.3
Orange	100.0	85.7	76.9	83.3
Grape	90.9	85.7	76.9	66.7
Onion	100.0	85.7	84.6	83.3
Tomatoes	100.0	85.7	84.6	83.3
Potatoes	100.0	85.7	84.6	83.3
Carrot	90.9	85.7	69.2	83.3
Lettuce	100.0	85.7	61.5	83.3
Energy Drink	90.9	100.0	69.2	66.7
Potato Chips	100.0	100.0	92.3	83.3
Pepsi, 2 Litre	100.0	100.0	100.0	100.0
Pepsi, 12 Pack	100.0	100.0	84.6	83.3
Wheat flour (10 kg)	100.0	-	70.0	66.7
Coffee (930 gm)	60.0	-	76.9	66.7
Sugar (2 kg)	100.0	-	76.9	83.3

Table 3: Average food prices (in Canadian dollars) across different geographic locations in Manitoba

Food Item	Winnipeg (11 stores)	Non-First Nations urban centers in northern Manitoba (7 stores)	Communities with all-weather roads (13 stores)	First Nations communities without all-weather roads (6 stores)
Skim milk (1 litre)	1.55	1.56	2.23	2.65
Low-fat milk (1 litre)	1.58	1.57	2.43	2.42
Low-fat milk (2 litre)	3.31	3.45	3.82	4.12
Fat-reduced milk (1 litre)	1.66	1.67	2.04	3.06
Fat-reduced milk (2 litre)	3.34	3.48	3.86	4.99
Fat-reduced milk (4 litre)	4.79	5.08	6.99	8.11
Whole milk (4 litre)	5.25	5.60	4.43	8.56
Lactose-free milk (2 litre)	5.32	5.70	5.84	6.15
Chocolate milk (4 litre)	5.29	6.43	8.73	9.64
Ground Beef	11.54	10.90	12.24	16.89
Chicken Breast	14.50	17.45	17.17	21.99
Chicken thighs	8.77	9.27	10.93	15.49
Pork Chops	12.48	10.99	12.92	19.04
Eggs	2.96	3.13	3.77	3.90
Apple	3.36	4.36	5.66	7.41
Banana	1.81	1.64	2.76	4.72
Orange	3.52	3.45	4.65	3.80
Grape	5.25	4.72	8.10	9.93
Onion	1.83	2.93	2.92	3.17
Tomatoes	3.94	5.17	6.54	10.86
Potatoes	1.30	1.29	2.03	2.21
Carrot	1.82	2.63	3.02	4.46
Lettuce	1.84	2.20	2.37	2.58
Energy Drink	2.70	3.09	3.36	3.75
Potato Chips	3.39	3.39	4.57	5.72
Pepsi, 2 Litre	2.42	2.33	3.34	8.80
Pepsi, 12 Pack	5.57	5.88	7.61	20.25
Wheat flour (10 kg)	17.01	-	22.84	35.34
Coffee (930 gram)	17.58	-	21.09	26.12
Sugar (2 kg)	3.58	-	4.89	6.97

Table 4: Pairwise comparison of the average difference in food prices using Tukey-Kremar procedure for unequal sample size (in Canadian Dollars)

Food Items	Winnipeg VS non-First Nations urban centres	Winnipeg VS First Nations communities with access to all-weather road	Winnipeg VS First Nations communities with no access to an all-weather road	Non-First Nations urban centers VS First Nations communities with access to an all-weather road	Non-First nations urban centers VS First Nations communities with no access to an all-weather road	First Nations communities with access to an all-weather road VS no access to an all-weather road
Skim milk (1 litre)	0.01	0.68***	1.10***	0.67***	1.09***	0.42
Low-fat milk (1 litre)	-0.01	0.84***	0.84**	0.85**	0.85**	-0.01
Low-fat milk (2 litre)	0.14	0.52	0.82*	0.37	0.68*	0.31
Fat-reduced milk (1 litre)	0.14	0.51	1.65***	0.38	1.51***	1.31**
Fat-reduced milk (2 litre)	0.14	0.51	1.65***	0.38	1.15***	1.13***
Fat-reduced milk (4 litre)	0.39	2.20***	3.32***	1.91***	3.03***	1.11*
Whole milk (4 litre)	0.35	2.17***	3.31***	1.82***	2.96***	1.14*
Lactose-free milk (2 litre)	0.48	0.52	0.93	0.14	0.45	0.31
Chocolate milk (4 litre)	0.51	2.83**	3.73***	2.32**	3.21***	0.89
Ground Beef	-0.64	0.70	5.35	1.34	6.00*	4.65
Chicken Breast	2.94	3.26	7.48*	0.3	4.54	4.22
Chicken thighs	-1.55	0.43	6.56	1.98	8.11*	6.13
Pork Chops	-1.55	0.43	6.56*	1.98	8.11*	6.13
Eggs	0.16	0.80**	0.94**	0.64	0.78	0.14
Apple	1.00	2.29***	4.04***	1.29	3.04**	1.75
Banana	-0.18	0.96***	2.90***	1.14***	3.08***	1.97***
Orange	-0.70	1.23*	0.28	1.20	0.35	-0.84
Grape	0.01	3.38**	5.21***	3.37**	5.20***	1.83
Onion	1.11	1.1	1.35	-0.01	0.24	0.25
Tomatoes	1.66	3.04*	7.35***	1.37	5.69**	4.31**
Potatoes	-0.1	0.73	0.91	0.75	0.92	0.18
Carrot	0.81	1.21**	2.64***	0.39	1.83**	1.43**
Lettuce	0.36	0.53	0.74	0.17	0.35	0.21
Energy Drink	0.37	0.65**	1.04***	0.27	0.66	0.39
Potato Chips	0.01	1.18***	2.33***	1.18**	2.33***	1.15**
Pepsi, 2 Litre	0.08	1.10**	7.52***	1.01*	7.44***	6.42***
Pepsi, 12 Pack	0.31	2.04*	14.68***	1.73	14.37***	12.64***
Wheat flour (10 kg)	-	5.83	18.21***	-	-	12.39*
Coffee (930 gram)	-	3.50	8.54*	-	-	5.02
Sugar (2 kg)	-	1.31***	3.16***	-	-	1.85***

Significance level: The *, **, and *** show that the average prices are significantly different using a 5 percent ($p < 0.05$), 1 percent ($p < 0.01$) and 0.1 percent ($p < 0.001$) significance level, respectively. The average food price difference, e.g. between Winnipeg and non-First Nations urban centers, was calculated as the average food price in Winnipeg minus the average food prices in non-First Nations urban centers.

Food prices

The average prices of food across different geographic locations in Manitoba are given in Table 3. We provide here a brief discussion of the prices of some key foods.

Milk

The average milk prices in the First Nations communities (including communities that have access to an all-weather road) were significantly higher than the prices in Winnipeg and non-First Nations urban centers in northern Manitoba. Average prices of milk (for all container sizes and different fat content) in the First Nations communities with no access to an all-weather road were exceptionally high, even after taking into account the subsidies received through the Nutrition North Canada (NNC) program. For instance, the average price of a one-litre fat-reduced carton of milk in First Nations communities with no access to an all-weather road was approximately 84 percent higher with the NNC subsidy and 181 percent higher without the subsidy as compared to the price in Winnipeg. First Nations communities with no access to an all-weather road, on average, paid between 63 percent and 69 percent more for the four-litre jug of milk than consumers in Winnipeg. There were very little or no difference in the average prices of milk between Winnipeg and non-First Nations urban centers in northern Manitoba.

Though the availability of lactose-free milk is quite limited in First Nations communities, the average price difference between Winnipeg and First Nations communities was not as high as the average price difference in regular milk. There was, on average, a maximum of about 23 percent difference in the prices of lactose-free milk between Winnipeg and First Nations communities. However, the average price of lactose-free milk is much higher than the price of regular milk of the same container size, and thus more likely unaffordable by most low-income families.

In Manitoba, although milk prices are regulated, the milk prices regulation currently applies only to one-litre carton milk and is geographically limited to within a 240 kilometer radius around Winnipeg and a 360 kilometer radius around Brandon.[6] However, the majority of First Nations communities are located outside these regulated areas, thus effectively exposing them to higher milk prices.

[6] A retailer cannot charge more than the price specified by the Manitoba Milk Price Review Commission—e.g., a maximum of $1.71 for one-litre whole milk in Winnipeg and Brandon. This price is adjusted every year in February based on the changes in the consumer price index and production costs of the previous year. Milk distributors or retailers can charge a transportation differential of 1 cent for every 30 kilometers for a distance up to 240 kilometers from Winnipeg and 360 kilometers from Brandon.

Fresh fruits and vegetables

The prices of apples, bananas, and grapes were significantly more expensive in rural First Nations communities (with and without access to an all-weather road) as compared to both Winnipeg and non-First Nations urban centers. The average prices of apples, bananas, and grapes in rural First Nations communities without access to an all-weather road were 121 percent, 161 percent, and 89 percent higher than the prices in Winnipeg, respectively. As compared to the prices in First Nations communities with access to an all-weather road, bananas and apples were significantly more expensive in First Nations rural communities without access to an all-weather road. While there was no significant difference in the prices of onions and lettuce across all the different communities, tomatoes and potatoes were significantly more expensive in rural First Nations communities with and without access to an all-weather road. As compared to the average price in Winnipeg, tomatoes were 66 percent and 176 percent more expensive in First Nations with and without access to an all-weather road, respectively. There no significant difference in the prices of fruits and vegetables studied between Winnipeg and non-First Nations urban centers in northern Manitoba.

Meat products

Ground beef in rural First Nations communities without access to an all-weather road was significantly more expensive compared to Winnipeg and non-First Nations urban centers. The prices of chicken breasts and pork chops in rural First Nations communities with and without access to all-weather roads were significantly higher than in Winnipeg. The average prices of meat products were between 46 percent and 77 percent higher in rural First Nations communities without access to an all-weather road as compared to Winnipeg, or between 26 percent and 73 percent higher as compared to non-First Nations urban centers in northern Manitoba. Overall, the prices of meat products studied were not significantly different between Winnipeg and non-First Nations urban centers.

Less nutritious food items

There is a commonly held assumption that the prices of less nutritious or unhealthy food items are cheaper than healthy foods (Food Secure Canada, n.d.). However, as compared to Winnipeg or non-First Nations urban centers, the less healthy food items considered in this study were *as expensive or even sometimes more expensive* than healthy foods in First Nations communities. The average prices of all less healthy foods studied were significantly more expensive in First Nations rural communities with and without access to an all-weather road as compared to Winnipeg. The prices of less healthy food items studied were between 38 percent and 293 percent or between 21 percent and 277 percent more expensive in First Nations communities with no access to an all-weather road than in Winnipeg or non-First Nation urban centers,

respectively. The price of Pepsi was exceptionally high in rural First Nations communities without access to an all-weather road where a two-litre container and 12 pack of Pepsi were 293 percent and 264 percent more expensive than in Winnipeg. There was also a significant price difference for all the less nutritious foods studied (except for energy drinks) between First Nations with and without access to an all-weather road. Table 4 summarizes a pairwise multiple comparison of the average food price differences across different communities using a Tukey-Kremar procedure for unequal sample size. Overall, about 57 percent and 77 percent of the food items presented in Table 5 were significantly more expensive in First Nations with and without access to an all-weather road as compared to Winnipeg, respectively. Forty percent of these food items were significantly more expensive in First Nations communities without access to an all-weather road than in those with access to all-weather road.

Determinants of food prices

We ran a regression analysis using the Ordinarily Least Square (OLS) model to investigate the determinants of food prices in northern Manitoba. The results are presented in Table 5. Since not all food items studied were available in all the stores visited, it was not possible to construct a food price index and use that index as a dependent variable in our OLS model. Rather, we used the prices of selected food items as a dependent variable and ran several separate models. We used population size, access to an all-weather road, and distance from Winnipeg, which are all factors assumed to influence food price, as independent variables in our model.[7]

Our OLS estimates show that among the three variables considered, only lack of access to an all-weather road significantly influences food price. For instance, keeping population size and distance from Winnipeg at the same level, the model predicts that, compared to communities with access to an all-weather road, the average price of 2 litre (2 percent) milk and 2 litre Pepsi in First Nations communities with no access to an all-weather road is 1.27 times and 6.82 times higher, respectively. The effect of this barrier on food prices was significant across all the models estimated. Population size had no significant effect on food prices examined. Except for tomatoes, distance from Winnipeg had also no significant effect on the food prices studied.

[7] We also considered the number of stores in the community as an explanatory variable in our initial model. However, since all the First Nations communities without access to an all-weather road have only one store, there is a perfect collinearity between the number of store in the community and access to an all-weather road.

Table 5: Estimates of determinants of food prices in northern Manitoba

	Milk (2L, 2 percent, 37 stores)	Whole milk (4 liter jug, 36 stores)	Bananas (33 stores)	Onion (33 stores)	Chips (35 stores)	Pepsi (37 stores)
Intercept	3.640 (0.483)	6.000 (0.734)	2.920 (0.456)	2.580 (1.511)	4.208 (0.674)	2.470 (0.624)
Population size	< 0.001 (0.001)	< 0.001 (0.001)	< 0.001 (0.001)	< 0.001 (0.001)	< 0.001 (0.001)	< 0.001 (0.001)
Access to all-weather roads	1.27*** (0.308)	1.806*** (0.494)	2.300*** (0.294)	4.670*** (1.039)	1.567*** (0.409)	6.822*** (0.399)
Distance from Winnipeg	0.001 (0.007)	0.015 (0.001)	0.002 (0.006)	0.051* (0.021)	< 0.001 (0.009)	0.007 (0.008)
Adjusted R-Squared	38	53	74	63	47	91

Results of qualitative research and discussion of findings

Food availability, quality and accessibility

For this study, we collected data on the availability and prices of selected food items in stores across different locations in Manitoba in order to compare the availability and affordability of foods. Our findings show that in First Nations rural communities with or without access to an all-weather road, the availability of foods in the stores surveyed was very low as compared to Winnipeg or non-First Nations urban centers in northern Manitoba. This difference was particularly evident in the availability of skim milk, lactose-free milk, fresh meat products, and grapes. Timing plays a role in food availability, and several communities demonstrated low availability, or quality, of certain foods at particular times of the month or year. According to the information from focus group participants, stores in the First Nations rural communities, particularly those that have only one store, run out of most food items (milk especially) quite regularly. As one focus group participant from Wasagamack, Island Lake, stated: "During pay time, everyone in the community rushes to the store to get groceries but the store mostly runs out of some products and you have to wait two to three days to get them when the store is re-stocked."

In addition to lack of availability, for rural First Nations communities especially in communities with no access to an all-weather road, the quality of the foods available in the store is another key challenge. Since it takes longer for a shipment to reach these fly-in communities, the quality of perishable food items deteriorates even before they reach store shelves. During transportation, some items, particularly perishable and frozen foods, are exposed to different temperature conditions thus leading to quality deterioration. There was considerable dissatisfaction among focus group participants with the quality of many of the food items

available in the only grocery store in the communities. In the six focus group discussions held with mothers and community service providers, low quality of perishable foods was raised as one of the main problems in connection with grocery shopping. For example, one focus group participant in Lac Brochet said: "By the time fruits and vegetables arrive here they are not good…half of them are already bad. Spoilage is a big problem with fruits and vegetables. We do not have sales like they do in cities and towns. The only time we have a sale is when the product is out-dated."

Food availability in local stores, of course, does not guarantee access. Food prices, distance to the stores, and availability of local public transport are other main factors that determine accessibility. Our findings show that First Nations communities living in rural areas are paying significantly higher prices for most of the food items examined, whether they have access to an all-weather road or not. In all the focus group discussions, participants voiced deep concerns about food prices. As one participant from Wasagamack said "Milk is too expensive and not affordable. But we still buy it. We do not have any other choice. Just two bags of groceries costs about $300. What we can afford here is just ground beef (mostly frozen) and rice."

Transportation costs and monopoly as drivers of food prices

According to the Northern Food Prices Project Steering Committee (2003) report, freight/transportation costs contribute significantly to the high foods price in northern Manitoba, particularly in communities without access to an all-weather road. An online survey conducted by the NRG Research Group (2015) with retail managers in the northern Canada also showed that 73 percent of the managers who were interviewed believed that reducing freight rates would have the greatest impact on reducing the costs of groceries sold in their stores (NRG Research Group, 2015). While our study also shows that food prices in communities with no access to an all-weather road are significantly higher, we do not have data to directly examine the impact of transportation costs on food prices.

Our study also shows that First Nations rural communities that have access to an all-weather road were paying much higher prices than non-First Nations living in urban centers in northern Manitoba. Most food prices in First Nations communities such as Chemawawin and Misipawistik were significantly higher than in Thompson or Flin Flon, yet these communities are located nearly halfway between Winnipeg (the main food distribution center) and Thompson or Flin Flon. This suggests that, in reality, transportation costs may play a much smaller role than what many perceive, in determining food prices in First Nations communities with access to an all-weather road. As one focus group participant in Cross Lake First Nations pointed out: "We have roads and food should not be that expensive here. I have a friend who lives in Gods Lake and their prices are really high. We are not isolated like that and it is not that far to drive to Thompson. Thompson is further [from Winnipeg] but they have lower prices than us."

Focus group participants in communities without access to an all-weather road stated that the reason food prices are very high in their community is because of the monopoly due to lack of competition between retailers and high cost of transportation because of their isolation or remoteness. When this study was conducted, about 67 percent of the First Nations communities visited had only one grocery store, which supports communities' argument about lack of competition. As one focus the group participant from Lac Brochet indicated:

> The North West Company buys milk in bulk. They get a big discount on that. Perimeter airline also gives them a discount. In addition to that, they also get a subsidy from the federal government. But when the milk gets here the price is tripled. Why is that? Because there is no competition.

A more puzzling issue that surfaced was the food price discrepancy between Opaskwayak Cree Nation (a First Nations community) and The Pas, even though they are located very near to each other geographically, and separated only by a bridge. Out of the 32 food items on our survey list that were available in stores in both communities, 24 food items (75 percent) were more expensive in Opaskwayak Cree Nation, while only 8 food items (25 percent) were more expensive in The Pas. To give an example, at the time of our survey, the prices of one and four litres of milk, and baby formula (12 x 385 ml Enfamil) were $1.62, $5.29 and $52.99 in The Pas, respectively, while the same quantity and brand were $1.99, $6.39, and $64.99 in Opaskwayak Cree Nation, respectively.

Our finding that First Nations communities are paying a higher price for foods than non-First Nations urban centers in northern Manitoba, although they are located in very close proximity, is analogous with the conclusion of a recent study conducted in northern Ontario (Food Secure Canada, 2016). Furthermore, this Food Secure Canada study states that many First Nations communities in southern Canada experience food insecurity that greatly exceeds neighboring non-Indigenous cities and towns.

Out of community shopping

Although food prices in all First Nations communities were significantly higher than in non-First Nations urban centers in northern Manitoba, communities with access to an all-weather road have the option to drive to nearby towns or cities that offer more product choices with higher quality, lower prices, and more sales. Focus group participants in Chemawawin and Cross Lake First Nations revealed that shopping outside their communities is a very common practice.

As shopping outside the community involves travel and time costs, not all community members have the ability to shop outside their communities. As one focus group participant in Chemawawin stated "Some people always shop here because they do not have a car. They have no choice and they have to get their food here. They are mostly people on social assistance." Furthermore, First Nations communities without access to an all-weather road have very limited options for shopping outside of their community during most of the year, except during the

winter when the ice road opens.[8] However, focus group participants in Wasagamack indicated that a shorter winter season and less snowfall than usual are making travelling on winter roads more problematic and unpredictable.

Lack of transportation for local and out of community shopping

All six focus group discussions held in the different First Nations communities consistently identified lack of access to transportation for food shopping as a key challenge for people who do not own their own vehicle. It is usually those on social assistance and young single mothers who are most affected. As is indicated in Table 1, the percentage of First Nations communities on social assistance ranges between 24 percent and 48 percent. The high costs of transportation add a further burden on family budgeting for these populations, whose social assistance incomes are generally low. As there is no access to public transportation, people's only options are to obtain a ride from family members and friends, or hire a taxi. The costs of transportation adds to the already high cost of food thus limiting out-of-community shopping.

Some of the challenges related to transportation are community specific. For instance, Wasagamack First Nations community faces two unique challenges in relation to accessing the local store and seasonal food availability. First, the Northern Store is located on a separate Island and during all seasons except for the winter every community member must pay for the boat taxi to the store. The second challenge is a seasonal lack of food availability. The Wasagamack First Nation community does not have its own airport and the Northern Store must transport its shipments by barge from St. Theresa Point, where the nearest airport is located. However, boat transportation is a challenge in fall and spring during freeze-up and ice break-up. Focus group participants in Wasagamack indicated that depending on the weather, there were times when most of the food items were unavailable in the local store for an extended period of time. Food prices also go up during certain times, as stated by a Wasagamack participant:

> Every year during the break-up and freeze-up, the price of milk and other food products will go up and sometimes remain the same after the break-up and freeze-up. There is a time in a spring where milk price was as high as $13.99 for a four-litre jug! We have no authority to ask the Northern Store to bring the cost down after the freeze-up and break-up.

Implications of high food prices for First Nations communities

Higher food prices negatively affect access to food, particularly for low-income families, and people on social assistance. All the mothers who participated in the focus groups said that for

[8] For instance, First Nations communities in Island Lake and Shamattawa shop in Norway House and Gillam during wintertime, respectively.

families with children, meeting the households' demand for milk was a significant challenge. Additionally, they pointed to the high price of milk as the main barrier to accessing enough milk for their families.

Focus group participants also indicated that the inability to afford purchasing foods for their family is a source of constant stress, frustration, and anger which all have implications for mental health. One focus group participant from Cross Lake described the challenge of a neighbour as follows: "I know someone who has a hard time. When she run out of food she asks my parents. When she cannot get the help she is really frustrated and angry…that is probably one mother." Another said that "When you are not able to provide your children with milk either because you do not have enough money to buy it or there is no milk in the store it really hurts your feelings."

Most of the mothers in the focus groups recognized that low-income households (particularly those headed by single mothers and mothers on social assistance) with children frequently run out of food such as milk, requiring them to make a difficult choice between providing milk to their children versus other basic necessities. As one participant in Wasagamack stated:

> What I usually do is sell out food, for example, ground beef for $25, and that is enough to pay for my boat taxi to cross to the store [which costs $10 for a return trip] and buy a four-litre jug of milk. That also affects what you have budgeted for a week. Selling something to get something else and that continues like a cycle. People sell pampers because they have to buy milk. And then they will be looking for pampers after few days. So it is an added stress, daily.

Focus group participants also linked the causes of diabetes in aboriginal communities to high food prices, as another Wasagamack participant stated:

> I wonder why there is an epidemic of diabetes in Aboriginal communities. Because food is so expensive so they buy a big bag of spaghetti over milk. You know what I mean? And then like the whole grain stuff, the whole grain pasta is way more expensive than the big white spaghetti. A small amount of good stuff for higher prices and a large amount for less.

The significance of traditional foods in combating food insecurity

Focus group participants emphasized the importance of harvesting and consuming traditional foods for meeting their nutritional needs, in ways that also satisfies their traditional values. A recent study conducted in Norway House First Nations in northern Manitoba revealed that about 90 percent of the households involved in fishing and harvesting of traditional foods are food secure (Islam & Berkes, 2016). When discussing the transition in their communities from food

self-sufficiency on traditional foods to store bought processed foods, focus group participants spoke of rapid and profound changes, such as this Wasagamack participant:

> The flip from traditional food to buying your food happened not that long ago. It happened in the early 1960s. It was a rapid change that created dependency overnight. It took less than ten years from complete self-sufficiency on traditional foods, no subsidy, to what we have now.

And another participant from the same community put it like this:

> I do not remember drinking milk. Most of my days were in a bush. In my childhood, we ate wild food and I spent most of my time on a trap line. Now it is mostly canned food and that is what I think is making everybody sick. A lot of people are getting diabetes. I do not have diabetes . . . . I do not eat those canned foods. That is what I recommend. Eat wild food. Like my dad used to tell me: there is medicine in wild foods.

Although the trend of consuming traditional food has declined particularly among the younger generation (Council of Canadian Academies, 2014), some communities and families still practice hunting, fishing, and wild fruit harvesting, though the level of traditional food harvesting varies across different communities. Focus group participants provided several reasons for the decline in consumption of traditional foods. First, is the cost (e.g., fuel, equipment, transportation) that makes harvesting traditional foods unaffordable. Second, participants pointed to a growing scarcity of some traditional foods caused by expansion of hydro development and climate change. Studies have highlighted that global climate change and environmental contaminations of traditional food affects the availability, supply and safety of traditional foods (Guyot, Dickson, Paci, Furgal, & Chan, 2006; Kuhnlien & Chan, 2000). Clearly, several critical factors (e.g., dam developments for hydroelectric and mining activities) could contribute to the scarcity and lack of access to traditional foods. The third main reason highlighted by participants is a lack of knowledge regarding traditional practices, including what, where and when to harvest traditional foods, particularly among the younger generation. As one participant from Wasagamack said: "The white people brought in the bad foods. I remember when I was a kid we used to eat berries and wild fruits and that was what we snacked on. Now the kids do not even know what to eat." While another participant from the same community stated:

> I think most of the people here would say their grandfathers had gardens. Like my father had lettuce, tomatoes, cabbages, potatoes, cornels and carrots. Why can't we do that? We had a big garden around our house. We were harvesting that even when it was raining. No question asked. That was how disciplined we were. Now we cannot even do that.

Conclusions

This article examined the availability and prices of store-bought foods, and the implications of such factors on communities in northern Manitoba. An in-store price survey and six focus group discussions were used to collect data in 22 communities. Based on this empirical research, we conclude that in addition to limited availability of healthy foods, food prices in First Nations communities were significantly higher than in Winnipeg or non-First Nations urban centers. While the Nutrition North Canada program attempts to tackle the high food prices in northern communities with no access to an all-weather road, it does not sufficiently reduce prices of healthy foods to an affordable level. Addressing the lack of access to, and availability of, healthy foods (both store-bought and traditional foods) could have positive public health implications, protecting individuals in these communities from the negative mental and physical health effects of food insecurity, and inability to properly provide for their families.

The two main reasons for high food prices were 1) a monopoly and therefore lack of competition among retailers in the region; and 2) the high transportation costs faced by retailers in First Nations communities without access to an all-weather road. Although in some cases (in communities with no all-weather road) transport costs certainly led to higher food prices, it is not universal. For example, people living in Chemawawin, a First Nations community situated 450 kilometres from Winnipeg, pay significantly higher food prices than consumers in The Pas that is located 625 kilometres from the capital. Clearly, factors other than transportation play a major role, and rigorous quantitative analysis is required to better understand the determinants of food prices, and develop appropriate policies for addressing the elevated food prices in northern communities. Our findings also point to a need for more research to document, and better understand, the policy implications of existing food price discrepancies between First Nations and non-First Nations communities located in the same/similar geographic areas.

From a food security perspective, there are a number of policy implications emerging from this research. First, a policy change that could have immediate benefit would be to extend the current milk price regulations to include northern communities in Manitoba which could reduce milk prices by up to 38 percent. Secondly, creating economic opportunities as determined by the communities themselves to raise household income (purchasing power) could assist in addressing the food insecurity problem. Thirdly, since the lack of an all-weather road is the key determinant of food prices in northern Manitoba, in the long-term, one partial solution might be building road infrastructure for those communities where it is financially and environmentally feasible to do so, and, most importantly, if this is desired by the community. While these may be important short-term steps to help better ensure food security for those living in Indigenous communities, working directly with communities through meaningful consultation is absolutely necessary to understand how they would like to see issues of food access addressed, be it through transportation or other means.

Our research also revealed an important political dimension. It signaled the need for a more substantial and profound transformation that includes decolonizing food systems and

building Indigenous food sovereignty. To decrease dependency on store-bought foods, focus group participants stressed the cultural and nutritional benefits of harvesting and eating traditional foods. Thus, it is important to ensure that Indigenous peoples have unimpeded access to their traditional geographical hunting, trapping, fishing, and harvesting areas, and that these areas be protected from development projects that lead to contamination of water, flora, and fauna is essential. Furthermore, it is also crucial to facilitate opportunities for inter-generational knowledge transfer in traditional hunting, harvesting, and cooking techniques within fields such as health and education to improve access to, and utilization, of traditional foods.

This leads to the need for a broader conversation beyond food security to focus more on Indigenous food sovereignty so that Indigenous peoples may self-determine their own food and surrounding political and economic systems (Coté, 2016; Kamal et al. 2015; Martens, Cidro, Hart, & McLachlan, 2016; Morrison, 2011; People's Food Policy Project, 2011). As Daigle (2017) demonstrates in the case of the nearby Anishinaabe communities (on Treaty 3 territory in Ontario, Canada), the protection, resurgence and regeneration of Indigenous foodways are critical to the processes of decolonization and self-determination; furthermore, this self-determination is "grounded in everyday practices of resurgence" (p.2) that are themselves embedded in everyday acts of resurgence of food practices.

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Original Research Article

Supporting Inuit food security: A synthesis of initiatives in the Inuvialuit Settlement Region, Northwest Territories

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Abstract

Food insecurity among Indigenous Peoples of northern Canada is a significant public health issue that is exacerbated by changing social and environmental conditions. While a patchwork of programs, strategies and polices exist, the extent to which they address all "pillars" of food security (food *availability*, *access*, *quality*, and *utilization*) remains under-assessed. We respond to this gap by providing a framework for synthesizing and assessing information about food security initiatives, using a case study of the Inuvialuit Settlement Region (ISR), the westernmost Inuit region of Canada. Our objectives are: (1) to identify existing initiatives in the ISR; (2) to assess the breadth and diversity of these initiatives in addressing the four key food security "pillars"; and (3) to present an analytical framework that will facilitate ongoing data updating and sharing in the ISR and elsewhere. Through a scoping review and direct consultation with 12 key informants, we identified 30 initiatives that support food security in the ISR. These are funded and implemented at a range of national, territorial, regional, and local levels, and include both governmental and non-governmental programs, strategic frameworks, and research and monitoring initiatives. Seven key themes emerged from the cross-scale analysis of these initiatives, including: orientation with respect to food security pillars, scope and scale, demographic targeting, funding, monitoring and evaluation, and implications for food security

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strategies. While our framework provides a useful tool for data synthesis and analysis, its outputs can help in identifying gaps and opportunities for both resource allocation and program and policy development for under-served communities. Significantly, this study highlights the importance of engaging local perspectives in the development of coordinated approaches to address Inuit food insecurity.

Keywords: Inuit; Indigenous; Canada; food insecurity; food programs; food security initiatives; program assessment

Introduction

In northern Canada, the high price of nutritious market foods, together with changing lifestyles, acculturative stresses, and access barriers to locally-harvested, culturally-preferred, country (wild) foods present a significant challenge to the food security of Indigenous Peoples (Council of Canadian Academies, 2014), with Inuit experiencing the greatest disparity relative to the general Canadian population. Many Inuit have insufficient or unpredictable access to safe, affordable, and nutritious food to meet their dietary and food preference needs; thus, they experience food insecurity. Unemployment, low incomes and high food costs are principle causes (Egeland, 2010). The 2007-2008 Inuit Health Survey (Saudny, Egeland, & Leggee, 2012) classified 62.6 percent of Inuit households as food insecure, with Nunavut (one of the four Inuit regions in Canada) showing the highest documented prevalence (68.8 percent) among all Indigenous Peoples in a developed country (Egeland, 2011; Egeland, et al. 2011; Rosol et al., 2011). In the Inuvialuit Settlement Region (ISR), the westernmost Inuit region of Canada, 43 percent of Inuit households were classified as food insecure (Rosol et al., 2011), compared to 7.7 percent of total Canadian households (Health Canada, 2012).

Food insecurity remains an important public health issue, even in developed and food-rich countries such as Canada and the United States (Olson, 1999; Seligman, Laraia, & Kushel, 2010; Stuff et al., 2004; Willows, Veugelers, Raine, & Kuhle, 2011). At the sub-national level, food insecurity is disproportionately experienced by certain groups, particularly Indigenous Peoples (Egeland, Johnson-Down, Cao, Sheikh, & Weiler, 2011; Skinner, Hanning, & Tsuji, 2014; Rosol et al., 2011; Willows et al., Kuhle, 2011). For Inuit, adverse health effects include (but are not limited to) disrupted eating patterns, reduced diet quality and increased susceptibility to chronic and infectious disease (Egeland et al., 2011; Huet, Rosol, & Egeland, 2012). Food security is also a social determinant of health, reflecting the underlying socioeconomic conditions that influence Inuit health outcomes (Inuit Tapiriit Kanatami, 2014).

Inuit, scholars and other national and international actors have called for immediate action to mitigate the negative health impacts of food insecurity in Canada's North (Council of Canadian Academies, 2014; De Schutter, 2012; Rosol et al., 2011). Despite diverse efforts to address the issue and its underlying causes, Inuit food insecurity rates remain high (Huet et al., 2012; Rosol et al., 2011). This highlights the need to better understand the existing program and

policy landscape in Inuit regions—including the scope, breadth, complementarity and cultural appropriateness of food security interventions.

Determinants of food (in)security among Inuit

The Inuit food system is comprised of three interrelated dimensions: the country (traditional, wild) food system, the market (store-bought) food system and, to a lesser extent, the locally-produced (locally-grown) food system. Distinction among these sub-systems is complicated by factors such as the commodification of country foods (Searles, 2016). Moreover, there is complex interplay between subsistence and wage-based activities in Inuit communities, with most households participating in both and balancing the resources derived from each (Council of Canadian Academies, 2014; Condon, Collings, & Wenzel, 1995; Natcher, 2009; Parker, 2016; Todd, 2010; Usher, 1976). Employment in the wage economy, for instance, can support country food access by providing cash for harvesting equipment and supplies while at the same time limiting the time individuals can devote to harvesting activities.

Food security is a multidimensional concept, premised on the "pillars" of sustained food *availability* (supply of food), food *access* (affordability and allocation), food *quality* (nutritional quality and food safety), and food *utilization* (food knowledge/skills and cultural preferences) (FAO, 1996; Nunavut Food Security Coalition, 2014; Wesche & Chan, 2010). Below, we summarize the major determinants of these "pillars" for each dimension of the Inuit food system. This provides a context for our analysis of existing initiatives to promote food security, using the ISR as a case study.

Country food system

The *availability* of country foods is influenced by environmental and ecological conditions that shape the health, abundance, distribution, and migration of wildlife populations. Inuit communities have witnessed climate-related impacts on their wild food systems, including declines in key wildlife populations, that could have significant consequences for food security and diet quality (Guyot, Dickson, Paci, Furgal, & Chan, 2012; Rosol, Powell-Hellyer, & Chan, 2017; Wesche & Chan, 2010). For example, many caribou (*Rangifer tarandus*) populations across the circumpolar north are experiencing dramatic declines in abundance (Gunn, Russell, & Eamer, 2011). Related conservation measures such as harvest moratoria can further constrain country food access and affect diet quality (Chan et al., 2006; Rosol et al., 2017).

Access to country food may be influenced by changes in both environmental/ecological and social systems. Changes in the physical harvesting environment (e.g. reduced ice safety, unpredictable weather conditions) may limit harvesters' ability to safely and predictably access wildlife (Chan, 2006; Ford, 2009; Lambden, Receveur, & Kuhnlein, 2007; Meakin & Kurvits, 2009; Nancarrow & Chan, 2010; Wesche & Chan, 2010). Employment status, income, time available for harvesting, and the ability to purchase and/or maintain equipment and supplies can

also influence the level of harvesting and consequently affect country food access (Condon, Collings, & Wenzel, 1995; Hopping et al., 2010; Huet et al., 2012; Mackey & Orr, 1987; Mead, Gittelsohn, Kratzmann, Roache, & Sharma, 2010b). Where country food is available for purchase (e.g. country food markets), financial means also determine access (Lardeau, Healey, & Ford, 2011; Myers, Powell, & Duhaime, 2004). Other sociocultural factors, such as kinship ties, reciprocal relationships, and food sharing networks can influence country food access, and play an important role in the food security status of vulnerable community members (e.g. Elders and single mothers) (Beaumier & Ford, 2010; Lardeau, Healey, & Ford, 2011).

Regarding food *quality*, food safety is an integral dimension. While country foods are nutritious and often preferred, they are also the principal exposure vector for many persistent environmental contaminants in the Arctic (Chan, 1998; Donaldson et al., 2010; Van Oostdam et al., 2005). Although the majority of the Inuit population falls below Health Canada guideline levels for heavy metals (e.g. mercury and lead) and persistent organic pollutants, the body burden of these contaminants often exceeds that observed in the general Canadian population (Chan, 1998; Chan, Kim, Khoday, Receveur, & Kuhnlein, 1995; Kuhnlein & Chan, 2000; Laird, Goncharov, & Chan, 2013). For example, average blood mercury concentration among Inuit women (18-45 years) in Nunavut was approximately eight times higher than the female Canadian national average, although still below the 8 ppb population guideline (Chan, 2012).

At the same time, for country food to remain a viable part of the food system, harvest activities must be practiced and country foods must be effectively *utilized*. For Inuit, subsistence activities (e.g. hunting, fishing, trapping, and gathering) remain inextricably linked to wellbeing and cultural identity (Borré, 1991; Collings, Wenzel, & Condon, 1998; Duhaime, Chabot, & Gaudreault, 2010; Kishigami, 2004; Searles, 2002; Wenzel, 1991). However, changes in the transfer of traditional knowledge and skills to younger generations (Pearce et al., 2011), and other acculturative stresses (e.g. declining participation in traditional activities, competing demands on time, changing food preferences) can also influence utilization, cultural preference, and taste for country foods (Willows, 2005).

Market food system

Despite the very complex and costly logistics of food retailing in northern Canada, where many small communities have limited or no road access, market food is now routinely *available* in remote community stores through private retail corporations or community co-operatives (Enrg Research Group, 2016). Food diversity generally remains limited, however.

While a federal subsidy program exists to mitigate high food costs across the north, concerns over retailer accountability and limited market competition remain (Burnett, Skinner, & Leblanc, 2015; Galloway, 2014; 2017; Rennie, 2014; Skinner et al., 2016). The high cost of food in northern Canada, particularly for fresh fruit and vegetables, is well documented and remains an important *access* barrier to nutritious foods (Duhaime & Caron, 2012; Lambden et al., 2006).

For instance, in 2011 the average price of market foods in Nunavik (Inuit region of Quebec) was 81 percent higher than in the provincial capital of Quebec City (Duhaime & Caron, 2012).

In addition to availability and access constraints, the *quality* of perishable foods can deteriorate significantly during long-distance transport, thus decreasing consumer preference for healthful fruit and vegetables. Furthermore, lifestyle changes that include time constraints and the appeal of convenience foods, as well as limited nutritional and food preparation knowledge regarding market foods may limit the *utilization* of healthful market food (Duhaime et al., 2002; Ford & Beaumier, 2011).

Locally-produced food system[1]

Food production in the north is constrained by biophysical conditions (e.g. cold climate, permafrost, polar nights). Accordingly, locally-produced food has historically occupied a negligible role in the Inuit food system. However, innovative food production techniques and practices (e.g. cold climate greenhouses, community gardening and animal husbandry), may "have the potential to become key elements" in northern food strategies (Avard, 2015). Enhancing northern food production (i.e. *availability*) and local/regional food distribution networks (i.e. *access*) is a recognized priority area for economic development and food security in Canada's northern regions (GNWT, 2017; Nunavut Food Security Coalition, 2014). Locally-produced food can improve nutritional *quality* through freshness, but nevertheless requires a shift in consumer food knowledge, skills and choice (i.e. *utilization*) and significant financial investment.

Moving forward on food security

As food security is multifaceted and complex, initiatives to address its various determinants and dimensions vary widely, ranging from short-term hunger mitigation efforts to longer-term programs and policies designed to address root causes (Barrett, 2002; Council of Canadian Academies, 2014). Over the long term, broader-scale strategies are required to support sustainable, resilient food systems that are culturally-appropriate and grounded in the principles of Indigenous food sovereignty (Grey & Patel, 2015; Morrison, 2011; Weiler et al., 2015). Currently, multiple programs, policies and strategies are in place in the North; however, the extent to which these efforts are complementary and address all aspects of food security (i.e. *access*, *availability*, *quality*, and *utilization*) remains under-assessed. This study aims to inform some of these gaps.

In this study, we focused specifically on formalized initiatives (including programs and strategies, from national to local) aimed at supporting food security in the North, using the ISR

[1] "Locally-produced food" is here understood to include any foods produced either within the community or in the broader region/territory (e.g., ISR or NWT).

as a case study. Our objectives are: (1) to inventory existing (and when relevant, notable defunct) programs in the ISR, (2) to assess the breadth and diversity of these programs in addressing the four key food security pillars, and (3) to present an analytical framework that will facilitate ongoing data updating and sharing in the ISR and elsewhere. Our framework is structured around the program themes outlined in the recent expert panel report, *Aboriginal Food Security in Northern Canada: An Assessment of the State of Knowledge* (Council of Canadian Academies, 2014). Within each theme, results are tabulated from higher to lower scales of implementation, recognizing the diversity of funding structures (national, territorial and local), and including both governmental and non-governmental funding sources. The relevant food security pillars are indicated and discussed for each initiative.

Methods

This paper is based on information gathered in the ISR, an Inuit Land Claim Settlement area located primarily in the northernmost part of the Northwest Territories (NWT). The project emerged from ongoing collaboration between academic researchers, regional organizations and community representatives. During regional food safety and security workshops in 2012 and 2014, participants prioritized the identification of existing food security initiatives to provide a basis for developing a comprehensive food security strategy for the ISR (Fillion et al., 2014).

Setting

With a total area of 1,172,749 km^2 (Inuvialuit Regional Corporation, 2017) and a population of 5,700, the ISR encompasses six primarily Inuvialuit (Inuit) communities: Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok (Figure 1). The Inuvialuit Regional Corporation (IRC), created at the signing of the Inuvialuit Final Agreement in 1984, has a governance mandate of improving the economic, social and cultural wellbeing of Inuvialuit beneficiaries. Despite devolutionary arrangements and considerable movement towards Inuvialuit self-government, much of the jurisdictional authority to deliver programs and services resides with the Governments of NWT (GNWT) and Canada.

Inuvik (population 3,170), the only ISR community with year-round road access[2], serves as the administrative center for the western Canadian Arctic and provides regional public services (e.g. high school, hospital, long-term care facility). The other five communities are smaller and more remote, with populations ranging from 117 (Sachs Harbour) to 996 (Tuktoyaktuk) (NWT Bureau of Statistics, 2016). Each ISR community has a hamlet/town office,

[2] At the time that this research was conducted, an all-season highway was under construction between Inuvik and Tuktoyaktuk. The opening of the highway (in November 2017) impacts the food system. For example, food can now be brought in by truck year-round and the community no longer qualifies for the Nutrition North Canada subsidy on market food items.

a Community Corporation, and a Hunters and Trappers Committee, all of which administer funding and deliver programs/services for community purposes. Other public and private services/infrastructure in these communities include schools (Beaufort Delta Education Council), community and youth centers, churches, and grocery/general stores (one or two stores per community). Approximately 70 percent of Inuvik's population self-identified as Indigenous, compared to 83-92 percent in the smaller ISR communities (NWT Bureau of Statistics, 2016). Average family income in the region ranges from CAD $58,958 in Ulukhaktok to CAD $112,044 in Inuvik[3] (NWT Bureau of Statistics, 2016).

Food system structure and dynamics differ markedly between Inuvik and the five smaller communities. With the exception of Inuvik, the majority of individuals in the region report that half or more of their meat consumption is country food (NWT Bureau of Statistics, 2016). Stores in the smaller communities obtain market food year-round through air shipment, and seasonally by ice road (Aklavik and Tuktoyaktuk[3] only, in winter) and barge (once per year, during ice melt). The average cost of the *Revised Northern Food Basket* (to feed a family of four with a healthful diet for one week) in the ISR was CAD $410 in 2014-2016, over twice the cost in Ottawa (CAD $192), the nation's capital. At a regional scale, country foods are obtained principally from hunting and sharing networks (among family, friends and community organizations); over two-thirds of ISR households reported sharing country food with others (Egeland, 2010).

Local-scale social, cultural and economic dynamics have important implications for the risk and experience of food insecurity, particularly in the smaller communities (Collings, 2011; Collings et al., 1998; Collings, Marten, Pearce, & Young, 2016; Parker, 2016). For example, household structure (e.g. marital status) has implications for household centrality in community resource and food sharing networks, a traditional mechanism for maintaining food security and social relations (Collings et al., 2016). Consequently, single women and single men who lack an active hunter in the household and/or who have limited access to sharing networks may experience constrained country food access (Collings et al., 2016), which is associated with disparities in food security status (Duhaime et al., 2002, Gaudreault, 2010). While these local-scale sociocultural factors can influence the implementation and viability of food security initiatives, a detailed analysis of these relationships is beyond the scope of this study.

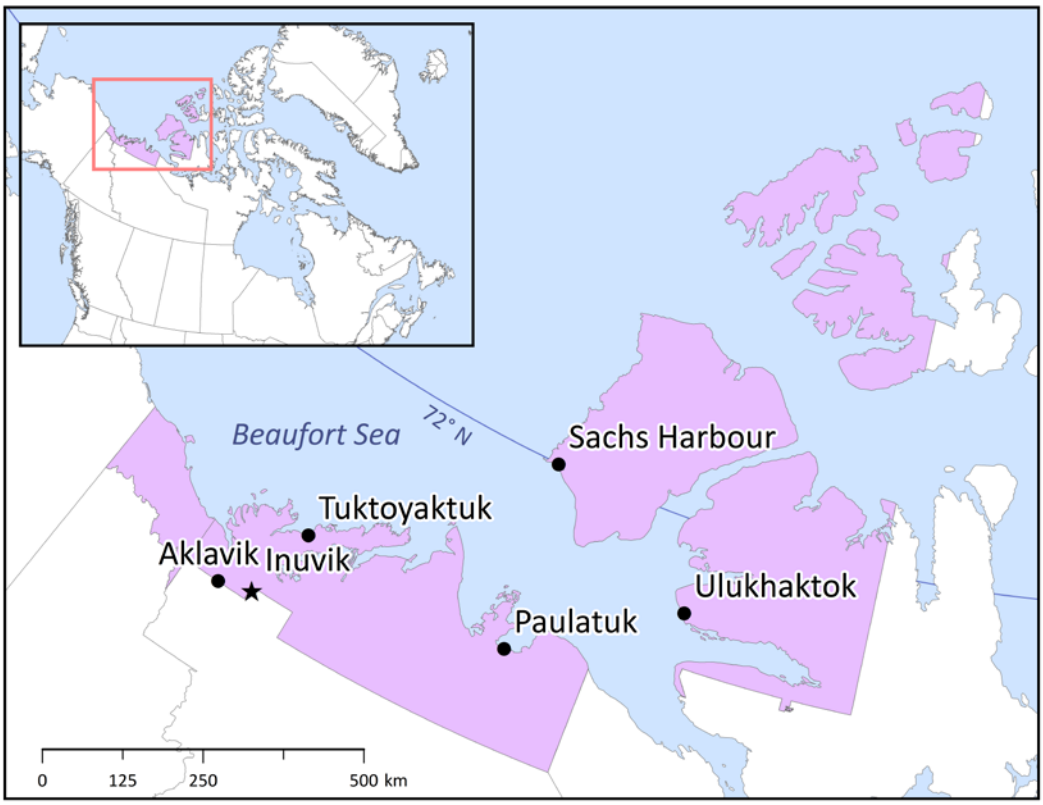
Identification of food security initiatives

In this study, we first undertook a scoping review of the academic literature (Levac, Colquhoun, & O'Brien, 2010) to identify publications that address food security initiatives across the four Inuit regions (for broader context), with a focus on the ISR. Searches in PubMed and Web of Science databases were conducted using the following single and combined search terms: *Inuit,*

[3] Average income in Inuvik is higher than in the remote communities due to the concentration of high-salary employment and may not be representative of Inuit household income given the town's significant non-Indigenous population.

Inuvialuit, food, food security, nutrition, harvest, country food, strategy, policy, and *program*. We then systematically searched the websites of national, regional and community governments; non-governmental organizations; and public health agencies for relevant reports, communications and references related to food security programs and strategies. Subsequently, to verify our initial list and identify additional initiatives, we conducted a series of consultations (n = 12) with northern program managers, organizational representatives (national, territorial, regional and local), and community research assistants between autumn 2014 and autumn 2015. These were accomplished through a combination of in-person meetings, telephone calls, and e-mails. Prior to publication, we verified this information with relevant contacts and updated it as necessary.

Figure 1: Location of the Inuvialuit Settlement Region and its six communities. (Map created by Sarah Simpkin; Map data from Natural Resources Canada (2016), licensed under the Open Government Licence – Canada)



Analytical framework

To effectively synthesize and assess information about food security initiatives in the ISR, we developed an analytical framework based on: a) the seven thematic areas defined by the Council of Canadian Academies (CCA; 2014), and b) the four pillars of food security described above

(FAO, 1996; Nunavut Food Security Coalition, 2014; Wesche & Chan, 2010) (Table 1). First, food security initiatives were categorized from higher to lower scales of organization (i.e. national to local) based on the implementing body, under the following CCA themes: (1) affordability and availability of healthy foods; (2) health and education programs; (3) community wellness and intergenerational knowledge sharing; (4) harvester support and sustainable wildlife management; (5) poverty reduction and community economic development; (6) infrastructure, transportation and local food production; (7) youth engagement. While many initiatives intersect or overlap with multiple thematic areas outlined above, this classification scheme was the most appropriate available structure for interpreting our results. Second, each initiative was assessed to determine its contribution to addressing one or more food security pillars.

In the next section, we provide an overview of ISR food security initiatives and discuss each CCA program theme in turn. This is followed by a discussion of emergent cross-cutting themes from the analysis of these initiatives, including orientation with respect to food security pillars, scope and scale, demographic targeting, funding, monitoring and evaluation for evidence-based policy-making, and implications for food security strategies. We then conclude by highlighting the importance of understanding and assessing the evolving landscape of food-related initiatives to support sustainable food systems and food security over the long term.

Results and Discussion

In the ISR, we identified a total of 30 initiatives that are funded and implemented at different levels of organization (national, territorial, regional, and local) and support food security at the community or regional scale (Table 1). These include: (1) volunteer, non-profit and/or donation-based community initiatives such as food banks, (2) government and institutional programs supported by sustained core-funding allocations, (3) application-based funding opportunities (impermanent or annual), (4) strategic frameworks and action plans (e.g. anti-poverty, wellness or northern economic development), and (5) research and monitoring initiatives. We have attempted to provide a comprehensive inventory through systematic search strategies and direct consultation with northern program managers; however, the final list may not be exhaustive and will necessarily evolve over time. Particularly challenging is the comprehensive identification of impermanent community-based initiatives (such as community harvests) resultant from application-based funding (e.g. from non-profit organizations). It is important to recognize that each initiative includes a number of components (e.g. infrastructure, funding, management, community support, and strategic vision) that must work in tandem to ensure sustained program activity and support for food security.

Table 1: Summary of Current Food Security Initiatives in the Inuvialuit Settlement Region. The initiatives are organized by Council of Canadian Academies (2014) theme, from higher to lower scales of implementation within each theme. The relevant food security pillars are indicated for each program.

INITIATIVE	IMPLEMENTING BODY (FUNDING*)	LOCATION	DESCRIPTION	TARGET POPULATION	FOOD SECURITY PILLAR
Theme 1: Increasing the affordability and availability of healthful foods					
1. Nutrition North Canada: Food Subsidy	Registered Northern retailers, Southern suppliers, and Country food processors/distributors (Indigenous and Northern Affairs Canada)	Five remote ISR communities†	Subsidized transport of perishable nutritious food and commercially-produced country food to remote northern communities	All residents	Availability, Access
2. Arctic Food Bank	Midnight Sun Mosque (Muslim Welfare Centre)	Inuvik	Provides food items	People in need	Access
3. Inuvik Food Bank	Inuvik Food Bank (Food Banks Canada)	Inuvik	Provides food items	People in need	Access
4. Food Bank	Our Lady of Lourdes (Society of Saint Vincent de Paul)	Paulatuk	Provides food items	People in need	Access
5. Food Bank	Hamlet of Sachs Harbour (NWTHC: Small Community Homelessness Fund)	Sachs Harbour	Provides food items	People in need	Access
6. Food Bank	Our Lady of Grace Church (Society of Saint Vincent de Paul)	Tuktoyaktuk	Provides food items	People in need	Access
7. Food Bank	Hamlet of Ulukhaktok (NWTHC: Small Community Homelessness Fund, Municipal Funds)	Ulukhaktok	Provides food items	People in need	Access

8. Soup Kitchen	Ingamo Hall Friendship Centre (NWTHC: Small Community Homelessness Fund)	Inuvik	Provides hot meals	People in need	Access
9. Meal Program	Inuvik Homeless Shelter (NWTHC: Small Community Homelessness Fund)	Inuvik	Provides hot meals	People who are homeless	Access
10. Community Kitchen	Our Lady of Victory Roman Catholic Church (Society of Saint Vincent de Paul, NWTHC: Small Community Homelessness Fund)	Inuvik	Provides hot meals	People in need	Access
11. Homelessness Kitchen	Hamlet of Paulatuk (NWTHC: Small Community Homelessness Fund)	Paulatuk	Open kitchen and food provision	People in need	Access, Utilization
Theme 2: Health and Education					
12. Nutrition North Canada: Nutrition Education	Inuvialuit Regional Corporation (Indigenous and Northern Affairs Canada)	Five remote ISR communities†	Cooking circles and food demonstrations carried out by a hired local community member to increase knowledge of healthy eating and enhance healthful food preparation skills	Adults	Utilization
13. Canadian Pre-Natal Nutrition Program: First Nations and Inuit Component (Including Inuvik Healthy Babies)	Inuvialuit Regional Corporation (Public Health Agency of Canada)	All six ISR communities	Provides support for various programs including maternal nourishment and food provision (cooking, snacks, food coupons/vouchers and baskets), nutritional education and breastfeeding, and country food preparation	Pregnant women, mothers of infants, and infants up to 12 months; in particular those identified as high risk	Access, Utilization

14. Northern Contaminants Program	Partnership between Community organizations, Researchers and Governments at various levels (Indigenous and Northern Affairs Canada)	All six ISR communities‡	Provides funding for research, monitoring, and communication to enhance understanding of the benefit/risks of country food consumption and support informed food choices	All residents	Quality
15. Nutrition education and school snack/meal programs	Schools (Breakfast for Learning Canada, Food First Foundation, IRC: Healthy Living and Disease Prevention)	All six ISR communities‡	Helps start and sustain school-based meal and snack programs, including funding for food, supplies and equipment (e.g. kitchen and garden equipment, cold storage), and staff/volunteer support, as well nutrition education programming	School-aged children and adolescents	Availability, Access, Utilization
16. Drop the Pop NWT	Schools (GNWT: Health and Social Services)	All six ISR communities‡	School-based educational campaign and funding initiative to support consumption of healthful foods and beverages, and improving nutritional knowledge and skills	Students, families, schools and communities	Access, Utilization
17. Healthy Family Program (Several)	Arctic Family Centre (Beaufort Delta Health and Social Services)	Inuvik	Delivers activities and provides support to enhance child and family development (includes the Collective Kitchen, Baby Food and Family Meal programs)	Families (prenatal to age 6)	Access, Utilization
Theme 3: Community wellness and intergenerational knowledge sharing					
18. Community Wellness Plans (2013)	ISR communities in partnership with the Inuvialuit Regional Corporation (GNWT: Health and Social Services)	All six ISR communities	Outlines community perceptions regarding how current health and wellness programs are faring and provides a roadmap for prioritizing initiatives in support of community health and wellness	All residents	Access, Utilization
19. Project Jewel	Inuvialuit Regional Corporation (Various)	All six ISR communities	On-the-land after care wellness program	After-care participants (youth and adults)	Access, Utilization

Theme 4: Harvester support and sustainable wildlife management					
20. Community Harvesters Assistance Program	Community HTCs (GNWT: Environment and Natural Resources)	All six ISR communities‡	Provides funding to HTCs to support community harvests activities (e.g. purchase of harvest equipment and supplies)	Harvesters	Access
21. Inuvialuit Harvesters Assistance Program	Community HTCs (Inuvialuit Regional Corporation)	All six ISR communities‡	Provides ongoing funding to support Inuvialuit subsistence harvesters	Inuvialuit beneficiaries (preference for subsistence harvesters)	Access
22. Community Freezer	Hamlet of Paulatuk, Paulatuk HTC, Paulatuk Community Corporation (Various)	Paulatuk	Provides cold-storage for country food	Harvesters and people in need	Access
23. Tuktoyaktuk Ice House	Hamlet of Tuktoyaktuk (Various)	Tuktoyaktuk	Provides cold-storage for country food	Harvesters	Access
Theme 5: Poverty reduction and community economic development					
24. Anti-Poverty Fund	Indigenous Governments in the NWT, Community Governing Authorities, NGOs partnered with an Indigenous or Community Governing Authority (GNWT: Health and Social Services)	All six ISR communities‡	Provides application-based funding for projects to combat poverty in five of the Territorial Anti-Poverty Strategy Pillars (child and family support; healthy living and reaching potential; safe and affordable housing; sustainable communities; integrated continuum of service)	All residents	Access
25. Territorial Housing Programs (Several)	NWTHC (NWTHC)	All six ISR communities	Supports home ownership (2 programs), repair and maintenance (5 programs), and public housing	Eligible individuals based on NWT Residential Tenancies Act	Access

26. Country Food Development and Value-added Processing Initiative: Country Food Processing Methods Training Course	Aurora College, Inuvialuit Regional Corporation: ICEDO (IRC, Gwitch'in Tribal Council, GNWT: Education, Culture and Employment, GNWT: Industry, Tourism and Investment)	All six ISR communities	This course teaches the knowledge and skills required for value-added processing of country food through in-class and hands-on instruction	Adults	Utilization
Theme 6: Innovation in infrastructure, transportation and local food production					
27. Territorial Agri-Food Programs (Several)	GNWT: Industry, Tourism and Investment (Canadian Agricultural Partnership)	All six ISR communities[‡]	Provides a suite of programs and funding to support training, skills-development (e.g. Agriculture Training Program, Agriculture and Food Processing Development Program), research (Agriculture and Agri-Food Research Program), marketing (Market Development Program) and food safety (Food Safety Program) for the establishment and development of the NWT agriculture and agri-foods sector	NWT agri-business	Availability, Quality
28. Beaufort Delta Small Scale Foods Program	Community Garden Societies with support from the Inuvik Community Greenhouse (GNWT: Industry, Tourism and Investment)	Five remote ISR communities[†]	Provides funding and support for the installation and establishment of gardens and greenhouses, as well as information and skills seminars (e.g. food preservation)	All interested residents	Availability, Access
29. Inuvik Community Greenhouse	Community Garden Society of Inuvik (Contribution Agreements, Memberships, Fundraising)	Inuvik	Makes greenhouse garden plots (74 full-size plots) available to residents of Inuvik	All interested residents	Availability, Access

Theme 7: Youth engagement					
30. Traditional Harvest Program: Take a Kid Harvesting	Schools and Indigenous Organizations (GNWT: Environment and Natural Resources)	All six ISR communities‡	Provides funding to organize youth on-the-land skills training	School-aged children	Access, Utilization

* Program funding is challenging to track (particularly for initiatives that lack core, multi-year funding) given the multiplicity of funding sources and fluctuations in annual availability. Access to funding may also be influenced by local human capacity for identifying opportunities and developing funding applications. Furthermore, program implementation may also rely on donations, fundraising, and volunteers. As such, funding sources summarized here are not necessarily comprehensive.
† The five remote communities that lack year-round surface transportation include: Aklavik, Paulatuk, Sachs Harbour, Tuktoyaktuk and Ulukhaktok.
‡ Based on program eligibility (implementation of program may vary between communities)
Acronyms: GNWT = Government of the Northwest Territories; HTC = Hunters and Trappers Committee; ICEDO = Inuvialuit Community Economic Development Organization (part of the Inuvialuit Regional Corporation); ISR = Inuvialuit Settlement Region; NGO= Non-governmental organizations; NWT = Northwest Territories; NWTHC =Northwest Territories Housing Corporation

Theme 1: Increasing the affordability and availability of healthful foods

Initiatives aimed at increasing the affordability and availability of healthful foods focus on lowering food cost and addressing the barriers that limit healthful food availability in northern communities. Programs in this category are generally geared toward market foods, although country foods may be included in some programming based on availability.

Food subsidy programs

Since the 1960s, the Government of Canada has reinforced access to nutritious market foods in remote northern communities by subsidizing food shipping costs. Notably, the now-defunct federal *Food Mail Program* (FMP) provided a subsidized rate on northern food shipments between 1999 and 2011. Its successor, *Nutrition North Canada* (NNC), was launched in 2011 as a market-driven program, providing subsidies to retailers operating in over 100 isolated northern communities across the country. Available in the five remote ISR communities, the NNC subsidy ranges from CAD $1.60 to $6.10/kg for level 1 foods (nutritious perishable items) and from CAD $0.05/kg to $4.30/kg for level 2 foods (non-perishable staple items), depending on community characteristics (Government of Canada, 2017).

Community food support programs

Formal community food support programs (i.e. food-based hunger mitigation programs) are relatively new in the north, where strong cultures of reciprocity and food sharing have traditionally supported food access for those in need (Natcher, 2009; Wenzel, 1995). While community food programs are now widely used in major Arctic population centers, their role in smaller community contexts has not been comprehensively assessed (Ford, Lardeau, & Vanderbilt, 2012; Ford, Lardeau, Blackett, Chatwood, & Kurszewski, 2013; Lardeau et al., 2011).

A number of local-scale food support programs are offered in the ISR, including food banks, soup kitchens and other hot meal providers. Food banks are operational in five of the six ISR communities. In Inuvik, several meal programs are regularly available for people who are homeless or otherwise in need. In the ISR, food support programs are generally implemented locally by hamlet offices, not-for profit groups or charitable organizations and are often funded through donations and fundraising; thus, operations (e.g. program schedule, outreach, participant eligibility) are highly variable between programs and communities. In small communities where only one such program may exist, inconsistent funding and operational capacity may continue to leave gaps in emergency food access provision. Moreover, while such programs increase food access, they do not address the root causes of food insecurity (Riches, 2003); without adequate policies and complementary initiatives, program users may become chronically reliant, as is the case in Inuvik (Ford, Lardeau et al., 2013).

Theme 2: Health and Education

Healthy dietary choices rely in part on nutritional knowledge and food preparation skills (Council of Canadian Academies, 2014). As such, education and capacity-building programs are an effective mechanism for improving knowledge about food, health and wellness. These initiatives may focus specifically on conveying nutrition-related information, or on capacity development activities related to food preparation, food safety and budgeting, among others.

Nutrition education and food preparation programs

Currently, NNC includes a nutrition education component that builds community knowledge of healthy eating and food preparation skills. Available in the five remote ISR communities, the program includes cooking circles and food demonstrations carried out by a local community member. Nutrition education programs (such as the federally-funded *Canada Prenatal Nutrition Program* (CPNP) and the *Healthy Family Program* (Beaufort Delta Health and Social Services)) often target families with infants/young children to encourage breastfeeding and healthful food preparation, including country food preparation. These programs may also facilitate food access (theme 1) by providing direct food support through the provision of hampers and meal ingredients.

Additional nutrition education programs targeted at children/youth and administered in school settings are funded by charitable organizations (e.g. *Food First Foundation*; *Breakfast for Learning*) and the territorial government (e.g. *Drop the Pop Campaign*). Each ISR community has active school-based meal and snack programs that both improve access to healthful food (theme 1) and help build nutritional knowledge and skills (themes 2 and 7). School-based food programs have had demonstrable benefits on food and nutrient intake among Indigenous youth in remote northern Ontario (Gates, Hanning, Gates, Stephen, & Tsuji, 2016; M. Gates, Hanning, Gates, McCarthy & Tsuji, 2013; Skinner, Hanning, Metatawabin, Martin, & Tsuji, 2012); however, their impact among Inuit youth has not been reported.

One of the best-documented research-related health intervention programs among Inuit is *Healthy Foods North* (HFN)[4], a multi-institutional chronic disease prevention program implemented in 2008-2009 in selected communities of the ISR and Nunavut (Sharma, 2010; Sharma, Gittelsohn, Rosol, & Beck, 2010). The intervention aimed to promote physical activity and improve diets by supporting the consumption of fruit, vegetables and country food, while also decreasing the consumption of processed foods high in sugar and/or fat (Sharma, 2010; Sharma et al., 2010). The Inuvialuit component of HFN included three of the six ISR communities, where two received the intervention and one served as a control group with delayed intervention. Program impacts were evaluated in relation to psychosocial (Mead, Gittelsohn, De Roose, & Sharma, 2010a; Mead, Gittelsohn, Roache, Corriveau, & Sharma, 2013)

[4] HFN is no longer active and is thus not included in Table 1.

socio-economic (Erber et al., 2010), healthy eating behaviour, and diet quality outcomes (Bains et al., 2014; Kolahdooz, Butler, et al., 2014; Zotor et al., 2012). Overall, HFN showed some success in mitigating the negative impacts of the nutrition transition among Inuvialuit. It also highlighted the need to tailor public health interventions and policy to local needs by using population-specific tools (Kolahdooz, Pakseresht, et al., 2014).

Food safety programs

Various programs support food security (food quality dimension) by enhancing community knowledge and capacity surrounding food safety, including the presence of environmental contaminants and zoonotic diseases in country foods. The *Northern Contaminants Program* (NCP) was established in 1991 to research and monitor long-range contaminants in country food species in Northern Canada. Its four subprograms (Health; Environmental Monitoring and Research; Community-Based Monitoring and Research; and Communications, Capacity and Outreach) collectively provide data (e.g. temporal trends of contaminant levels in specific country food species, human biomonitoring) to improve understanding of the health effects and benefits/risks of country food consumption and help support informed food choices. The NCP community-based monitoring program also enhances community research capacity and youth engagement (theme 7) by directly involving youth.

A number of related initiatives also offer capacity building opportunities (including knowledge transfer and hands-on skills development) for safe food handling, including for country food (see *Country Food Development and Value-added Processing Initiative* below*)*.

Theme 3: Community wellness and intergenerational knowledge Sharing

Socioeconomic conditions are central to food security in the ISR, particularly in the smaller hamlets (Collings, 2011; Parker, 2016; Todd, 2010). Accordingly, food security can be supported through initiatives that bolster community wellness and intergenerational well-being. Such programs may encourage food sharing, promote the transmission of inter-generational knowledge and skills, or include community-driven food assessment or asset mapping activities (McTavish, Furgal, Popp, & McCarney, 2012). Initiatives such as *Take a Kid Trapping/Harvesting* provide a context where youth and Elders interact around country food. Such programs may also target specific groups that may be at higher risk of food insecurity. *Project Jewel* (IRC), for instance, is a wellness program that incorporates clinical support with on-the-land camps and culture-based activities – including food procurement and sharing – to enhance and connect people with Elders and their culture.

Various IRC initiatives assist ISR communities in supporting collective health and well-being. In 2013 each community developed a wellness plan based on community consultations lead by IRC in partnership with Health Canada (Inuvialuit Regional Corporation, 2013a; 2013b; 2013c; 2013d; 2013e; 2013f). Community wellness plans and activities vary among communities,

but generally include support for culture, traditional activities, and other health-promoting activities including (but not limited to): diabetes workshops, fitness activities, community kitchens, community gardens, and school food programs and policies. As such, while food security is not a specific area of focus, the wellness plans provide a roadmap for community-based activities and locally-identified priorities in support of community health.

Theme 4: Harvester support and sustainable wildlife management

The country food system requires that healthy wildlife populations be sustained over time, and that harvesters are able to access them. As such, it is important that harvester support programs and wildlife management programs work to balance sustainable harvesting and conservation principles. Community-based monitoring is a useful mechanism for periodically evaluating the health and population status of key species, which influences harvesting recommendations (Council of Canadian Academies, 2014).

Harvester support

Traditional harvesting practices and sustainable country food harvest can be supported through the provision of funding and materials (e.g. harvesting equipment and supplies) to individual harvesters or to community organizations (e.g. for community hunts or community freezers). As a component of land claim agreements, Canada's territorial governments deliver harvester support programs to encourage traditional harvesting activities and the production and consumption of country food. Additionally, the IRC administers the *Inuvialuit Harvesters Assistance Program*, which provides assistance to subsistence harvesters. Harvester support programs range from providing funding for harvesting supplies and equipment, search and rescue services, harvester salaries, community harvests, the purchase of country food for community purposes, and youth engagement and skills development activities (theme 7). Harvest-support programs are locally administered through regional or community-based hunters and trappers committees. Accordingly, decisions regarding program eligibility, funding allocation and the nature of programming are variable between communities and over time. Funding for such programs, although sustained, is limited and therefore provided on an intermittent basis and/or to a limited number of harvesters (Ford, Smit, & Wandel, 2006; Gombay, 2009).

Sustainable wildlife management

Wildlife management policies have significant impacts on country food availability and accessibility, and consequently on food security and sovereignty (Chan et al., 2006; Ford, McDowell et al., 2013). Comprehensively addressing wildlife management policies/programs is beyond the scope of this paper; however, it is important to recognize the role of regional and

community-based harvester committees and organizations and territorial and federal wildlife management regimes in supporting country food security. The GNWT: ENR provides funding to support community-based organizations representing the interests of hunters and trappers (Local Wildlife Committees). In turn, Inuvialuit harvester organizations provide critical knowledge and insights on matters relating to wildlife management and conservation in the region. Nonetheless, population status and harvest level information may be insufficient for rigorous decision-making in the North (Giroux, Campbell, Dumond, & Jenkins, 2012), pointing to an ongoing need to link decision-makers across scales (national, territorial, regional, and local) and sectors (economic development and poverty reduction, public health, education and wildlife management) to support sustainable country food harvests and access (Theriault, 2011). To date however, only limited research has looked at how wildlife management and country food harvest programs and policies in the Canadian Arctic can mutually support food security and ecological sustainability (Kenny & Chan, 2017).

Community country food storage

Community food storage programs are typically established to provide a country food "access point" for residents who are unable to harvest or have limited sharing networks (Organ, 2012). Commonly, local harvesters stock the food storage units (Boult, 2004), which include below-ground "ice houses" for cold storage (passive cooling) and electrical freezers. While some programs provide financial support or purchase meat directly from harvesters, others rely on voluntary donations. Community freezers are perceived to support country food access, including extending availability both seasonally and in the face of environmental change (Chan et al., 2006; Duhaime, Chabot, & Gaudreault, 2002; Furgal & Seguin, 2006); however, their direct influence on food access, food security and country food consumption has received limited attention to date (Organ, 2012; Organ, Castleden, Furgal, Sheldon, & Hart, 2014). It is important to note that program outcomes may differ between communities and across regions due to variation in organizational structure and operations. As such, literature pertaining to freezer programs from other Inuit regions (Organ, 2012; Organ, Castleden, Furgal, Sheldon, & Hart, 2014) may not be applicable in the ISR context.

In the ISR, we identified two types of infrastructure with semi-active programs: an ice house in Tuktoyaktuk (constructed in the 1960s) and a community freezer in Paulatuk (from a GNWT-sponsored freezer program in the 1980s). The sustainability challenges experienced by these and similar defunct programs in other communities highlight the need for detailed evaluations to better understand program dynamics. This is particularly true in the face of recent renewed interest and government funding initiatives to both support new community freezer programs and regenerate existing and defunct ones (Organ, 2012). At the same time, household chest freezers provide an alternative to the communal storage model, and ISR residents have had periodic access to programs that support individual freezer acquisition. As previously stated, to be viable and provide effective support for food security, multiple dimensions of a program must

successfully operate in tandem over time (e.g. infrastructure, funding, management, local support, and strategic vision).

Theme 5: Poverty reduction and community economic development

The mixed economic system in northern Canada has both positive and negative impacts on food security. Northerners are burdened with comparatively higher rates of unemployment and reliance on public housing, as well as lower health and education status. Characteristics of socioeconomic disadvantage (e.g. non-completion of secondary education, low income, household crowding, single parent households, household members on income support, the need to support other family members, public housing, and housing in need of major repairs) have been associated with food insecurity among Inuit (Egeland, Williamson-Bathory, Johnson-Down, & Sobol, 2011; Ford & Beaumier, 2011; Huet, Rosol, & Egeland, 2012). Poverty reduction activities that relate directly to food security tend to be twofold. These include direct interventions related to income and housing, and longer-term initiatives to promote self-reliance through community economic development.

Poverty reduction

At the territorial level, the GNWT established an Anti-Poverty Strategy and Action Plan for 2014-2016 (GNWT, 2013, 2014). The associated Anti-Poverty Fund provides CAD $1,000,000 annually to organizations and community governments for relevant projects. Food security is included under two of the Action Plan pillars: Children and Family Support, and Sustainable Communities (GNWT, 2014). Several ISR projects have received support from the fund, including community harvests that engage youth, homeless persons, and other individuals in need. Funding for such programs, however, is application-based and annual, which may limit the pool of potential applicants and the reliability of support over time.

Various types of income and social support programs exist in the ISR to mitigate the high cost of living, notably: northern tax benefits, employment insurance, housing support, and childcare programs. These programs may interact indirectly with individual and/or household level food insecurity by liberating stressed financial resources (Council of Canadian Academies, 2014). For example, affordable housing, identified as a key issue during the recent ISR food security planning process (Fillion et al., 2014), is addressed by a complement of GNWT programs.

Community economic development

The Inuvialuit Community Economic Development Organization (ICEDO), a subsidiary of the IRC, delivers numerous projects and programs to support ISR communities in fostering sustainable economic development and access to economic opportunities for Inuvialuit

beneficiaries. ICEDO recently initiated the *Country Food Development and Value-added Processing Initiative* to improve regional capacity for increasing the shelf-life of country foods with the potential for making these products market-ready. This project includes a purpose-built, mobile country food processing training facility and a hands-on methods course offered in conjunction with Aurora College. The course teaches knowledge and skills related to maximizing the commercial viability of country foods.

On the retail side, food co-operatives are social enterprises that foster local control over food retailing, and offer an outlet for local, commercially harvested and value-added country foods (Islam & Berkes, 2016). The GNWT provides support to aspiring and existing Co-operative Associations in the ISR (and across the NWT).

Theme 6: Innovation in infrastructure, transportation and local food production

In the North, multiple initiatives are designed to facilitate the logistics of food production, transportation, storage and sale of both locally/regionally-produced food and country food.

Infrastructure and transportation

In the five remote ISR communities, the majority of market food items are flown in by commercial airlines. Seasonal infrastructure and transportation services such as ice-roads (between Inuvik and Aklavik/Tuktoyaktuk) and marine transport (barge) periodically provide a lower cost alternative to air freight; however, these depend on water levels; climatic, weather, and sea-ice conditions; and continued service provision. Innovative solutions to attenuate high shipping, operating and other logistical costs are needed. Likewise, strategies to enhance local food production and distribution must address similar barriers.

Local food production

Interest in local food production is increasing in many parts of the north, including the NWT (Johnston & Williams, 2017). Following a series of public engagement meetings, the GNWT launched the first-ever territorial Agriculture Strategy in 2017 – The Business of Food: A Food Production Plan (GNWT, 2017), which includes actions under six pillars (Planning; Community Leadership, Partners and Collaboration; Regulatory Measures; Training and Capacity Building; Resources; and Food Production). Complementarily, the Canadian Agricultural Partnership funds several programs to support the establishment and development of the NWT agriculture and agri-foods sector (i.e. local food production, distribution, and sales). These include skills-development (e.g. Agriculture Training Program, Agriculture and Food Processing Development Program), research (Agriculture and Agri-Food Research Program), marketing (Market Development Program), food safety (Food Safety), and garden and greenhouse establishment (Small Scale Foods Program) programs. In the remote ISR communities, small greenhouses were

established in 2016 and local garden societies were tasked with program development in consultation with the Inuvik Greenhouse Coordinator. In Inuvik, a community greenhouse has been running since 1998, supported by membership fees, fundraising and additional intermittent sources.

Country food exchange

The commodification of country foods (including commercial harvests/fisheries, country food stores/markets) is posed as a strategy to support broader access, particularly in larger settlements and for households that lack hunters or food sharing networks (Duhaime et al., 2002; Ford, Macdonald, Huet, Statham, & MacRury, 2016). Historically, country food commodification programs largely resulted in exports to non-Inuit markets and, despite providing economic benefits to communities (Duhaime et al., 2002; Whittles, 2014), appear to have had negligible impacts on local country food access and food security (Council of Canadian Academies, 2014). In the ISR, muskox (*Ovibos moschatus*) has been commercially harvested on Banks Island (near Sachs Harbour) since 1981 for export to domestic and international markets (Whittles, 2014). Additionally, meat from Canadian Reindeer[5], a privately-owned company in the Inuvik area, is distributed annually to Inuvialuit beneficiaries and is also available on the commercial market.

As the potential for enhanced country food commodification is currently being explored in the ISR, the development of capacity, knowledge and skills to support such efforts is progressing via the mobile country food processing training facility and methods course described above. While it is recognized that commodification could play a role in enhancing country food access and availability in the region and across the North, the diversity of local perspectives on this issue, including concerns regarding impacts on community sharing networks, which support food security and remain fundamental to Inuit social relations (Collings et al., 2016); the potential exclusion of vulnerable community members through prohibitive pricing (Myers, 2002; Lardeau, Healey, & Ford, 2011); and regulatory and sustainability issues related to wildlife harvest present unresolved challenges.

More informally, country food is also bartered and bought/sold within Inuit communities and regions through local or regional organizations and businesses, and through social networks, including via Facebook. In the ISR, airlines offer a subsidized rate for country food transport that may facilitate these types of exchanges.

[5] A herd of reindeer was introduced to the region in the 1930s to mitigate against caribou shortages. While reindeer (*Rangifer tarandus*) are of the same genus as the culturally-valued caribou, they are semi-domesticated and actively managed with husbandry practices.

Theme 7: Youth engagement

Recognizing that youth are the group most impacted by the nutrition transition and also future community leaders, their engagement is essential for building food security in the North. Youth engagement is often linked with intergenerational knowledge transmission, food-related skills development, and other educational aspects. While this theme overlaps with several aforementioned themes, it is included as a stand-alone category to highlight the key role of this particular group in building sustainable and sovereign food systems.

The *Take a Kid Trapping/Harvesting* Program provides opportunities for school-aged-youth to participate in on-the-land skills training, including country food preparation. While providing an important opportunity for enhancing community access to country foods and fostering traditional land skills and knowledge acquisition, such programs create the context for effective transfer of traditional knowledge across generations (Wesche, O'Hare-Gordon, Robidoux, & Mason, 2016).

A number of other school-based activities also contribute to youth engagement around food procurement and nutrition. Schools in the ISR offer opportunities for students to engage in on-the-land harvesting and engagement with Elders around country food butchering and preparation techniques. Additionally, aspects of local food production are integrated into parts of the educational curriculum (e.g. class greenhouse visits in Inuvik).

Food security initiatives in the ISR: Cross-cutting themes

This study underscores the fact that addressing food security through programming and other initiatives is multi-faceted and extremely complex. A number of important initiative-related themes emerge from this cross-scale synthesis, including: orientation with respect to food security pillars, scope and scale, demographic targeting, funding, monitoring and evaluation for evidence-based policy-making, and implications for food security strategies. These are discussed below.

Addressing the four pillars of food security

The pillars of food security – *availability*, *access*, *quality* and *utilization* – are not equally addressed by the programs identified in this review. The majority of programs aim to increase *access* to food, either by promoting financial access to market or country food, or by providing direct access to food through food distribution programs.

A much smaller number of programs address the fundamental pillar of food availability. Regarding market food, NNC's objective is to promote the availability of affordable healthy food in remote communities, but its current structure limits the extent to which program outcomes are evaluated (Galloway, 2017). For country food, this review did not identify any programs that

specifically address the availability of relevant species; this limitation reinforces the importance of improving conceptual and practical linkages between wildlife management and health by applying a food security lens. Regarding locally-produced food, only a limited number of programs promote local agriculture or other local food production initiatives.

Most of the programs under theme 2 (Health and education programs) and theme 3 (Community wellness and intergenerational knowledge sharing) address food utilization in parallel to food access.

Scope and scale of food security initiatives

Food security initiatives identified in this review vary in both spatial and temporal scale. In the ISR, there exists a continuum of approaches, from short-term hunger-mitigation strategies (e.g. food banks, soup kitchens), to longer-term programs and strategies that target the systemic causes of food insecurity (e.g. through capacity building, community economic development, and infrastructure improvements).

While some programs address a specific determinant of food insecurity (for example, access to nutritious market foods via fiscal subsidies), many programs respond broadly to community needs, where the food security focus is implicit. For instance, many programs work holistically to encourage community wellness through youth engagement, intergenerational knowledge exchange, skills development, and sharing. Over the long term, such programs may also foster improved nutrition, health and food security by empowering communities to build resilient food systems.

Initiatives to support food security may be implemented at various levels of organization by any number of actors, including non-governmental, community, and stakeholder organizations/agencies. In the ISR, although federal initiatives (e.g. NNC, CPNP) have focused largely on increasing affordable access to nutritious market foods and health promotion, community-based priorities tend to emphasize access to country food, and this is reflected in a number of territorial, regional and locally-administered programs.

Demographic targeting

While some ISR programs serve all residents (e.g. the NNC subsidy) or a sub-set of interested residents (e.g. community greenhouses), many are delivered in targeted settings (e.g. Elder programs in community centers) and service a particular segment of the population (e.g. children, low income families). Generally, food security initiatives target vulnerable demographics including children and youth (e.g. school meal programs), pregnant women and infants (e.g. CPNP), single mothers, Elders, and households with no active hunter (e.g. community freezers).

Effective targeting is fundamental to enhancing food security among the most vulnerable subpopulations (Barrett, 2002) and is often explicitly considered in food program design and evaluation. Despite the widespread practice of program targeting, the literature suggests that in

practice targeting may not always be feasible or desirable (Barrett, 2002), and it may also restrict access to individuals who would benefit from program inclusion. For instance, individuals who are middle aged or homeless are often overlooked in northern food support programs (Ford, Lardeau et al., 2013). Preferential support for certain groups may also happen implicitly, based on the locally-determined allocation of often scarce resources. Furthermore, it is important that any program targeting extends beyond identifying segments of the population and their needs to facilitating program access and awareness among such individuals. For instance, delivery or transportation services may benefit participants with limited mobility (The Food Security Network of Newfoundland & Labrador, 2010).

Funding

Continuity in program leadership and funding represents an important challenge for northern food program design (The Food Security Network of Newfoundland & Labrador, 2010). The majority of food security programs in the ISR operate based on government funding at various levels (e.g. national, territorial and regional). In the absence of formal government funding, community food programs generally depend on voluntary community support and donations. As such, the scarcity of available volunteers and the rate of volunteer satiation (whereby the same individuals volunteer for multiple programs) limits program effectiveness at the local scale (The Food Security Network of Newfoundland & Labrador, 2010).

The provenance of program funding and administration may also affect program scope, targeting and governance. For example, the *Arctic Char Distribution Project* (in Nunavik, Quebec), which provided free fish to pregnant women in need, was perceived to have strong community-based value as it was locally-conceived, rather than a federal initiative (Gautier, Pirkle, Furgal, & Lucas, 2016). The broader literature on food assistance programs has yielded only a vague understanding of the "appropriate blend" of private and public institutions and interventions (Barrett, 2002).

Monitoring and evaluation

During our review, we found limited evidence of monitoring and evaluation regarding identified initiatives. While NNC comprises an annual monitoring process, it is criticized by Northern residents as having limited capacity to assess effectiveness (Rennie, 2014) and by the Auditor General of Canada for its lack of transparency (Office of the Auditor General of Canada, 2014). While the Government of Canada has committed to improving NNC's monitoring and conducted a significant stakeholder engagement process in 2016, changes have yet to be undertaken.

Program monitoring and evaluation are required to inform policymakers and the public about the effectiveness of public investment and actions in solving social problems (van der Veen & Gebrehiwot, 2011). It is important to document both operational and impact-related outcomes. In other words, monitoring processes that document program-level outputs (e.g. the

volume of food delivered or the number of people serviced by the program) and program impact evaluations that assess the extent to which a program mediates changes in food security conditions (Riely, Mock, Cogill, Bailey, & Kenefick, 1999) should be used complementarily.

The empirical documentation of the effect of food programs on food security (Bartfeld & Ahn, 2011) has inherent challenges. These include: isolating the impact of a given program among individuals who engage in multiple programs; overcoming selection bias, since persons at greater risk of food insecurity are more likely to participate; and more fundamentally, determining effective indicators and metrics of food security (e.g. food expenditure, nutritional status, food security questionnaires). Local perspectives are key to this type of evaluation (Riches, 2003). Existing methodologies regarding participatory program planning and evaluation (Nichols, 2002; Whitmore, 1998) represent promising approaches for capturing the multidimensionality of Inuit food security.

Designing integrated food security strategies

Factors that influence food availability, access, quality and utilization in the Inuit food system do not exist in isolation, but rather interact over different spatial and temporal scales (Ford & Beaumier, 2011). As such, a multidimensional continuum of initiatives is needed to address food insecurity, ranging from short-term mitigation activities to long-term organizational change and policy responses that focus on root causes (Council of Canadian Academies, 2014).

Our review shows that while a significant number of existing initiatives address aspects of food security in the ISR, they are often *ad hoc* and it is difficult to track the range of programs in operation at any one time. Furthermore, scalar mismatches appear to be common, where intentions at the program administration level do not address key local needs. At the regional scale, coordinated food security strategies that are developed through extensive community consultation and reflect local needs and priorities would help to guide decision-making and ensure that resources are used efficiently and effectively. Strategic planning around food security is currently underway at national, territorial and regional levels; as such, there is significant scope to align policy goals across scales at this critical juncture.

In Canada, the Inuit territory of Nunavut has followed such an approach, undertaking an extensive consultation process to develop a regional-scale food security strategy and action plan that recognizes the interdependent nature of market food, country food and locally-produced food in the food system (Nunavut Food Security Coalition, 2014). The resulting framework now helps to guide investments, resources and programming at both regional and local levels in Nunavut, and provides a useful model for other Inuit regions. Adopting a similar approach in the ISR would allow the identification and highlighting of Inuvialuit priorities to support the development of an integrated food security strategy.

Conclusion

Food security is a complex and multi-faceted issue, and one that is particularly problematic in remote, northern communities. In the ISR, and elsewhere across the north, there are many initiatives underway that address the different food security pillars. While it is clearly important to understand program-level dynamics, a broader synthesis of initiatives at a regional scale offers key perspectives about how different food security challenges are being addressed and how initiatives interrelate.

Here we provide a framework for synthesizing information about a wide range of food security initiatives that can serve as a template for future data collection and longitudinal comparison in the ISR and elsewhere. This information can help in identifying gaps and opportunities for program development for under-addressed food security pillars and for under-served communities and segments of the population. It also supports decision-makers in aligning resources across sectors, and has implications for other northern regions and for currently developing policy frameworks at multiple scales.

Building on the current research, additional investigation into the costs of food security initiatives in relation to the spectrum of results achieved (from process outcomes, to health and population level effects) would be a useful next step. A comprehensive synthesis and evaluation of food-security related initiatives across Indigenous territories/regions across the north, to identify commonalities, efficiencies and gaps, would benefit the design (and redesign) of food security initiatives. Furthermore, work to identify mechanisms that strengthen the alignment of policy goals across scales could play a key role in supporting positive program outcomes.

This assessment highlights the importance of monitoring and evaluation to improve understandings of program effectiveness and complementarity. Furthermore, it highlights the important role of local perspectives and involvement in coordinated approaches for addressing food security. In the evolving landscape of Inuit food systems, broader-scale, holistic governance strategies can play a useful role in aligning local programming with priorities, policies and resources across scales. Such processes must be supported (or driven by) local and regional governance organizations.

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Original Research Article

Climate change, community capitals, and food security: Building a more sustainable food system in a northern Canadian boreal community

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Abstract

Canada's North offers unique food systems perspectives. Built on close cultural and spiritual ties to the land, the food systems within many northern communities still rely on the harvesting and gathering of traditional food and function through the sharing of food throughout the community. However, social, economic and environmental pressures have meant that some communities rely more on food purchased from the stores, which can be unhealthy and expensive, leading to high rates of food insecurity and chronic health problems in many communities in the North. Northern communities are now dealing with the impacts of climate change that are increasing pressure on the food system by limiting both access to the land and the availability of traditional food sources. This research presents a case study from the Northern Canadian boreal community of Kakisa, Northwest Territories. Using a Participatory Action Research (PAR) methodology, community members play an active role in identifying threats to the community food system, as well as developing community-based solutions to foster adaptation and transformation of their food systems to become more resilient to the impacts of climate change. By using the Community Capitals Framework to identify multiple stressors on the food system this research illustrates how a community can allocate available capitals to adapt to the impacts of climate change as well as identify which capitals are required to build a more sustainable food system.

Keywords: Food security; climate change; adaptation; participatory action research; resilience; Northern Indigenous communities

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Introduction

Throughout Canada's North[1], Indigenous people and ecosystems are linked together. This close relationship with the land and an understanding of natural variability inherent in the ecosystem has enabled communities to thrive. The land is a source of cultural and spiritual well-being, and is also the foundation for community food systems, which continue to be based on subsistence harvesting - hunting, fishing and gathering – and function through social and cultural customs and traditions, such as food sharing (Abele, 2009; Chabot, 2003; Collings, 2011; Collings, Wenzel, & Condon, 1998; Condon, Collings, & Wenzel, 1995; Dombrowski, Khan, Channell, Moses, Mclean, & Misshula, 2013; Skinner, Hanning, Desjardins, & Tsuji, 2013).

Community food systems have needed to adapt and change over time, mostly to seasonal changes on the land, migration and availability of animals, and other local variables (Berkes & Jolly, 2001; Kofinas et al., 2010). Traditional knowledge, a place-based system of knowledge based on practice, experience and belief regarding the close relationship between humans and the environment, functions as a form of adaptive management that has allowed communities to continually adapt and thrive in this sometimes harsh environment (Armitage, Berkes, Dale, Kocho-Schellenberg, & Patton, 2011; Berkes, 1999; Berkes, Colding, & Folke, 2000; Parlee, Manseau, & Lutsel K'é Dene First Nation, 2005).

The relationship between communities and the land has been changing, however, and with it the food system people rely upon. Numerous broader issues such as social, economic, and, political factors, have, and continue to, shape communities and food systems in the North (Ford, Smit, & Wandel, 2006; Furgal & Seguin, 2006; Loring & Gerlach, 2009. These issues include colonialism and the transition into settlements driven by government policies, the introduction of the wage-based economy, and land and resource rights (Power, 2008). Global change, which encompasses both environmental and societal changes, has deeply impacted Indigenous communities, and as a result, individuals depend less on the land for their livelihoods and more on the market economy to meet their needs (Loring & Gerlach, 2009). The need for income is now crucial due to the high cost of living in the North, but employment leaves less time to participate in traditional activities. With less time spent on the land accessing the traditional economy and harvesting traditional food, communities become more dependent on store-bought foods and other goods and services.

As a consequence, past decades have seen a transition in the diets of Indigenous communities in the Northwest Territories (NWT), and across the globe, moving away from traditional food sources to food purchased from stores (Council of Canadian Academies, 2014; Kuhnlein & Receveur, 1996; Kuhnlein, Receveur, Soueida, & Egeland, 2004; Kuhnlein & Receveur, 2007; Popkin, 2002). This change is having a negative impact on the health of these

[1] We define Canada's North as comprising of the three Northern Territories of Yukon, Northwest Territories, Nunavut as well as Nunavik (northern Quebec) and Nunatsiavut (in Labrador). However, cited studies from the literature also include Indigenous communities from Northern Ontario, and Alaska.

communities as purchased food often provides less nutritional value, more energy in the form of carbohydrates and fat than traditional diets, and has been linked to increases in diet-related disease such as obesity and diabetes(Egeland, Johnson-Down, Cao, Sheikh, & Weiler, 2011; Gagne et al., 2012; Johnson-Down & Egeland, 2010; Kuhnlein et al., 2004; Kuhnlein & Receveur, 2007; Receveur, Boulay, & Kuhnlein, 1997).

However, as the high cost of food and lack of affordable, nutritious options are major barriers to food security in the North, the high cost of supplies and equipment needed for harvesting food from the land are also important factors to consider (Council of Canadian Academies, 2014). Also of concern is the fact that some youth are not participating in traditional practices, offering fewer opportunities for transfer of knowledge from Elders. As a result, youth often lack the skills needed to survive on the land and bring back food for the community, which puts additional stress on the community's ability to access and share food from the land (Power, 2008; Pearce et al., 2009a; Beaumier & Ford, 2010). As a result, food systems that have emerged are complex, involve multiple factors and stressors, and reflect the rapid social, cultural, and political changes that communities have undergone over the last several decades. These food systems are poorly understood and the barriers that communities face in meeting their nutritional needs has led to alarming levels of food insecurity measured at 24 – 69 percent across the North (Council of Canadian Academies, 2014, Rosol, Huet, Wood, Lennie, Osborne & Egeland, 2011; Tarasuk, Mitchell & Dachner, 2016)).

To compound the barriers that northern Indigenous communities face in achieving food security, the impacts of climate change are rapidly affecting ecosystem form and function in the region. Permafrost thaw, increases in food web contamination, changing migratory patterns of animals, increases in intensity and frequency of wildfire, and changes in hydrology all impact access and availability of traditional foods (Andrachuk & Smit, 2012; Chen et al., 2013; Ford et al., 2008; Ford, Pearce, Duerden, Furgal, & Smit, 2010; Ford, Smit, & Wandel, 2006; Guyot, Dickson, Paci, Furgal, & Chan, 2006; IPCC, 2014; Nickels, Furgal, Buell, & Moquin, 2006; Pearce, Smit, Duerden, Ford, Goose, & Kataoyak, 2009b; Pearce, Ford, Willox, & Smit, 2015; Wakegijig, Osborne, Statham, & Issaluk, 2013), with many of these issues projected to intensify in the future (Price et al. 2013, IPCC 2014). But the impacts of climate change go further than disruptions to the ecosystem goods and services, threatening other services and infrastructure communities depend on (Prowse, Furgal, Chouinard, Melling, Milburn, & Smith, 2009). Therefore, the food systems that are currently straining to provide access to adequate and affordable food are also vulnerable to the impacts of climate change and constitute an important challenge for communities in the North.

The focus of this paper is twofold: 1) to use a novel approach to describe a food system in a northern Indigenous community that will better reflect the unique socio-economic and political landscape experienced as well as the impacts and pressures of a changing climate. 2) to offer a case study in participatory research that serves to empower community members to make positive changes to their food system in the face of climate change. To describe the food system a northern Canadian Indigenous community, this study utilizes the Community Capital

Framework (CCF), developed by Flora et al. (2004) and built upon rural sustainability and livelihoods work by Scoones (1998). Sustainable Livelihoods examines the capitals and assets people need to make a living, and these livelihoods are sustainable when they are resilient to outside stresses (Scoones, 2009). Under a livelihoods approach, climate change is a stressor, but one of many that can impact several systems. The capacity for people to adapt to this stressor relies on their ability to access different capitals, which are also impacted by the same systems (Connolly-Boutin & Smit, 2016). Sustainable Livelihoods approaches are emerging as a focus of climate change adaptation literature and food security studies (Connolly-Boutin & Smit, 2016; Levine et al., 2004; Nkem, Somorin, & Sonwa, 2013; Penn, Gerlach, & Loring, 2016) as they acknowledge the needs of the people involved, and not just the issues and solutions (Levine et al., 2004).

The CCF differs slightly from other Livelihoods approaches in that it is based on seven dimensions of capital contained within a community: natural, social, cultural, political, built, financial, and human (Table 1). Each of these capitals can be viewed as individual systems that interact with one another and can be used to create capitals or resources that contribute to healthy, vibrant communities, economies and ecosystems (Flora, Flora & Fey, 2004; Emery & Flora, 2006). This approach is comparable to other emerging definition of food systems, including complex adaptive systems (Stroink & Nelson, 2013) and systems of systems (Blay-Palmer, Sonnino, & Custot, 2015; Hipel, Fang, & Heng, 2010), and are defined by place and local circumstances (Marsden, 2012). By using the CCF, however, these complex systems are named in terms of the seven different capitals, providing us with a starting point for analysis of food systems and discussion.

CCF has been utilized in community development, resilience, and planning (Emery & Flora, 2006; Ashwill, Flora and Flora, 2011; Stone & Nyaupane, 2015) but this case is used to represent the factors that influence the food system. Adaptations are most successful at reducing vulnerability at the community scale (Ford & Smit, 2004), which means sharing these examples and case studies can provide lessons to other communities in bottom-up approaches to decision making and implementation (Smit & Wandel, 2006). Adapting local food systems to become more resilient in the face of climate change is therefore key to the long-term future of communities in the North.

Community description

The community of Kakisa, located in the South Slave region of NWT, is home to the Ka'a'gee Tu First Nation (KTFN). This small Dene community of approximately 50 people is accessible year-round by the Mackenzie Highway and is located between two larger administrative centres, Hay River (120 km) and Fort Simpson (320 km). Kakisa is approximately 370 km to Yellowknife, the capital of the territory (Figure 1). The KTFN's traditional territory occupies

approximately 10,000 square kilometers within the Taiga Plains ecozone which is comprised of patches of boreal forest intermixed with peat plateaus and wetlands.

Table 1: Description of Community Capitals (Source: Flora et al., 2004)

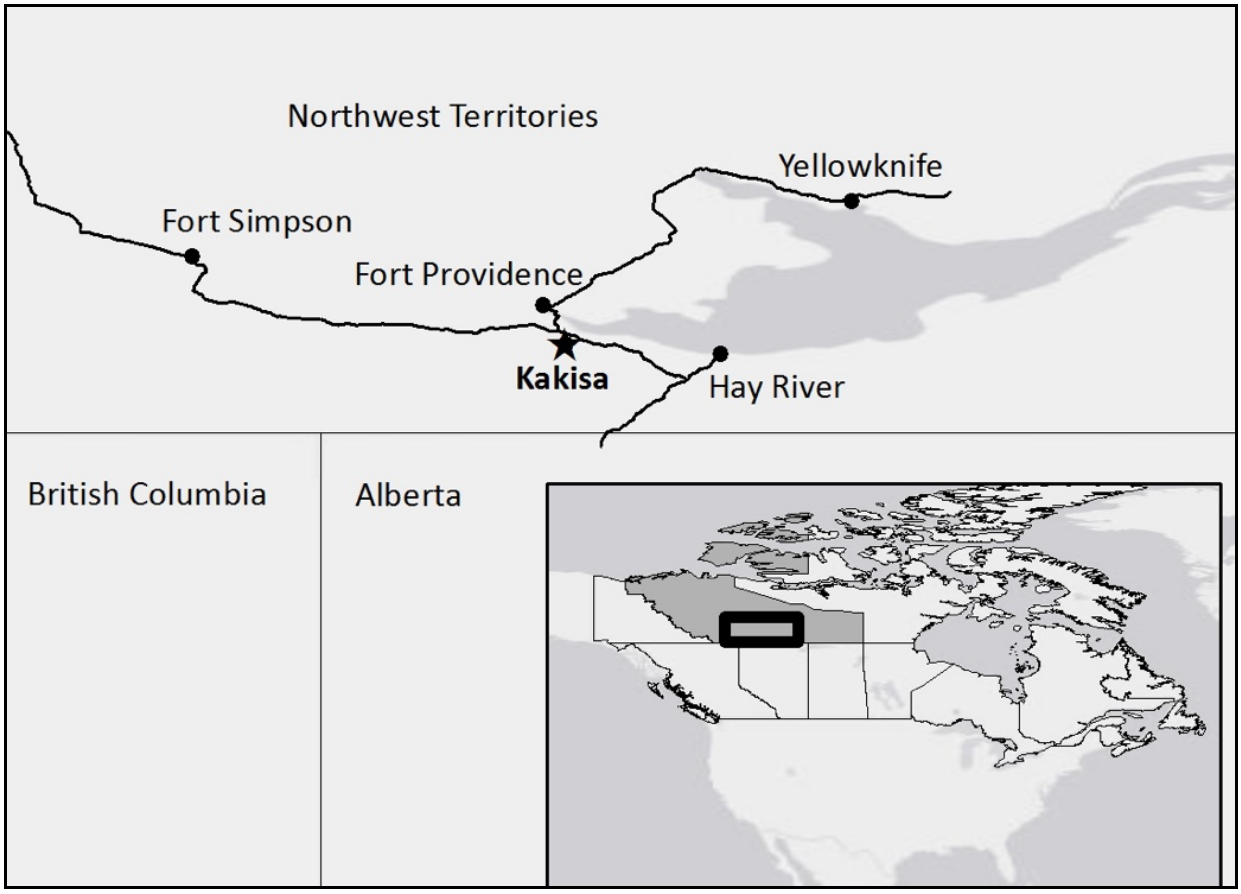
Capital	Description
Social	Connections and networks among people and organizations or the social glue to make things happen.
Cultural	Reflects the way people "know the world" and how to act within it. Cultural capital includes the dynamics of who we know and feel comfortable with, what heritages are valued, collaboration across races, ethnicities, and generations. Cultural capital influences what voices are heard and listened to, which voices have influence in what areas, and how creativity, innovation, and influence emerge and are nurtured.
Natural	Those naturally occurring physical assets in a location, including resources (e.g. minerals, forests, waterways), amenities and natural beauty.
Financial	Access to financial resources to support community capacity building, social and civic entrepreneurship.
Political	Access to power, organizations, connection to resources and power brokers. Ability of people to find their own voices and contribute to community well-being.
Human	Skills and abilities of people, including access to outside resources and bodies of knowledge to increase understanding and to identify promising practices. Human capital also addresses the capacity to "lead across differences," to focus on assets, to be inclusive and participatory, and to be proactive in shaping the future of the community or group.
Built	The physical infrastructure that supports the other community capitals (roads, buildings, services etc.).

The area also includes two large lakes, Kakisa and Tathlina, which are connected by a series of rivers to the Mackenzie River. The community uses the area for a wide variety of harvesting purposes, including hunting, fishing, gathering and trapping. As such, the community maintains strong traditions and ties to the land and most residents rely on traditional foods as a crucial component of their diets with 94.4 percent of the community having obtained most or all (>50 percent) of their meat through hunting or fishing (Northwest Territories Bureau of Statistics, 2013). The community's most important food source is moose, but other large animals, such as woodland caribou, are harvested as opportunities arise. The lands around Kakisa are also a migratory stop for many species of waterfowl, which are typically hunted in the spring. Fish, is also an important food source for the community, both for personal use and through a small commercial fishery that generates income for several community members.

As the smallest community in the territory, Kakisa has limited access to infrastructure and services and therefore must depend on resources in nearby communities, increasing costs and time commitments due to travel. Even though Kakisa has year-round road access, adequate alternatives to traditional foods are not always immediately available or are not easily accessible;

the closest store is 120km away and food options there are limited and expensive. No infrastructure for drinking water or wastewater exists in the community, so services from Hay River are required at a cost to the community. The small size of the community also limits economic opportunities for community members.

Figure 1: Location of Kakisa, NT (Other communities and roads shown)



Employment through the Band office (the official community administration), local construction jobs, or through the commercial fishery provides income for some, while others find employment outside of the community. The closest nurse's station is in Ft. Providence, roughly a one-hour drive away. The community has a small school (K-12), and the Band office and new community hall hosts community gatherings. Development pressures are also an issue for the community, with oil and gas extraction occurring in the Cameron Hills area (located to the south of Tathlina Lake) and proposed forest management and wood pellet production in other areas of their traditional lands. The community is concerned about the impacts of these developments, and others, on the health of the land. As there is currently no land claim settlement in place in the region, the community has limited ways it can have a say in, and protect, their land. One option that the KTFN has been pursuing for years is obtaining protected areas status for their traditional lands. A completed protected area agreement would ensure the land is managed to conserve

biodiversity and ecosystems, establish a land management authority, and protect traditional land uses (NWT Protectes Area Strategy Advisory Committee, 1999).

Methods

One of the most important features of this research is how it was driven by the community. The community of Kakisa, through the Band Council and the community's Environmental Coordinator, reached out to researchers through a mutual connection (Ecology North, an environmental non-governmental organization (NGO)) in the NWT, to have this work done as the community was concerned about the impact that climate change was having on their ability to harvest traditional foods from the land. Working through Ecology North, which has developed social capital in communities throughout the NWT, a successful grant application was developed with the aims of addressing the issues of food security and climate change as proposed by the community.

All organizations involved (community, NGO, and academic institution) formed the research team and were able to contribute their expertise to the project, guided by the interests of the community. From the beginning the community directly influenced project goals, methods, and deliverables as an active partner. The goal of the research was to create a food security action plan for the community that featured concrete steps and projects to ensure food security for future generations.

The basis of this research approach borrows from other studies that have conducted vulnerability and health studies in northern communities (Ford & Smit, 2004; Parlee et al., 2007). This Participatory Action Research (PAR) approach ensures the research is community-driven and that it responds both to the practical concerns of the community and furthers the goals of social science through the active collaboration of researcher and participant in co-learning (Gilmore et al., 1986).

With origins in community empowerment, social action, and community health and development (Altrichter, Kemmis, McTaggart, & Zuber-Skerritt, 2002; McTaggart, Wallerstien & Bernstein, 1994), PAR strives to achieve community-driven/defined social change and transformation (McTaggart, 1999). PAR methodologies have been used in building food systems across Canada (Blay-Palmer et al., 2013), including Indigenous communities (Skinner et al., 2013; Stroink & Nelson, 2013). Consistent with other work in the North, which utilizes Community Based Research (CBR) approaches (Berkes & Jolly, 2001; Pearce et al., 2009a; McGregor, Bayha, & Simmons, 2010; Armitage et al., 2011; Tondu et al., 2014), research was conducted alongside representatives of the community, observing – but also contributing to – their activities. Through building trust and open and transparent communications these partnerships and collaborations directly benefit the community (Angell & Parkins, 2010; Tondu et al., 2014).

The PAR methodology used here involves fostering as much opportunity for community engagement and participation as possible (Minkler & Wallerstein, 2011). The use of community events where food was provided alongside displays of maps, historical aerial photos, and graphs showing environmental changes over time (such as temperature, precipitation etc.) fostered such participation (Wolfe et al., 2011). An introductory workshop was held in August 2014 at the Band office in the community. Events like this allow researchers to engage in informal conversations about the content of the visual material with community members and listen to the stories and concerns of individuals. The interactions allowed researchers to gain insights into community priorities and were an opportunity for researchers to interact with community members and begin to build familiarity and trust. This initial event helped to establish research questions at the intersection of climate change and access to traditional food that are important to communities.

During a one-week period in November of 2014, researchers returned to the community for more meetings and to conduct interviews. A community meeting was held with prospective participants to familiarize them with the research objectives, methods, and to answer any questions regarding the project. As this was the first time participating in an interview for many community members, the researchers ensured that they were made aware of the process of informed consent, and the research was made flexible to accommodate their needs and preferences. This included the timing and location of the interviews. In all, 21 community members were interviewed, encompassing almost half of the community. Such high engagement was made possible by the community's Environmental Coordinator, who spent time talking to and recruiting community members.

Participants who were able to speak to changes on the land, including Elders, harvesters, and others, were selectively sampled with the help of community partners and invited to participate. Each interview took approximately one hour and was conducted in the language of their preference (South Slavey or English). For all interviews conducted in Slavey, an interpreter was used to consecutively translate questions and answers. Interviews were mostly conducted in the Band Council offices, but some were conducted in the homes of some residents if this was their preference. Interviews were semi-structured around open-ended questions so there was enough flexibility to explore more detail based on specific experiences and expertise of each participant (Hay, 2000).

Questions asked during interviews ranged from a community definition of health, links between health and traditional foods, to how changes on the land are impacting health and access to traditional food. Most importantly, participants were asked what community-based solutions they would like to see to address some of the vulnerabilities identified during these conversations. Questions were modified to suit the participant. For example, Elders were asked to tell stories about their experiences on the land from the past, whereas current land users were asked questions more relevant to present experiences and recent environmental changes (for example, what they see in their landscape and how it has changed over the past few years). All interviews were digitally recorded and participants were reimbursed for their time.

Audio recordings were transcribed verbatim and researchers read through all of the data files to gain a full understanding of the contents of the interviews. A general discussion amongst the research team followed to help identify themes and coding structure (Mays & Pope, 1995; Bradley, Curry & Devers 2007). Resulting data was organized according to themes and assembled in a results document, which was shared and discussed with a community representative. Data verification was done by giving community members the opportunity to review transcripts and approve quotations before any information was made public. Respondents had the opportunity to either remain anonymous or associate their name with their quotations. A results workshop was conducted in February 2015 to report the preliminary findings of the study back to the community. This workshop allowed individuals to comment on the findings prior to the finalization of reports but also for a discussion on "Next Steps" to determine what actions the community wants to take to address some of the findings. Essentially, the community was describing initiatives they wanted to undertake to build a more resilient food system. This discussion allowed for the formation of a work plan for the community and set priorities for future work. This was a part of the iterative process that builds PAR as well as trust. Final results were shared with community members through plain language documents and disseminated by the community's Environmental Coordinator. This research approach and methodology was approved by the Research Ethics Board of Wilfrid Laurier University and through the Aurora Research Institute, the research licensing organization for the NWT.

One of the innovative elements of the methodology used here is the partnership and personal relationships built with the community's Environmental Coordinator. This individual has been involved in environmental monitoring projects through government departments and non-governmental organizations, and has coordinated field sampling for fish, water and wildlife monitoring with government and university researchers from WLU. As such, the Environmental Coordinator has a high capacity to conduct research and was adept at providing logistical support for this project, both of which were key to its success. Of most benefit to the project was the social capital and connections this person has in the small community which allowed for easy communication and connections to community members and local decision makers (Chief and Band Council). Their affinity for social networking and text messaging led to increased and timely communication and interaction in the community, which allowed the project to proceed at a more rapid pace, especially when dealing with last minute logistical challenges and accommodating community needs. What emerged as a powerful driver behind the research and subsequent follow up projects was their personal drive to conduct work that made a positive impact in the community. This drive not only enabled them to champion the research, but pushed much of the research from participatory and collaborative to Action Research.

This relationship helped to foster research links outside of the community. For example, the Environmental Coordinator attended meetings at the university in Waterloo, Ontario, with research partners from around the globe, and was able to help shape further grant applications and collaborations. The positionality of the Environmental Coordinator made a significant contribution to the overall project and speaks to the importance of building capacity and

empowering communities, and the role of local leaders to be active members of the research team and to enhance participation of community members. Another key element was the partnership between an academic institution, the community, a territorial non-governmental organization, and government agencies to conduct this research. Part of building resilience and fostering food system development is to build social capital by fostering connections and networks within (bonding social capital) as well as outside of (bridging social capital) the community (Blay-Palmer et al., 2015). By building a strong network of organizations, where each partner brought their own expertise to the research team, the group was able to leverage other networks and funding, and bring diverse experience in similar or related work to the community (Putnam, 1995; Emery & Flora, 2006). This became important after the initial research was conducted and community-defined projects were prioritized. As funding sources were identified, different partners that were more suited for specific grants were put forward as the proponent with the other groups offering letters of support and assistance in writing. The community had final approval on all grants moving forward. This partnership leveraged the capacity of other groups to target and obtain funding sources for the community in a way that benefited all groups involved.

Results and discussion

The members of the Ka'a'gee Tu First Nation have observed changes to the land, animals and water around them that they attribute to the impacts of climate change and are concerned that these changes are impacting food security in the community. Interviews with community members revealed that the importance of the land, social connections, and culture are the basis of the community's food system and their connection to place. However, issues, concerns, and barriers to food security due to the impacts of climate change and other societal factors were identified. Participants also shared ways that they are currently adapting to the changes on the land, but more importantly, shared ideas for how the community can strengthen their food system to be more resilient to the impacts of climate change. This section is therefore organized into three subsections: describing the community food system, impacts of climate change, and building capitals for a more sustainable food system.

Describing the community food system

Through preliminary project scoping and engagement events it was apparent that the preferred food system for the community relied on traditional food. What emerged during interviews and discussions was a more detailed understanding of the importance of the land and traditional foods to the community's health and well-being. Community members spoke about the importance of being on the land and eating traditional foods as the foundation of being healthy.

The link between a healthy ecosystem, clean water, and a healthy community emerged, as one informant explained,

> So I guess the health depends on the animals. My grandfather used to talk about things like that. He said we have always been rich in animals and their fur and moose and stuff like that. And our health depends on the health of the animals, the fish and that kind of stuff.
>
> -Lloyd Chicot

Therefore, in terms of community health and well-being, as well as the community's food system, the land, water, and traditional foods, which are important components of natural capital, play crucial roles. Another important component of the food system is the ability to access natural capital through cultural capital, which relies on learning skills and traditional knowledge that is passed through generations. Food sharing, a common practice in Indigenous communities, and part of the social economy, ensures that all community members have access to traditional foods, particularly those in need (McMillan & Parlee, 2013). Overall, being on the land and eating traditional foods and practicing traditional activities, including the sharing of food, is important to community members in Kakisa and was seen as a main strength of the community.

> The traditional values of our people. We still follow the traditional lifestyle. People are very...good and polite, and we help one another. Helping one another in the community. We share with each other. So you could say that it is like one big family.
>
> -Margaret Leishman

As such, natural, cultural and social capitals form the basis of the food system in Kakisa. However, like other communities in the North, the food system has changed over recent years. Accessing natural capital by hunting, fishing and gathering now requires more financial capital as money is needed to purchase gas, gear, and supplies. To build this financial capital, community members need access to jobs, something not readily available in this small community, so they need to travel to other communities for work. However, community members spoke about how working leads to less time available for on-the-land activities and they therefore rely on sharing networks and/or store-bought food more often. Store bought food was also discussed as being a necessary part of the food system, but was perceived by many to be unhealthy compared to traditional foods and more expensive, as has been observed in other studies (Lambden, Receveur & Kuhnlein, 2007; Wesche & Chan, 2010).

> Being able to eat traditional food I think is a good way of being in good health. You go to the store and buy hamburger and eat hamburger and eat processed chicken and stuff like that. You are putting garbage in your body when you can just go out on the land and go get it.
>
> -Anonymous community member

With the nearest grocery store located roughly an hour away, the time and financial capital needed to travel to the store, let alone the cost of food, was a concern. For many, the transition away from traditional food has resulted in greater food insecurity, particularly amongst those who are not able to harvest foods nor have family members able to share enough with them.

> Compared to way back, we had plenty food and today it's not [like that]. Today we purchase our food and it's very expensive.
>
> -Community Elder

Some harvesters, particularly those with young families, find it difficult to find the balance between the need to work in the money economy and being on the land. One participant shared their experience:

> Actually it really is [hard to find a balance], especially when I am working now. But I would like to go back on the land, but there is not much income, especially with trapping. I used to do quite a bit of that. But there is just not much in it. It is a lot of work, and everything costs money now.
>
> -George Simba

Although maintaining on-the-land traditions and being a close-knit community were mentioned as strengths of the community, there is a general concern that those strengths may be at risk in the future. Many community members were concerned that youth, in particular, are not as interested in traditional foods and activities, and more importantly, do not speak Slavey. Youth, as well as many of the younger community members speak only English and Elders mainly Slavey; therefore, language is seen as a major barrier preventing interactions between youth and Elders. This could impact the long-term access to cultural capital if traditional knowledge and skills are not passed down to the youth who will be providing food for the community in the future.

Although the community has held many on-the-land camps for youth and community members in the past and wishes to continue to do so, it was noted that while there are opportunities to do more on-the-land activities and community hunts, there are issues with low participation due to time commitments such as work, or low interest. Low participation in an already small population is a challenge. As the community is active in meetings and discussion to protect their lands and contribute to regional initiatives it is taxing on the few individuals that represent the Band and their interests. This small community is being asked to contribute to many initiatives and discussions that will shape the future of the lands and their food system.

Using information from the interviews as well as through preliminary project scoping and discussion with community members, an outline of the community food system in terms of community capitals was created (Table 2). Each key point determined through the research had either a positive or negative influence on each capital. For example, being a small, close knit community where food sharing is common practice indicates the presence of strong bonding social capital, and connections between community members that is an asset to the food system.

However, issues of low participation and engagement as well as having some community members leaving in pursuit of jobs or training can decrease social capital. Cultural capital is maintained through practicing traditional ways of life and passing that knowledge down to the youth, and although the community prides itself on living the traditional way of life, barriers such as loss of language, participation, and time commitments threaten that capital. The current food system, which the community depends on for health and well-being, is being strained from the depletion of too many capitals at once. Now, and maybe most importantly, the pressures of climate change on community natural capital, as detailed below, will add more pressure on the food system.

Table 2: Summary of community capital in the food system of Kakisa as determined though community interviews, showing key elements that contribute to (+) or degrade (-) capitals

Capital	Attribute
Social	(+) Strong social economy (food sharing) (+) Small, close-knit community (bonding social capital) (+) Experience with research networks outside of community (bridging social capital) (-) Some issues with degradation of bonding social capital in the community. (-) People leave community for education and jobs
Cultural	(+) Most community members maintain traditional practices and activities and a strong connection to the land (-) Limited time available to take part in traditional activities (for some) (-) Language as barrier to transfer of traditional knowledge (-) Some youth not as engaged in traditional foods and activities
Natural	(+) Abundant sources of traditional food (+) Abundant access to clean water (-) Concerns of impacts of development on the health of the land
Financial	(+) Access to community funding and government grants (+) Small commercial fishery (-) Limited availability of jobs in community (-) High cost of living (food, gas, and supplies)
Political	(+) Active local government (+) Pending protected area designation (-) Limited decision making ability in terms of control of lands
Human	(+) Engaged community (active in training opportunities) (-) Small population (-) Time and effort needed to travel to other communities for store-bought goods.
Built	(+) All-weather road access (+) Local school (+) Community hall and culture camp (-) Limited infrastructure (health, water, etc.) (-) No store

Impacts of climate change on the food system

Climate change is having an impact on the lands, waters, and animals around Kakisa. Through interviews and engagement, community members shared stories and experiences about the changes witnessed on the land and provided context as to how the broader global changes have impacted their community and their food system. These changes have caused them to become worried about the health of the land, water, and animals that they depend on as part of their culture and also for food. In general, the community has noticed a warmer trend in recent years, not only in the summer months, but also in the winter. Elders recounted stories of times in the past where the cold temperatures would crack trees, but it had not been that cold for quite some time. These changes in temperature are having impacts on the community's ability to harvest traditional foods. More variability in weather is making it harder to predict conditions and requires people to wait longer for lakes and routes to freeze and adjust to earlier melt in the spring. Storing and preparing food while on the land is more problematic as well, bringing up issues of food safety. As one participant described it,

> The weather is really warm most years, like September when we went goose hunting. We had some moose meat hanging out drying and smoking, and those spoiled because the weather was really warm at the end of September and usually it is cold enough so we just let the meat hang.
>
> -George Simba

Changes on the landscape due to permafrost thaw results in land subsidence, conversion of forest to muskeg, and changes in water resources, and have significantly affected the lands around the region (Baltzer, Veness, Chasmer, Sniderhan & Quinton, 2014; Coleman et al., 2015; Quinton, Hayashi & Chasmer, 2011; Williams, Quinton & Baltzer, 2013). This landscape change, and more importantly changes in water and ice conditions makes travel more difficult and less safe. Although changes in landscape have been witnessed by community members, their concerns were more focused on changes in water. Waterways are an important method of accessing the land, vital to ecosystem health and is a central part of the definition of place (Fresque-Baxter, 2013).

These changes are experienced more in the winter months when the land is more accessible and where observations and concerns are based around what does or does not freeze as it used to. For example, there is an increase in the risk of skidoos becoming stuck in unfrozen muskeg or falling through the ice because of changing conditions. With these changes, the need to be more cautious on the land was identified in the interviews and more broadly in the literature (Ford et al., 2008; Pearce, Ford, Caron & Kudlak, 2012). This requires harvesters to know what to watch out for and take time to check conditions, such as ice thickness and patches of "candle" ice, described as when ice looks like swiss cheese, so that it may be dangerous to cross.

Lack of rain, and how dry the past few years have been was also a common theme during discussions. The impacts of the dry conditions on food sources, such as berries as well as the overall health of the lakes and waterways were mentioned as major concerns.

> There's no berries. The weather in the summer is too hot and the berries dry up fast.
>
> -Community Member

Lower water levels and an increase in water temperature in both lakes have been observed, particularly in the past few years. Water levels have been so low in Tathlina Lake that the 2014 fall moose hunt was called off because the plane was unable to land in the shallow waters. Not being able to conduct this hunt worried several community members for many reasons. It is an opportunity for many community members to be on the land together, fostering social capital, and intergenerational knowledge transfer, and to build cultural capital. It is also an opportunity to fill people's freezers with meat for the winter. The fall hunt is an important activity to support food security for the entire community as moose meat is brought back and shared. In addition, low lake levels, particularly in the shallow Tathlina Lake, caused some community members to be concerned about the long-term health of the fish population.

> We are worried about the lake, especially the lake to the south, Tathlina. There it is pretty shallow. It is probably three feet or four feet. If it gets any shallower, I am not sure about the fish. I worry about that more than I do with this lake (Kakisa) because this lake is deeper. If the water drops, there will still be enough for the fish. It is the other lake that I worry about. Everyone depends on that lake for fishing. And in winter time, for commercial fishing too.
>
> -George Simba

Fish are a plentiful source of food, but are an important community staple as they are relied on when other food sources are not available, but also as income through a small commercial fishery. The community has invested in fish processing infrastructure and wishes to see the economic benefits of this investment continue. As such, fish, and therefore the health of the waters in the region, play a vital role in the health of the community's food system, influencing several capitals.

Community members have also noticed changes in animals. New animals have appeared on the land and waters, including pelicans, cougars, and deer, while traditional foods, moose in particular, can be harder to find. The introduction of new species does not necessarily add new food options for the community nor replace another species as has been proposed in other studies (Andrachuk & Smit, 2012; Ford & Smit, 2004; Ford, Smit, Wandel & MacDonald, 2006b; Ford et al., 2008; Wesche & Chan, 2010). Here, when speaking of the possibility of harvesting deer to support the community, one Elder and active harvester spoke of reluctance to do so because of the lack experience or traditional knowledge of harvesting and preparation methods. Lack of cultural background about these new species limits their use in the community's food system.

As for other changes in animal availability, community members are noticing timing of spawning runs and animal migrations are different than they used to be. This results in missing opportunities to harvests species at times and locations as they were used to doing in the past. There is a decline in the health of some animals, with more frequent observations of ticks on moose and parasites in fish. There is concern that the land is changing so rapidly that traditional knowledge can no longer predict or explain what the community sees on the land.

Table 3: Impacts of climate change on community capitals related to traditional food access.

Capital	Climate Change Impacts
Social	(-) Limited ability to be on land as a group (low lake levels cancelling community hunts)
Cultural	(-) Traditional Knowledge not reliable to predict conditions (-) Limited opportunity to pass on traditional knowledge (low lake levels cancelling community hunts) (-) Limited intergenerational transfer of knowledge increasing risk to harvesters
Natural	(-) Warmer temperatures impacting food preparation and storage (-) Variable weather makes it harder to predict conditions (-) Low water levels impacting lakes (travel, potentially fish populations) (-) Drought impacting availability of berries (-) Health of food species being impacted (+/-) New species present (-) Changes in animal availability and timing of migration (-) Changes to land make travel more difficult
Financial	(-) More resources needed to travel further in search of food (gas and supplies) (-) Resources needed to maintain access to land (clear trails)
Political	(-) Decreased ability to travel and monitor lands
Human	(-) Increased safety risks while traveling on land (-) More time and effort needed to obtain traditional foods (-) Stress due to increased uncertainty
Built	(-) Trails and cabins on the land need more maintenance

The impacts that climate change is having on the food system, as described by community members through interviews, are summarized in Table 3 in terms of community capitals. These impacts, with the exception perhaps of the introduction of new species, were perceived as being negative by the community. Although the main impact of climate change is on natural capital, repercussions are felt in the other capitals that make up the food system. For example, changing conditions on the landscape impacts human capital due to more risk to the harvester and time needed to remain safe. Financial capital is reduced because more time, gas, and other supplies are needed to travel further to avoid hazards and through increase risk to harvesting equipment. These changes on the land can also impact both social and cultural capital if community members cannot access the land or harvest the traditional foods that are part of the culture.

It should also be noted that the impacts of climate change were identified by participants as having negative effects on the land and food system. Therefore, a food system that was already being compromised due to the depletion of many capitals (see Table 2) is further stressed by the impacts of climate change. For example, if climate change creates further challenges or barriers to accessing the land, fewer opportunities for long-term replenishment of cultural capital through community hunting camps will be available.

Building capital for a more resilient food system

Allocating existing capitals allows communities to cope with or adapt to the impact of climate change on access to and availability of traditional food sources. However, with the threat of climate change and other factors limiting the creation and maintenance of some capitals, there is the need to build a food system that is more resilient to these stressors. Enabling the community to continually adapt over time to future social and ecological changes by building on community strengths, values, and vision was an important part of this research (Berkes & Ross, 2013; Ross & Berkes, 2014). Resilience can be more than just maintaining a system as it recovers from a disturbance, it can be seen as creating opportunities for transformation to more desirable endpoints (Davoudi, Brooks & Mehmood, 2013). As part of the PAR methodology utilized in this research, participants were asked questions about how to address the impacts of climate change on their food system and to improve access to food for the community.

With all the changes impacting the land, ensuring the safety of harvesters was important to many community members. Being safe on the land now requires more allocation of community capitals. The community informally uses the "buddy system", or going out with a group of harvesters, when on the land. This requires using more financial capital (for additional gas and supplies), as well as relying on human and social capitals. However, harvesters also require proper skills and training to be safe and survive on the land, and to be aware of conditions. Accessing cultural capitals, through traditional knowledge is therefore key to developing these skills. Many participants agreed that learning more on-the-land skills is important for younger harvesters to be safe and survive on the land in case of emergencies where they may need to stay longer on the land than planned. However, creating opportunities for that to happen can be limited by financial capital. As one Elder explained:

> To be on the land. That means we need money to make it happen so that we can be on the land and have the Elders to teach the kids. It is also creating opportunities for the Elders to fill their roles as teachers. Elders are always the teachers.
>
> -Community Elder

Another Elder commented that although community hunts are a good way of being on the land together there is, generally, low participation by some of the youth.

> But a lot of small kids they don't like traveling in the Bush. It's too much work for them I think. The ones that like to do something, they're good. I don't think you'll be able to teach them what they don't like.
>
> -Community Elder

Ultimately, this disconnect between youth and Elders may have been caused through the impacts of residential schools, where those directly impacted were not able to transfer their knowledge on to their children, who in turn, do not pass it to their children.

> A prime example is residential school people. It has effected all of our generations. Because of that, if I went into the school and talked to them for half an hour, they wouldn't know what I am talking about. So, parents need to be taught also to re-learn. And for the Elders to be given their roles again and to re-earn their roles again.
>
> -Community Elder

Bringing the community back together, and building bonding social capital, therefore, appears to be a key element in supporting a more sustainable food system and helping the community adapt to climate change as it is key to knowledge transfer. The community identified strengthening social capital over the long-term as a priority, and the Band Council has actively been trying to address this issue over the past several years. The community has held many on-the-land camps in the past allowing youth to gain skills through experience while strengthening social and cultural ties in the community. Language programming was a priority already identified by the Band Council. The Council continues to pursue and develop language learning as a key to understanding and preserving traditional knowledge and the cultural identity of the community.

Encouraging on-the-land activities has been cited as a key adaptation strategy in other studies (Ford et al., 2006a; Pearce et al., 2012; Cunsolo-Willox, Harper, Ford, Landman, Houle & Edge, 2012). The community wants to continue to pursue other opportunities to build social capital as well and want to see all future projects and research incorporate on-the-land experiences and foster youth and Elder relationships whenever possible. This also fosters truly engaged PAR as the community continues to define the scope and objectives of future research.

In Kakisa, the health of the land and the health of the community is closely tied together. Community members spoke of the importance of doing what they could to help take care of the land and strongly identified with stewardship and monitoring programs as priorities for the community.

> If you take care of the land and the animals, then the land will take care of you.
>
> -Terry Simba

One common practice amongst harvesters was taking pictures of what they saw on the land. In fact, during interviews, many harvesters took out their smartphones and showed the

research team pictures from their trips on the land. Others mentioned numerous pictures they had taken of changes they have seen on the land. These photos may include conditions and hazards, animal sightings or other interesting occurrences. Through taking pictures and sharing information from the land the community is already engaged in an informal monitoring of change. Although this information was primarily shared through kin relationships, it was agreed that more information should be shared throughout the community as an opportunity to build social capital. As one Elder explained:

> We used to share stories all of the time when the hunters and fisher people go out and the trappers. When they come back they used to all come together. The men especially. And they would share their information. You know, if the fur was good, and what area was plentiful. My dad was really good at that and he used to organize those talks all the time. Today people come back here sometime after hunting, and they go into their house and you don't see them again. We need to learn how to share these again.
>
> -Community Elder

Information, knowledge, and skills are resources, shared in similar ways to traditional foods in communities, flowing through kin relationships (Harder & Wenzel, 2012). Active harvesters commented on how they would often share information with family members, but not with the broader community, as used to be the case. The interest in sharing photos and capturing conditions and observations on the land illustrates how investments in financial and built capital (technologies such as cellphone networks, internet, phones and cameras) can help build community capitals and foster innovation and adaptations in the community. Initial discussions with harvesters as well as other community members during the 'Results Workshop' indicated that the community was interested in further developing a monitoring initiative based on the photos and information community members were already collecting.

Community members were interested in learning more about mapping, using GPS, and contributing to an online database accessible by community members. This initiative may help to build political capital as the database of images and observations can be used to enhance decision making, at numerous levels, contribute to ongoing research in the region, and promote stewardship of the land (Bennett & Lantz, 2014; Gill, Lantz & Gwich'in Social and Cultural Institute, 2014).

Another initiative that the community felt was important to take care of the land was through waste management. Being clean and free of garbage was cited as a major strength in the community.

> As individuals, we need to take care of the land. A big thing with the land is how well you take care of it and how you take care of your garbage.
>
> -Anita Chicot

Participants identified numerous issues with waste in the community, citing lack of appropriate recycling infrastructure, concern about pollution at the community landfill, desire to keep the community clean, and to do their part to take care of the land. The ties between food availability and waste management also emerged, as the community feels that their landfill is a source of contamination for the land, and therefore animals that they find near the landfill may not be suitable for consumption. So, diverting waste from the local landfill could increase the availability of food. However, waste diversion is challenging in the region as the nearest recycling collection facilities are located in Yellowknife. Although some community members admitted to taking their recycling to Yellowknife when they travel there on business, it is not a sustainable solution. The community is interested in exploring other options, such as working with other communities to create waste management solutions as well as composting organic wastes.

Building a more sustainable community food system by growing food was an adaptation that each community member discussed during interviews. Everyone had positive responses to the idea of either community gardens or individual garden plots, and many interviewees shared positive stories about past gardening experiences in Kakisa. Many community members saw the benefits of gardening to be eating healthier food that they could grow themselves, and would be a less expensive alternative to food from the store. This may also lead to less travel to Hay River for groceries and a lower burden on financial capital allowing for more resources to be allocated to being on the land. Government programs in the NWT are available to pay for the installation of gardens and related infrastructure, making gardens an option for those who are interested. However, community members also identified some key barriers to growing their own food, specifically, a lack of education and recent experience around gardening, and most importantly a lack of time to tend the gardens.

> If people could come and make a garden and show us how to do it. We could do it, we could weed and water it and stuff like that. I don't know who to ask. Some of them they make a box and they make a garden in there. That would work. It would be nice to have something to grow your own vegetables. So you wouldn't have to go all the way to Hay River for that stuff.
>
> -Sarah Chicot, Elder

Building human capital and skills around gardening are needed. This will, for the most part, be a completely new resource to add to the community as Dene culture has had little experience with growing food. The literature does contain some evidence of gardening in Indigenous communities in the past in the region (Helm, 2002; Loring & Gerlach, 2010) and there have been several attempts at gardening in Kakisa in the past, mostly through Band, school or government involvement. These gardens ultimately failed because either the community champion moved away or a garden was built under the assumption that community members had the skills needed to care for and utilize it.

Lessons from these past failures need to be learned. Building capacity and fostering community engagement are key to supporting communities interested in growing food. Fostering partnerships with local resources such as the Northern Farm Training Institute (NFTI) located in Hay River can provide the training and support key to community success. This challenge is not unique to Kakisa. Human and social capitals are needed for many communities in the NWT to support small-scale garden plots and potentially scale-up existing gardens towards larger scale food production (Douglas, Chan, Wesche, Dickson, Kassi, & Williams, 2014; GWNT, 2015).

Building a more resilient food system and implementing initiatives proposed by community members will require the creation of new and the enhancement of existing capitals. Some capitals can be developed through initiatives already implemented in the community, such as promoting safety and training of young harvesters through mentorship. Or adding new skills and capacity though training.

A summary of the capitals that are required or could be developed through existing and proposed adaptations and initiatives is presented in Table 4. However, as noted, developing programs to foster each capital takes both time and financial capital. The community wants to foster change through programs that engage and involve the community, particularly youth. As such, some of these initiatives have already begun to be developed through partnerships with the community and other organizations. Gardens, for example, were installed in the summer of 2015, planted in part by the school, and supported by hands-on training for community members by NFTI. It is hoped that community engagement and involvement will help to spiral up capitals, where building one capital leads to the development of others, and this in turn can lead to positive changes in the community (Emery & Flora, 2006).

Table 4: Community capitals being developed or required to foster resilience in community food system

Capital	Adaptations
Social	Increase community engagement Use of "buddy system" and community watch to keep harvesters safe More frequent community hunts and time together on the land Increase communications amongst harvesters to report conditions on the land
Cultural	Language programming "Buddy system" creates opportunity for mentorship of youth Promote on-the-land camps and community events when possible
Natural	Recycling to increase stewardship Monitoring land for impacts of climate change and development Participate in environmental research Contribute to local and regional land protection initiatives
Financial	Resources needed to fund community-defined programs
Political	Monitoring lands Participate in regional discussion for land protection
Human	Skills and training needed for initiatives (gardening, mapping, etc.)
Built	Infrastructure and tools required programs and initiatives (gardens, etc.)

Conclusion

Climate change is having an adverse impact on the already strained community food systems in the North. These impacts are affecting natural capital through changes witnessed in the land, water, and animals that form the basis of the food system and affect health and well-being in communities. Through the lens of the CCF, this research highlights the interconnections of community capitals and how impacts to natural capital are having broader effects within the community. This research detailed a PAR approach to climate change adaptation where community members were able to determine their own goals and priorities, and work with project partners to identify plans and next steps to help build more resilient food systems. By identifying transformative projects that are important to enhancing food availability, the community is actively defining their food system.

These projects involve key themes of reconnecting to the land, taking care of the land, and growing food, but require the addition of human, financial, and social capitals to enhance capacity, skills, and engagement within the community. Initiatives such as these will take time to implement, which requires a long-term partnership between the community and researcher to build capitals and capacity, reflective of the PAR process. All of the potential programs determined by community members rely on building or maintaining certain capitals. Human capital is required in the form of education, training, and capacity building within the community to learn new skills to implement these programs. Financial capital is needed for these projects and, in some cases, is (or can be) available, but accessing that capital can be difficult if necessary human capital is limited. (e.g. grant writing). The community also strives to have more political capital, as well as to have more say and protection of their lands and natural capitals, which aare the basis of their food system.

However, political capital is limited by human capital as only a few community members are available to represent the community at meetings. But by using the political capital available, and by building social capital through networks that extend outside of the community (through research and monitoring networks or similar initiatives), the community is playing an active role in trying to protect their natural capital. Social capital, either bonding social capital such as community engagement to strengthen ties within the community, or bridging social capital to create networks outside of the community to bring in new knowledge and skills, will be key elements of successful implementation.

The CCF offers a valuable lens for the issues of climate change and food security that are impacting Indigenous communities in the NWT. The capitals approach better describes the complexities of the food system that is both the product of tradition, culture, and the close relationship to the land as well as unique socioeconomic and political pressures that continue to shape communities. The CCF puts the community first and offers a place-based analysis for food system issues. It allows us to see past issues of food and include other issues that impact the community's well-being. It also offers a starting point to better integrate the unique food systems of the North into the broader context of food system literature. This can further act as a bridge to

bring in new knowledge where communities in the North can learn a great deal from food system studies from around the world. It may be, however, that Kakisa does not be fully represent what is being experienced in other communities in the NWT or elsewhere.

Due to its small size the community has high amounts of social capital, mainly through kin relationships. Larger communities may have a more complex social structure as well as other place-based circumstances that make their food system different. Further work in larger communities would offer a valuable addition to the emerging dialog of food systems in the North. However, communities like Kakisa can also offer lessons for communities around the globe, particularly those communities adapting their own food systems in the face of climate change.

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Original Research Article

"Aboriginal isn't just about what was before, it's what's happening now": Perspectives of Indigenous peoples on the foods in their contemporary diets

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Abstract

Health promotion materials for Indigenous peoples generally recommend that Indigenous people incorporate more "traditional" foods into their diets, referring to foods that are hunted, fished or gathered from the local environment. Little scholarly attention has focused on which foods Indigenous peoples themselves consider to be traditional, or the socio-cultural significance of their contemporary food patterns. The purpose of this project was to hear the voices of Indigenous peoples about the significance, meanings, and values of foods they eat, and what they consider to be traditional foods. Participants self-identified as Aboriginal people living in or near Terrace, BC were asked to photograph everyday foods, which were then used in semi-structured interviews. Themes identified in preliminary analysis were shared with seven of the original participants in a focus group. Key issues included barriers to access and use of locally gathered foods, and concerns about environmental contaminants in wild food. Participants spontaneously spoke of food in terms of health, but had to be prompted to discuss traditional food. While locally gathered, fished and hunted foods were clearly seen as traditional, the status of other foods was more contested. Case studies of specific foods revealed how participants imagined traditional foods, and also how these were combined with store-bought foods in inventive ways to produce culturally-significant fusion or hybrid foods. Our findings reflect the vibrancy and resilience of Indigenous cultures, and suggest that we reconsider some of the dominant assumptions that inform research and health promotion activities targetting Indigenous peoples.

Keywords: Indigenous; qualitative research; traditional foods; fusion foods; cultural change; Northwestern British Columbia

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Introduction

One of the ongoing effects of settler colonialism on Indigenous peoples in Canada is disproportionately higher rates of chronic diseases, including diabetes and cardiovascular disease (Adelson, 2005; Reading & Wien, 2009). As a result, the diets of Indigenous peoples have come under increased scrutiny in efforts to find ways to decrease disease rates and increase longevity. Health promotion guidelines to treat and prevent chronic disease among Indigenous people generally recommend the inclusion of more traditional foods—foods that are available from local natural resources and possessing cultural significance (Earle, 2013; Willows, 2005). Traditional foods have been shown to be healthier and more nutrient-dense than store-bought, market alternatives, and an antidote to acculturative forces that are undermining Indigenous health, cultures, and foodways (Dietitians of Canada, 2012; Egeland & Harrison, 2013; Kuhnlein & Receveur, 1996).

While health promotion recommendations urge Indigenous people to incorporate more traditional foods into their diets, we wondered what counts as traditional. This research began with the first author's observations as a dietitian working in northern British Columbia communities that many of her Indigenous clients included many items as "traditional food" or "Indian food" that would not officially be recognized as such. These foods included rice, chow mein, China Lily soya sauce, and bologna. The first author noted that *Tsimshian*[1] community feasts held in the Kitsumkalum reserve community often featured West Coast "fusion" foods—locally gathered food combined with store-bought foods, often in inventive ways. For example, an "Indian style" Chinese New Year community dinner featured seaweed chop suey, curried bologna suey, fish lo mein, shrimp chow mein, and fried rice. The dynamism of such fusion food suggests the lively incorporation of foods from other cultures into a First Nations feast, while making creative and economical use of local resources.

It is significant that fusion food would be part of a community feast. Community feasts are a contemporary version of the potlatch, a culturally and politically important ceremony for the Pacific Northwest First Nations that was banned under the Indian Act between 1884 and 1951 (McDonald, 1995). McDonald (1995) argues that the revitalization of feasting activities among the Tsimshian is a decolonizing activity that involves the creation of "a world structured in a Tsimshian way, a world that allows Tsimshian thoughts and practices," and a way to build and integrate the community by revitalizing cultural tradition and values. As such, one would expect that the food served at a feast, an integral part of the ritual, would also reflect community values and cultural practices.

As a white settler who grew up in western Canada, the first author realized after she moved to Terrace, BC that what little she knew of Indigenous peoples was based on popular stereotypes, in which they were either romanticized or vilified. As she worked and lived alongside

[1] Tsimshian First Nation is located on the Skeena River in northwestern British Columbia.

Indigenous people, she became increasingly uncomfortable with racist stereotypes and undertones in her work as a dietitian, and in the community more generally, and the representations of Indigenous peoples in health promotion research, literature, and activities. The second author is also of European settler descent; she continues to be shocked by the ongoing violence of settler colonialism, and is humbled by the resilience and generosity of Indigenous peoples despite racism, adversity and colonial attempts at genocide. Honouring the truths that were laid bare by the Truth and Reconciliation Commission about the history and legacies of the Indian Residential Schools, the authors hope this research can be part of the difficult work of reconciliation, of coming to know each other and living in mutually respectful relationship.

The purpose of this study was to explore the perspectives of Indigenous people living in and around Terrace, BC regarding culturally meaningful food in their contemporary diets. The research set out to privilege the voices of Indigenous people themselves, and to disrupt stereotypes of Indigenous peoples and traditional foods.

Location

The research was undertaken in late 2008 and early 2009 in and near Terrace, BC, which is on the traditional territory of the Tsimshian First Nation, and the home of the first author. Terrace is located on the Skeena River in northwestern British Columbia. It is categorized as a small urban centre, with a population of 15,723 people in 2016, 23 percent of whom identified as Aboriginal persons (Statistics Canada, 2016). Indigenous people from a variety of nations live in and near Terrace, particularly from the nearby *Gitxsan, Nisga'a, Tahltan, Haisla* and *Kitasoo* Nations. Situating the research in this urban centre means that the results may be relevant to the more than 50 percent of Indigenous people in Canada who also live in urban centres, with easy access to market foods from grocery stores and restaurants. However, unlike those who live in larger urban locations, Indigenous residents of Terrace may have easier physical access to a variety of wild harvested foods from the nearby land and water, and to the rich Indigenous cultural practices in the local community. This makes an ideal setting to explore ideas about which foods count as traditional for local Indigenous people.

Methods

The first author conducted photo-elicited, semi-structured interviews with eleven people who self-identified as being Aboriginal persons[2], and a follow-up focus group with seven of the

[2] Although we are primarily following contemporary use of the term "Indigenous," an inclusive term used internationally to refer to the original, pre-contact inhabitants of a territory, it was not in wide use at the time the research was conducted. At that time, the term "Aboriginal" was considered the most inclusive, covering First Nations, Inuit and Métis.

original eleven participants. The Queen's University General Research Ethics Board approved the study protocol. Two local Indigenous women, one of whom worked for the Kermode Friendship Center and the other for the regional health authority, acted as community advisors. They helped with recruitment, answered the researcher's questions and gave advice. Participation was limited to participants over the age of 18 with the ability to converse in English.

Prior to individual interviews, the first author met with each participant to explain the study, obtain informed consent, provide instructions for taking photographs, and collect demographic information. Disposable cameras were provided to those who needed them; otherwise, participants used their own digital cameras. Participants were asked to take photos of a variety of foods, including favourite foods; typical foods eaten with family members; foods for special family occasions like birthdays; foods that are part of family traditions; foods served at community feasts and gatherings; food that is traditional for the community; and a food that is valuable or has status for the community. Participants took photos of an average of 11 different food items or meals, and signed a photo release to give permission for which photos the researchers could use and for what purposes. Photographs were used to facilitate the interview process (Power, 2002).

Interviews were arranged at a time and location convenient for participants, and lasted on average one hour and 45 minutes. Interviews were audio-recorded, with informed consent of each participant, and transcribed verbatim. As an honorarium, participants were given a $20 gift card to the grocery store of their choice. Transcripts were sent to participants who wished to receive one, but no participant asked for their transcript to be modified.

During the initial meeting, participants gave signed consent to be contacted regarding participation in a follow-up focus group. The focus group involved a shared meal cooked by the first author; a review of some of the key topics identified in the individual interviews; and participant reflections on the identified topics. The session was held at the Kermode Friendship Centre and took approximately two hours. Participants received an honorarium in the form of a $10 gift certificate. With consent, the session was audio-recorded and the recording transcribed verbatim.

Data analysis began with the first interview and continued throughout and after the data collection process. A post-interview summary, including main topics and themes, was prepared immediately after each interview (Miles & Huberman, 1994) and used to guide subsequent interviews and the focus group. Using Atlas.ti, version 5.5.9 (© 1993-2008 ATLAS.ti GmbH, Berlin), a qualitative data management software program, the first author performed line-by-line open coding of each interview and the interview transcripts (Charmaz, 2006). Transcripts were coded again with more conceptual codes, and categories and themes identified (Morse & Field, 2004). The first author also kept memos in Atlas.ti and kept a journal to document observations and reflections. In her journal she also asked questions of the data, cross-checked her interpretations to ensure they were well supported, and explored negative cases and contrasting perspectives (Patton, 2002).

Participants

Nine women and two men participated in research interviews. Seven of these original participants were also members of the follow-up focus group. Four participants were between 25 and 40 years of age; four between 50 and 60; and three were in their 70s. Most participants identified primarily with local First Nations: six participants identified with the Tsimshian nation, one with the Haisla nation, and one with the Nisga'a nation. Other participants identified with Indigenous groups whose territories are distant from Terrace: one participant identified as Cree, one as Cherokee, and one as Inuit. Two participants spoke of reclaiming their Indigenous heritage as adults, having grown up without connections to their Indigenous communities. All had lived in or near Terrace for many years. Those from more distant territories had strong connections with people from the local First Nations.

Results

Overview

Although we were especially interested in exploring participants' perspectives about food in relation to traditions, culture and cultural change, analysis of the individual interviews was striking in that all participants spontaneously described different foods and food preparation methods in relation to health. It was surprising because there were no questions about health in the interview guide. Overall, participants' understanding of the healthiness and unhealthiness of food strongly aligned with the dominant healthy eating discourse found in documents such as Canada's Food Guide to Healthy Eating, an observation that others have also found to be ubiquitous in Canada (Beagan et al., 2015; Hammer, Vallianatos, Nykiforuk, & Nieuwendyk, 2015; Ristovski-Slijepcevic, Chapman, & Beagan, 2008). Many participants exhibited a fairly sophisticated understanding of the nutritional qualities of food, describing components of food such as fat, fibre, vitamins, and sugar. Some also worried about chemicals in food, including pesticides, herbicides, hormones, preservatives, nitrosamines, MSG, and other "junk," and actively tried to avoid food that might contain these substances. Participants with chronic disease diagnoses, or who had family members with chronic disease, were especially careful with preparation methods, food choices, and portion control. Participants' comments also contained conventional ideas of balance, variety, and moderation.

Participants had nuanced views of the healthiness and unhealthiness of market and traditional foods. Participants recognized that some market foods, such as fruit, vegetables, whole grain products, and dairy products, are essential components of a healthy diet, and appreciated the ready availability of these foods in their community. They also recognized other market foods, especially highly processed foods, as unhealthy. Conversely, while recognizing the

health benefits of hunted, fished, and gathered food, participants also worried about the possible health hazards of environmental contaminants in wild meat, fish, and berries.

Traditions, culture and cultural change

There were several specific questions near the end of the interview guide designed to explore participants' views on traditional foods, a primary focus of the research. With few exceptions, participants did not speak of traditional foods until specifically questioned. Most participants rarely used the term "traditional food," and some did not use it at all. When participants did spontaneously discuss traditions, traditional ways or traditional foods, they did so in a casual manner. Characteristics like taste, cost, familiarity, versatility, and healthfulness were at the forefront of participants' discussions, instead of the more abstract ideas of tradition and culture.

When asked specifically to give examples of traditional foods, many participants included fish, seafood, wild meat, seaweed, and berries. Some stated that these are foods that are hunted, fished, and gathered, "from the land and the water," or that they were eaten before European contact. As Myra, 31, stated, "so-called traditional foods [are those] that they would eat prior to contact with Caucasians."

However, closer analysis of the interviews suggested more complex views. Beyond these initial responses, there was debate about what foods could or couldn't be considered as traditional. We have developed four food case studies, which offer a closer look at participants' perspectives on specific foods: seaweed, potatoes and rice, bologna, and chow mein. These case studies were developed from analysis of the individual interviews and then further explored during the focus group. These case studies aptly demonstrate the themes of the research analysis, including access to traditional foods and fears about loss of knowledge about hunting, fishing, and preparing traditional foods, and reveal the diversity of views that participants hold about these foods.

Case Study #1: Seaweed

Figure 1: Seaweed and rice

> That's fresh frozen seaweed. I fried some bacon and onions, and some clams, frozen clams… and then I just cooked the seaweed in there, with some rice….
>
> (Ruth, 77)

The Indigenous peoples of northwestern BC have a long-standing practice of gathering seaweed; it is so significant that the month of May is known as *Ha'lil<u>a</u>xsil<u>a</u>'<u>a</u>sk* in the Tsimshian language (*Sm'algyax*), translated as "the time for picking seaweed" ('Na Aksa Gyla Kyew Learning Center, 2008). Like *oolichan* grease (congealed fat from a small fish), this food is eaten almost exclusively by Indigenous residents, and seldom by non-Indigenous people in the Terrace area. Many participants spoke of seaweed in the context of discussing "Indian food" or "traditional food." Academic researchers and health practitioners would also have no trouble categorizing it as a traditional food.

This case study raises concerns about access to traditional foods—the difficulty participants had incorporating it into their diet because of its cost, their distance from the ocean, and their limited knowledge and experience with gathering and processing this food. This case study also illustrates some of the creative ways that people combined locally sourced and market foods into dishes that blurred the boundaries between traditional and non-traditional in the development of "fusion" food.

Seaweed was a popular food for all participants and among Indigenous residents more widely. Ruth, 77, provided evidence of this popularity when she talked about having prepared food for a feast and said, "I cooked a pot of rice and a pot of seaweed. That really went." Fiona, 27, simply stated, "I love it…." while Garnet, 58, echoed this sentiment and added, "…my wife and I both eat it like popcorn." Participants explained that seaweed is popular on its own or added to other dishes. Marcie, 38, stated, "It's…very versatile. You can put it on soup—fish soup—or eat it on its own. Some people like to fry it, and I have to admit I like eating it that way sometimes." Participants also described adding seaweed to clam chowder (Lorna, 57), mixing it in with herring eggs (Marcie, 38), having it with salmon, potatoes and "stink eggs" (fermented fish roe) (Ruth, 77) or salmon, rice and vegetables (Myra, 31). Some of these combinations are so established as to have proper names; when the researcher said something about "fish, rice and seaweed," Bridget, 36, offered a correction, saying, "You got that backwards. Seaweed, fish and rice." She also mentioned that "seaweed and oolichan grease and China Lily [soya sauce] is a dish." Seaweed was paired with non-fish foods too. Ruth, 77, shared that she has seen chow mein prepared with seaweed, and Fiona, 27, offered, "I like it on popcorn." Lorna, 57, described how her husband sometimes prepares it, "He makes a specialty seaweed dish…with chopped bacon."

Several participants also discussed seaweed's nutritional properties and health benefits. Both Fiona, 27, and Garnet, 58, spoke of its iodine content, while Myra, 31, stated more broadly, "…it has trace minerals in it that are good for us." Rona, 53, discussed her wish to see a regional Aboriginal food guide for the northwest coastal peoples, giving seaweed as an example of an item she would like to see listed and explained in such a guide.

But the strongest theme about seaweed concerned access. Despite its popularity, participants' comments suggested that many of them do not eat it as often as they would like. While seaweed was served at feasts and community gatherings, Marcie, 38, admitted that this is not something she often eats at home. Things had also changed for Fiona, 27, since she moved away from her grandmother's home in Kitamaat village. She said, "…this is my little zip lock bag my mom gave me. It was bigger then, it was like full. Now…well, you see it's almost empty…. That's the first time I've had it in almost years." Even though Bridget lived on reserve, her access to seaweed was also limited, "I've been out of seaweed for two months. Until the guys from Metlakatla drive through with it, with a thing of seaweed, I'm hooped for seaweed." She also stated that in Kitsumkalum access is largely dependent on having the time and resources that are required to harvest such foods.

While most participants did not gather seaweed themselves, some were able to obtain it through their personal connections. Ruth, 77, explained, "My son gave me that bag of … fresh seaweed and I just stuck it in the freezer…." Similarly, Myra, 31, described that she received fresh seaweed from a friend: "…she gives us like a bag of seaweed when it's still wet and then we dry it ourselves…" However, many participants could only obtain seaweed by buying it. "Now if we want seaweed we have to find someone to buy it from. It's not that easy to find" (Barb, 58). Garnet, 58, explained that First Nations people came to Terrace from villages on the central coast to trade or sell seaweed, saying, "there's a lot of people from down there … that actually come up here to the northwest and they'll park at the mall or they'll start advertising … or just talking to people and say 'hey, we've got some seaweed'…." While he spoke of trading oolichans or oolichan grease for seaweed in the past, "in the Nisga'a way," he admits that recently, it is more common to purchase seaweed. "You can get a big gallon bag for fifty bucks, which isn't bad, but it's a little expensive." Because Terrace and Kitsumkalum lie inland from the ocean, seaweed cannot be picked locally, and for this reason, Louie, 73, rationalized the cost of buying it at a local shop in Kitsumkalum by noting, "20 dollars for a big square…it's cheap because that's a lot of money in gas to run your boat."

Irene, 72, commented that nowadays not as many people are "putting up their own food," and wondered if this trend may be, in part, due to a lack of education and exposure. Supporting her perspective, Bridget, 36, presented her views as a younger participant:

> I don't know where to go for any of this stuff. I wouldn't even know how to pick seaweed or what kind of seaweed to pick. You know, I'm sure my mother must have known because she grew up on a boat with my Ya'ez [grandfather], but she worked, and we didn't live here….

She was concerned that, in addition to the other barriers that exist in terms of gathering food, that the knowledge needed for the harvesting and processing of seaweed and other foods is not being passed down from the older to the younger generations. Lorna, 57, Louie, 73 and Irene, 72, recognized the need for education as well, and spoke enthusiastically about a recent seaweed

gathering excursion in which students at the ‘Na Aksa Gila Kyew Learning Centre had participated.

Participants’ comments about seaweed reinforced that it is a long-standing traditional food for coastal First Nations, and a food that continues to be popular. Participants described it as a versatile food, with health benefits, but illustrated that many individuals have difficulty accessing it because of its cost, their distance from the ocean, and their limited knowledge and experience with gathering and processing this food. Therefore, while many individuals wanted to include this food more often in their diets, they described significant barriers that prevent them from doing so. Participants’ stated that there were similar barriers to obtaining and processing other locally sourced foods as well.

Case Study #2: Rice and potatoes

Figure 2: Participants’ photos of meals including rice and potatoes

While the first case study showed how a traditional food has been incorporated into contemporary dishes, the second case study illustrates how introduced foods, potatoes and rice, have become mundane, unquestioned dietary staples, integrated into everyday eating patterns. When questioned directly about whether these foods were traditional, participants held different views. In the absence of direct questioning, these foods seemed relatively uninteresting to participants, unworthy of too much attention.

Participants described potatoes and rice as playing a supporting role to fish, meats, and other dishes, in many possible combinations. In the case of rice, they described pairing it with chili, chicken cacciatore, salmon, seaweed, fish, curried bologna, seaweed, deer mulligan, salmon patties, clam fritters, stir-fries, and moose ribs. In some cases, participants explicitly described rice as being part of a dish, as in “you have the rice, the jarred fish, dried seaweed…a tablespoon of oolichan grease, and flavour it with some China Lily [soya sauce]” (Bridget, 36). Similarly, participants listed a number of foods they frequently paired with potatoes: turkey, herring eggs, fish, pork chops, meatloaf, roasts, and other meats. Some also described flavouring their potatoes with oolichan grease, or adding them into common dishes, such as fish soup, moose soup, and salmon patties.

Rice and potatoes seemed to be taken-for-granted ordinary staples. For example, Fiona, 27, talked about the foods she cooked on a day-to-day basis: "…just regular, potatoes and pork chops and stuff like that…." Likewise, Garnet, 58, and Bridget, 36, both described rice as a "staple," and Bridget implied that this had long been the case in her family:

> …we grew up poor, right, my family, so sometimes we didn't have a loaf of bread but we always had China Lily [soya sauce] for our rice … it was just one of those things. It was like the big bag of rice, the big bag of flour, the big bag of sugar and the bottle of China Lily, and then the big bucket of lard in the fridge and then with some salt…as long as you had those staples you weren't hungry, you weren't poor and you weren't out of food.

For older participants, rice and potatoes had always been staples. Irene, 72, who grew up in Port Essington [3], laughed when she said, "…we always get teased, saying we're Chinese people because we live on rice…." She also mentioned that her mom grew potatoes in their garden, and said, "we have to eat what mom grows—potatoes—so everybody lived on that … it's always potatoes, it's always rice." Similarly, Ruth, 77, talked about her childhood, and stated, "…in Port Essington we learned to get things that'll keep. We had potatoes but rice will keep, so we used a lot of rice." Rice and potatoes appear to have been permanent features of the diets of both younger and older participants.

When asked specifically if these everyday foods were traditional, participants' comments were revealing. For example, Irene, 72, had described having foods such as rice, potatoes and homemade bread since her childhood, and when asked if these were traditional foods, she responded by saying, "probably some people will say yes, because you were raised on it." However, Rona, 53, had a different view. In the following quote, she appeared to say that potatoes have been a long-standing part of local Indigenous diets, but then she seemed to catch herself.

> Potatoes have always been a part of ours- but we call it, in our language, we call it *skoosee*. Yeah, because we never had the seed, right. We never had the potato seeds until the Irish came…gosh, in, I think in my great grandparents' time, maybe even a generation before that, when the Irish started coming to the Nass and to the Tsimshian country. And so we never had potatoes, and so…since that generation that have potatoes growing in the basement, like they'd fix up a place and you'd grow potatoes there, so you'd grow up eating potatoes…it's just a thing that you had with your fish.

When I asked her directly about potatoes, she responded with another comment about Irish influence and followed with, "It's not traditional…the fish is traditional. Moose isn't even

[3] Port Essington was a salmon cannery town, founded in the late 19th century at the mouth of the Skeena River, about 100 kilometres from Terrace. European-Canadians, Japanese-Canadians and Indigenous peoples worked there, but most of the population did not live there year-round because employment was seasonal. It is now a ghost town.

traditional."[4] Later, she spoke about the foods in her current diet and said, "We have all the vegetables, lettuce, potatoes, that are new to us…rice, that's new to us." While she acknowledged the culinary changes that have occurred over time among the local Indigenous peoples, and that she herself has long consumed many of these "new" foods, in this context she seemed to be working with a strict, "pre-contact" definition of traditional foods.

However, her take on potatoes was challenged in the focus group. Garnet, 58, seemed to object to the idea that potatoes were not traditional, saying, "Potatoes didn't come from Ireland 'cause they did come here too. The ones we used to pick were really small and little, and we used to take them, and used to have to really dig hard for them…." Garnet had also spoken about rice and potatoes in his individual interview; in describing the traditional diet on the prairies, he included a description of "all the roots and the wild potatoes and rice we used to pick…." While he acknowledged that today's potatoes and rice might be different from what Indigenous peoples harvested in the past, he still seemed to view them as being "basically quite traditional." Perspectives on whether potatoes and rice could be viewed as traditional foods were clearly mixed.

Participants' off-hand comments are potentially more revealing. On a number of occasions, participants included rice and potatoes in descriptions of meals that they labeled as traditional. Ruth, 77, started off her interview by telling me about a meal she wished she had taken a photograph of, saying, "I baked potatoes and then burned fish, fried fish—you burn it over a fire …that's the traditional foods, eh." Similarly, Garnet, 58, described a fish stew made with potatoes, onions and, if available, seaweed and oolichan grease as follows: "…this is what we call mulligan …it's like a traditional [meal]… the West coast people have been eating this kind of food for years." Similarly, Fiona, 27, included rice in a comment about food traditions, namely, "…I grew up with our food traditions, and I would always have [seaweed] in salmon soup, and seaweed and rice…." In these comments, participants implied that rice and potatoes could be viewed as being traditional foods or, at the very least, that they have a welcome place alongside many of the more indisputable "Indian" foods.

Participants' comments about rice and potatoes suggest that they did not view these foods to be exciting in any way. However, it is precisely because they are mundane that they shed light on our understandings of food, culture and tradition. Just as a meal of seaweed and fish might not seem complete without rice, mulligan just wouldn't be the same without potatoes. These foods were practical additions to the traditional diets of Indigenous peoples. Potatoes could be locally grown, and had a long storage capacity. Although not grown locally, rice was relatively inexpensive, filling, and could be stored indefinitely, like flour.

[4] This participant believed that moose had come to the region relatively recently.

Case Study #3: Bologna

Much like the previous case study of rice and potatoes, bologna has become thoroughly integrated into local diets or "indigenized." However, its meaning has shifted over time. Once considered a luxury food, it is now more commonly associated with poverty, and eaten less often because of widespread awareness of the unhealthiness of processed meat products. Despite the shift in meaning, bologna is still considered "Indian food" and part of community feasts, for example, as "curried bologna suey" in a community Chinese New Year dinner in Kitsumkalum.

Many participants spontaneously discussed bologna in their individual interviews, even though no one took a photo of it. The oldest participants described bologna as a popular food, especially in their younger years. The three oldest participants each talked about how much they liked it. In these cases, they described bologna as a treat, a "luxury" and a break from the everyday. Ruth, 77, described moving from camp to camp to gather different foods throughout the year, saying, "then we'd move back to [Port] Essington, then we'll have a big treat—bologna." Louie, 73, also spent his younger years in Port Essington and shared a similar story: "…years ago in Essington, we didn't have a deep freeze or a fridge…bologna and wieners…it's a real treat once in a while…and I used to love eating that." Bologna was so popular in this generation that Irene, 72, described that her uncle would buy three or four rolls for feasts, "Every time there's a feast, he makes sure there's bologna." These participants' comments depict that when they were growing up, bologna was relatively rare, exceptions to the daily fare. However, this was also true for the youngest participant, Fiona, 27, who talked about growing up with her grandmother in Kitamat[5] village, saying, "I always used to like to have it besides always having fish every day...."

In the past, bologna was considered a high status treat because it had to be purchased and was not always readily available. The preserved meat, a relatively affordable luxury, could survive long distance transportation, even without refrigeration. Rona, 53, spoke about her experience living in the coastal village of Kincolith, where for years, they only had access to larger centers by boat.

> We never had roads. Like, Kincolith just got roads … what, five years ago? So that was … the other luxury thing … Hopefully the bologna would make it, so there would be bologna if you'd have enough money to have it.

Similarly, Ruth, 77, described how bologna was perceived in Port Essington, saying, "… that was rich man's food, bologna. It was the only thing we could buy." Further south, in Kitamat village, Fiona, 27, talked about how her grandmother thought bologna became increasingly expensive over time, but described a time when they were less financially constrained:

[5] Kitamat is a town located on a deep-water fjord about 60 kilometres from Terrace. It was a small Indigenous fishing village until the 1950s, when Alcan developed the town and built a hydroelectric dam, a deep sea terminal and a smelter.

> My uncle, he used to do really well because he's was a carver and for the time I grew up there he was making a lot of money so he'd would be able to make the bologna a little bit thicker. …Gran thought that was pretty fortunate for us to have really big bologna steaks.

In these ways, participants described that bologna was a luxury because of the financial and geographical barriers involved in accessing it, making it relatively rare but still affordable on occasion.

On a different note, several participants spoke about bologna in relation to residential school experiences. Rona, 53, told a story of her husband giving a speech at a feast attended primarily by residential school survivors:

> He was listing off all the food that that they brought and they were gonna serve and everything and then he said, "and fried bologna," and everyone was like cheering like crazy…yeah, they were all excited about having fried bologna and curried bologna.

She described that it was "definitely uncommon" for First Nations students to have had bologna in residential schools, an observation supported by Irene, 72. When she spoke about her year at a residential school, she mentioned that the high school students could cook for themselves on the weekend, "We could eat what we want, what we used to eat at home. Everybody hollered for bologna and rice and corn." For residential school survivors like Irene, bologna was a food that was associated with home.

Some of the younger participants did not share the older participants' nostalgic views of bologna, associating it instead with poverty. At the focus group, Bridget, 36, reacted to a description of bologna, rice and corn, with, "I really thought until I just read this that my mom had made that up because we were poor. I didn't really realize other people ate that too." She also added, "I noticed at school that there was things like ham, salami… I noticed rich kids had ham and salami with lettuce and stuff on their sandwiches…and I got bologna and bread." Her comments resonated with Garnet, 58, who said, "I've always related bologna…with the poor side of town too…I always associated bologna with not being able to afford good kinds of meats and stuff. Good red meat." His view of bologna as a substandard food was also evident in a comment he made about growing up in foster homes, where he was sometimes treated differently from the "regular kids," as in, "the family's having a roast or something…They fed me stuff like bologna and macaroni…." These comments show a shift in views of bologna over time: for older participants it was once a luxury, but younger participants considered it a "poor food."

Participants discussed other negative associations with bologna as well. One participant stated that while she used to eat bologna, now she thinks about "how much isn't really meat" (Myra, 31). Similarly, while Louie, 73, had previously described bologna as being a favourite food, since meeting his wife of several years, he no longer eats it because of "all the junk they put in there." Lorna, 57, pointed out that it contains additives, and is concerned that "you're getting nitrosamines produced in your stomach, which is a cancer causing chemical." Whether

participants may have previously associated bologna with being rich or being poor, it appears that over time, they have become increasingly concerned with the quality of these products and their potential ill effects on physical health. The additives that once enabled access to such products, when refrigeration was uncommon, are now understood to have ill effects for health.

Despite the shifting meanings of bologna, participants' comments suggest that this food is associated with Indigenous peoples and their communities. The language some participants used exemplifies this association; several described bologna as "Indian steak" or "Indian round steak." Bridget, 36, used this language when she shared the story of when she moved to Terrace:

> I didn't grow up around here…I came here and everybody was talking about Indian round steak…I didn't know what that was going to be and it sounded good, but it was bologna!

Rona, 53, also described bologna as "today Indian food," and provided some insight on why she felt it remains common among Indigenous families, saying, "…there's no alternative…when you can pay three dollars for some bologna, but you've gotta pay 50 dollars at the butchers for a piece of moose meat, which one are you gonna to get?"

However, there may be more to bologna than its relatively low cost and accessibility. After a hearty discussion about bologna in the focus group, Bridget, 36, shared some thoughts that suggest that bologna may also provide links to family and ancestors:

> Well, I feel like I was being raised more traditional than I thought. I had no idea. I really thought, you know, that I was the only one being subjected to bologna, rice and corn. Now, I feel almost privileged that my mom did share that. I feel bad for all the times I snubbed my nose at it and criticized her for feeding it to us. Here she thought she was giving us something from her home, from her past.

Fiona, 27, also used the term "traditional" in speaking about how her gran prepared bologna, saying, "She would always like it fried, with rice and creamed corn. That was pretty much a traditional side dish…." Her comment, and those of other participants, suggests that bologna is a long-standing food item in their families and communities.

This examination of participants' views on bologna exemplifies how the meanings of food are context dependent. For the older participants, this food was once a rare treat or luxury, but today it is more likely to be associated with poverty and poor health. Bologna's denigrated status may explain why although most participants discussed bologna, not one person took a picture of it for this research. Despite this and the self-deprecating humour implied in the term "Indian steak," it appeared that there remains something "Indian" about bologna. Consider, for example, the menu for a community Chinese New Year dinner in Kitsumkalum, where "curried bologna suey" is offered alongside other fusion dishes like herring egg chop suey and seaweed chop suey. In this case, the bologna, much like the clam fritters, is an example of the "Indian" contribution to this celebratory meal. This menu, and participants' comments about bologna, makes a case for the "indigenization" of bologna into the local diet.

Case Study #4: Chow mein

Figure 3: Chow mein and China Lily soya sauce

> Chow mein's like a comfort food, you know, it's like something my mom made all the time…it's one of the foods that [my aunt] and my mom learned how to cook from my grandmother….
>
> (Bridget, 36)

Chow mein is a common fusion food, a versatile stir-fried dish, with noodles forming its base, and various combinations of meat and vegetables added in. It has been adapted to reflect regional tastes and locally sourced ingredients in many countries (Lim, 2006; Newman, 2010). Several participants confirmed that chow mein is a common meal for Indigenous families in the area. Fiona, Bridget, and Marcie described that they often ate it at home, while Garnet, Irene, and Ruth stated that it was a popular meal with local Aboriginal families. The popularity of chow mein was emphasized by Irene, 72, who described making it for fundraising events in Kitsumkalum and declared it was one of their "number one sellers." It is also a special food for Fiona, 27, who described that chow mein was a break from her daily fare of seafood when she lived with her gran in Kitamat village,

> Part of it was like a treat, like, whenever we'd go to town we'd always go to a Chinese restaurant … it has all [my favourite vegetables] in it and just a different flavour instead of having what I grew up on.

Participants described chow mein as economical, easy and quick to make, versatile, healthy and tasty. Bridget, 36, emphasized its low cost:

> Chow mein's like a quick and easy one-pot dish that my mom used to always make for us, and there's a lot of vegetables in it and it can feed large numbers of people. …You can feed like fifteen people for like twelve bucks, right, so my mom used to make chow mein quite often, chow mein and rice, and then that would be our meal at least twice a week.

Bridget also appreciated its versatility,

> You can put whatever vegetables…that you have, right. It's a good use of vegetables…and whatever meat or seafood that you have goes well in chow mein. You can even make chow mein with herring eggs on kelp.

Garnet, 58, also talked about "herring egg chow mein," and other participants described chow mein made with other locally sourced foods. Garnet mentioned that he also liked to make it with moose meat, while Ruth, 77, observed, "I seen where people put seaweed in, chopped seaweed, just mix it…." Clearly, for these participants, chow mein is a popular meal that can be prepared in many different ways.

The popularity of chow mein is also evident by its regular appearance at feasts and other community dinners. Bridget, 36, mentioned "at a feast or community gatherings, potlucks, people will bring it." Later, she listed foods that are commonly served at such events, and includes chow mein again, "Herring eggs. China Lily. Chow mein is always there. Somebody fries up fish, lots of different kinds of fried fish. Oolichans, spaghetti, KFC, mixed berries…." Garnet's comments support her observations; he mentioned that in addition to fish and seafood, "you see a lot of roast beef, chow meins - different types of chow meins." I asked what he thought of seeing such foods at feasts and community dinners, to which he replied, "today it's sort of normal." Based on these comments, it appears that chow mein is a normal part of both family meals and community dinners.

Participants illustrated that chow mein is a popular, economical and versatile dish that is frequently consumed by local Indigenous families. Some families had eaten it for generations. This has become another indigenized fusion food, now considered "Indian." This notion is supported by the fact that participants described making it with locally sourced ingredients, such as herring eggs on kelp, seaweed and moose.

Discussion and conclusion

Analysis of these results suggest that the Indigenous participants in this study thought about what to eat in ways that most Canadians do—a complex mix of health concerns, affordability, availability, tastes, and cultural and family habits and traditions. In the ordinary, day-to-day navigation of food provisioning, cooking and eating, participants didn't appear to think about whether foods were traditional. But when specifically asked, what they considered as traditional

food was not always simple or straightforward. For the most part, participants understood traditional foods to be those that are familiar and meaningful to their families and community, though they couldn't always classify them with certainty. Participants definitely categorized as traditional local foods that are hunted, fished and gathered, just as academic researchers and health practitioners would. These foods were highly valued; participants bemoaned the relative inaccessibility of many of these foods because of cost, lack of geographic access and lack of knowledge about how to harvest, preserve or prepare them. They also worried about the potential of environmental contaminants in wild foods.

Many participants also considered as "traditional" foods that they or their families had eaten for a long time and were not indigenous to the area. Some of these foods, like rice and potatoes, were practical and filling, important for families who were forced into poverty by colonial disruption of their cultures. Similar to what Walsh (2014; 2016) has described for the Dene in remote regions of the Northwest Territories, these foods have become "naturalized" or integrated into the diet because of their practicality and are now taken-for-granted and unremarkable. Others, like bologna, achieved high status because they had to be purchased, and provided variety and change from the usual diet. Other foods sometimes considered traditional, like chow mein, were inventive fusion foods that combined locally sourced and store-bought ingredients.

This hybridization of the diet demonstrates an openness to change, suggesting that change does not threaten but rather enlivens cultural traditions. This ability to absorb, incorporate and indigenize new foods is a sign of cultural dynamism and strength. As cultural critic Edward Said describes, "all cultures are involved in one another; none is single and pure, all are hybrid, heterogeneous, extraordinarily differentiated and unmonolithic" (Said, 1994, p. xxv). The blurring of boundaries in Indigenous fusion food, mixing locally gathered, fished or hunted foods with non-local ones disrupts the dichotomy of "traditional-nontraditional." This dichotomy tends to freeze "authentic" Indigenous culture in the past and delegitimize as "inauthentic" the changes that vibrant and resilient cultures make to adapt. Such dichotomies can unintentionally reinforce a "self-other" distinction that supports colonial ideas of Indigenous people as exotic, close to nature, and primitive (Said, 1979).

Thomas King (2013) argues that there is a pervasive North American myth (presumably among non-Indigenous people) that Indigenous peoples and cultures are "trapped in a state of stasis." Only three participants spoke of culture and tradition as "static"—something that can be lost, taken away, eroded, brought back, remembered, or learned. They understood cultural change as "loss" or decay, and understood cultural survival as a return to pre-contact cultural and dietary practices. For example, Garnet, 58, who came to know his Indigenous heritage as an adult, explained that, "Once the Europeans came here…our traditions and our culture started dying."

Nevertheless, most participants spoke about social and cultural change in more positive tones, suggesting that culture was flexible and dynamic. For example, in discussing China Lily soya sauce, Bridget, 36, invoked a notion of cultural evolution, growth and change:

> It may not be something that people would consider traditional if you're strictly looking at…our culture, say, a hundred fifty years ago, but that's looking at culture in a more stagnated way. I believe that culture evolves and grows and changes with peoples' environments, so I consider traditional food one that my mother and my grandmother used that I still use. So if I go back two, maybe even three, generations, China Lily was there….

Myra, 31, one of the youngest participants, most poignantly summed up a view of Indigenous cultures as fluid and evolving, "Aboriginal isn't just about what was before—it's what's happening now." Such comments suggest that what is deemed to be culturally relevant or traditional need not be limited to what existed prior to European contact; it can also include practices and traditions that have developed in response to ever-changing circumstances.

A positive view about cultural change allows Indigenous peoples to be seen, and to see themselves and their ancestors, as creative and resilient human beings, with dynamic, lively cultures that are capable of change, not fixed in the past or static. Like other peoples, they draw from the past to creatively adapt to the present and the future. This more hopeful view of cultural change is in line with Indigenous goals of self-determination, because it takes for granted that Indigenous peoples themselves know what is in their own best interests in shaping their futures. This must be respected in research and health promotion activities targeting Indigenous peoples. In fact, the implications for working with Indigenous peoples are no different than when working with any other group: one needs to know about their specific needs and concerns before acting. Their priorities, agency, creativity and resilience must inform all endeavors that aim to address the food and health-related issues they face.

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Original Research Article

Exploring homelessness and Indigenous food systems in northern British Columbia

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Abstract

People experiencing homelessness are known to be highly food insecure, but outside of emergency aid little is known about their overall experiences with food, particularly in Canada's northern communities. This study examined experiences that influenced access to food for people experiencing homelessness in a small city in northern British Columbia. Early findings underscored the importance of the impacts of colonization when seeking to understand food access in this context, and the value of lived experiences (including people with experiences of homelessness) when seeking to understand Indigenous food systems and food sovereignty as part of a re-emerging food system. The research drew on ethnography and case study methodology with modified community mapping to explore the food systems of the participants, who identified as First Nations, Métis or had mixed Indigenous and European ancestry. A focus group and subsequent interviews revealed a dynamic and complex food system. The flexible research design enabled participants to creatively express the food-related issues, challenges and successes most pertinent to their lives. Key food-related themes were social connections, as well as connections to the land and to culture. Participants' experiences, actions and desires regarding food, health and well-being highlighted Indigenous food sovereignty as an overarching concept which offers an adaptable, holistic approach that can accommodate complexity. It is a valuable direction for future research and practice seeking to improve food security and health.

Keywords: homelessness, Indigenous food sovereignty, Indigenous food systems, northern food systems, emergency food aid

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Introduction

People experiencing homelessness are known to be highly food insecure, but outside of their use of emergency aid little is known about their overall experiences with food—particularly in Canada's northern communities (Dachner & Tarasuk, 2002). Understanding food use, availability, desirability and appropriateness has the potential to lead to enhanced services and improved health and well-being for people experiencing homelessness. These issues are pertinent for people of Indigenous descent, who are noted to be among those most at risk for food insecurity (Desmarais & Wittman, 2014; Li et al., 2016; Richmond & Ross, 2009; Tarasuk, Mitchell, & Dachner, 2016) and are also disproportionately represented within homeless populations (Hwang, 2001).

This paper shares some of the findings from a study on homelessness and food access in Prince George, a small city located within Lheidli T'enneh First Nation territory, in northern British Columbia (BC). This paper offers insights about the relationships between homelessness and food systems, and in this case, Indigenous food systems in particular. Homelessness in Prince George is associated with a history of migration into the city by Indigenous and non-Indigenous individuals and families to access services. As the largest city in the northern BC region, Prince George offers multiple locations where emergency food aid is provided. Social services, including emergency food provision, tend to be provided in a centralized, and individualized manner, which offers a stark contrast to some of the family, collective and contexts of the First Nations and rural and remote communities from which people are migrating.

The purpose of this paper is to explore elements of Indigenous food systems and Indigenous food sovereignty in the specific context of homelessness, informed by the study titled "Consuming connections: Experiences of food systems during times of homelessness in Prince George, British Columbia" (Russell, 2015)**.** This study aimed to explore experiences with food during times of homelessness in a small northern BC city and, in the process, shed light on range of food systems dynamics in the region, including some specific insights relevant to Indigenous food systems and Indigenous food sovereignty. The study was conducted as part of a Masters in Community Health Science at the University of Northern British Columbia during the period of 2012-2015.

This paper begins by introducing the concepts of Indigenous food systems and Indigenous food sovereignty, describes the research methods, and presents the results under the themes of social connections, connections to the land and reconnection to culture. A discussion follows, relating the results to Indigenous food systems and Indigenous food sovereignty.

Background

This research was informed by the recognition that "mental health, biological and nutritional mechanisms may be inseparable from the cultural and social aspects of traditional lifestyles"

(Earle, 2013, p. 4). For Indigenous peoples, colonization and the resultant changes in lifestyle severely disrupted food systems and had devastating effects on health and well-being (Alfred, 2009). Three notable examples include: the exertion of colonial control through banning important cultural events such as the *potlatch*[1] (McIlwraith, 2012); the prohibition on Indigenous farmers from vending their goods in the nineteenth century (King, 2012); and the destruction of the bison herds leading to starvation on the prairies (Daschuk, 2013; Hiebert & Power, 2016).

Johnson (2014) frames the benefits of consumption of traditional food in relation to physical activity and spiritual grounding, for community food security, and for greater sustainability. Kuhnlein and Receveur (1996) have defined traditional foods "as being composed of items from the local, natural environment that are culturally acceptable" (p. 418). Traditional diets are diverse, nutrient dense (Earle, 2013), sustainable, and in terms of market value, expensive.

Indigenous food systems may be based in part or entirely on traditional diets, and offer an ecological orientation to fostering both environmental and social determinants of health (Elliot, Jayatilaka, Brown, Varley, & Corbett, 2012). Elliott and colleagues (2012) identify empowerment, knowledge renewal, and renewal of family and community relationships as values which are central to Indigenous food systems. The Indigenous Food Systems Network identifies different but related values of interdependency, respect, reciprocity, and ecological sensibility (n.d.b). The Indigenous Food Systems Network explains, "Indigenous food systems are maintained through our active participating in traditional land and food systems" (n.d.b, para 4). People with a responsibility and relationship to the land are an active and necessary element of place based Indigenous food systems (Manson, 2015; Morrison, 2011). Food, health, and well-being are closely linked to one another. Indeed, among some Indigenous communities, the concepts most related to health include the ability to engage in land based activities, such as hunting, and eating appropriate food (Grey & Patel, 2015). Indigenous food systems are an element of Indigenous food sovereignty.

The concept of Indigenous food sovereignty (IFS) is described by Dawn Morrison, Coordinator and Chair of the B.C. Food Systems Network Group on Indigenous Food Sovereignty, as providing "a framework for exploring, transforming and rebuilding the industrial food system towards a more just and ecological model for all" (2011, p. 98). Morrison also notes that the concept is necessarily amorphous because of the diversity of Indigenous communities. Morrison describes Indigenous food sovereignty as follows:

> The newest and most innovative approach to achieving the end goal of long-term food security in Indigenous communities. The Indigenous food sovereignty approach provides a model for social

[1] The potlatch is common to many First Nations in Western Canada. Carrier Sekani Family Services, an Indigenous organization based out of Prince George, British Columbia, explains that the potlatch is the "core economic, political, social, legal, and spiritual institution of Carrier people"(Mann, 2016, para. 5). Food has a significant role at the potlatch.

> learning and thereby promotes the application of traditional knowledge, values, wisdom and practices in the present day context (2011, p. 100)

Four key principles of Indigenous food sovereignty have been articulated: spirituality or sacredness, participation, self-determination, and policy relatedness (Indigenous Food Systems Network, n.d.a.; Johnson, 2014; Morrison, 2011). The composition and delivery of typical emergency food aid provides a stark contrast to the precepts of Indigenous food sovereignty.

While it has been theorized that food sovereignty can be mobilized as an approach to increasing health equity, there remains little research in this area (Cidro, Adekunle, Peters, & Martens, 2015; Jones, Shapiro, & Wilson, 2015; Skinner, Pratley, & Burnett, 2016; Weiler et al., 2015). Although promoting and working from a framework of Indigenous food sovereignty is challenging, there are changes that can be readily implemented to begin the process of decolonizing food systems (Bradley & Herrera, 2016; Cidro et al., 2015; Elliot et al., 2012; Figueroa, 2015; Tobin, French, & Hanlon, 2010).

In Prince George, 11 percent of the overall population is Indigenous (Milligan, 2006), which is notably higher than for the province of BC (5 percent) (Statistics Canada, 2016a) and Canada as a whole (4.3 percent) (Statistics Canada, 2016b). Data from the 2006 Canadian census indicated that there was a high level of housing instability among the Indigenous population of Prince George, and that this population has incomes that were significantly lower than for non-Indigenous people (BC Stats, 2010). In the 2010 homeless count in Prince George, 27 percent of people identified themselves as experiencing absolute homelessness (Kutzer & Ameyaw, 2010).

Methods

This research set out to explore the food systems of the people with experiences of homelessness in Prince George. Methodologically informed by case study methodology and ethnographic methods (Creswell, 2009; Denscombe, 2007; Yin, 1994), the study was intentionally designed to be exploratory, namely to learn and share insights from participants' ideas and lived experiences, rather than to derive global statements on the subject matter. Participation in the research was open to adults who, within the past five years, had experienced at least six months of homelessness in Prince George. The participants who engaged with the study were people who identified as First Nations, Métis or had mixed Indigenous and European ancestry, and this background created a foundation for insights around Indigenous perspectives and orientations. The study received ethics approval from the UNBC Research Ethics Board (Approval number: E2013.1211.120.00). The findings presented in this paper offer a subset of the findings from a larger study that sought to explore experiences with food during times of homelessness in Prince George, BC.

The authors of the paper include the lead researcher, Russell, and her graduate supervisor, Parkes. Russell is a non-Indigenous person who has lived and worked with various Indigenous

communities and organizations over the past several years. She is a vegan with experience in *silviculture*[2] and small-scale agriculture. Parkes is a non-Indigenous researcher, originally from New Zealand. Her research focuses on the interface of health, ecological, and social issues, and has involved working with Indigenous communities in New Zealand, Hawaii, Ecuador and Canada. She has lived and worked in northern BC since 2009.

Methodologically based on case study and ethnographic research (Cresswell, 2009; Yin, 1994; Denscombe, 2007), the overall research design drew on a modified community mapping approach, adapted from methods applied in Amsden and VanWynsberghe (2005) and Blanchet-Cohen, Ragan & Amsden (2003). For the community mapping, each participant was provided with two large sheets of paper and art supplies. Participants were asked to draw or write elements of their food systems, responding to questions of what the current food system looked like, and what an ideal food system could, or should, look like (Brown, Harris & Russell, 2010) thus creating food system "maps". The final products were personal, the creation process was accessible, and each participant was able to identify their contribution. Two pairs of participants decided to collaborate and created their maps together. While the maps may not contain geographic data, as Amsden and VanWynsberghe (2005) explain, diverse forms of mapping still "support the power and capacity of people to represent themselves and their understanding of the world around them" (p.361). This arts-based tool, was selected as a way to undertake the research in a manner that was inclusive, valuing both individual perspectives as well as group discussions about food systems in Prince George. The full set of data collection methods included a modified community mapping event, a focus group and semi-structured interviews, all with people who have experience of homelessness. Data were collected through participant observation, recorded in field notes, and via audio recording of the focus group and interviews.

In total there were 12 participants in this study: eight women and four men, who had all experienced long-term, and/or cyclic homelessness. Three participants described having spent their "entire life" homeless. Participants were living, or had lived, in shelters, single rented rooms, hostels, motels, apartments, with family, or camped outdoors. All participants identified having limited financial resources as a serious issue in their lives. Participants identified as either First Nations, Métis or had mixed European and Indigenous ancestry. Most participants were originally from First Nations reserves in northern BC or from small towns but now lived in Prince George. During the process of consent, all participants were asked whether they preferred their own names or pseudonyms to be used when presenting results. Quotes have been presented with relevant names or pseudonyms below.

Ten participants agreed to be part of the community mapping event. While the maps produced in the community mapping were not analyzed as data, they were used to help facilitate discussion in the focus group and the semi-structured interviews. The semi-structured interviews with participants following the community mapping activities allowed for in depth discussion and elaboration of reoccurring themes that emerged within the larger group setting.

[2] Silvicultrure is "a branch of forestry dealing with the development and care of forests" (Merriam-Webster Dictionary, n.d.)

Data collection was followed by transcript checking, development of dissemination tools, and casual discussions about the research with participants occurring between May 1 and August 31, 2014. Of the 11 people who participated in interviews, six reviewed their transcripts and five provided feedback on the transcripts and emerging themes. Participants were aware that the results of the research would be shared through presentations and publications, and they were invited to participate in the development of a booklet that would highlight their experiences accessing food in a highly visual and easy to read manner. Five participants contributed to this booklet. Honoraria were provided to all participants in the form of gift cards to a nearby grocery store. Gift cards and coupons have been used before as a form of compensation in research with homeless populations (Breuner, Barry, & Kemper, 1998; Kendzor et al., 2016). Thematic analysis was used for data analysis (Braun & Clark 2006; Patton, 2002).

Findings

The findings presented here provided insights into a range of connections and relationships involved with the food systems of the participants, highlighting how these dynamics unfold across social, land, and cultural concerns. Although focused on people in Prince George with experiences of homelessness, the specific findings from this small exploratory study revealed themes and ideas relevant to Indigenous food systems and Indigenous food sovereignty in both Prince George and the northern BC region that will be discussed in the following section.

Social connections

The participants had close, existing social ties with one another. As part of their experience of homelessness, participants described using food to forge social connections with others. Access to food was enhanced by relationships that were caring, by generosity and a sense of respect. The participants benefited from social connections with other people experiencing homelessness through enhanced knowledge and support, for example, how participants orient to the services and options available to them. One participant described the act of sharing knowledge related to social services and food options as being akin to a "street people welcome wagon" (Mary, Interview). The foundations of positive relationships were laid in the participants' actions and maintained through mutual respect. Participants constantly reiterated the importance of respect within relationships, as Mary explained, "Basically it just all comes down to […] communicate to one another and respecting each other. Helping each other, loving one another, you know" (Mary, Interview).

Study participants also used food as a mechanism to remain connected with their families. This especially occurred through the sharing of memories:

> I always remember what my Grandma taught me. I'll never forget. This is how I know to survive in the bush. I know how to. I wouldn't just go in the bush, get lost and starve. (Mamie, Interview).

The family-oriented experiences participants described also provided insights into the preparation and sharing of traditional foods. Women in the study also spoke of and demonstrated caretaking and responsibility though the use of food by sharing food with others. Actions related to food and social connections led to feelings of personal empowerment. One participant described how when she was staying with a relative, being able to buy groceries is what enabled her to feel that she could contribute to the household. Participants also described how, if they had the financial resources, they would provide food and shelter to Indigenous people in need.

Connections to the land

Experiences of homelessness and food access for the participants highlighted complex and difficult situations, demonstrated by the following anecdote. One couple explained how they preferred to camp outside of the city during the summer months. While they had experience with hunting, trapping, netting fish, cooking, and gardening, they were largely prevented from engaging in these activities within the confines of an urban area. Thus, in order to access food within the city, they changed their behaviour. The couple binned for bottles and cans to return for the deposit, and then purchased prepared foods for the day or went to service providers for a meal. Although they identified abundant food sources outside of the city, they were unable to make use of them, even though they were sleeping “rough”. The couple explained that while they preferred to live off the land, they became trapped in the city by their need to access services, which contributed to feelings of disconnection. The environment that the participants experienced shaped their access to food, and influenced their sense of health and well-being.

Natural environment as healing

Throughout the community mapping activity, and in the follow-up interviews, nature was identified as a source of healing and inspiration by the participants through food and other pathways. Participants described a sense of wellness came from spending time in nature, as well as through the benefits of food related activities such as gardening or hunting. The participants recognized the effect of the natural world on their well-being and actively sought it out to improve their mental state.

> Where they have those little walking paths, I go through there, those trees. I walk through there and I feel so calm. And my spirit feels awesome [..] And I think about home. (Mamie, Interview)

Participants viewed the natural environment as a source of health and well-being, the provision of wild foods and medicines, periods of independence from social services, and connections to home. For example, one participant explained being given food while in the hospital:

> I […] basically had nothing again. And I couldn't access any of the food banks, or anything like that. I had to depend on my friends' goodwill, or they bring me care packages. It's what I survived on. And my brother brought me moose meat, and salmon. And that was, that kept me going for a month. (Anne, Community Mapping)

Natural environment as interdependence

The participants thought that having more involvement in their food systems would be a positive change. Many participants were raised hunting, fishing, berry picking, and growing vegetables. so they identified a lack of involvement with their food system now as detrimental. An example of this is offered by Mamie's explanation of her dream for the future:

> I'm going home, living the way I used to […]. I get my own food that way. It's clean, it's not chemical mix like what we buy in the store right now. Camping, I love camping, and I love trapping. In the winter I do that a lot. I used to 'til I end up out here stuck. Fishing, I do that a lot. Guiding. I love guiding. Taking out hunters. And picking berries and living off the land. That was before I end up on the street. I done all that, and I miss it, a lot. (Mamie, Community Mapping)

For other participants, connection to the land may also exist when living within the city. Even while experiencing homelessness, some participants continued to be actively involved with gardening, fishing or harvesting food. As Kat explained: "Yep! We go fishing at [the] park and you could go berry picking way the hell across [the] highway. You can go berry picking anywhere" (Kat, Interview). Another participate explained how he seized the opportunity to enjoy berries when he could: "When we walk towards that one place. I see this strawberry bushes eh, and my honey she always bugs, she keeps on walking eh? But I keep on eating my berries" (Dave, Interview).

Participants spoke of relationships of responsibility towards the land and reciprocity in the natural world. Several participants expressed concern about the environmental and health consequences of industrial agriculture, to plants, animals, and people, and described thinking "the old ways" of obtaining food were more sustainable and enhanced health and well-being. The experiences participants had in physical settings were mediated by the participants' past histories and, in particular, their perceptions of home. These connections influenced their access to food and shaped how participants experienced the food system, including during times of homelessness.

Reconnecting with culture

Caring for the environment and caring for people were seen as connected. Desirable diets were described by participants with reference to a range of characteristics, noting inclusion of traditional food and wild meats, eating more whole foods and less processed foods and avoiding meat raised in confined animal feeding operations.

As the participants described, food is impacted by, and impacts, many different areas of life. Reflecting on her childhood, Lisa explained how there were connections between her food, family life, and Indigenous heritage, and how this way of living was more environmentally sustainable and healthy. Participants described ways in which food was an aspect of culture that increased a community's cohesion. When describing her dreams for the future, Anne spoke of the interconnections between food, culture and community health and well-being:

> My dream is actually....my family has, uh, does a lot of hunting and fishing, [...]they can share their dry meat, their moose meat, their dry salmon, and between the people on my rez back home. And they have the old potlatch system. And they also have the old Indian Medicine which, they've tried to get me on but, um, I love fishing, I love berry picking, and I love having a garden. (Anne, Community Mapping)

The activities described by Anne were seasonal and connected to the cultures of the area. Different seasons involved different responsibilities; for example, another participant explained how summer was the time for making dry meat.

The participants described traditional foods as not only better tasting and healthier but also a manner in which to connect with their cultures. When asked if having traditional food would influence her attendance at certain service providers, one participant replied:

> Probably, because I would, I'm working on getting back in touch with my culture. My heritage, um, like ah, the, the food part of it. Like at potlatches. I haven't gone to a potlatch yet and that is just one thing that I am working on. I got to get there, I will. (Mary, Interview)

Participant experiences highlighted food as a way to experience culture, and the potential role for food aid in promoting Indigenous food systems. For example, some people who lacked familial relationships or were not raised within their culture saw Indigenous-led and -centered social services as providing an opportunity to learn about their cultures. The participants showed a strong preference for more culturally appropriate food and food related activities through food aid.

There were reports by a few participants that some food providers did occasionally make traditional foods available. Dan suggested that food aid would be enhanced if moose meat could be provided. Participants explained that the times when wild foods were available at emergency food providers were very positive. Participants felt positively about sharing food and increasing

accessibility of food aid generally, and were specifically interested in the sharing of, and access to, traditional food.

Discussion: *"It's not just a food struggle, everything goes with it"*

The participants in this study provided insights regarding food systems during periods of homelessness in a small northern city. The community mapping exercises and interviews revealed perspectives and concerns that are far beyond just food quantity and provision. Instead, the exploratory research revealed a range of tangible and intangible ways that the experiences and desires of people experiencing homelessness can be connected to issues of Indigenous food systems and Indigenous food sovereignty. This section will explore these themes with recognition that, in the words of one participant, "It's not just a food struggle, everything goes with it" (Lisa, Community Mapping).

Participants actively worked to renew relationships through the sharing of food and food related knowledge. Despite the challenges of homelessness some participants were active with gardening and they described that these connections led to feelings of self-efficacy, and contributed towards empowerment through active participation. Participants spoke of wanting to reconnect with how they used to obtain food through hunting, fishing, and gardening on a personal and community level. One participant described wanting to learn about traditional practices such as the *potlatch*. In many ways these actions and ideas overlap with concepts of Indigenous food systems and Indigenous food sovereignty.

These findings have implications for food security in terms of availability, accessibility, and use. As Webber and Dollahite (2008) explain, "[f]ood choice is influenced by the food 'context' (physical surroundings and social climate where food might be acquired)" (p. 188). In northern BC, as in other areas, issues of Indigenous food sovereignty need to be understood in relation to the context in which Indigenous peoples may be accessing food, including traditional foods (Cidro et al., 2015). Food-related problems were initiated by colonial forces, and are exacerbated for people experiencing periods of homelessness. This context must be understood in order to optimize the effectiveness of strategies to improve food security for people experiencing homelessness, and to minimize harm. By examining the foodscape with the participants, Indigenous food systems and sovereignty were illuminated as "potentialities for change" (Miewald & McCann, 2014), through the inclusion of "social, relational, and political constructions of food" (Miewald & McCann, 2014, p.537).

The importance of relationships for people who experience homelessness in Prince George resonate with Masuda and Crabtree's (2010) findings of "paradoxical relationships" within the Downtown Eastside in Vancouver. These authors highlight ways in which people are able to build community despite the negative circumstances of homelessness or being underhoused (Masuda & Crabtree, 2010). Participants in this study were often actively concerned with improving the welfare of people around them, sharing food and knowledge. The

needs of others were constantly discussed in relation to food access and homelessness. Nearly all participants described moments of generosity that, as noted by Elliot et al. (2012) can contribute to the renewal of relationships which is an element of enhancing Indigenous food systems. The relationship values of caring, cooperation and respect that participants spoke of, and demonstrated through their actions, are important facets of Indigenous Food Sovereignty (Morrison, 2011; Northern Health et al., 2012). This could be enhanced through food aid, as recent research has indicated that planned institutional initiatives to facilitate engagement in traditional food harvesting activities can contribute to relationship building (Wesche, O'Hare-Gordon, Robidoux, & Mason, 2016).

Power is gendered, and within patriarchial colonial society, Indigenous women (and Two-Spirit people) have been and continue to be faced with particular violence and oppression (Allan & Sakamoto, 2014). One way this oppression was accomplished was through displacing Indigenous women from their traditional food related roles during colonization (Grey & Patel, 2015). The women in this research used their control over food as a means of empowerment. Furthermore, the results support the findings of Allen and Sakamoto (2014) that Indigenous women experiencing homelessness are deeply concerned with the welfare of others and take a leadership role to assist and care for people. Through the reclamation of traditional food related roles, women who participated in this research are applying principles of Indigenous food systems which is increasing their own positive self image while creating tangible benefits for others in need.

Those participants who were sharing food were motivated by being able to provide food for others, and felt empowered by this through respect and collaboration. Participants that were growing food were actively reinserting themselves within their food system. These findings reinforce important features of Indigenous food systems (Elliot et al., 2012). Empowerment has been identified as a core focus of value within health and dietary related research with Indigenous populations (Skinner, Hanning, Sutherland, Edwards-Wheesk, & Tsuji, 2012). Indigenous food cultures generally involve "stewardship", and sustainability is a key value described by participants—which they connect to respecting the environment and each other. Traditional foods and participation in land-based activities can also be used to foster relationships with the land and demonstrate respect (Grey & Patel, 2015; Martens, Cidro, Hart, & McLachlan, 2016).

The findings of this study reinforce and expand on Vandermark's (2007) discussion that people experiencing homelessness are displaced people in regards to both social and physical environments (p. 241). The participants demonstrated that even though they are displaced, the connection between land and health can remain strong for Indigenous people (Kirmayer, Simpson, & Cargo, 2003; Northern Health et al., 2012; Parkes, 2011; Richmond & Ross, 2009; Wilson, 2003). Yet recipients of food aid typically have very little choice in what they are provided and the food given is highly processed, leading people to become "distanced" from their food, as argued by Riches (1999). However, when describing food access, participants spoke of a desire to be actively engaged in the production, cultivation, and harvesting of their

food, exemplifying the principle of participation—one of the four principles of Indigenous food sovereignty (Morrison, 2011)—and expressing a desire to reduce the distance from their food.

The participants' descriptions provided intimate, detailed insights into the interconnections between health inequities, society, and the natural environment as being interrelated determinants of health (Nelson, 2012; Parkes, Panelli, & Weinstein, 2003). Martens et al. argue that the concept of Indigenous food sovereignty, as opposed to Indigenous food security, is necessary to adequately address the complexity of these themes (2016). Yet the concept of Indigenous food sovereignty has been the focus of ongoing debate among Indigenous scholars and others (Desmarais & Wittman, 2014; Perry, 2013; Whyte, 2017). This suggests Indigenous food sovereignty should not be seen as immediately achievable, and should also not be considered a static goal. The experiences, actions, and desires of participants in this study highlight that Indigenous food sovereignty can also be usefully understood as embedded in their daily experiences, and manifesting in a variety of ways. There are social and environmental factors which contribute to enhancing or inhibiting food access. Health and well-being are deeply entwined with traditional food, and, as others have explained, it may be impossible to separate health and well-being from traditional foods (Earle, 2013; Morrison, 2011; Wesche et al., 2016).

Even while experiencing homelessness, the experiences and desires of participants in this study highlighted several themes that resonate with descriptions of Indigenous food sovereignty. They underscore that there are many ways that individuals can contribute towards building Indigenous food sovereignty across a range everyday lived experiences. Ultimately, Indigenous food sovereignty should be recognized as an everyday and vital component of people's lives or, as Indigenous food sovereignty has been described, as a "living reality" (Martens et al., 2016). This is consistent with the argument advanced by Meleiza Figueroa regarding Black farmers in Chicago. Figueroa stated that while the participants may not explicitly use the language of food sovereignty, their everyday practices are fighting against the oppression in a capitalist society and are creating transformative change, though they may be concurrently excluded from the food sovereignty conversations of more privileged classes who have a different vision of food sovereignty (Figueroa, 2015). Therefore, promoting Indigenous food sovereignty across a range of different contexts could contribute to improving the health and social conditions that impede access to food for the Indigenous people (Cidro et al., 2015; Earle, 2013).

Greenwood, de Leeuw, Lindsay and Reading (2015) among others, argue that colonialism is the most broadly influential determinant of Indigenous health (Loppie Reading & Wien, 2009; Richmond & Ross, 2009). The experiences of participants highlight the relevance of examining historical assumptions about eventual Indigenous assimilation into a capitalist economy (King, 2012) and the need to understand choices, actions and behaviours beyond their economic value – especially for those experiencing homelessness. This resonates with the fact that traditional foods have often formed the basis of a non-monetary economy (Earle, 2013) and the need for attention to supporting and respecting Indigenous food systems as a means to decolonize (Alfred, 2009; Morrison, 2011).

By undertaking exploratory research in an under-researched area, this study has provided initial insights into expressions of how lived experiences with homelessness intersect in an interesting way with notions in the literature of Indigenous food systems and Indigenous food sovereignty. By way of limitations, it is important to note that this study does not seek to fully represent the experiences of homeless individuals in Prince George which, as the largest centre in northern BC, is considered a destination for a range of people experiencing homelessness because of the services offered. Due to the small size of this study, the community mapping activity, and the semi-structured interviews, the experiences of the participants in this research should not be considered definitive for all people experiencing homelessness in the city, nor of all Indigenous people experiencing homelessness. The exploratory work does, however, offer insights that might otherwise be overlooked. It provides new perspectives on complex issues and underscores the interesting ways in which food, shelter, culture, and identity can interact among individuals and communities in different contexts.

Conclusions

Across Canada, there are creative initiatives that have developed to address food insecurity, including urban Indigenous food insecurity, in more holistic and empowering ways. However, these nuanced considerations have not occurred to the same extent in the context of the provision of food aid for people experiencing homelessness. There is an opportunity for food aid to foster culture, environmental, and community connections. Ultimately, consideration of the background of people experiencing homelessness, and the geographic location of service providers, should occur in the development of alternative aid models that are culturally and environmentally appropriate. There is potential to develop programming that takes advantage of the interest of participants in food citizenship, culture, and outdoors activities, in order to develop food policies that are of the location they serve, are sustainable, and actively work against oppression in society.

Thomas King explains that within dominant North American culture Indigenous people are often relegated to the past and romanticized by non-Indigenous people. These distorted perceptions extend to the point that non-Indigenous people may criticize Indigenous people for their “inauthenticity” (King, 2012).The reality is that Indigenous food system values and food sovereignty principles are tangible, but may be dismissed by dominant society due to the same tendency to romanticize, or due to a limited sense of what is possible in today’s context. In contrast, the participants’ experiences of food systems during times of homelessness has highlighted the timeliness and relevance of fostering Indigenous food systems and food sovereignty.

Promoting Indigenous food systems and Indigenous food sovereignty has the potential to foster a more respectful environment for service provision, as well as to promote aspects of social and environmental sustainability that are important challenges within contemporary food

systems. In the inherently unsustainable conditions of food aid, this approach could build elements of sustainability. An obvious challenge is the resource limitations and constraints faced by food providers; therefore any kind of programmatic innovation would likely require collaboration and engagement with the broader context of homelessness and food insecurity.

It may seem a radical shift to suggest that food aid—which has historically provided waste food to people to stave off hunger—should adopt Indigenous food sovereignty into food procurement, preparation and distribution policy. Yet, as Dawn Morrison describes, food sovereignty may offer a pathway toward reconciliation with colonial society by providing ways to apply traditional knowledge and practices to current situations (2011). In the context of homelessness, rather than viewing the provision of food as a charitable act and a temporary way to alleviate hunger, there are opportunities for society to embrace the potential re-emergence of Indigenous food sovereignty—and, in doing so, take a step forward towards decolonization.

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Field Report

Healthy Roots: Building capacity through shared stories rooted in Haudenosaunee knowledge to promote Indigenous foodways and well-being

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Abstract

Urban and reserve-based First Nation families in southern Ontario frequently experience food insecurity as well as more limited access to traditional, more nutrient dense foods from the local environment. *Healthy Roots* was initiated in the community of Six Nations to promote traditional food consumption. A small number of participants eating only locally available foods reported better-controlled blood glucose, positive weight change and increased traditional food knowledge. New relationships and partnerships were also developed. *Our Sustenance*, a community organization that was responsible for the local farmers market, community gardens, good food box program, and other community programs, joined the *Healthy Roots* Committee to continue advancing the knowledge and activation of the community-based initiatives such as the development of a Haudenosaunee Food Guide. *Healthy Roots* may serve as a model and inspiration to other Indigenous communities looking to reconnect to their local environments and Indigenous lifeways to promote Indigenous foodways and well-being.

Keywords: Indigenous foodways, Haudenosaunee food guide, Healthy Roots, Indigenous community programs, Indigenous well-being

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Introduction

This field report documents the implementation and outcomes of two Haudenosaunee community-based programs in Southern Ontario, *Healthy Roots* and *Our Sustenance*. Part of the outcome was the development of the Haudenosaunee Food Guide and building personal and community capacity around traditional food procurement.

It is well known that traditional foods harvested locally contribute towards the holistic well-being of Indigenous peoples and that a shift towards marketed foods has had negative consequences for health and well-being (Elgeland et al., 2011; Schuster et al., 2011). Quality may be compromised as store-bought foods can contain more saturated fats and refined carbohydrates, while traditional foods are more biologically diverse and more nutrient dense (Gagné et al. 2012). This transition away from nutrient-rich locally harvested foods has resulted in significant changes and challenges negatively influencing the health and well-being of individuals and communities. There have been similarly adverse effects on Indigenous food knowledge systems (Lambden et al., 2007). A more comprehensive understanding of the factors or determinants related to impacts on food security is necessary to address and combat these complex trends across local Territories. In doing so, food security should not be narrowly defined as having enough to eat or enough household funds to purchase processed foods that may be more accessible (Willows et al., 2009). Rather, its meaning, certainly in an Indigenous context, encompasses the ability to acquire foods in socially or culturally acceptable ways that may encompass access to traditional knowledge as well as knowledge of the local environment (FAO, 1996; Schuster et al., 2011; Willows et al., 2009).

The majority of research on traditional food access and local food systems has taken place in northern and more remote locations (Lambden et al., 2006; Receveur et al., 1997). It is well known that urban and reserve-based First Nation families in southern Canada frequently experience food insecurity as well as more limited access to traditional foods or being out on the land (FNIGC, 2012; Richmond et al., forthcoming.). Access to knowledge, including Indigenous knowledge, contact with Elders, and increased cultural capacity around traditional foods are important determinants of food security, nutritional health, and well-being (Neufeld et al., 2017). The concept of food sovereignty encompasses acquiring foods in culturally acceptable ways, such as through traditional practices (FAO, 1996; Schuster et al., 2011; Willows et al., 2009). An Indigenous food sovereignty framework explicitly connects the health properties of food with the health of the environment and identifies a history of social injustice as having radically reduced Indigenous food sovereignty in nations such as Canada (Morrison, 2011). It addresses aspirations for collective well-being, along with acknowledging land rights and cultural integrity. Indigenous food sovereignty also considers gender equity, adequate nutrition, addressing structural racism and a restructuring of socio-political processes (Cidro et al., 2015).

In 2012, Six Nations families participating in the First Nations Food Nutrition and Environment Study (FNFNES) similarly reported multiple barriers to increased use of traditional foods, such as knowledge access (Chan et al., 2014). More than 73 percent of participants

expressed they would like to include more traditional and locally accessed foods in their families' diets. The Southwest Ontario Aboriginal Health Access Centre (SOAHAC) Food Choice Study that included urban and reserve-based families in southwestern Ontario found that 35 percent of reserve-based and 55 percent of urban-based respondents describe themselves as food insecure (Richmond et al. forthcoming). Survey respondents from both groups expressed strong interest in consuming more traditional foods, with 76 percent of urban-based respondents and 52 percent of reserve based respondents indicating that they would prefer to consume these foods more frequently.

Six Nations of the Grand River Territory is the largest First Nations reserve in Canada, located in south western Ontario and home to approximately 13,000 members living on reserve (Six Nations, 2013). Many community initiatives have ensued over the years, with efforts to promote wellness and improve the health and well-being of our community. More recently increased acknowledgement and need for community collaboration centred on traditional Haudenosaunee culture and food ways have been expressed (Chan et al., 2014). Haudenosaunee refers to "people of the longhouse", commonly referred to as "Iroquois" or "Six Nations", originally made up of Mohawk, Cayuga, Oneida, Seneca and Onondaga Nations, and eventually Tuscarora Nations. Through the continued realization of the value and impact of the knowledge of the Ancestors, the community is shifting to apply existing knowledge to cultivate a healthy Haudenosaunee community.

Background

The following sections are written from the point of view of the first two authors who were involved throughout this community initiative.

Beginning in mid-December 2014, Six Nations Health Services was approached by *Two Row Times*, one of the local news publications. They were looking to partner together and create something for the community to engage in. One idea was to build on the upcoming flurry of New Year's resolutions, with an initiative focused on foods promoting healthier lifestyles. Little did anyone involved realize that this initial conversation between *Two Row Times* and Six Nations Health Services would have such an impact on the community. Creating the momentum that moved us forward to where we find ourselves today, in a place where the concept of this community initiative is becoming more imbedded in the work being done in the community with an increased interest, availability and acceptance of Haudenosaunee foods. The conversations about how *Healthy Roots* should begin was actually started around the kitchen tables of families in the community. It was these family conversations that prompted the focus on Indigenous foods first and made the on-going exchanges between *Two Row Times* and Six Nations Health Services so exciting.

We brainstormed about a community challenge that focused on our traditional foods and knowledge and considered the potential for a community challenge that would allow us to

acknowledge, honour, and bring forward the knowledge of our Ancestors. Our people knew how to live a healthy lifestyle, through their relationships with the land, community, and ourselves. Our inherent knowledge as Indigenous Peoples can tell us what we need to know to become healthy again.

The term *Healthy Roots* was used to describe this new challenge for the community of Six Nations. Entsisewata'kari:teke (Mohawk) and Esa:do:gwe: (Cayuga) each mean "you will become healthy again". This phrase inspired a 90-day community challenge, it was part of the *Healthy Roots* logo, this branding appeared on all promotion items and press. The goal of the community challenge was to integrate the knowledge of our Ancestors through increasing access to traditional foods, activities and promoting interconnectedness. The *Healthy Roots* Challenge was set to begin on January 1, 2015. As a collective group, Health Services and *Two Row Times* staff selected four community members who were willing to participate in the Challenge. The selection process was not structured and the four selected were those that had existing relationships with Health Services, and had expressed interest in wanting to make positive changes to their health.

The participants were committing to preparing and consuming only foods that were available on Turtle Island (North America) pre-settler contact. They were to eliminate wheat flours, white sugar, dairy products, salt and lard (also known as the "five white gifts") and aim to sustain on foods that originated in North America. The Challenge also involved a commitment to participating in at least 30 minutes of physical activity each day. The overall purpose of the *Healthy Roots* Challenge was to see if by engaging in these lifestyle changes for 90 days, eating only foods original to our Indigenous peoples, and moving our bodies more, we would see any positive impact.

The start of the *Healthy Roots* Challenge

Once they agreed to take part in the Challenge, the selected participants were required to sign a formal letter of commitment that included their permission to share their experience with the intervention publically either through social media sites, such as the *Healthy Roots* Facebook Page, Instagram, or Twitter and in the *Two Row Times* weekly paper. Each participant received a booklet at the start of the challenge to record their daily food intake, activities, and document weekly activity and dietary goals. An honorarium of $100 also went towards food costs and each received a Fitbit (pedometer) to track daily activity. Throughout the challenge relationships were established with the community dietitian at Six Nations Health Services for on-going support according to their individual needs and to establish measures for weight, waist, hip, and chest, and body fat percentage. This relationship also prompted dialogue with the participants' family doctor if any additional monitoring was required, such as medication management or blood values.

Participants were also required to engage in *Healthy Roots* specific community events which were planned where the entire community was invited to learn more about *Healthy Roots*. Local chefs led cooking demonstrations using traditional foods and traditional activities such as snowshoeing took place with interested community members of all ages. At the end of the Challenge a finale dinner took place to celebrate the participants and hear stories about their journey.

The potential impact varied greatly depending on each of the four community participants. They were all adults, ranging in age from 21-50, with two males and two females. Each of them expressed different hopes and goals they wanted to achieve as being a part of the Challenge including: having better blood sugar control; taking less medications for diabetes and cholesterol; losing weight; sleeping better; being more productive at work; limiting digestive distress after meals; learning more about our traditional foods; gaining strength; preventing diabetes from worsening or decreasing diabetes complication risks; and feeling better. Initially the majority of the goals each of the participants shared focused primarily on physical health, but as they moved through the Challenge, their experience deepened extending beyond to emotional and spiritual well-being.

Gaining momentum

The public engagement through the sharing of individual experiences, challenges, and successes each day via social media initiated a surge of interest and momentum around the *Healthy Roots* Challenge. The participants felt an additional sense of responsibility, or accountability not only to themselves, but to their communities, knowing their community; friends, family, coworkers were all watching, supporting and learning. As the Challenge continued, participants started to share a different point of view, something that had started as a predominately physical challenge focused on lifestyle changes had started to dig deeper. For example, participants were becoming more aware of the link to their food, what they put into their body and how it strengthened their emotional and spiritual well-being; they were becoming more rooted in their Indigenous culture.

Participants started sharing about their improved relationships with themselves and those around them, including their foods. As they were investing much more time and energy into sourcing, preparing, and enjoying their foods, they each spoke of how they viewed food differently, as a life sustainer. They shared stories of how they felt an increased connection to their culture and Ancestors as they engaged in traditional activities and foodways, thereby strengthening their identities as Indigenous Peoples. One of the *Healthy Roots* participants expressed these connections in a quote published in *Two Row Times:*

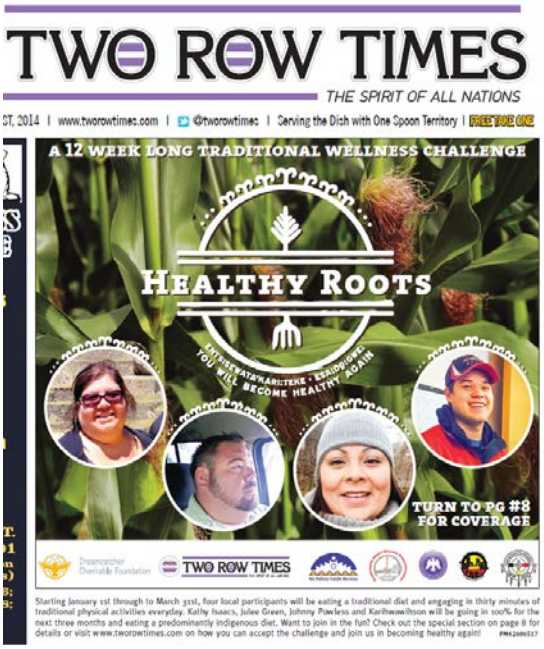
> It's also giving me a sense of how our ancestors used to eat. How would they have eaten and been more physically active? It really got me thinking. One time my meat was on a ration and I was still hungry and I thought to myself, 'Is this maybe what it would have

> felt like when back in the day there was only so much food to go around until they could go out and get more? (Garlow, 2015)

The collaboration of different community partners influenced the community engagement. By partnering with *Two Row Times*, who were generously supported by *Dreamcatcher Charitable Foundation*, the outreach and scope of the initiative was much broader. Through support from *Dreamcatcher Foundation* we were able to provide promotional items at community events and provide monetary honorariums to the participants. *Healthy Roots* T-shirts, toques, stickers, other promotional items, and door prizes were given away to raise awareness among community members. We were able to positivity influence community members to participate in events, again extending our outreach. Using the newspaper to convey stories from the participants' perspectives allowed the community to hear about the success and impact of the project from their point of view, rather than from a health care provider. For example, the newspaper was able to convey the experience of Julee Green, who had been a participant in the *Healthy Roots* Challenge. She had stopped eating the "five white gifts" of sugar, salt, lard, dairy, and wheat. She had incorporated 30 minutes of daily activity, and in doing so she felt she was changing her life. As she expressed herself:

> I'm feeling great! Before I began I was feeling horrible. I had aches and pains in my back and feet. My digestion wasn't working right. But I noticed a difference just after two days into the diet. That sold me! That is when I realized, 'Okay. This is what I'm supposed to be doing. (Garlow, 2015)

The community finale of the *Healthy Roots* Challenge was held on Thursday March 26, 2015. Each of the participants shared stories of their journey over the past three months. A delicious *Healthy Roots* inspired meal was served to a full house of over 100 people at Six Nations Community Hall, as community members gathered to hear about the experiences of the four community participants. In attendance were peoples' family members, coworkers, neighbours, cousins, and friends. All had been closely following participants' progress each week in the *Two Row Times* newspaper, on social media, and out in the community at the bank, grocery store or local restaurant.


TWO ROW TIMES

THE SPIRIT OF ALL NATIONS

A 12 WEEK LONG TRADITIONAL WELLNESS CHALLENGE

HEALTHY ROOTS

TURN TO PG #8 FOR COVERAGE

TWO ROW TIMES

Figure 1: Two Row Times Coverage (Permission to use this image (Dec. 31, 2014) was granted by the Two Row Times)

Figure 2: Before and After Healthy Roots Challenge (Photo credit: Julee Green)

The physical changes participants observed—such as weight loss, controlled blood glucose, and gained strength—had a profound impact when combined with the personal, intimate accounts of how many felt their lives had changed forever through this process. Participants shared that their initial hopes and goals at the onset of the study were surpassed. Community members remarked at how such change could have occurred in such a short period of time by just acknowledging and activating the knowledge of our Ancestors.

The success we experienced with this initiative made us realize that the end of this project established the groundwork for the beginning of future projects. New partnerships were developed and integrated into the *Healthy Roots* Committee, including *Our Sustenance*, a community organization that was responsible for the local farmers market, community gardens, good food box program and other community programs, and *Kakhwa'on:we* "Real People Eat Real Food", another community organization. Discussions occurred on how to maintain the momentum gained from *Healthy Roots* challenge and to continue advancing the knowledge and activation of the community.

Our Sustenance

The *Our Sustenance* program has focused on sustainability, food access, and education since it began in 2011 and the *Healthy Roots* partnership was a synergy that could not be ignored. The plans were simple: to find ways to help anyone who was interested to learn how to bring healthy food choices to their front yard. We had classes on composting food waste, vermicomposting (worms), and how to plant and grow a garden. *Our Sustenance* has an ongoing program that allows people to access the greenhouse where fresh greens and seasonal vegetables are available for just a few dollars.

From the perspective of the *Our Sustenance* program, the goal of joining the committee was to provide support to the initiative and the community in order to sustain the momentum gained from the *Healthy Roots* initiative. The expansion to include the first Homegrown

Goodness series that would be centred on the strengths of *Our Sustenance*: growing food. This series included various activities and information aimed at engaging the community, such as gardens or home grown whole foods in their lifestyle. The Homegrown Goodness series was tailored for the first time to introduce the idea of gardening and sourcing local foods. *Our Sustenance* brought the *Healthy Roots* challenge into the front yards of community members who wanted to take up the challenge of including whole, fresh healthy foods, and as the title suggests, home-grown food.

By opening up a series of gardening how-to workshops and events, the *Healthy Roots* program was now showing people how to "plant the seeds of wellness" and integrating that into the communities' awareness. This was a first endeavour for *Our Sustenance* and our first as a partner in *Healthy Roots*. As a community, our historical culture is one that was agricultural, but over generations and with many of the issues that have occurred over time, growing our own food has become less and less common. The gardening skills workshops were a way to offer both cultural and practical skills and information to allow anyone to participate.

The first series included the planting of the community garden, where a community youth came and sang her seed song, as others were busy planting the garden. The *Our Sustenance* Community Garden is a public garden. You can access space for a private garden, but the larger section is planted and grown and the motto is, "if it's ripe and you'll eat it, please take what you can use". The *Our Sustenance* program has eight raised beds, twelve feet square each and they are planted by the program and cared for by staff and volunteers, with a community member doing the tilling. They are grown expressly for the community. We have had no issues with vandalism, and we promote our own brand of "theft" since we have no limitations on who can take food from the gardens. The private plots that are maintained by family members have not had any loss of food and only ever suffered from other supportive gestures, such as watering. The program promotes the ability and willingness to share and the community has responded in kind.

The partnership has brought *Our Sustenance* to the forefront in the community, but also created a positive step for *Healthy Roots*. The Homegrown Goodness Series of *Healthy Roots* gave the entire community the opportunity to be part of *Healthy Roots* in an accessible way, relating to whole healthy foods, not strictly Indigenous food only. You no longer needed to be one of the challengers to be able to proudly say you were taking on the *Healthy Roots* flag. In this case actually it was less a flag and more swag. That year you could not go anywhere in the community without seeing someone in a *Healthy Roots* swag item. Toques from winter, t-shirts from the summer, and aprons from the Healthy Harvest series held in the fall showed that community participation was increasing and had a growing following.

In the fall, *Healthy Roots* and *Our Sustenance* held a Healthy Harvest initiative, which offered a series of canning and food preservation classes. What started as a class for 10-15 registrants ended up being closer to 25 community members showing up each week, with and apron in hand and an eager face. The classes began with Kitty, the Greenhouse Grower (and educator) at *Our Sustenance*, teaching the basics of canning techniques and the science behind it.

Kitty would eventually become a participant in the second *Healthy Roots* community challenge as a member of the board represented in the community. This was the second time a ninety day challenge of specifically Indigenous food only was created. This time, rather than the original 4 community members, there were 9, including a family of 3 as a single unit.

Kakhwa'on:we "Real food for real people"

Another integral contributor of the *Healthy Roots* Committee is Chandra Maracle, representing Kakhwa'on:we. Chandra, with the support of Rick Hill, developed *The Haudenosaunee Food Guide*. This was a document that intended to increase and inspire awareness of foods known to be within the Haudenosaunee territory prior to European arrival. Haudenosaunee agricultural knowledge and skill were well developed in the region, with an extensive amount of foods being cultivated from the garden. All other available food sources would have been wild and therefore collected/gathered or hunted during the appropriate season (see Figure 3).

Figure 3: Haudenosaunee Food Guide[1]

[1] The Haudenosaunee Food Guide was developed and written by Chandra Maracle, supported by Rick Hill. It was approved by the Healthy Roots Committee (*Two Row Times*, Six Nations Health Services, *Our Sustenance and Kakhwa'on:we*), and was designed and printed by *Two Row Times*, with the financial support of the Dream Catcher Charitable Foundation.

The Haudenosaunee Food guide was developed with the intention to support the second *Healthy Roots* Community Challenge, scheduled to begin on January 1, 2016. The purpose was to honour the foods of the Territory and truly model the diets of our Ancestors. Within the first *Healthy Roots* Community Challenge in 2015, the goal was to focus on foods available on Turtle Island pre-settler contact. Through discussions amongst the committee and community members, the focus shifted in the second challenge towards engaging participants who would commit to a Haudenosaunee specific diet. The first challenge pertained to local food, or foods Indigenous to North America, whereas the second challenge used a list of foods very specific to the region the Haudenosaunee would have lived in, namely Southern Ontario and east toward the Finger Lakes region of New York and up to Quebec and the St Lawrence seaway. The resource developed by Chandra and Rick is a work in progress and will continue to grow and develop with the community.

Building community capacity

The second *Healthy Roots* Community Challenge was slated to begin January 1, 2016. The recruitment for this Challenge began in fall 2015. A community call was issued inviting interested potential participants to submit an application stating "why they wanted to be a part of the second *Healthy Roots* Challenge?" The *Healthy Roots* Committee selected nine of the twelve applicants to participate in the three month challenge and commit to following the Haudenosaunee Food Guide. The Committee selected participants based on the content of their application and reason for wanting to be a part of the Challenge with the goal of creating a group with diversity in age, gender, and knowledge. The nine participants were made up of: a family of three (mother, father, and teenaged daughter); an educator; an artist/historian; a police foundations student; a food access worker; a mother/caregiver; and a health professional. The participants were a motivated group that was inspired to commit to the challenge for various reasons, such as those quoted in the *Two Row Times:*

> I've always wondered if switching to an all traditional diet would heal us on several levels and the challenge is an opportunity to find out if it will. (TRT Staff, 2015)

> I observed the participants last year and felt a great sense of renewal and inspiration as part of what I wanted to see change in our community when I moved home almost 6 years ago was our relationship with food. Not only how we eat but how we grow and harvest. I chose to be a part of this project based on learning more in depth and with support about our traditional foods and the different ways to prepare them. I'm hoping it will optimize my disease management. (TRT Staff, 2015)

> As the Director of Health Services, I have been observing the program over the past year and have seen the positive impact that the program has had on the community both for individuals and as a whole. It has been my philosophy as a leader that it is important to walk the talk, and so I see this challenge as my opportunity to demonstrate my personal and professional commitment to health and wellness. (TRT Staff, 2015)

> I want to participate in this because I want to see if I can actually live by the cultural standards that I teach about. (TRT Staff, 2015)

Just as was observed during the first *Healthy Roots* Community Challenge, the second Challenge offered a variety of opportunities for the nine participants and community members to engage in workshops, community, and educational events (Figures 4-5). One of the participants spoke about fostering connections between herself, her food, community and family:

> The thing I would like people to take from Healthy Roots is the connectedness that we have to each other, to the world around us—the animals, the plants, the thought process that we have. We're all connected. And if changing our lifestyle by eating something a little different brings that to the forefront and helps us to remember that, it might be a little easier to make the world better. That's all it's going to take. (Hill, 2016)

Growing forward

The ongoing goal of the *Healthy Roots* partnership, and in particular the presence of *Our Sustenance*, is the hope to see the growth of a community. The growth of relationships on many levels; individuals to their food, to each other and to the larger community as a whole. The solidification of the *Healthy Roots* committee has been integral to the progress of this program. The community moving forward will be able to look to *Healthy Roots* for guidance, ideas and, initiatives to bring together food, culture, community, and health. The partnership between the committee members means that we work in a synergistic relationship feeding off each others ideas and creativity, just as a garden works together to grow. The roots from the soil, leaves, and flowers bring forth the fruits we will all share as we tend our garden. We look forward to the *Healthy Roots* program offering support to the community to grow food, friendships, and promote health as Indigenous people.

New research opportunities have also emerged from the *Healthy Roots* Community Challenges. A partnership between Six Nations Health Services and McMaster University has formed to assess the efficacy of the *Healthy Roots* intervention on cardio-metabolic factors. The main objectives of this pilot study are to investigate the impact of the three-month Healthy Roots

lifestyle intervention on: (1) body weight; (2) subcutaneous and ectopic fat (including visceral and liver adipose tissue); (3) serum lipids and glucose; (4) gut microbiome and serum metabolome; and (5) gene expression and epigenetic changes among First Nations people of the Six Nations of the Grand River Territory.

This *Healthy Roots* intervention ran from March 20, 2017 until June 20, 2017. The goal was to recruit 20 participants who met the inclusion/exclusion criteria and could commit to following the Haudenosaunee food guide for a three month period and other intervention parameters. This pilot study presented an exciting opportunity to explore the bio-physical impacts of the *Healthy Roots* intervention. From the previous two years' challenges we have heard various testimonials of positive changes. This pilot study will help to build on those testimonials and potentially provide biological evidence to support the previously reported changes from the *Healthy Roots* Community challenges.

Figure 4: Harvesting Corn

Figure 5: Cooking Workshop

To build on these initiatives, and add to previous research conducted in southwestern Ontario on traditional food systems, a four-year grant has been funded by the Canadian Institutes of Health Research (CIHR) to support a participatory research project building on these community successes. The study aims to increase the local availability of traditional foods and address access in addition to knowledge barriers identified in southwestern Ontario by documenting and integrating inter-generational knowledge resources. Photovoice methodology

will be used to investigate knowledge and sources of traditional foods with Elders and Youth. Results generated it is anticipated will inform *Healthy Roots* and other community-based programs like *Our Sustenance* to better meet the needs of the larger community.

It is anticipated that the study's community-based framework, photographs, and stories may also be transferable to other Indigenous communities living in urban centres and other rural locations. There is also the potential for the project to develop into a larger research program or community-based health initiative focused on healthy eating and sustainable food systems. Results from the proposed research will also inform the creation of community-informed and delivered nutrition services and resources that will promote a greater diversity of food choices by bridging sources and locations of traditional food knowledge. The opportunity to blend a Western medical understanding of Indigenous health with traditional food and knowledge will create a level of accessibility to *Healthy Roots* with a much wider audience, including potentially health care providers.

These opportunities are just the beginning, in regards to outreach and shared voices. *Healthy Roots* is an initiative that began on the Six Nations of the Grand River Territory and draws on traditional Haudenosaunee knowledge around food and health. The hope is that *Healthy Roots* will serve as a model and inspiration to other Indigenous communities looking to reconnect to their local environment and Indigenous lifeways in the promotion of well-being.

Concluding perspectives

In unison with *Healthy Roots*, *Our Sustenance*, and other partners, movements towards community engagement and research aimed at increasing control over the sustainability of local food systems and environments has shifted towards Indigenous food sovereignty (Grey & Patel, 2015). The emerging literature on the Indigenous food movement identifies community involvement and family-centred education about food and re-establishing a relationship with the land as essential to restore traditional food systems as has evolved through collaborative community processes in the community of Six Nations.

Elsewhere, progress has been made in the resurrection of traditional food systems. In northern Minnesota, for example, the community of White Earth Anishnaabeg are focused on achieving the localized harvesting of traditional foods. Manoomin (wild rice) is still harvested traditionally by many community members (Silva & Nelson, 2005) and acres of flint corn are grown. Fish, deer, and buffalo are similarly locally sourced. Food-related projects such as gardening and maple-sugaring also have an impact on the physical health and cultural connectedness of community members including a lunch programme for elementary school kids, and the provision of traditional foods to community Elders (LaDuke 2005). Another project in Saskatchewan highlights the importance of Elders and community members in Indigenous foods exploration and revitalization by passing on knowledge through workshops on Indigenous food

and medicine protocols, identification, harvesting, processing and preparation of Indigenous foods and medicines, along with partnership and networking activities (Gendron et al., 2016).

While *Healthy Roots* is centered in the community of Six Nations, the community initiative and intervention are arguably relevant to Indigenous communities elsewhere. Other communities are asking to be involved in more activities around traditional foods (Chan et al., 2014; Gendron et al. 2016, Richmond et al., forthcoming). The activities promoted as part of *Healthy Roots* could be applied by other communities within their own unique Indigenous food environments and systems. Traditional food systems are complex and holistic. They are valued from a physical health perspective and the activities involved in their acquisition and distribution allow for the practice of cultural values, such as sharing and cooperation (Earle, 2011). There is urgency in sharing practices and increasing knowledge capacity around traditional foods through increased social support and knowledge regeneration. Elevating traditional foods and food systems as pathways towards self-determination also reinforces both dietary and biocultural diversity (Johns & Sthapit, 2004). The dimensions that constitute Indigenous foodways collectively contribute towards the holistic health of individuals, Nations and Territories.

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Event/Art Review

En'owkin Centre Breastfeeding Art Expo

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Keywords: breastfeeding promotion; Indigenous; art; exhibit; Indigenous health; En'owkin; Penticton Indian Band; Adams Lake Indian Band

Introduction

Breastfeeding, a traditional Indigenous practice, creates a strong bond between mother and baby. The health benefits to mother and baby are significant; they include reduced incidence of ear infections; enhanced brain development in baby; and reduced risk of type 2 diabetes in mothers. Mother Earth benefits too, since breastmilk requires no packaging, and families also benefit because breastfeeding is free. When family members support the mother, everyone is part of the breastfeeding journey that ultimately strengthens community.

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What is the Breastfeeding Art Expo?

The "Breastfeeding Art Expo" (Expo)[1] is a one-of-a-kind exhibition of 15 large community art projects and 65 independent artworks by citizens of central British Columbia that celebrate the benefits of breastfeeding. The Expo took place from June 2017 to June 2018. This provocative and educational art show also included 20 short videos[2] that tell art and health stories. Also, the *Teacher's Guide*[3] offered curriculum-linked, grade-specific activities for students to complete before and after going on a guided or online tour of the Expo. The *Teacher's Guide* includes an Indigenous Focus section. The Expo project was a partnership between Interior Health[4] and the non-profit social service organization KCR-Community Resources[5] as well as 35 community partners. It was led by a ten-member Steering Committee, including two Indigenous members. Twelve of the community partners are Indigenous-based, and the First Nations Health Authority was one of six funders.

What are the Expo goals?

The Breastfeeding Art Expo aimed to increase awareness of the benefits of breastfeeding, especially for youth; to facilitate understanding and support for breastfeeding between and within cultures, families, ages and genders; and to offer unique opportunities for artists and community participants. Some long-term goals of the project were: to renew traditional practices of breastfeeding and shift cultural norms; to reduce food insecurity among infants and children through breastfeeding; to reduce the ecological footprint by shifting from bottle feeding to breastfeeding; and to strengthen supports for breastfeeding women. Overall, the concept promoted was that when women are well supported in hospital with best practices, breastfeeding is often easier and women breastfeed longer. The many benefits of breastfeeding are then passed on to mothers, babies and families.

[1] www.breastfeedingartexpo.ca
[2] Videos can be viewed at https://www.youtube.com/channel/UC8Sy0ZmOFXZdQ7iZm3xR2wg
[3] Teacher's Guide: http://breastfeedingartexpo.ca/teachers-guide
[4] British Columbia Interior Health: https://www.interiorhealth.ca/Pages/default.aspx
[5] KCR Community Resources, Kelowna, BC: https://kcr.ca/

Art is recognized as an important tool in Indigenous culture to support health and healing.[6] The Expo had a proud and important Indigenous component. During 2017 and 2018, the Expo travelled to six locations in the Interior of British Columbia, including the En'owkin Centre, which is a nationally-recognized Indigenous arts and training centre. At this location, Indigenous art pieces from the larger Expo were selected and featured.

"En'owkin Center Expo" ran from October 5 to November 9, 2017. During the "En'owkin Expo," students and the public from Penticton Indian Band and surrounding towns and cities came to view the art. Events included a Sharing Circle and traditional foods for the Opening Night, Quintessence Latch-On event, and a Human Milk Drive. Students from grades 5 and 6 received an education session on breastfeeding at Outma Squilxw Cultural School (Penticton Indian Band) and Sənsisyustən House of Learning (Westbank First Nation). The students' breastfeeding-inspired painted rocks were displayed.[7]

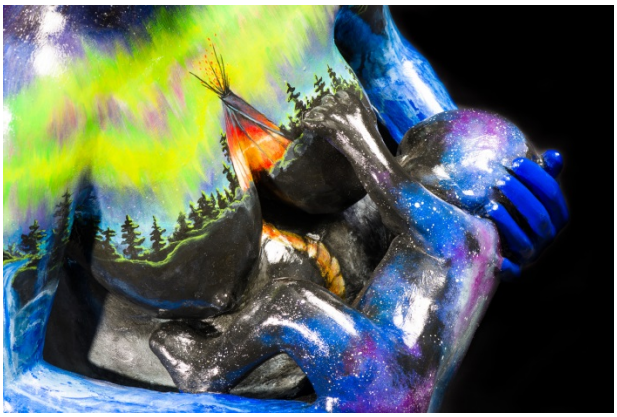
Below are highlights from six of the Community Art Projects at the "En'owkin Expo." The short videos online tell the inspiring stories behind the art. In addition, three of the independent artworks by Indigenous artists are listed. More information about the artists, their art, and the art development processes is available through the Art Catalogue.[8]

Community projects

Baring our Breasts, led by Safire Jones from Nelson, British Columbia, included seven unique plaster cast busts of women, based on women's stories and interpreted by community artists. One of the busts, entitled "Source," was created by Rebecca Bessette and was inspired by her Indigenous heritage and her vital and close breastfeeding experience with her two children. Rebecca's great-grandmother, an Algonquin Cree woman who was a businessperson and leader, owned a trading post in Peace River, Alberta in the early 1900s and later moved her family to British Columbia. Rebecca says, "This piece shows how everything is connected: the water that

[6] https://artshealthnetwork.ca/ahnc/art_wellness_en_web.pdf
[7] Pictures from these events are displayed at http://breastfeedingartexpo.ca/
[8] Art Catalogue: www.breastfeedingartexpo.ca/art-catalogue/

cleanses, the breast that nourishes, and the home that keeps us connected. Breastfeeding completes the circle."



Breastfeeding in Focus was led by photographer Renée Leveille, who was inspired by her father to discover her own Métis heritage. As part of her project, Renée collaborated with the Vernon First Nation Friendship Centre and mentored mothers to develop the confidence to take pictures of each other breastfeeding.

Image 1 of 2

First Moments was led by Métis labour and delivery nurse and photographer, April Mazzelli. It follows an Indigenous mother and her family in their traditional breastfeeding journey. The four photographs in the piece were chosen from hundreds. They show skin-to-skin contact between mother and baby immediately after birth, and the importance of family during birth and breastfeeding.

Image 2 of 2

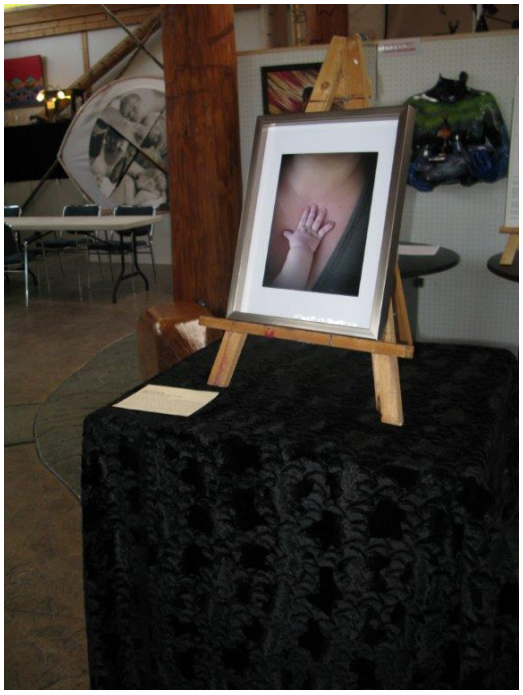
Nurturing Community was led by photographer Paulina Otylia Niechcial, a doula and a Nurse in Charge at a northern BC First Nation nursing station. She worked closely with Okanagan Indian Band and showcased photographs of three breastfeeding women surrounded by the people who supported and encouraged them along the way.

The Fabric Of Motherhood was led by Quilting Artist and Certified Lactation Educator Karen Irvine of the Cariboo Friendship Centre in Williams Lake. Five breastfeeding women were mentored to create quilts or chalk drawings from a sketch image modified from their own breastfeeding photograph.

Traditional Spirit was led by well-known First Nation Artist and Curator Tania Willard. Tania used digital illustrations with archival photographs to create linocut blocks with community members from three First Nation communities. The artist and participants explored the topic of breastfeeding and its importance within the BC Secwepemc culture. They talked about the cultural loss caused by residential schools and the looting of Indigenous cultural artifacts. Then, through art they transformed this into positive attitudes, visibility and options for breastfeeding in families.

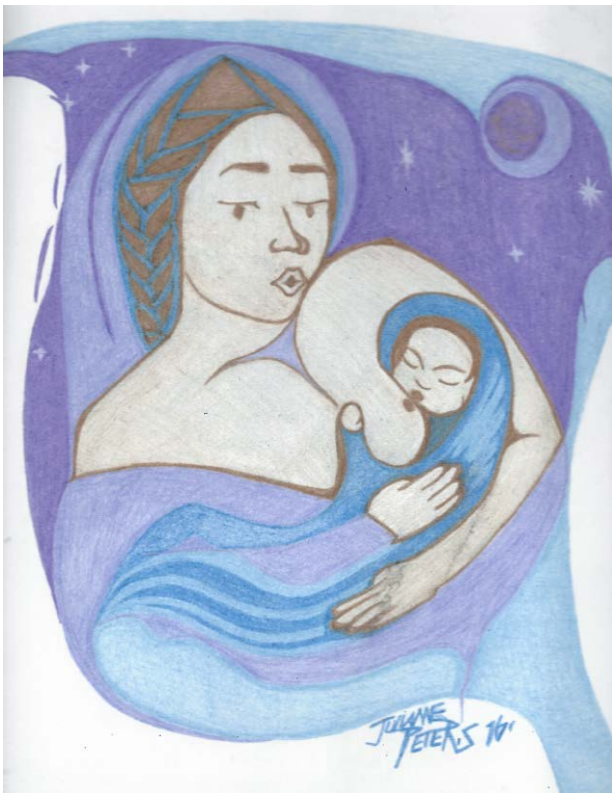
Independent artworks

Baby's Gratitude by Carlene George of Penticton Indian Band captured a cell phone photo of her son's hand on her chest as she was breastfeeding. Carlene had early difficulties breastfeeding, and her son's simple but powerful gesture told her to not give up. She went on to breastfeed her son to 13½ months and she is now breastfeeding her second son.



Generation To Generation by Pat Raphael Derrickson, of Westbank First Nation, was a stunning acrylic painting on canvas using bold colour and simple lines to relay her message of the connection between mother and child that existed for generations around the world. She says: "The feeding of a baby that is nestled in your arms creates a teaching of safety and reassurance".

Ren Ki7ce, Ren Tmicw (My Mother, My Home) by Julianne Peters, a Secwepemc First Nation woman from Tsq'escen, Canim Lake, invites the viewer into her story with a pencil crayon drawing on acid free paper. Julianne says: "Mothers, our first caregivers, carry us within while our spirits grow into the universe. We slowly manifest into being as she protects our souls."



Conclusion

Through the celebration of art, "The En'owkin Breastfeeding Art Expo" brought together Indigenous and non-Indigenous community members, health care professionals, teachers, grade school students, and leaders. This created an important opportunity to learn about breastfeeding, to share stories, and to talk about how we can improve the environment and services for mothers to successfully breastfeed. The community art projects will be donated into

the Interior BC community at the end of the Art Expo, primarily to hospitals, clinics and community centres.

As a result of this project, an initiative to develop several one-page client breastfeeding handouts for the Snxastwilxtn Centre at Penticton Indian Band is now in its early phase. Due to the interest generated through the Expo, a local First Nation health centre is exploring opportunities to become breastfeeding accredited through the Baby-Friendly Initiative, a national accreditation process. It would be the first First Nation health centre in British Columbia to become accredited, and the second in Canada.

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