**PERINATAL WELLBEING IN AN ABORIGINAL CONTEXT:**

**UNDERSTANDING THE HEALTH BELIEFS AND CULTURAL PERCEPTIONS OF GRANDMOTHERS FROM THE SIX NATIONS RESERVE IN SOUTHERN ONTARIO**

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfillment of the

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TITLE: Perinatal wellbeing in an Aboriginal context: Understanding the health beliefs and cultural perceptions of grandmothers from the Six Nations reserve in Southern Ontario

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**Abstract**

**Background**: Aboriginal peoples face disproportionate health inequalities in comparison to non-Aboriginal Canadians, especially in regards to cardiovascular disease risk factors. Evidence illustrates that the propensity to develop these chronic diseases happens during the perinatal period. Related to this are maternal health behaviours—which are influenced by grandmothers’ advice. Very few studies have explored Aboriginal grandmothers’ beliefs around perinatal health or how they translate into maternal health behaviours.

**Objectives**: The objectives of this thesis were to:

1) Qualitatively explore the beliefs and cultural perceptions around prenatal and postnatal health behaviours from the accounts of Grandmothers from the Six Nations reserve;

2) Incorporate the emergent themes to develop a theoretical framework;

3) Design and apply culturally-respectful avenues for knowledge translation.

**Methods**: Qualitative, semi-structured individual interviews and focus groups were conducted with grandmothers from the Six Nations reserve. Sampling of participants used non-probabilistic methods. Recruitment was achieved through the leadership of community members and continued until saturation. All interviews were audio-recorded, transcribed verbatim, and underwent thematic analysis. A Six Nations community member was involved with the coding process and additional interviews were conducted to ensure member-checking.

**Results**: Six Nations grandmothers identified three primary perinatal beliefs: 1) Pregnancy is a natural phase of the life course that is not an illness nor a “comfort zone”; 2) Pregnancy is a sacred period where balance is key; 3) Optimal perinatal health is achieved through immunity, security, comfort, social development, and parental responsibility. This knowledge is shared via storytelling and observational teaching. In addition, the grandmothers identified local community responsibilities required to uphold optimal health. Consultation with the community resulted in an integrated knowledge translation component (short film) for key stakeholders.

**Conclusion**: Building resilience and strength through culturally-generated interventions will guide the future of community-based programs and policies that aim to reduce cardiometabolic risk factors in this Aboriginal community.

“Our grandmas tell us we’re the first environment, that our babies inside of our bodies see through the mother’s eyes and hear through the mother’s ears.

Our bodies as women are the first environment of the baby coming, and the responsibility of that is such that we need to reawaken our women to the power that is inherent in that transformative process that birth should be.”

(Katsi Cook as quoted in an interview with Wessman & Harvey, 2000)

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This thesis is dedicated to my one and only dearest sister.

Although you are no longer here with us,

I can feel you in the wind that brushes through my hair;

I can see you in the light of the mid-summer sun;

I can hear you in the patter of the springtime rain.

You will never be forgotten…



**Preface: My position throughout this research journey**

I am a non-Aboriginal minority woman of color who was raised in Ontario, Canada in a four-person nuclear family. Although I grew up in the security of a free country, my ancestral roots intertwine in politically-unstable soil where Indigenous peoples faced a string of broken promises. I am no stranger to understanding what it feels like to have ancestral lands destroyed by the arrows of a historically patriarchal government. Nor am I stranger to the feeling of familial loss and grief. At the age of 21, I lost my younger sister in a tragic accident, leaving my family torn with emotion. This life-changing hurdle left everything I knew in a state anguish and I saw my parents face the unbearable punishment of having a child taken away from them far too soon.

Sharing this story with you is not a mere attempt to compare my life with the struggles that Indigenous peoples have faced since the beginning of colonization, but to simply state that this thesis is a project whose roots run deeper than the vein of its written existence. It also runs through the person who conducted the heartfelt interviews, transcribed each word, and shared the knowledge through the lens of their unique life perspective—a perspective that empathizes with the challenges that Aboriginal peoples have faced and of course, the resilience that an individual (and collective) spirit can show.

During one of the earliest interviews that I conducted for this project, a grandmother asked me if I knew what it felt like to have my sovereignty taken away. I quickly realized that although I was asking questions about prenatal and postnatal health beliefs, the discussion would undoubtedly be a reflection of socio-political realities. From that point onwards, I made a promise to myself that I would be conscious toward ensuring that it was indeed the voice of the participants that came fourth in the data analysis. After all, Charmaz (2009) does say that data should be “collected and analyzed to make participants’ actions, interpretations, and influences explicit.” In addition, it was also a re-iteration that working with Aboriginal communities is a life-long commitment to upholding a reciprocal, active, collaborative relationship.

Interesting, I am also closer in age to the mothers of this community than to the grandmothers I interviewed, which places me in an interesting position during data collection and analysis. Truly and surely, I was the one that was doing all the learning. In fact, although this project is in partial fulfillment of an MSc degree, I definitely got a PhD in life. The grandmothers that I interviewed taught me so much about how to approach difficult life situations and how to prepare myself for the challenges of bringing new lives into this world. I genuinely felt they were the experts in this content area, which is something I strived to illustrate in the presentation of this thesis.

My Hindu background and South Asian culture has shown me a different perspective of perinatal health than I observed from the Six Nations grandmothers. In fact, I expected to hear an abundance of culturally unique prenatal health advice (as I did when I completed a similar study with South Asian grandmothers). Instead, I heard personal stories and life experiences that came with pregnancy and caring for a newborn. I found it beautiful but challenging at times to comprehend the meaning of some of the stories. But, I soon realized that the splendour in sharing knowledge through stories is that it allows the listener to take what they need and apply what makes sense to their own unique situations. It is a very respectful way of sharing information and advice, thus probably more relevant to a younger generation living in times that are quite different from what the grandmothers were used to. This is the principle that was used as the underpinning for the knowledge translation piece in this thesis. Stories have immense power. It is my hope that we can use that power to share the necessary knowledge for the benefit of the Six Nations community.

My hope is also that we will be able to co-create interventions to help support the re-building of a community in a way that intergenerational knowledge can be shared and celebrated…in a way that women can have the power to raise healthy future generations.

I present the following thesis to you in cross-cultural solidarity with the Six Nations community, the original inhabitants of the land I am so lucky to call my home.

In sincere appreciation for the research participants and the opportunity to present this thesis,



Sujane Kandasamy

“We do not inherit the earth from our ancestors. We borrow it from our children.”

-Indigenous proverb

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**A General Note**

This thesis uses a constructivist grounded theory approach to explore the perinatal health beliefs and cultural perceptions currently held by grandmothers of the Six Nations community, a reserve in Southern Ontario. The purpose of conducting this study is to gain a comprehensive understanding of perinatal health in a Six Nations context and how these beliefs influence maternal health behaviours. Ultimately this thesis provides insight into how we can work collaboratively with Aboriginal communities to co-create culturally-respectful interventions to reduce the early risk factors of chronic disease.

The first chapter will introduce and briefly discuss Aboriginal health and research within a Canadian context. The second chapter will focus on the Six Nations community and the primary research findings of the qualitative study completed with local grandmothers. The third chapter is centered on the use of innovative, culturally-relevant knowledge translation methodology to share the information gained from the thesis, and the fourth and final chapter will focus on the lessons learned and the future direction of this thesis.

**A General Note on Terminology**

In parallel with the Royal Commission on Aboriginal peoples, the term ‘Aboriginal’ is used to refer to the first inhabitants of Canada—a term that is collective of Inuit (the first peoples of the Arctic), First Nations (status and non-status Indian people), and Metis peoples (mixed Indian ancestry) (Aboriginal Affairs and Northern Development Canada, 2015). This terminology is consistent with the Constitution of Canada, where the term ‘Aboriginal’ represents the descendants of the original people of North America. The term ‘peoples’ will be used to acknowledge the tremendous amount of heterogeneity that exists amongst this community of individuals in regards to language and culture.

The term ‘Indigenous’ is used to refer to the people who identify their ancestry with the original people of Australia, Canada, and other countries across the world. Politically, the term ‘Indigenous’ has implications in regard to the consequences of colonization and the collective right for self-determination (Waldram et al., 2006). Additional clarifications around terminology will be expressed as footnotes within the text of this thesis

**Chapter 1: Aboriginal Health and Research in a Canadian Context**

**1.0 Introduction to Aboriginal Peoples’ in Canada**

In order to thoroughly understand the issues related to heath, healthcare, and health services within an Aboriginal context, it is important to gain an appreciation for the many different perspectives of knowledge acquisition (which is one the pillars of an Indigenous paradigm), understand a brief history of Aboriginal peoples, and the unique challenges of building a strong foundation for respectful research relationships. This process begins with the three comprehensive dimensions to understanding Aboriginal Peoples in Canada: 1) Foundational; 2) Cultural, and 3) Legal, all of which are discussed in the paragraphs below.

 **1.0.1 The Foundational Dimension**

The foundational dimension incorporates the cultural beliefs and the archaeological evidence for the existence of Aboriginal peoples in North America, providing insight into bio-anthropological explanations and traditional oral histories.

Many Aboriginal people have a spiritual view of creation. For instance, the *Haudenosaunee Peoples*[[1]](#footnote-1) believe that the earth was created through the interplay of elements from the sky and waters. Each of the Nations voice slightly different versions of the creation story, which very often begins with Sky Woman falling from the sky. Stories describe the Sky People, the Great Turtle, and how beans, corn, and squash came to give sustenance to the people. Many other nations across Canada have their own unique creation stories—these stories serve as a common thread for the relationships Aboriginal peoples have with the land, the cosmos, and with health and wellbeing.

As a different perspective, an anthropological viewpoint illustrates numerous lines of evidence that the earliest ancestors of present-day Aboriginal peoples arrived to America (Turtle Island) from the continent of Asia. Among these lines of evidence includes phenotypic features such as dental characteristics (Turner, 1985), skeletal morphologies (Szathmary and Ossenberg, 1978), and genetic similarities (Szanthmary 1985, 1993). The amalgamation of linguistic, archaeological, and molecular genetic evidence suggests that over 12 000 years ago three different waves of migrations occurred from Asia, giving rise to three separate linguistic groups: Amerind, Eskimo-Aleut, and Na-Dene. According to these analyses, people moved westward over the Bering Land Bridge (Greenberg, Turner, and Zegura, 1986). During periods of glaciation, the Bering Land Bridge brought Asia and America together, allowing for the passage of plants, animals, and people. Genetic evidence also supports this migration pattern (Eshlemnam, Malhi, and Smith, 2003).

Although archaeological evidence currently supports the first migration of people from Asia to America, many different nations share oral histories that explain how their peoples came to exist on earth. These various sources of knowledge should be regarded with equivalent respect because all worldviews—whether dominant in a society or not—should be appreciated and valued. In order to uphold such a standard, we must be able to discuss various viewpoints, perspectives, and cultural perceptions without pre-determined judgemental thoughts or tones.

**1.0.2 The Cultural Dimension**

 The concerted role of the immense amount of heterogeneity among pre-contact Aboriginal groups and the socio-political landscape of Canadian history makes it challenging to accurately classify what contemporary Aboriginal culture encompasses. For feasibility purposes, social and medical research has categorized Aboriginal people in one large grouping (E.g. “Aboriginal”). Although this is an accepted classification, there are inherent issues of doing do, which will be discussed below.

The cultural dimension encompasses the various lineages of linguistic and cultural backgrounds that exist among Aboriginal peoples, including how the revitalization of disappearing languages and cultural beliefs have impacted current societies. This is especially impactful because preceding the arrival of Europeans to North America, there were vast numbers of Aboriginal groups—all of which had their own distinct languages. Linguistic analyses suggest that there were eleven different families of languages and over fifty unique languages at the time of European contact. In parallel, there was much variation between cultural beliefs, values, and lifestyles between the groups—often attributed to the heterogeneity of the Canadian geographical landscape.

Although there is available data on pre-contact culture, the evidence is fragmented and based oftentimes on ethnohistorical inquiry. Driver (1969) grouped Aboriginal peoples into “culture areas,” defined as geographical areas “occupied by a number of peoples whose cultures show a significant degree of similarity with each other and at the same time a significant dissimilarity with the cultures of the peoples of other such areas” (Driver, 1969: 17). However, the combination of sharing certain ecological areas and the exchange of ideas/people, there are also similarities between groups. In present day society, however, many of these cultural perceptions and languages remain threatened, with a limited number of individuals who can speak conversationally or share original oral stories.

 Since the period of contact with Europeans, there have been a multitude of changes to Aboriginal culture. These changes are the result of many factors, including a systematic approach to abolish these cultures, Euro-Canadian familial adoptions, foster homes, and most devastatingly, residential schools. The residential schooling system systematically damaged Aboriginal culture across Canada, fragmenting families, communities, and the transmittance of culture, traditions, and languages. Although these schools operated from the 1880s to the latest parts of the 20th century, the impacts of their existence—commonly considered a form of cultural genocide—has left lasting scars on many generations of Aboriginal families.

“Two primary objectives of the residential school system were to remove and isolate children from the influence of their homes, families, traditions and cultures, and to assimilate them into the dominant culture. These objectives were based on the assumption Aboriginal cultures and spiritual beliefs were inferior and unequal. Indeed, some sought, as it was infamously said, “to kill the Indian in the child.” Today, we recognize that this policy of assimilation was wrong, has caused great harm, and has no place in our country.”

-Prime Minister Stephen Harper, official apology

(June 11, 2008)

 Through these assimilative and colonial policies, many contemporary Aboriginal peoples may have lost ties to their heritage, while others may have limited ties to mainstream society but speak their own language with fluency.

According to the 2011 census, almost 213,500 people reported an Aboriginal mother tongue and nearly 213,400 people reported speaking an Aboriginal language most often or regularly at home. Among those that reported an Aboriginal mother tongue, 58.1% spoke it most often and 24.1% spoke it on a regular basis, in addition to another language that that also spoke regularly (Statistics Canada, 2011).

 In conclusion, Aboriginal cultures and languages are very heterogeneous categories that have been influenced by many complex factors over Canada’s history. It is important to be attentive to these details as we later discuss cultural perceptions and beliefs in greater detail.

**1.0.3 The Legal Dimension**

 In Canada there are two legal categories for Aboriginal peoples: those with status (also recognized as Registered Indians[[2]](#footnote-2)) and those without status. As established by the Federal government of Canada, this categorization allows individuals to be recognized under the Indian Act[[3]](#footnote-3). Every registered Indian has a distinctive number which is often used to gather health based data for this population. In addition, there are Aboriginal peoples who may have lost their Indian status (E.g. through marriage) or never received it at all.

Many communities also signed treaty documents with government bodies (either British or Canadian) and became Treaty Indians[[4]](#footnote-4). In regards to health services, the Federal government is responsible for the care of Registered Indians and Treaty Indians. However, much of the focus (in terms of resource allocation) has centered around Status Indians who live on reserves (which are sections of land that are detained by the Canadian government on behalf of First Nation communities). There is no comparable status designation for the Inuit peoples, however, the Federal government assumes accountability for their health and health services in a similar way they account for Status Indians.

 Understanding a brief summary of Aboriginal Peoples including the foundational, cultural, and legal dimensions will assist in the appreciation of the current health issues that affect the First peoples of Canada. In addition, the establishment of the diversity in culture, linguistics, and history reiterates that broad, generalizing affirmations may not be applicable at the local community level. As a result, to ensure that realities are taken within context, specific safeguards (such as a community-specific advisory group) must be put into place when conducting or applying research with Aboriginal communities.

**1.1 Brief history of health and disease**

Constructing a picture of health or disease from a previous timeframe consists of bringing together the various research projects on all the related, but fragmented topics. Although it is a challenging task to recreate past health histories while illustrating minute details, it is important to establish these archaeological pictures so that the potential causes for illness and the factors that promote health can be adequately explored. In these cases of piecing together fragmented sources of evidence, broad generalizations must be made—especially in a country like Canada where bio-archaeological analyses are disproportionately represented across the nation (e.g.: some regions have better preservation conditions or less urbanization).

 In the Southern Ontario context, the bio-acheaological evidence is fairly robust, providing insight on population size, the movement of individuals/groups (including trade routes and habitat relocation), and the pattern of infectious disease spread (Starna et al., 1984; Fecteau et al., 1991; Williamson and Pfeiffer, 2003). Much attention has focused on the nutritional impacts of the introduction of maize (Katzenberg and Schwarcz, 1986; Schwarcz et al., 1985). Dental evidence between AD 900 and 1300 suggests that the heavy dependence on maize resulted in carries, abscesses, and tooth loss (Crinnion et al., 2003) even though there was also evidence of animal protein consumption. Also during this time, Southern Ontario villages relied on horticulture, hunting, fishing, and foraging. The dependence on plant products left this population susceptible to starvation (crop failure) and nutritional deficiencies (lack of vital amino acids).

 There is also indication of infectious disease, particularly iron deficiency anemia from pathogen stress (as seen by porotic hyperosteosis) (Stuart-Macadam, 1992). Such impacts were seen in over 38% of children (Pfeiffer and Fairgrieve, 1994); over 50% of adults suffered from respiratory pathogens as a result of wood smoke exposure (Merrett, 2003). Bone scarring is also in parallel with Tuberculosis outbreaks prior to contact (Pfeiffer, 1984).

 Mummified discoveries are uncommon in the Canadian database, however, the 1999 discovery of a mummified man in his early twenties found within the boundaries of the Champagne and Aishihik First Nation (British Columbia) illustrates an important starting point to research relationships between First Nations communities and academic institutions (Beattie et al., 2000). Since that discovery, many more research relationships have formed across the country, illuminating the academic fields of anthropology and epidemiology with rich and diverse perspectives.

Currently, there are over 1.4 million Aboriginal peoples who currently compose the Canadian mosaic (about 4.3% of the total National population) (Statistics Canada, 2011). Of the total Aboriginal population, Registered Indians represent 50%, Non-Status Indians represent 15% and the Métis and Inuit both compose 30% and 4%, respectively (Statistics Canada 2011); approximately 40% reside on-reserve, and the remaining 60% live off-reserve (Statistics Canada, 2006). Over half (56%) of Aboriginal people reside in urban areas and in some of Canada’s largest cities (E.g. Winnipeg, Regina), the concentration of Aboriginal people is higher than the national average of 4%. Also, with a birth rate that is 1.5 times higher than the National average, Aboriginal peoples constitute a sector of the population that will continue to grow over the coming years (Statistics Canada, 2011). These demographic factors constitute the importance for making Aboriginal health a priority for Canada.

Nationally, Aboriginal peoples face immense inequalities in terms of health status (Symlie, et al., 2009; MacMillan et al., 1996). This is especially true in regards to neonatal death, accidental mortality, infectious diseases, mental illnesses, and chronic diseases (Symlie et al., 2009). Chronic diseases, especially cardiovascular disease (CVD), obesity, and type 2 diabetes place heavy burdens upon Aboriginal communities. In fact, a large body of epidemiological evidence demonstrates that Aboriginal communities are burdened with higher rates of cardiovascular disease (CVD) and a healthcare system that is unable to meet the needs of this chronic disease (Health Canada, 2004; Harris et al., 2002; Waldram et al., 2006). In 1997, the First Nations Regional Health Survey (RHS) first reported that heart disease and hypertension was 2.5 and 3 times higher, respectively, when compared to non-Aboriginal Canadians (Health Canada, 2004). In a follow-up study, the RHS established that First Nations adults aged 50 to 59 years had greater than a two-fold higher prevalence of self-reported heart disease: 11.5% compared to 5.5%, when compared to the general Canadian population (RHS, 1997). In 2010 the RHS evaluated the prevalence of CVD, showing that rates had risen 13.4% in seven years.

It is reported that Aboriginal peoples have significantly more carotid atherosclerosis, glucose intolerance, obesity, abdominal obesity, and CVD (18.5% vs 7.6%, P = 0·00002) when compared with Europeans (Anand, Yusuf, Jacobs, & Davis, 2001). The crisis in Aboriginal peoples’ health is heavily influenced by social disparities (Adelson, 2005) including a poor standard of living for many Aboriginal peoples in Canada (O’Neill, 2007). Lower socioeconomic status has been associated with smoking, poor diet, significant differences in food expenditures, overweight, and physical inactivity (Smith et al., 1997). In addition genetic and environmental risk factors and decreased screening and interventional efforts have also contributed to this landscape of increased CVD prevalence. The Heart and Stroke Foundation of Canada reports that CVD and stroke risk factors are higher for Aboriginal peoples compared to non-Aboriginal Canadians, predicting the risk profile to increase over time (Heart and Stroke Foundation Position Statement: Aboriginal Peoples, Heart Disease and Stroke, 2012).

 In addition to studies exploring CVD risk factors, there are a small handful of Canadian studies that have investigated the relationship between CVD and psychological wellbeing within an Aboriginal context. For example, an Australian study found that Indigenous Peoples had stress and worries in relation to the socio-political landscape of their respective communities (Ong and Weeramanthri, 2002). These stressors were perceived to be the causes of heart disease and the barriers to diagnosis and management. In addition, the stressors that are often felt by Indigenous Peoples were not recognized as stressors by non-Indigenous individuals (Ong and Weeramanthri, 2002). This is supported by the work of Skinner and Silverman-Peach (1989) who report that the calm demeanor of Indigenous Peoples is often misunderstood as a state of being stress-free by non-Indigenous health care providers.

 The collective contribution of these studies suggest that due to complex factors, Aboriginal peoples face higher risks of CVD and CVD risk factors (including socio-political stressors). In order to better comprehend these risk factors and the relationships between them, research must gravitate toward enhancing our understanding of social factors and social determinants of health within an Aboriginal context. The remaining sections of Chapter 1 aims to address some of these concerns in greater detail.

**1.2 Social Determinants of Health**

Aboriginal children inherit colonial histories that oftentimes include low socioeconomic status, high rates of substance abuse (Chansonneuve, 2007), and increased interaction (also due to overrepresentation) with the criminal justice system (Rudin, 2005). These factors are closely and complexly intertwined with intergenerational trauma that is related to residential schooling (Wesley-Esquimaux and Smolewski, 2004) and the deeply-rooted loss of language and culture (McIvor et al., 2009).

Thus, these elements of colonialism influences Aboriginal children’s lives and can only be interpreted by applying a social determinants of health lens (one that encompasses the multiple realities of the sociopolitical, historical, economic, and geographical contexts that are faced by Aboriginal peoples). According to Figure 1.0, it can be seen that Aboriginal children’s health declines after birth, influenced by distal, intermediate and proximal determinants (Loppie-Reading and Wien, 2009). Because the basis of adult health and health inequity begin in early childhood (CSDH, 2008), understanding Aboriginal children’s health requires the appreciation of three interconnected dimensions. First, there are proximal determinants of health: the factors that impact the physical, emotional, mental and or spiritual health of an individual (e.g.: employment, income, education). Second are intermediate determinants: the source of proximal determinants (e.g.: community infrastructure, cultural continuity, health care systems). Third are the distal determinants (e.g.: colonialism, racism, social exclusion, self-determination), the factors that are the most difficult to change, however, if transformed, they will likely result in the greatest long-term benefits to improving the health inequalities that impact Aboriginal children.



Figure 1.0. Web of Being: Social Determinants and Aboriginal peoples’ health (Loppie-Reading and Wien, 2009).

In summary, the foundational, cultural, and legal aspects of what it means to be Aboriginal is has close ties to the access of health services as outlined by the Federal government of Canada. Regrettably, due to the complexity of colonial policies and westernization, Aboriginal peoples face immense inequalities in terms of health status (Smylie et al., 2009; MacMillan et al., 1996), which is especially true in regards to chronic disease (e.g. CVD), neonatal death, accidental mortality, infectious diseases, and mental illnesses (Smylie et al., 2009). Through the application of a social determinants of health lens, we can understand these intricacies in better detail and thus work toward to the co-creation of relevant and sustainable interventions that can help reduce the burden of these illnesses.

**Chapter 2: Perinatal Wellbeing as per the Grandmothers of the Six Nations Community, a Reserve in Southern Ontario**

 **2.0 The Six Nations Community**

The community that our research group has a strong relationship with is the Six Nations of the Grand River---a reserve of the Haudenosaunee Peoples, the largest First Nations population in Canada. According to the Six Nations Lands/Membership Department (Dec 2013), there are 25 660 band council members, of which 12 271 live within the Six Nations First Nation Territory. The Six Nations, consisting of Mohawk, Oneida, Cayuga, Seneca, Onondaga, and Tuscarora, were unified under the Great Tree of Peace in order to sustain peaceful decision-making. The Confederacy states that each of the Nations come together with the primary goal of living together in harmony, where law, society, and nature play equal and important roles. Each nation 1) upholds their own council, led by the Chiefs who are selected by the Clan Mother and 2) handles their own nation-specific internal affairs. The Grand Council is given sanction to handle the matters that affect the nations within the Confederacy.

The main reserve (18 000 hectares of land) is located approximately 25km Southwest of the city of Hamilton, Ontario, situated between the cities of Brantford, Caledonia, and Hagersville. Six Nations is bounded by Brant County, Haldimand County, Norfolk County, and the Mississaugas of the New Credit First Nation. The reserve is comprised of 2674 housing units in total (2279 units in the rural parts of the reserve and 395 units in the more urban sub-divisions).

The family structure of the Haudenosaunee is mainly based on the clan system. Under this organization, families begin with a female ancestor. All others living within her Longhouse are within her lineage and connect back to her. As a result, each family was called the Longhouse family with the Clan Mother as the lead member. All female offspring (including her sisters, her sisters' daughters, and granddaughters) would dwell in the Longhouse. Once they were married, their respective husbands would also reside with them in the Longhouse. Children also lived in the Longhouse where they were surrounded by their familial networks and could learn from their elders. Each child was cared for by their mother and their aunties (mother’s sisters). Children were much closer to their maternal relatives and even called their mother’s sisters “mother”, along with their biological mother. This created a great sense of security for each child.

Traditionally, women handled village issues, men looked after hunting, fishing, and trade concerns, and Elders held respected positions as knowledge keepers: the ones to convey traditions and to help with child rearing.

Contemporary family structure is quite similar to the conventional nuclear family (a mother, father and children). However, the Haudenosaunee still maintain the traditional matriarchal structure where clans are passed through the mother’s lineage.

The Haudenosaunee traditionally celebrate 13 annual ceremonies that symbolize the 13 moons throughout the year. These ceremonies typically follow seasonal changes and are rooted in the expression of gratitude to people, nature, the spirits, and the Creator. There is hope held that participating in these ceremonies will help to maintain the prosperity of the nations. In addition, Storytelling is an essential part of Haudenosaunee culture: a positive way to pass on the values of Haudenosaunee beliefs. Through the story, the listener can learn values, laws and acceptable behaviours without being told, forced, or imposed. In a contemporary context, storytelling is a thriving art form where legends are taught to subsequent generations. Many individuals make their livelihood as story tellers and crafters of oral histories.

Although the Six Nations community encompasses a variety of small businesses, one of the primary economic drivers is Grand River Enterprises (GRE), a cigarette manufacturing and packaging company, that sells under the brand names Sago, Putters, DK's and Golden Leaf. GRE, a Canadian corporation under the laws of Canada (as per April 29, 1996) is one the largest Native employers in Canada, has worldwide grasp, and grosses millions of dollars annually (Identity of the Investors, under the arbitration rules of the United nations commission on international trade law and The North American Free Trade Agreement; Tobacco Think Tank 2012: Our vision—Compiled by Kandasamy & Anand, 2012).

With a vision of a “wholistic system that inspires people to achieve wellness,” Six Nations Health Services consists of 15 main programs and services that are offered to the community: ambulance services, the birthing center, dental services, the diabetes education program, early childhood development services, the family health team, health promotion & nutrition services, the healthy babies/healthy children program, long term care, medical transportation, mental health, the New Directions group, school nurses, sexual and clinical health nurses, and the Study of Health Assessment and Risk Evaluation in Aboriginal Peoples (SHARE-AP) research group. Six Nations Health Services supports the aforementioned resources under the authority of the Six Nations of the Grand River Elected Council. Relative to the small rural reserves in Ontario, Six Nations is considered to be urbanized—with access to paved roads throughout the community and direct entry routes to nearby cities such as Hamilton and Brantford.

Our research group has been working with the Six Nations community since the late 1990s and with my time coordinating our most recent project, the Aboriginal Birth Cohort (ABC) study, I have learned that there are many unique considerations of working with a First Nations community within a long term research capacity. These primarily include: 1) collaborating to overcome a historical relationship of mistrust (government and research); 2) building research interest within the community; 3) maintaining contact with research participants for the full length of the study; 4) completion of follow-up visits in a timely fashion; 5) maintaining constant contact with local staff to brainstorm solutions to operational challenges as they arise. We have worked closely with the community to design and apply collaborative methods to address these unique considerations:

1. Overcoming a historical relationship of mistrust with the government and associated research institutions is a two-fold complexity as it involves a) the local Six Nations partners and b) the community-at-large. We have worked to build strong, respectful, trusting relationships with our Six Nations partner groups (particularly the Birthing Center) and with community members. This includes a) weekly visits with scheduled face-to-face meetings with our core group of Six Nations research staff (which gives us the chance to take a relational approach to building trust); and b) participating in the array of local events/gatherings/fairs to reach out to the community with the hope of maintaining respect, reciprocity, relevance, and responsibility.
2. Building interest within the community has allowed us to employ innovative and creative recruitment strategies such as “gift exchanges” and collaborative videos to share information about our community-level research studies and how participation can truly help build a stronger, healthier community.
3. Maintaining contact with research participants for the full length of the study is a challenge in almost every study. It is unique challenge on Six Nations because most people use “pay-as-you-go,” prepaid, or frequently expiring cell phone plans. This of course results in people’s contact information changing often, posing difficulty for follow-up and maintaining a sense of engagement amongst the participants. In order to address this issue, we try to maintain contact in ways that are organic to the population—in this case, use of web-based contacts like Facebook. We also attend all community events to maintain interest, answer questions, and update contact information of our research participants.
4. Completion of follow-up visits in a timely fashion is also a challenge for many longitudinal studies. We aim to achieve timely data collection by building our study visits in parallel with the Birthing center’s routine visits (as many of our participants are also clients of the center).
5. We maintain continuous contact with local staff to brainstorm solutions to operational challenges as they arise. This practice encourages the development of a truly reciprocal, active, collaborative research relationship. As all of our studies are joint projects between the Six Nations community and McMaster researchers, we aim to resolve all issues together as a single unit.

Gaining experience with applying the aforementioned philosophies, has given me the

confidence to use these ideas in the design of my thesis project. It has taught me how to be more flexible in designing a research protocol, how to work as a genuine team member, and how to use opportunities to build trust and rapport with the Six Nations community.

**2.1 Early Life Determinants of CVD and the Influence of Maternal Behaviours**

There is evidence to suggest that the propensity to develop CVD risk factors, primary adiposity, is rooted in early life and dependent on a complex interaction between genetic factors, epigenetics, and non-genetic factors (Barker et al, 1989; Barker, 2000). Recent evidence also suggests that CVD risk factors are heavily influenced by the prenatal and postnatal environments.  Such risk factors include elevated maternal pre-pregnancy BMI, excess gestational weight gain, exposure of the fetus to cigarette smoke, genetic predisopsitions, solid food introduction, use of formula, and newborn sleep patterns (Ong and Dunger, 2004; Ong and Loos, 2006).

To understand these complex interplays specifically within an Aboriginal context, we have initiated the Aboriginal Birth Cohort (ABC) study, a joint initiative between McMaster University researchers and the Six Nations Reserve (Wahi et al., 2013). The ABC study applies a medical and social lens to explore the following: 1) The major antenatal maternal factors (e.g. pre-pregnancy weight, weight gain, dietary intake, physical activity, and smoking exposure), selected paternal factors (e.g. cigarette smoking), and pregnancy factors (e.g. maternal weight gain, smoking exposure, glucose intolerance, and pregnancy-induced hypertension) which are associated with the newborn’s adiposity and cardio-metabolic factors; 2) The association between early feeding practices (i.e. exclusivity of breastfeeding, formula feeding, type, frequency and duration of breast/bottle feeding, and growth after weaning), sleep patterns and activity on newborn’s adiposity, and related cardio-metabolic factors; and 3) The impact of the home environment, including socio-economic status, social support, and maternal psychosocial factors on newborn’s adiposity (Supplementary information about the Aboriginal Birth Cohort study can be found in Appendix A).

Many of these factors are rooted in maternal beliefs about pregnancy, maternal behaviors during the perinatal period, and access to health resources and care. There is a body of evidence that has qualitatively explored the prenatal and postnatal health beliefs of different ethnic communities of pregnant women. For example, Hill et al. (2011) conducted focus groups with Somali immigrant women living in the United States to understand their experiences and beliefs regarding pregnancy and birth. Their analyses revealed six major themes: 1) pregnancy as a natural experience; 2) value of prenatal care; 3) lack of control and familiarity with delivering a child in the USA; 4) discovering a balance between breastfeeding and breastfeeding barriers; 5) uneasiness around mental wellness concerns; and 6) challenges with the healthcare system. It is concluded that Somali women’s beliefs and behaviors toward Westernized ideas of prenatal health is heavily impacted by their own cultural and religious values. In another qualitative study conducted by Thorton et al., 2006, the influence of different factors on weight and diet-related perinatal health beliefs in Latina women living in Detroit were explored. Ten pregnant women were interviewed and it was discovered that holistic health beliefs and the opinions of key social support networks consistently affected Latinas' incentive and beliefs about the need to maintain health during pregnancy and the links between behavior and health (Thorton et al., 2006). In addition, Krans et al., 2005, sampled 211 patients in an obstetrics and gynecology practice in Mississippi, USA to understand their exercise habits and beliefs around prenatal exercise. The 4-week study revealed that 95% of women believe that exercise during pregnancy is beneficial. There was also a significant correlation (P<0.000) between a woman's beliefs regarding the positive impact of exercising during pregnancy and whether or not she chose to participate in prenatal exercise. In addition, a large percentage of women (46%) indicated that their doctor had the most influence on their beliefs regarding exercise, suggesting that health care professionals should be able and willing to discuss these issues with their patients (Krans et al., 2005).

Related to the exploration of pregnant women’s beliefs around perinatal health behaviors, a recent study explored whether women’s beliefs and emotional responses to pregnancy can explain differences in maternal health (both mental and physical) (Jessop et al., 2014). From the results of 408 women in their third trimester of pregnancy, it is shown that a woman’s personal representation of pregnancy can account for 30 and 39 percent of the differences in physical and mental health, respectively. As a result, evidence supports that one’s perceptions and beliefs about pregnancy can impact overall maternal health.

In conjunction, from a cross-cultural perspective, there is growing evidence that a pregnant woman’s health attitudes and behaviors are impacted by her grandmothers’ role in the decision-making process during the perinatal period. For example, Gupta et al (2015) qualitatively explored the role that grandmothers play in the influence of maternal and newborn healthcare decisions in Ghana. They conducted in depth interviews with 35 new mothers, 8 traditional birth attendants, 16 community leaders, and 13 healthcare providers. It was concluded that Grandmothers are oftentimes the gate-keepers for health-seeking behaviours, suggesting that there are gaps between health education programs directed to mothers as independent decision-makers, and the cultural actuality that mothers rarely make such choices without the consultation of other family members (especially grandmothers). Consequently, to provide optimal healthcare to the pregnant women of this community, it is vital to include to grandmothers in the decision-making process.

In a review conducted by Aubel (2012), it was determined that grandmothers play a central role as household advisors and caregivers, especially around issues related to child nutrition and health. In addition, grandmothers also influence maternal and child feeding/nutrition habits, especially during the period of pregnancy, the early postnatal period, and when handling children who are sick. Aubel (2012) concludes that there is a need for health policies, research, and programs to include the wider household rather than focusing narrowly on the autonomous decision-making of the mother.

Within an Indigenous context, Simmonds et al., (2012) conducted a study in a remote community on the Ngaanyatjarra Lands in Western Australia where women are expected to birth outside of their home and without the support of familial networks. In this traditional Aboriginal society, knowledge around pregnancy and birth is collectively known as the ‘Grandmother’s Law’—which is secret and sacred. Openly discussing the issues around pregnancy and maternal care is considered ‘shame’ (which brings up feelings of embarrassment or shyness). It is postulated that this is one of the reasons why a woman would not choose to discuss these topics with healthcare providers or male practitioners. The inability to have the support of a family member during the birth led to challenges in breastfeeding, loneliness, and limitations in the passing of traditional birth knowledge. Overall, this study illustrates the value of older women (usually grandmothers) in providing birth advice and support for the Aboriginal women of this community. This study also parallels the view that Aboriginal communities in Canada also depend on the strength and knowledge of older female relatives. In Canada many Aboriginal communities are matrilineal societies, where women carry the clan’s lineage and are key in passing linguistic and cultural knowledge. Aboriginal women in their roles as mothers, sisters, aunties, daughters, and grandmothers have protective impacts on the wellbeing of children, families, communities, and cultures. They are also a key source of strength and resiliency for their communities (Lavell-Harvard & Lavell, 2006). The cross-generational transmission of teachings and cultural beliefs between women has conventionally maintained the stability of Aboriginal societies. Unfortunately, the influence of colonial policies has led to the fragmentation of this traditional way of life, leading to much loss and grief (Cull, 2006). The strength to move forward for these communities depends heavily on women in their roles of nurturing and raising children.

“Strength to move forward as healthy individuals, families, and communities, is inextricably linked to Aboriginal women, mothers, grandmothers, and aunties as the bearers of future generations.” (National Collaborating Center for Aboriginal Health, 2012).

There is limited evidence about how grandmother’s advice influences attitudes and behaviors of Aboriginal women during the prenatal period. More specifically, there are no studies that have explored Six Nations grandmothers’ beliefs about optimal prenatal health behaviors or about how that advice is translated into maternal attitudes. Assessing such cultural perceptions will allow for the generation of appropriate maternal health interventions directed for the women of the Six Nations community.

The objectives of this study are to:

1. Use a constructivist grounded theory approach to qualitatively explore the beliefs and cultural perceptions around prenatal and postnatal health behaviours from the accounts of Grandmothers from the Six Nations reserve
2. Incorporate the emergent themes to develop a theoretical framework that explains how and why the beliefs and cultural perceptions are interrelated

**2.2 Study Design: Constructivist Grounded Theory**

Constructivist grounded theory is a systematic, focused, and dynamic approach to collecting and analyzing qualitative data to construct a theory directly from the data itself (Charmaz, 2014). This methodology aims to develop an interpretation (which cannot stand outside the researcher’s view) of how (and why) the research participants’ construct value and act upon specific scenarios. Use of constructivist grounded theory was ideal for this study because it views knowledge as socially constructed, acknowledges multiple viewpoints (among researchers and research participants), and data is collected and analyzed to make participants’ “actions, interpretations, and influences” explicit (Charmaz, 2009). The investigators are an interdisciplinary group of Aboriginal and non-Aboriginal researchers with experience in qualitative research methodology, cardiovascular medicine, pediatrics, Aboriginal health, population health promotion, health services research, and epidemiology. The research methodology was respectful of Indigenous viewpoints on health research and participants were welcomed to share their own stories, reflect upon the data analysis, and contribute to the building of the theoretical framework.

Grounded theory also allows researchers to incorporate what they hear, see, and sense during the data collection process into the analysis phase. Beginning with inductive data, grounded theory requires an iterative approach between data and analysis, use of comparative methods, and maintaining the researcher’s involvement and engagement throughout the process. This study followed the methodological guidelines of Charmaz (2014).

**2.2.1 Sampling and Recruitment**

The inclusion criteria for this study: 1) Grandmother that self-identifies as Aboriginal (specifically of Six Nations) and 2) Able to provide informed written consent; exclusion criteria for this study: 1) Cognitive impairment that prevents participation in a verbal interview. Also, the participants of this study did not have to be biological grandmothers, as many older women from this community identify themselves as grandmothers if they fulfill a caretaker role in their families (especially if caring for young children).

During the infancy of data collection, a diverse array of participants (key knowledge holders) with different life experiences were initially sampled in order to provide a point of departure (a starting point). Once categories began to emerge, theoretical sampling provided the basis for the explicit refinement of theoretical categories through purposeful and theoretical sampling. The purpose of this sampling strategy is not represent a population or to increase statistical generalizability of the results. Instead, it is to delineate and develop the properties of emerging categories and to provide grist for emergent hypotheses.

Participants were initially identified through the guidance of community members who play active roles in the Health Services programs in the local Six Nations community. In the beginning, a wide variety of grandmothers with diverse views and life experiences were sampled. As categories emerged, theoretical sampling was employed and achieved with support from the project’s advisory committee, key community leaders (across various fields), and by attending and/or participating in local community events. For example, I attended the Winter 2015 Health Fair at the Six Nations Community Hall to learn more about community members that had specific knowledge about healthy food options on the reserve and concerns around food security. Attending these local events over the last two years allowed me to share the details of my thesis, build trust amongst community members, and connect with key knowledge holders who eventually became participants in this study.

Recruitment proceeded until theoretical saturation. Although grounded theory methodologists do not agree on how saturation should be defined, Charmaz (2014) provides insight into how to best conceptualize this term in a way that preserves the integrity of the data and the quality of the analysis. As a result, the saturation point was established to be when collecting new data does not trigger 1) novel theoretical insights or 2) more information about the established themes that leads to new patterns or properties.

**2.2.2 Data Collection**

A semi-structured interview style was used to conduct individual in-depth interviews and focus group sessions. The interviews were completed at the participant’s home or in the family room of the Six Nations Birthing Center. The location was determined by the participant and based upon their comfort level and accommodation requirements. Focus groups were only scheduled at the request of the participants (E.g. if a group of grandmothers were personal friends and wanted to be interviewed together).

Each interview, audio recorded and transcribed verbatim, was between 56 minutes and 224 minutes in length. The interviewer (SK) completed all of the interviews and focus groups. SK spent much time building connections and trust with the Six Nations community (visiting Six Nations weekly from 2013-2015) during the data collection phase. SK also interviewed two grandmothers who subsequently referred other community members with key knowledge about the emerging themes. After each interview, field notes were compiled by the interviewer and audio reflections were completed. The interviewer also distributed a self-administered questionnaire regarding the demographic details of the participant (e.g. date of birth, marital status, primary occupation, etc.)

**2.2.3 Data Analysis**

Coding is the process of labelling segments of data and thus gaining an analytic handle for making informed comparisons with other segments of data. The development of codes (and the coder’s ideas about them) directs subsequent data collection. In the process of making and coding many comparisons, the coder’s analytic grasp begins to form. The combination of coding and writing preliminary notes (memos) about codes and comparisons, the analytic categories begin to be defined. This work culminates in a “grounded theory,” which is essentially an abstract theoretical understanding of the experience being studied.

Initial coding:

The first step of data analysis is the process of coding. Initial coding consists of studying fragments of data (words, lines, segments, incidents) and labelling them using action terms. For the process of initial coding, line-by-line coding was employed. SK and a second coder worked independently after jointly coding one representative interview. They discussed codes and diagramming frequently to resolve differences in conceptualization. SK and third coder coded interviews together, resolving all discrepancies through discussions that were built into the coding meetings. The third coder is and has been a member of the Six Nations community since birth. Although she is not a grandmother herself, she is a mother who understands the important role of grandmothers within the community, Six Nations culture/context, and is well versed around the topics of pregnancy and prenatal and postnatal care. It is vital to have a community member assist with the coding process so that language is interpreted correctly and meanings are taken within the appropriate context.

Between the coders, 168 unique initial codes were identified. Subsequently, codes to be used for focused and theoretical coding were identified by the codes that were most common/recurrent and through discussion between the coders (to determine culturally significant codes). For this particular study, determining codes of cultural significance is extremely vital to assuring that relevant and appropriate conclusions are drawn. Also through discussion, equivalent labels were identified and grouped together as identical topics. For example, “not laying around” and “remaining active” were grouped as two different action codes that had equivalent meanings.

Focused coding:

Once all the initial codes were identified, the most significant and frequent codes were used to re-sift through the large volume of data. This process also included an active comparison phase to group and categorize related codes into larger categories (themes). This process encompassed frequent discussion between the coders, additional clarifying interviews with Grandmothers, memo writing, diagramming, and audio reflections. Employing all of these vehicles allowed for active, reflexive analysis. The categories helped to inform the overall theory: an interpretation of how/why participants construct meanings and actions in specific situations.

Theoretical development (Constructivist grounded theory):

 Using a reflexive stance, the categories were compared to one another to develop interrelations (similarities and differences) between them, with a goal of formulating a detailed account of how, why, and when they are associated. This is the stage where the carefully crafted field notes, memos, and audio reflections become highly beneficial.

 Figure 2.0 summarizes the process that was used to conduct this research project, develop the thesis, and create the necessary platform for effective data dissemination. The main framework of this diagram was developed by Charmaz (2014) and modifications were made to allow for community relevance. For example, regular meetings with a community advisory group throughout the research project is not a recommendation made by Charmaz (2014), however, it is of value in this case where having an on-going understanding of cultural-relevant terminology, language, and vocabulary is of vital importance.

FIELD NOTES, MEMO WRITING, DIAGRAMMING, REFLECTIONS (WRITTEN AND AUDIO), MEETINGS WITH ADVISORY GROUP

Categories reach saturation

Theoretical sampling

to develop theoretical

categories

\*This process is dynamic and iterative

Figure 2.0. Timeline displaying the process of data collection and analysis for a constructivist grounded theory approach for a qualitative study (as developed from the direction by Charmaz, 2014)

The trustworthiness of the data was preserved through the maintenance of a reflexive stance throughout the data collection and analysis process. Reflexivity is the researcher’s own examination of the research experience (including their assumptions, interests, and positions that impacted the inquiry). An account of this scrutiny was maintained using audio reflections. These entries were retrospectively studied to produce a short narrative titled “Preface: My position throughout this research journey,”—a narrative that can be found at the beginning of this thesis. In addition, detailed field notes, frequent memo-writing, post-interview audio reflections, and diagramming assisted with the formulation of the theoretical framework. For example, toward the end of the data collection process, I completed several audio reflections where I attempted to compare and contrast the major themes and sub-themes to solidify their relationships with each other and with the supplementary insights that I gained from conducting the interviews. Most especially, diagramming assisted in developing the interaction between how the local community level factors relate to the grandmothers’ core beliefs, essentially aiding in the foundation that upholds them.

A thorough member-check process was sustained through the completion of in-depth interviews with previously interviewed participants. The goal of these interviews was to convey the results back to a handful of initially interviewed Grandmothers (n=4) to explore how they conceptualized the main themes/results. The member-check interviews were also transcribed verbatim and used to modify and solidify the accuracy in the content and context of the data. In addition, the themes/results were also brought back to other Six Nations community members (non-grandmothers) to gage their perspectives. The suggestions garnered from the application of these diverse lenses were used to direct additional interviews with research participants for the purpose of clarifying or re-evaluating specific issues. Specifically, the non-grandmothers provided insight into how the results would be perceived by a young-adult cohort of Six Nations community members. They provided suggestions of additional questions that could be asked to grandmothers and commented on how to frame the results for data dissemination. I proceeded to use their guidance and recommendations so that a thorough understanding of the results could be presented back to the Six Nations community.

**2.3 Results**

Demographic characteristics of research participants:

18 grandmothers were interviewed in total (three group interviews and seven individual interviews). 4 of these 18 grandmothers participated in supplementary member-check interviews. The mean age of the research participants was 64.8 years, the youngest being 52 years and the oldest being 84 years. Many of the participants are widows (44.4%), 22.2% are currently married, 16.7% are single, 11.1% are living with their partners as common-law couples, and 5.6% are divorcees.

88.9% of the interviewed grandmothers had obtained at least a high-school level education, with 5.6% attaining a University degree. The majority of the participants worked primarily as home-makers (28%), while many others held jobs as educators, healthcare providers, and in local businesses. Those who were retired still maintained very busy schedules by participating in various local committees and playing an active role in raising their grandchildren.

|  |  |
| --- | --- |
| **Description** | **Value (n=18)**  |
| Total Number of Grandmothers interviewed Number of Great-Grandmothers  interviewed  | 184 (22%)  |
| Mean age of Grandmothers (years)  | 64.8 (Ranging from 52 years to 84 years)  |
| Median number of Grandchildren each  | 5 |
| Marital status  Married  Common law  Single  Divorced  Widowed  | 4 (22.2%)2 (11.1%)3 (16.7%)1 (5.6%) 8 (44.4%)  |
| Highest Level of Education Less than High school  High school Some College  College diploma or equivalent  Some University  Bachelors degree Graduate school (eg: MSc, PhD) Professional degree (eg: MD, DC)   | 2 (11.1%)9 (50%)1 (5.6%)4 (22.2%)1 (5.6%) 1 (5.6%) 00 |

Table 1.0 Demographic table of interview participants (n=18).

Theoretical Framework: The Embedded Model of Perinatal Health Beliefs and Behaviors

 Figure 4.0 illustrates the theoretical framework that integrates the results of this thesis. In this framework, the dotted arrows represent an influential relationship (e.g. grandmothers’ perinatal health beliefs influence maternal health behaviors via storytelling and actions). The thick solid arrow represents a requirement to uphold another factor (e.g. local community-level factors are required to uphold the grandmothers’ perinatal health beliefs). The thin solid arrow represents an ideal influential relationship that may not exist in the practical organization of the community. For example, ideally, maternal behaviors should influence community level factors because social programs should be developed based on community needs. However, this relationship may be impacted by other complex factors such as a community’s political agenda, funding, and access to human resources.

The core perinatal health beliefs of the grandmothers, the maternal health behaviors of subsequent generations, the concerns that serve as dynamic observation-based community level factors required to uphold the beliefs, and the rooting of these components within a fluid mosaic of societal influences, fit together as embedded circles (wheels). The first small wheel on the inside encompasses the core perinatal health beliefs of the grandmothers. These perceptions translate into maternal health behaviors of subsequent generations through the grandmothers’ oral stories and their own behaviors (actions). The second small wheel encompasses the maternal health behaviors of the generations that are subsequent to the grandmothers (eg: their children and grandchildren). The maternal behaviors of the younger generation also influence the grandmothers’ beliefs around perinatal health through storytelling and actions. For example, if a young mother’s health perception and behavior changed after acquiring knowledge from other sources (e.g. a health program or service), she may share that with her grandmother orally or through her actions. As a result, the grandmother may change her own perception about that particular issue. As a more specific example, one grandmother expressed that while she was growing up, she learned that newborns should be bathed daily to ensure healthy growth and development. However, when her granddaughter was pregnant, she attended a prenatal class where she was taught that daily bathing is not necessary for optimal health and could in fact be detrimental. Through the granddaughter’s actions and storytelling (e.g. sharing her own personal experiences), the grandmother had altered her initial perception on cleansing newborns. This example also illustrates that some of the grandmothers’ beliefs are not rigid perceptions—they are instead guidelines based upon their own experiences.

The community concerns expressed by the grandmothers (which are community-level responsibilities required to uphold the core beliefs and thus necessary for optimal health) are largely a result of the maternal behaviors that they have observed within their community. These concerns are dynamic because they are directed by maternal beliefs/behaviors and influenced by societal factors. In addition, the maternal health beliefs/behaviors of subsequent generations can also impact the grandmothers’ core beliefs about prenatal and postnatal health.

 For example, one of the core beliefs about prenatal health is that pregnancy is a sacred period where a woman should keep her emotional and mental health in balance and stay vigilant by monitoring all symptoms that occur in excess. A grandmother will teach subsequent generations this lesson by sharing stories from her personal life and/or having emulated the behavior for her children while she herself was pregnant. A local community factor (concern) that is required to uphold this belief is that current subsequent generations should take the effort to learn more about spirituality and positive thinking (which is instrumental to their own and their children’s optimal health). This community concern was generated by the grandmothers’ observations of maternal health behaviours/beliefs of the younger generation (i.e. observing young mothers not being able to face their challenges with an optimistic attitude). This relationship between maternal beliefs/behaviours and community factors is dynamic, as things can change (e.g. new resources, local social programs, or familial connections can become available to help youth mothers learn more about positivity and spirituality). Likewise, community factors are influenced by societal factors (in this case a youth’s access to spiritual teachings or community Elders).

Essentially, the prenatal and postnatal health beliefs of the Six Nations grandmothers and the maternal behaviors of subsequent generations are embedded within local community level factors (concerns), which are influenced by familial networks and the greater society.

Figure 4.0 Theoretical Framework: The Embedded Wheel Model of Perinatal health beliefs and behaviours

Setting the stage with the Grandmothers’ accounts:

Consistently discussed by all of the grandmothers, women of their generation did not receive an adequate amount of verbal advice about pregnancy and prenatal health from their own mothers or grandmothers. Instead, they had to learn primarily through observation, listening to stories told by family and friends, and simply “being on their own”. A common reflection of the reproductive years of this generation of grandmothers was that a woman would be on her own once she got pregnant and was just “supposed to know what to do.” There was nobody who talked with them about pregnancy and health in any detail (not their parents or their health care providers). As a result, there was much reliance on their own maternal instincts providing survival.

“I grew up in a time when you didn’t ask questions. Like I was taught not to ask questions as I grew up. I was not allowed to listen to my mother and dad talk. They spoke in their language. We just didn’t ask so [when I got pregnant] I just lived as I always lived and did as I always did, ate as I always ate.” (Group Interview 2)

Many of them described their own mothers as “private” and “very close-mouthed,” especially about the topic of pregnancy and prenatal health. This reality, created an environment where they had to “learn for themselves,” read books, and do the best they could with the information they had. Some may have wanted to ask more questions but did not feel like they had the freedom to inquire further. In past generations, pregnancy was perceived secretive, hushed subject.

“When I was pregnant with him I wanted to know things but I didn’t know, didn’t have anybody to ask. My sister already had kids before but she never talked about it, she never talked about anything. And my mother was really close mouthed about a lot of things, she never really talked much about anything and so what I did was, I read a book by Elizabeth Bing, the Mom’s method. I read that book from cover to cover when I was pregnant with my son and I still have that book.” (Individual Interview 1)

“I guess I just felt like my mom was private. Im private. I don’t know. I probably did ask her something. I don’t remember asking a whole lot of questions.” (Group Interview 2)

“My mom was just independent of her mom too, she did her own thing. My grandma was there but I didn’t ask her a lot of questions either. I do remember them telling me stories. I do remember that, about their deliveries.” (Group Interview 2)

In addition, trial and error, personal choice, and trust in oneself became especially important in guiding maternal health behaviors. In some cases, it led to “friends being each other’s counsellors;” and learning and sharing pregnancy information with friends became common.

This generation of grandmothers expressed the many differences between their youth and that of subsequent generations. The grandmothers discussed at length about the many chores and generally busier lifestyle that kept them active throughout their lives. As a result, “laying around” and being sedentary is a foreign, unnatural concept that is not in parallel with the values they were raised with.

“We just had stuff to do. We had chores to do. We had bills to pay. There was no time to lay around. You just had to do what you had to do. Sleeping and laying around—that’s not the way we were brought up.” (Group Interview 1)

The grandmothers voiced acknowledgement that the increase in sedentary lifestyles and a more-convenient way of living (eg: with modern machinery, technology, running water) is related to changes in the way children are raised and the value systems that are taught to them—both of which can impact behavior.

“My upbringing might be a little different than [my childrens’] because when I was brought up, it was a lot different than it is now. My parents lived on a mixed farm. My dad was a farmer and he had all kinds of animals. We had to help with daily chores like feeding the chickens, gathering the eggs, cleaning the hen house, those kinds of things. It’s all different now. Kids don’t know these things anymore.” (Individual Interview 4)

Overall, regarding the topic of prenatal and postnatal health beliefs, the grandmothers expressed three primary beliefs for optimal health and seven local community factors (concerns) for the upkeep of optimal health.

Primary belief 1: Pregnancy is a natural phase of the life cycle

The grandmothers perceive the state of pregnancy as a natural course of life that is neither an illness, a medical problem (typically does not require medical intervention), nor a “comfort zone” where one should “baby themselves”.

“Don’t sit for too long, don’t be lazy, move around. You are not sick.” (Individual interview 5)

This understanding of pregnancy also includes behaviors that should be avoided, such as being sedentary for long periods of time, “lazing around”, and eating for two. The state of pregnancy should not be equated to a state of illness where you take an intermission from your normal life to rest in excess. Instead of “laying around” one should continue rising with the sun and keeping up with their pre-pregnancy chores and work life. This practice is encouraged to maintain optimal health in four different ways: 1) a pregnant woman must stay active so that her body is ready for the job of childbirth; 2) staying active during pregnancy helps to ensure that the baby does not “settle” in a position that makes delivery difficult; 3) avoiding sedentary behaviours helps to prevent excess gestational weight gain, which is difficult to get rid of postnatally; 4) staying active helps avoid the development of large babies. It is recognized that optimal prenatal health lies in a state of balance between rest and exhaustion; one should avoid resting in excess (laying around) and moving around or participating in too much physical exertion (exhaustion).

“When you are pregnant, you’re so big, like that’s what I thought—no one is going to know what I ate, I’m big anyway. But you pay for it after.” (Group interview 2)

“And they can work and everything too, I think. You don’t really need to baby yourself. Because to me, pregnancy is a normal process. Maybe they need to baby a little bit toward the end of the pregnancy when you need an afternoon nap or pillows to support your belly. Because they do get into this comfort zone. Of pregnancy.” (Individual interview 2)

“I don’t think [the problem] is too much sleep though. I think it’s being lazy and not getting the exercise and moving around because if you are sitting or laying around doing nothing then your body is not going to be ready for the job of having a baby. It is a big job. If you are just lounging around and not doing anything then all of a sudden you do lots of work, its going to be really hard. So that’s how it is having a baby too. So you have to be exercising and then its not going to be that much work or you would be able to handle it better.” (Individual interview 1)

In addition, it is also believed that the continuation of a pre-pregnancy lifestyle during pregnancy can be a negative thing if the mother reflects poor health habits. The grandmothers provided examples such as overeating, drinking alcohol, smoking, or using drugs to represent these negative habits. They say that these behaviors can have serious impacts on the unborn child and should be immediately terminated.

“I was a big eater. But I was also in a drinking time in my life when my son was born. So you know, I didn’t stop drinking because I wasn’t educated on the bad things smoking and drinking and stuff like that can do to your child when you’re carrying a child.” (Group Interview 2)

Personal experiences (including those gained through trial and error) can help one learn optimal maternal behaviours for their unique bodies and circumstances. For example, one grandmother discussed in detail how she was told to eat for two during her first pregnancy but through trial and error experiences learned that it is the responsibility of the mother to avoid over-eating because it can cause overweight babies.

The belief that one should avoid the behavior of “laying around” during pregnancy (excessive sedentary behaviours) is especially significant because it was consistently the most important belief the Grandmothers had about optimal health during the prenatal period. It was also a belief that arose several times during the many of the interviews and one that was expressed with feelings of concern and worry for the next generation.

Primary belief 2: Pregnancy is a sacred period

Although pregnancy is thought of as a natural phase of a woman’s life course, pregnancy is also believed to be a symbol of a special spiritual state. It is a time where the pregnant woman and the unborn child are on the verge of two different spiritual worlds and their fates not easily guaranteed. The grandmothers also explain that a mother should not be too prepared or too anxious for the baby’s arrival.

“They say that when you are getting ready for the baby to come, not to be too ready. Don’t get cribs and all kids of toys and all kinds of gadgets and stuff like that because you don’t know how long they are going to be here. And sometimes when you get too many things, they aren’t going to stay long. Have the necessities but don’t prepare too much.” (Individual interview 1)

The grandmothers also expressed that the sacredness of pregnancy also requires that the pregnant woman stay vigilant, monitor all symptoms that occur in excess, be aware of changes that may occur, listen to her body, and learn from her experiences (which is how one learns how to trust oneself but also understand that the things that are out of one’s control will be taken care of by a greater power).

“So I think anything excessive should be monitored. Anything out of the ordinary should be monitored, not taken lightly.” (Individual interview 2)

“If there are premature signs of labour, it should all be looked at.” (Individual interview 2)

“Eating foods that agreed with them, you know. If they didn’t watch what they ate, they would get indigestion, so they watched really well, you know, with that.” (Individual interview 3)

“Nature will take care. If you have a craving for food—if you fulfill that craving, it is probably what your body needs. Listen to your body and do what feels right. And don’t feel guilty if you make a mistake. Just learn by it.” (Individual interview 7)

The sacredness of pregnancy also reveals how critical the maintenance of balance is to the pregnant woman’s wellbeing. This encompasses spiritual, physical, social, and emotional wellbeing. The grandmothers expressed that if all of these factors are balanced, the woman would not be faced with sadness, feeling down, or feeling too excited for the baby’s arrival. This concept extends to doing everything in moderation, between the extremes.

“To me it’s more of a spiritual thing. You need balance all around—physical, spiritual, and mental, it all has to be balanced. And I just took time to myself to pray and sort through things and I was fine. I didn’t need someone telling me ‘you’re depressed and you need pills’. That’s not helpful. (Group interview 2)

“Everything in moderation is the goal. Aristotle’s theory isn’t it? Between extremes. If you go too much the other way too, that’s not good for your baby, to develop a normal, healthy baby.” (Individual interview 2)

Primary Belief 3: Give the baby “a chance to be healthy” by ensuring postnatal requirements for optimal health

The following main themes were identified as the most important areas for ensuring a newborn child’s optimal health: immunity, security, comfort, social development, and, parental responsibility.

Immunity involves making a mindful effort to keep the newborn away from large crowds/sick people and adhering to standard immunization protocols. This is a crucial element in the assurance of a healthy child. Grandmothers consistently expressed the need to give the newborn adequate time to develop their immunological defenses within the boundary of their home environment before exposing them to new surroundings.

“We were supposed to stay home for the first three months, not visiting other homes or out in public. And mothers don’t follow that anymore. If anybody wanted to see the baby, they would come here. There is a double duty of keeping the mother well and the baby not exposed to germs until she has built immunity. [Nowadays] right out of the hospital, they got to go shopping, and do this and do that. They should take more time—to give them a chance to be healthy.” (Individual interview 7)

Security is primarily developed through wrapping, bundling, and “snuggling” the infant and supporting predictable routines. A child feeling comfortable and secure helps to form stronger mother-child bonds, helps with the optimal development of the child’s mind (by helping them learn how to stay calm).

“Babies need to feel secure. That’s what swaddling does for them. It helps them feel snuggled because they are not used to all this space. When they were inside mom they were all bundled up and if they are still like that outside, babies are more calm.” (Individual interview 1)

Comfort consists of ensuring that the baby is comfortable in how you choose to dress them, treat them when they need to be reassured, and how you choose to support them during sustained periods of sitting (eg using a cradleboard if possible instead of a baby seat). Feeling comfortable helps to develop trust, confidence, and the ability to calm oneself.

“I dislike those baby seats. They would be a lot better if they were on a cradleboard. It’s better for their bones and spine. It must be uncomfortable for [the baby]. They all protest, they all cry. That’s definitely important. Making sure that baby is comfortable and not just buying things because they are available [and convenient].” (Individual interview 7)

“It just bugs me when people take their babies out, I mean their eyes are new. They should keep them in a darker room for two weeks. But now you see women running around with little stiff clothes on and stiff hats on their little heads. And jeans. Hard jeans on their soft little body. That just bugs the heck out of me.” (Individual interview 5)

Social development consists of ensuring reciprocal communication (making eye contact and talking to the newborn) to help promote social growth and development. Social development through active communication helps to teach important skills that will help them learn how to form satisfying and trusting relationships.

“Social development. [The baby] knows who are and all. He sees you, hears your voice, that’s one things that I told my grandchildren, talk to your baby. If you are going to change him, tell him that. He knows the tone of your voice, and if you keep talking to him, he’s going to respond. Eventually. So that’s the social development at a young age. Cause they are born with that wonderful thing called a brain and they start to think right away. You might not know it, but they do.” (Individual interview 3)

Parental responsibility includes being accountable for the child that you have brought into this world. It includes being available for them and helping them become the “productive people they were meant to be”. Although the grandmothers recognize that returning to work postnatally is a personal choice for each individual woman, they do encourage the behavior of staying home with the baby instead of having someone else watch them—especially during the first year, which is a crucial time period for building a strong bond. It was consistently stated that a mother should take responsibility for her children. In addition, parental responsibility also encompasses ensuring that mothers are ready to raise children before conceiving, that they can commit time for them once they arrive, and that mothers continue to be “there for them” during challenging times such as parental separations.

“She should stay with the baby instead of having someone else watch them.” (Group interview 1)

“If it was up to me to tell my daughter to stay home with her kids, I would tell her to stay home as long as she could with them.” (Group interview 1)

“I told my daughter, if you have children, you raise them, don’t stick them in daycare. They’re your children. You raise them, be there for them.” (Group interview 2)

“There’s quite a bit of abuse separation you know. A lot of men leave their wives and it could be the other way around too with leaving their husbands with the kids and taking off. You see a lot of that. We were always there for them. You have to be there for your children.” (Individual interview 6)

Local Community level responsibilities required to uphold the grandmothers’ perinatal health beliefs:

The grandmothers also expressed six primary areas of concern for the development of a healthy future generation. These areas of concern are community factors that are essential to uphold the prenatal and postnatal health beliefs, and thus optimal health.

Community Factor 1: Healthy food

Food symbolizes more than nourishment for the body. It has cultural and spiritual meaning around familial gatherings, the connection to the land, and the treatment of the animals that are sacrificed for our meals. The grandmothers’ concern around these areas include: contaminants, toxins, and pollutants that enter the food chain as a result of industrial processes, the manipulation of food that once grew natively on the land, the negative impacts of the immoral ways that animals are sacrificed for meals, new childhood allergies as a result prenatal food choices, taking more time to understand familial medical histories can better guide food choices (especially during pregnancy), food security and access to healthy local foods, difficulty in making healthy food choices when most food items are chemically or biologically processed, sweetened drinks (eg: pop) being fed to young children, and the lack of reverence toward the teachings around Traditional teas. The grandmothers also suggested that the younger generation should aim to solve these issues around the access to healthy foods so that their children can live healthier lives. After all, the access to healthy, natural, local foods year round for the community is important in upholding all three of the Grandmothers’ core beliefs about prenatal and postnatal health.

“All the chemicals we take in through our food and vegetables—we have to flush that out. If we don’t, it stays inside [and makes us sick].” (Individual interview 6)

 “Our plants are being manipulated, our old Indian corn isn’t the same as it used to be. Tomatoes aren’t the same.” (Individual interview 5)

“Disrespect for our meat. Disrespect for our food. They think they know better than the Creator. Look what they have done to the cows, injecting them with chemicals. Everyone is fat now.” (Individual interview 4)

“They don’t respect these chickens. They exploit the chickens and pigs. They abuse them. When you’re killing a moose, you never chase them for more than 45 minutes because that moose has got powerful poisons in it and when the adrenaline goes wild, that goes in the meat and it can make you sick.” (Individual interview 4)

“I think she has to be careful, like now they tell them to not eat peanut butter when you’re pregnant, because your child will develop an allergy tot that. That was unheard of when we were growing up.” (Individual interview 3)

“To be healthy, I guess you have to have a healthy natural diet. I guess its easier said than done because it’s really scary nowadays because of all the [toxins] they put in the food. How can you say anything is really natural? Even if we grow it yourselves, what is in the soil is going to get into your food. How can you have anything natural anymore? Chemicals and hormones are all man-made. The Creator put everything we need to live on, to grow, to survive on.” (Individual interview 1)

“The biggest health problem is that it is hard or very difficult to be healthy because of all the stuff they put in the food. I mean, I don’t know how we can be healthy?” (Individual interview 7)

Community Factor 2: Strong, healthy partnerships and social support networks

The Grandmothers expressed their concern for the “psychologically lost” mothers in the community who may not have someone in their social support network to help guide them, “lend them a helping hand”, or help them learn their new level of responsibility. Enhanced structures of familial and social supports are necessary to help young mothers raise strong, healthy children. They also brought to light the many grandmothers who are currently raising or have adopted their own grandchildren. Many feel obligated to give them a good environment but also expressed the challenges of taking on such an important responsibility. This community concern is related to upholding the sacredness of pregnancy and helping to raise healthy babies. When it is not upheld, it becomes a barrier in ensuring optimal health.

“We have a lot of young mothers [at Six Nations]. A lot of them probably have their mothers to help them. And that’s good, but some are already lost, from a psychological point of view, lost. And their first priority is not the baby, it’s themselves. It’s all about me, and the baby comes second, sort of thing. And hopefully there is someone there to give them a hand, point them in the right direction.” (Individual interview 3)

In addition, grandmothers identified that a strong spousal partnership weighs heavily on the emotional status of a healthy pregnancy. Maintaining a relaxed mind during pregnancy is very important in the assurance of a healthy baby. It is also important to have a good support system lined up before the third trimester. Women may not want to ask for help or feel as though they are able to, which is why it is really important for familial networks to lend a helping hand during this time. Grandmothers expressed that family members and friends being present at the birth is not always the most important thing. Instead, the more important thing is making a commitment to be an active part of the mother’s support system. That is more valuable and helpful than the glory of being at the birth.

“It is really important to have a support system set up before the third trimester. A lot of our women don’t like to ask for help or they don’t feel like they can. Being at the birth is not the most important thing. It’s about making a commitment to be in her support system, not just about the glory of being at the birth.” (Individual interview 1)

This community-level factor is related to upholding the sacredness of pregnancy and helping to raise healthy babies. When it is not upheld, it also becomes a barrier in ensuring optimal health.

Community Factor 3: Postnatal care for mothers with newborns

The grandmothers stated that one of the most important behaviours to ensure optimal health is for new mothers to engage in adequate postnatal care. This includes staying active to rid oneself of the pregnancy weight (to avoid excess weight) but also seeking resources and support to ensure mental and emotional wellbeing (due to the risk for postpartum depression). These community factors were often shared through one’s personal experiences with their own postnatal challenges.

“I think the most important thing is taking care of yourself after you have the baby. And a lot of people, a lot of Natives don’t do that. They figured they got the baby fat now, so what’s going to become of it? You gotta work at it to get rid of it. But a lot of people just get worse after having babies. They don’t take the time to take care of themselves.” (Group interview 2)

“Don’t worry about the house being messy. Don’t do any housework, don’t do any dishes, don’t cook, just take care of your baby and let people take care of you. That’s what we tell people now. But when I was having my children, nobody said anything like that. Nobody even gave that kind of advice or anything and so I went home and did what I was doing, did what I had to do because I had other kids at home. When I was having my third one though, it was really, really hard on me because of post-partum depression.” (Individual Interview 1)

This community concern is related to helping to raise healthy babies and strong families. When it is not upheld, it becomes a barrier in ensuring optimal health for new mothers and for their children.

Community Factor 4: Physical activity for children

The grandmothers recognize that there has been a decline in physical activity and a rise in sedentary behaviors amongst children. This change is discussed as a comparative view between the active lifestyles that the grandmothers had as they were growing up in contrast to the behaviors of their grandchildren. Although, this is a commonly cited observation for many communities in North America, it of special concern because 1) the rates of childhood obesity are particularly high amongst Aboriginal Peoples; and 2) sedentary behaviors (including “laying around”) are foreign concepts to the cultural way of being for this community.

“It’s so different, kids now a days. You don’t see no kids playing outside or nothing. Before we would always be outside. We would always be outside. We were never overweight you know. And nowadays you see that they sit in front of the TV. Chunky little kids around. Videogames. The only exercise they get is for their eyeballs.” (Group interview 2)

Community Factor 5: Teachings about the impacts of prenatal maternal behaviours on the unborn child

The Grandmothers expressed the importance of new parents being mindful about the impacts that prenatal behaviours have on the health of the unborn child. These impacts can be both positive and negative. For example, a pregnant women pursuing higher education is placing her unborn child in an enriched environment that will provide added benefit to the child’s mental growth. Similarly, a woman who engages in drinking alcohol or smoking cigarettes during pregnancy can predispose her unborn child to serious physical and/or mental disabilities. The grandmothers wanted the next generation of parents to have a wholesome understanding of such translational impacts so that they can make the best decisions for themselves, for their children, and for their communities.

“Oh I think that’s very important. I’ve watched and witnessed my grandchildren being born and at one point my daughter in law was going to class at a university and so that child before she was born even, was exposed to a learning experience, and they say that if you sing coo to your baby while you are carrying it, that that has an impact on that baby. A lot of mothers don’t think about that, but then it’s brought home really strong if the mother takes drugs, smokes, or drinks alcohol, I don’t know if whether that mother is told at any point that she shouldn’t do that. I think that a fair number of the young native people don’t know or don’t want to know. They get into drugs and smoking and drinking and they don’t think that’s going to have any effect on their baby but it does. They are born with alcohol syndrome. They are born with a need for drugs before you know that kind of thing. And smoking affects their lungs. But again in that time that we were growing up we never heard of that.” (Individual interview 3)

Community Factor 6: Teachings about spirituality, balance, and positive thinking

The grandmothers consistently discussed the importance of spirituality, a balanced lifestyle/outlook, and positive thinking upon health. This is true not only for pregnancy, but during the life course—however, it does become especially important during the prenatal and early postnatal periods because the baby (unborn and newborn) is always listening and feeling everything the mother feels and the social environments they are around. This local community level factor is important in upholding the sacredness of pregnancy and helping to raise healthy children.

“To me it’s more of a spiritual thing. You need balance all around—physical, spiritual, and mental, it all has to be balanced. And I just took time to myself to pray and sort through things and I was fine. I didn’t need someone telling me ‘you’re depressed and you need pills’. That’s not helpful. Some kids these days don’t know anything about spirituality or how to think positive. They just want to dwell on the negative.” (Group interview 2)

Other important considerations

There was very limited advice or beliefs shared about health during the pre-conception period. Pregnancy was consistently described as a stage that was not planned for during their generation and a period where they were not consulted for health advice by their children or grandchildren. However, the Grandmothers recognize that in today’s generation, more couples are planning for children.

The grandmothers also stated that personal choice, personal ability, and contextual factors play a role in directing maternal health behaviors. For example, breastfeeding (length, duration) and returning to work postnatally are impacted by a variety of complex, yet interrelated physical and social factors. For example, a mother may be aware that breastfeeding is optimal for her newborn’s health (as per the advice of her health care provider), however she may be physically unable to produce enough milk or be able to exclusively breastfeed multiples (e.g. twins). In these scenarios, the grandmothers encourage the woman to stay positive, and “not to feel guilty.”

Learning to listen to your body (regarding rest, sleep, exercise postnatally) is rooted by personal choice and an element of trial and error/adaptive management. Rigid health recommendations are not optimal for everyone (every *body* is unique and is living a different context/reality). As a result, a balanced understanding between content and context is needed to make ideal health decisions.

Grandmothers seldom interfere or self-impose advice on their children or grandchildren. Instead, teachings/lessons are worded very respectfully and oftentimes shared as a story or by her own behaviors and actions. In addition, the Grandmother will give advice when she feels is the best time for the recommendation to be considered seriously (“There is a right time to give advice”). They also encourage learning from experience, learning from mistakes, and independence, as it is “one of the best gifts you can give your child.” Grandmothers oftentimes use their own personal experiences to help counsel or teach.

The process of learning from experience includes learning through observations (through watching family members, being around babies from a young age). Also, there is recognition that advice on optimal prenatal and postnatal health behaviors change over the years (e.g.: around how to clean your baby). This means that there also opportunities for learning health advice from the stories or behaviors of subsequent generations. Overall, the Grandmothers have primarily formed their health beliefs around prenatal and postnatal health through their own personal experiences.

**2.4 Summary and Implications**

In summary, the grandmothers consistently discussed three primary areas of prenatal and postnatal health: 1) Pregnancy is a natural phase of the life course that is not an illness, a medical condition, nor a “comfort zone.” In order to ensure optimal health, a pregnant woman should continue with a non-sedentary lifestyle; 2) Pregnancy is a sacred period where a state of balance is key; 3) Babies should be given a chance to be healthy through the promotion of immunity, security, comfort, social development, and parental responsibility. These teachings are shared with subsequent generations via storytelling and observational teaching (the grandmothers own actions). In addition to these core beliefs, the grandmothers also identify six barriers/local community concerns to upholding these beliefs. These local community factors were generated through the observations that the grandmothers have made about the younger generations’ maternal health behaviors. As a result, the relationship between these community factors and the maternal behaviors of the younger generation is dynamic. As the younger generation acquires knowledge from other sources and translates it into their own behaviors, it can then influence the grandmothers’ beliefs about optimal prenatal and postnatal health. An underlying factor within these relationships is that culture is a modifiable, fluid concept that can change over time. In addition, this model is heavily reliant on the storytelling being a key component to the transfer of knowledge. The relationship between the storyteller and the story listener is paramount because both parties have a responsibility for the knowledge. Sharing knowledge through storytelling and observational teaching is a very respectful to those who are gaining the knowledge because they are able to absorb and apply what is appropriate for their own specific circumstances. It is not self-imposed nor enforced; there is no precise prescription of how one’s life should be lived. Each person has the responsibility to make the right choices for oneself—but the grandmother is instrumental in helping to guide or counsel by sharing their personal experiences.

The implications for these results are important for the Six Nations community. First, we have a better understanding of how grandmothers, who are highly respected community members, view optimal maternal health behaviors. This information can help to modify existing health programs or help establish new community-inspired programs that are based upon culturally-generated knowledge. It is evident that programs that help to improve community factors and/or assist with familial or social supports are integral to upholding the grandmothers’ beliefs about optimal prenatal and postnatal health. In addition, offering a space or platform where a pregnant woman’s grandmother or older female relative can be involved with sharing her own personal birth stories, to counsel/guide on important teachings (e.g.: responsibility), or to offer emotional support can greatly benefit the women of this community (and thus future generations). Also, the data from this study can help begin the dialogue of other health interventions that can use storytelling as the basis of translating important health knowledge to key stakeholders. For example, perhaps health and non-health services that cater to Aboriginal communities can implement oral storytelling as a way to share knowledge with their clients and customers.

This study was designed and conducted with scientific rigor, upholding grounded theory methodology as closely as possible. First, data collection and analysis occurred iteratively in order to ensure that the emerging themes were addressed appropriately during subsequent interviews. Second, the multi-disciplinary data analysis team provided various perspectives that were debated until a consensus was achieved. This resulted in a more rigorous analysis. Third, participants (n=4) were consulted for member-check interviews to ensure that the data representation aligned with their perspectives. During this interview, a brief summary report was orally presented to the participants and their feedback was audio-recorded. Nothing was changed after completing these four interviews. Fourth, to ensure transparency, participant quotes were presented to illustrate how their voices were used in the data analysis and interpretation.

The anticipated challenge of this study was to strike a complementary balance between rigorous scientific research and Indigenous ways of knowing. Although the frameworks that were put in place to uphold the voice of the community (eg: a Six Nations advisory group, a community coder, extensive relationship building), exclusive Indigenous methodologies were not used. For example, the ethical underpinnings of this study were designed with a Western view in mind, including the processes for written informed consent (which is ultimately based on the accepted standards of Research Ethics Boards). Obtaining informed consent under an exclusive Indigenous model would have been a very different process, perhaps even including an oral consent without any paperwork. This is a limitation because it may set a boundary on community acceptance and application of the research findings. Despite this potential limitation, a strength of this study is that it was designed as a collaborative initiative between McMaster and the Six Nations community and conducted with the upmost respect for the research participants.

Although the goals of this study were to understand the cultural beliefs and perceptions around prenatal and postnatal health as per the grandmothers of Six Nations, the results are able to help us understand the perspectives of young mothers and fathers. This information can help formulate a holistic understanding of what types of prenatal and postnatal supports are required to help subsequent generations raise healthy, strong children.

**Chapter 3: Indigenous Knowledge Translation (KT)**

1. **Overview of KT and KT in an Indigenous context**

Knowledge Translation (KT) is the process where research findings are synthesized, disseminated, exchanged, and applied for different audiences. It occurs on two main levels: 1) With researchers within the field of study (through scientific meetings, academic publications, and conferences); and 2) With the key stakeholders of the knowledge (patients, community members, health care providers, policy-makers, etc.) (Straus et al., 2009). This dynamic and iterative process is encouraged by Canada’s largest health research funder, the Canadian Institutes for Health Research (CIHR) as the linkage between research and improved health programming (and thus, health outcomes) (CIHR, 2014). CIHR also suggests that using an integrated KT model where stakeholders are engaged during the entire research process helps researchers and knowledge users work collaboratively to determine research questions, methodology, interpretation, and dissemination. This process helps to ensure that the produced findings are relevant and functional. Originally developed by Graham et al., 2006, the current CIHR KT framework (Figure 5.0) conceptualizes a knowledge-to-action process where a funnel represents the thorough distillation of knowledge before it is adequate for application.

The audience for KT must surpass the circle of researchers—in fact, it is should be mandatory for dissemination to reach the population of key stakeholders (especially patients, health care professionals and policy-makers). This becomes even more vital when research is conducted with marginalized or socio-economically disadvantaged communities. To uphold ethical research, the investigative team must ensure that the research findings remain relevant to the population and is translated using a culturally-appropriate vehicle.

Smylie et al (2003) evaluated the previous CIHR model against Indigenous knowledge via a literature review and expert opinions. They concluded that KT methodology in the health sciences needs to be specifically developed and evaluated within Aboriginal communities. This is because different cultural underpinnings may prevent the direct application of a Westernized Following this request, CIHR created documents specific to Aboriginal knowledge translation. It is recognized that Aboriginal KT (using research to create positive change) is an ethical pursuit where respect, reciprocity, relevance, and responsibility are embedded in the framework for understanding and engaging in a research relationship with Aboriginal communities. First, there are many different sources of knowledge (e.g. scientific knowledge, traditional Indigenous knowledge)—all of which must be respected. Building upon the diversity of sources is a necessary step to filling in the large knowledge gaps about Aboriginal health (status, non-status, Inuit, Metis, rural/remote Aboriginal peoples) (CIHR, 2013). This concept is the true meaning of the “knowledge” component in knowledge translation. Second, community input and support are essential elements that must be in place from the beginning of the study—from study design, to data collection/analysis, and program development (CIHR, 2013). This level of community engagement helps to sustain KT effectiveness by increasing relevancy, building capacity, and community knowledge. The channels for dissemination must be complementary to the community’s way of knowing and being (which can be understood through a community-based approach). These concepts illustrate the “translation” component of knowledge translation (CHIR, 2013). The primary goals of Aboriginal KT can be located in Table 2.0.

|  |  |
| --- | --- |
| 1 |  Build on both Aboriginal and non-Aboriginal definitions of KT.  |
| 2 | Understand and engage with the ethics of KT.  |
| 3 |  Draw from the long history of KT in Aboriginal communities and build on traditional practices and understandings of knowledge generation and sharing, as well as health and well-being.  |
| 4 | Utilize the multiple types of knowledge and ways of knowing. |
| 5 | Partner with Aboriginal communities throughout the research and policy-making processes.  |
| 6 | Tailor research and KT strategies to local Aboriginal knowledge and cultural systems.  |
| 7 |  Engage and involve First Nations, Inuit, and Métis communities, their Elders, and their political leadership in research and policy-making.  |
| 8 | Work with experts in communications and media engagement to develop and refine your KT message with and where it is appropriate and possible.  |

Table 2.0. The primary goals of Aboriginal KT (CIHR, 2013)



Figure 5.0. Knowledge to action process (Graham et al., 2006)

* 1. **Objectives of KT in the Grandmothers Study**

An active, integrated KT model is the foundational backbone of this thesis. The protocol was designed in collaboration with Six Nations community partners, the data collection and analysis process was a joint effort between McMaster and the local Six Nations team, and knowledge dissemination is an innovative project involving Indigenous oral and visual artists.

Upholding this model of KT flips the traditional role of a researcher from a place of authority to a place of equality. With these levels of active collaboration built in with the research community, both the researcher and the community (including participants) become co-creators of the knowledge, learning from one another and thus respecting the various sources of knowledge that can be gained and shared (a form of reciprocal learning). In addition, working with the local artists changed my role as a researcher/presenter to a supportive role where my teamwork and communication skills became more important behind the scenes than in the limelight. I believe that for knowledge dissemination to be truly applicable to the communities that we work with, as researchers, we must be able to strike a fine balance between leadership and cooperation.

The objective of KT synthesis and dissemination in the grandmother’s study is to utilize a culturally-generated vehicle to share the results of the study with the Six Nations community (grandmothers, new mothers, young women/men) and with health care providers/health program developers who service the Six Nations community. In the form of spoken word poetry and film, the results of the study goes through an iterative process where it is condensed (distillation) and carefully crafted into an auditory and visual story piece that highlights the main themes and theoretical framework developed from the data analysis process.

Oral storytelling is a culturally-significant way of communicating ideas for Indigenous people worldwide, so it is crucial that we use a relevant way of sharing and appreciating teachings, stories, and knowledge be the crux of this knowledge translation piece. In addition, sharing information through artistic means is an effective and applicable way to connect with people—young and old. Within an Indigenous context, art and storytelling are often used to express important teachings and messages. The process of using artistic pieces is also an active method of knowledge translation that contributes to the reciprocal teaching-learning “circular rationality” that is often expressed by Indigenous peoples (Wilson, 2008). This is because the receiver of the art/story plays an important role in perceiving the story that is told. As a result, both the artist and the receiver play equal roles in the transfer of knowledge.

The film will be featured on the Six Nations reserve through several interactive public meetings during the summer and the fall of 2015. Grandmothers, youth, mothers, fathers, midwives, health care providers, and band member representatives will be invited to attend. The goal of showcasing the video on a public platform is to share the knowledge of the grandmothers (their beliefs, message, and concerns) and to begin a healing dialogue between the generations, one that emphasizes the knowledge gained from this thesis: the celebration of birth and a cultural understanding that pregnancy is a natural (normal) process that is also very sacred.

**Objectives:**

1. Use an integrative KT model for the culturally-generated dissemination of the results of the study to key stakeholders from the Six Nations community
2. Collaborate with talented, local Indigenous artists who self-identify as community members
3. Use the content (the data/information) to inform health programming and public health initiatives and projects
4. Use the context (the actual meaning behind the data) to contribute to a healing dialogue that addresses the grandmothers’ beliefs and concerns for the Six Nations community
	1. **KT Methodology**

This project was designed with the intent of meeting the goals of Aboriginal KT. First, the “knowledge” component respectfully uses a methodology (qualitative oral interviews) that is organic, culturally complementary, and does not impose Western ways of knowing. In addition, using grounded theory methodology to approach this qualitative study holds the research participant as the most knowledgeable about the research subject. It allows the research participant to engage in what they themselves find to be important aspects of the research question using various vehicles (eg: stories, pictures, newspaper articles, personal experiences, etc.).

Second, the “translation” component is the area that highlights the involvement of the community from the project’s inception, mindful use of dissemination channels, contextualization of the results, and value of the message and the messenger (who is usually a community member). To uphold this framework, the Grandmother’s study employed a variety of elements. For example, we had an advisory group consisting of three community members to help us create a sound protocol, recruit key knowledge holders as research participants, assist with coding the interviews, advise on data analysis, and fundraise to cover the costs of producing the spoken word film. This core group was instrumental in the contextualization of the results so that a clear message can be communicated to key stakeholders. We also employed a culturally-generated (and innovative) vehicle to translate the results: a locally produced spoken word film. Through collaboration with a Six Nations spoken word artist and a film-maker, this oral-visual piece will help to translate the results of the grandmother’s study in a culturally meaningful way. In addition, the message is crafted and communicated by a community member. This is especially important because people learn best from their peers (CIHR, 2014). In addition, we engaged and involved the community of Six Nations grandmothers in the research process as our qualitative methodology builds upon the idea that it is community members who hold the expertise. Speaking with the research participants about my plans for KT built up a sense of momentum and many of them expressed interest in obtaining copies of the film to share with their friends and families. In addition, through the production of the film, we worked closely with a media expert (local artist) to refine the KT message and publish it using an audio-visual format that is accessible to the general Six Nations community.

* 1. **Relationality in the Production of the KT Piece**

Relationship building is the heart of what it means to be Indigenous (Wilson, 2008). This includes relationship building with one another, with the environment, and with the cosmos. This concept was a very important part in producing a quality KT piece that is relevant and sustainable for the Six Nations community.

I met a film maker through an intensive 7-day Six Nations Exchange program that I participated in February 2015. During our time in the program, we had the chance to learn more about one another, one another’s work/projects, and the way we think about different situations. Through many discussions, the film maker inspired me to use film and visual media as a vehicle to translate important knowledge to a large volume of people. Although the opportunity did not allow for us to work together on this particular project, I am grateful that we had the chance to consult one another on the use of film to package and translate sensitive issues.

The film maker that I worked with to produce the integrated KT video is friend of mine whom I have known for over a decade. She is very talented, creative, and committed to community-based projects. We spent many hours planning and devising a concept for the film and during this time, we also got to know one another even better than the 10-year friendship we had built from our high school days. It was such a pleasure to collaborate with someone who is so aware and sensitive to the socio-political realities faced by Aboriginal peoples.

Similarly, I was introduced to the spoken word artist through another close friend who has a strong history of working with First Nations reserves in Northern Ontario. She is a talented spoken word writer and performer who is originally from Six Nations. The two of us spent time getting to know one another over several face-to-face and phone meetings, eventually which led to an opportunity for us to work together in this capacity. The spoken word artist is strong and brilliant young Aboriginal woman, who I am grateful to have met and now call my friend.

Although I myself am a non-Indigenous person—a guest of this great nation, it is very important to me that I respect and value the importance of building relationships (through trust and honesty) in Aboriginal culture.

The analyzed data was provided to the collaborators in three different formats: a written summary, several oral presentations during face-to-face meetings and/or phone calls, and the audio recordings of the original interviews. The spoken word artist, a young mother from the Six Nations community, composed a four minute poem based upon the results of the thesis and the incorporation of a personalized thread. As she is a young woman who has recently had experience with perinatal health advice, it was important to allow her to intertwine a personal edge to the piece. In fact, it is the amalgamation of these two aspects that gives the piece the emotional height that is required to evoke a response in those who watch the film. The film-maker worked to film and edit all the scenes in way that showcases the parallels between perinatal wellbeing and natural processes while emphasizing the poignant words of the poem.

Both collaborators are supportive of disseminating the piece as widely as possible (eg: uploading on Youtube and Facebook, sharing via Twitter) so that the Six Nations community will be able to gain maximum exposure to the knowledge gained from this thesis. In addition, we will also be working closely with local partners such as the Six Nations Health Foundation, Nations Uniting, the Six Nations Birthing Center, and other Native youth networks to disseminate the film to patients and clients who may benefit from the information. The film can be accessed using the following link: <https://www.youtube.com/watch?v=8oqimM3xBhA>.

* 1. **Summary and Implications**

In summary, KT is a vital step in the research process. It is imperative that findings are shared in a relevant and appropriate way with key stakeholders including patients, community members, health care providers, and policy makers. Aboriginal KT uses a slightly different framework that encompasses a respectful, reciprocal, responsible and relevant approach to using research to create positive change. As a result, some of the key aspects of Aboriginal KT includes using multiple types of knowledge/ways of knowing, tailoring KT strategies to local Aboriginal cultural systems, engaging communities in the research process, and working with communication experts to refine an appropriate KT message.

The strength of the KT portion of the thesis is that we used many of the CIHR-recommended Aboriginal KT goals while maintaining a collaborative relationship between the Six Nations community and McMaster-affiliated researchers. For example, the protocol was designed in partnership with Six Nations community leaders. We originally presented a skeleton protocol and through several meetings with our partners, it became a solidified plan for data collection, participant recruitment, and data interpretation. In addition, with the knowledge dissemination piece being an innovative project involving Indigenous oral and visual artists, we are also working together to illuminate and support local talent. These many levels of community consultation results in a more rigorous, culturally-respectful, and thus more compelling knowledge translation and dissemination effort at the community-level.

The main challenge of the KT portion of this thesis is that we will not be able to quantitatively evaluate the behavior change associated with the dissemination of this knowledge. Because the goal is to use multiple avenues (e.g. distributing CD copies of the film, uploading on Youtube and social media), we will not be able to assess whether young Six Nations women’s maternal health behaviors or community-level factors change as a result of this film. It will however, be of worth to monitor general changes in maternal health beliefs and behaviours over time. This could provide insight into the impact of complex community-level and societal factors that underpin social realities within a community. Despite this limitation, we have applied a well-defined KT framework that is appropriate for this community and thus should contribute new knowledge in a culturally-respectful way.

The implications of upholding this KT framework provides valuable lessons for the future of research that involves Aboriginal communities. For example, it of importance to note that relationship-building takes a significant amount of time and as a result, a plan for KT should be devised early on so that the appropriate partnerships can be established. In the case of this thesis, it was vital to build a bond with the artists early on in the research process so that they are adequately involved with the protocol and thus become invested stakeholders in the dissemination of the data.

Since the KT piece is a technical application, the distribution is feasible and able to influence large numbers of people in a short period of time. As a result, the reach is broad and can potentially lead to positive impacts in regards to sharing the knowledge of this thesis, but also supporting the work of local Indigenous artists. The goal of this dissemination tactic is also to use the content (the data/information) to inform health programming and public health initiatives and to use the context (the actual meaning behind the data) to contribute to a healing dialogue that addresses the grandmothers’ beliefs and concerns for the Six Nations community. The impact of achieving these goals can potentially bring the Six Nations community even closer together, patching up some of the familial gaps that may exist around the discussion of perinatal health care. As pregnancy and birth was traditionally something that was not openly discussed, perhaps showcasing an emotional spoken word piece written and performed by a community member, may help to break some of these walls.

**Chapter 4: Discussion, Conclusions, and Future Directions**

 **4.0 Discussion**

The Six Nations community is a matrilineal society where grandmothers (especially maternal grandmothers) play an important role in helping to teach, counsel, and raise subsequent generations. Although grandmothers are not always biological grandparents, they are older women who are key figures in helping to support pregnant women and young children within the community. In the Six Nations community, they represent an amalgamated voice of the teachings of the grandmothers who came before them (as a result of familial upbringing) and the current observations they see amongst the youngsters who will become the future generation of grandmothers.

Despite the rooted cultural belief that women play a special role as teachers and advocates, it is regretfully recognized that the role of colonial forces (including residential schools, community relocation, and cultural suppression) may have impacted the transfer of cultural knowledge to this generation of grandmothers (Smylie, 2014). In the face of these challenges, many women of the Six Nations community have decided to show their resiliency and strength by participating in this research study and thus contributing to the dialogue of prenatal health, postnatal care, and raising healthy children—topics that were historically silenced, leaving important knowledge to be stripped away.

Birth is one of life’s most momentous events. For many Aboriginal peoples, birth is considered a communal event that is celebrated and believed to strengthen relationships between families and the local natural environment (Benoit et al., 2003; National Aboriginal Health Organization [NAHO], 2008; Kornelsen et al., 2010). This view supports the grandmothers’ beliefs in regards to the many community-level factors that are required to uphold optimal health for pregnant women and young children. These community-level factors are the responsibility of the entire community—from local residents to key leaders and administrative authorities. It is important for these stakeholders to be actively involved in upholding communal accountabilities (e.g. ensuring healthy local foods) so that community members have access to the resources that can help them attain improved health status.

 The results of this thesis may also help to explain some of the perinatal outcomes that are seen in the Six Nations community in relation to gestational weight gain. For example, Oliveira et al., (2013) reported that 57.1% of pregnant women from Six Nations gained more than the recommended amount of weight. In addition, the newborn’s birth weight was positively correlated with maternal BMI (Oliveira et al., 2013). Interesting, the grandmothers’ spoke in much detail about the idea that “pregnancy is not a comfort zone” where a woman should be “laying around,” and/or “eating for two”. These behaviors were thought to result in larger size babies and excess pregnancy weight gain (which is not easy to lose). Instead, the grandmothers recommended that she should be continuing to “rise with the sun,” working (in the home or outside the home), and continuing to take care of her other children—continuing to stay busy and active without over-exhausting herself. The grandmothers believe that staying active during pregnancy is one of the most important factors in the assurance of optimal health for both the newborn and the mother. This might be a point where the older generation of grandmothers and the younger generation of women at child-bearing age have different perceptions on the state of pregnancy. For example, it is known through this thesis that the grandmothers believe pregnancy is a natural part of the lifecourse where a women should continue with her balanced pre-pregnancy lifestyle—it is very similar to a toughening it out attitude. Young mothers may have a different view on the state of pregnancy—perhaps it is viewed as a time where one should slow down from their regular commitments and spend more time connecting with their unborn baby. It would be interesting to conduct subsequent interviews with women of child-bearing age to explore what their perceptions are and how it may be different or similar from the grandmothers’ beliefs. It is hypothesized that it is this change in the perception of pregnancy that has contributed to the recent increases in gestational weight gain among some communities of Aboriginal women.

Traditionally, Aboriginal cultural pregnancy teachings promoted physical work and activity in moderation. This was viewed as a healthy practice that contributes to the strength required during the prenatal period and for the birth (Eni, 2005). In addition, there are many teachings regarding the significance of maternal nutrition, which was commonly considered a community responsibility. The disruption of traditional lifestyles and diets brought on by colonization and associated environmental degradation has been linked to a growing epidemic of obesity among Aboriginal peoples (Young et al., 2000; Lix et al., 2009). This is especially true in northern and remote communities where a disproportionate burden of poverty and food insecurity results in many Aboriginal families who are unable to sustain healthy meals.

The grandmothers also identified postnatal care and support to be very important in the assurance of optimal health. They described having a baby as “a crisis,” a time where the mother needs much support from family and friends. Raising healthy children was described as a communal effort. As a result, communities need to have adequate resources to help support these needs. This includes the ability to have locally-trained traditional Aboriginal midwives that can support women during the perinatal period. This way, Aboriginal women can create their own unique birth plans, working together with a midwife who understands their cultural needs. They can also work together to set up strong support networks so that the woman is well taken of during the postnatal period (Smylie, 2014).

 The strengths of this thesis include the comprehensive community-level applicability of the research methodology, the methodological rigor of a constructivist grounded theory approach, use of an Aboriginal KT framework, and the diverse expertise brought in by the multidisciplinary research team. In addition, many measures were used to ensure participant comfort (e.g. conducting the interviews at their convenience, the interviewer being open and non-judgmental, etc.); however, the limited discussion of the use of traditional medicines may suggest that participants may not have felt entirely comfortable. Oppositely, many other sensitive topics (such as racism in the healthcare system, traditional practices, personal challenges with motherhood) were discussed. The alterative explanation is that traditional medicines are not widely used and thus not typically discussed in relation to perinatal health beliefs in this community. It may be of interest to conduct subsequent qualitative studies that explore the use of traditional medicines within the context of prenatal and postnatal care. A similarly designed ethnographical study will help to clarify the issues around traditional medicine use during pregnancy and/or the early postnatal period.

 Overall, this thesis contributes to the limited literature that is currently available on Aboriginal grandmothers’ cultural perceptions and beliefs around prenatal and postnatal health. By thoroughly assessing Six Nations grandmothers’ perinatal health beliefs, we now have a better understanding of important knowledge can be applied to health programs for this community. In addition, it also contributes to the evidence that supports the inclusion of grandmothers in the perinatal decision-making process—Six Nations grandmothers want to be more involved in the prenatal and postnatal care of future generations but in a respectful way that does not distract from the desires of the pregnant woman.

 **4.1 Conclusions and Future Directions**

Prior to initiating data collection, I had expected to hear an abundance of specific health beliefs around prenatal and postnatal health—especially with being aware of the crucial role that Grandmothers play within the matrilineal society of the Six Nations of the Grand River.

Instead, I heard stories.

 Birth stories. Stories of the community overcoming the barriers imparted by a colonial history. Stories of facing the challenges of pregnancy and a newborn. Stories of friends as counsellors. Stories of the loving relationships they have with their grandchildren. Nearly every answer was intertwined as a story. And every story had a meaning. One of the most important conclusions of this thesis reiterates that storytelling is a very important and respectful vehicle for the translation of knowledge.

Although the grandmothers of this generation have faced many trials and tribulations, there is an element of strength and resilience that I saw in all of them—a desire to survive through the challenges and see the next generation grow to be strong, healthy, productive members of society. I saw kindness in their eyes and an aspiration for an optimal community for their grandchildren.

Because the subject of pregnancy is not always discussed openly between family members, conducting this study was an important step in the initiation and continuation of the dialogue around optimal prenatal and postnatal health; using the spoken word film to disseminate the main findings of this project also allows us to reach a broad category of stakeholder and potential knowledge users. In addition, it is important to work closely with Six Nations health services to reflect the results of this study in existing or newly designed health promotion programs (particularly the community level concerns/barriers to optimal health). In fact, it would be ideal for the Grandmothers to establish an alliance to address these concerns—perhaps it could be through the design and application of a community platform that involves pregnant women and their familial networks.

In order to further our understanding about how to help support optimal health for pregnant women and newborns, it is important to also interview new mothers, pregnant women, and others who are in their familial circles (eg: their intimate partners, aunties, uncles, cousins, grandfathers, etc.). This will allow us to learn more about optimal support strategies that are desired by pregnant women/mothers and give insight into the potential barriers that prevent the upkeep of these strategies. It can also help us understand how familial networks are currently providing support during the prenatal and postnatal period and identify opportunities to optimize that support piece.

In addition, if we also interview 1) Six Nations program developers who are involved with the establishment and facilitation of traditional and non-traditional health programs directed to pregnant women/newborns and 2) health care providers who work closely with pregnant women in the Six Nations community, we can better understand the gaps between the advancement and the acceptance of information that promotes optimal maternal health behaviors. This will assist in understanding the best vehicles to use when delivering health information to key stakeholders.

There is much to be learned about best practices in public and population health and how to apply these strategies to the true benefit of the community. This is especially true in a First Nations context where there are unique considerations around health, health behaviors, and research. It is important to understand the cultural complexities in order to facilitate optimal interventions to improve the unique health profiles of First Nations communities.

In parallel, ethical research involving Aboriginal peoples requires a conscious dialogue about common interests and points of difference between academic researchers and the communities involved. Respectful relationships can be fostered between the institution and the Aboriginal community through mindful qualitative research, utilizing Indigenous methodologies (employing cultural competence to redress power differentials, engage in reciprocal/collaborative work, put the community at the center of the research, etc.), and ensuring that the relationship is built upon mutual respect, relevant research objectives, and reciprocity.

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**Appendix A**

1. **Aboriginal Birth Cohort Study**

**Secondary Objectives of the Aboriginal Birth Cohort Study:**

1. To determine if the rate of breastfeeding increases with prenatal education and breastfeeding training.

2. To investigate the association between selected genetic variants and epigenetic markers of the mother and offspring on the offspring’s adiposity and related cardio-metabolic factors.

3. To study the association between maternal diet in pregnancy, and infant diet with the infant microbiome at 1 year, and determine the association between the infant microbiome and child health outcomes.

4. To determine if there are differences in birth weight and adiposity (corrected for gestational age and sex) between Aboriginal newborns and an existing cohort of white Caucasian and South Asian newborns in Canada.

5. To qualitatively explore the prenatal and postnatal health beliefs as per the Grandmothers and use the emergent themes to develop a theory.

5a. Identify and pursue culturally-generated opportunities for knowledge translation interventions.

**`Additional details about the Aboriginal Birth Cohort Study:**

With the assistance of Tsi Non:we Ionnakeratstha (Ona:grahsta’) The Six Nations Birthing Center and the Avenue Medical Center (Brantford, ON), 300 pregnant Aboriginal women will be recruited from the Six Nations reserve/surrounding area to participate in the ABC study. Each mother-baby pair will be involved for the full three year study period. Inclusion criteria for enrollment: Aboriginal women pregnant with a single fetus; Exclusion criteria: Women who conceived via artificial methods, women pregnant with more than one child, surrogate mothers, and women suffering from chronic medical conditions (active cancer, infectious disease, VDRL positive).

During the first clinic visit, eligible participants will be invited to provide informed written consent for their participation in the study. The consent process is an ongoing ethical piece where consent for various parts of the study can be chosen or denied. Stage 1 of the data collection process includes an antenatal visit (between 24-28 weeks gestation) where the consenting participant will be requested to provide information on age, parity, medical and pregnancy history, smoking status/exposure, diet (validated food frequency questionnaire) and socioeconomic factors in addition to physical measurements (height, weight, hip/waist circumference, skinfold thickness, blood pressure) and a 75-g oral glucose tolerance test.

At the subsequent data collection point, the birth visit, details on the labour and delivery will be collected (e.g.: type of delivery, APGAR scores, complications during delivery, length of stay). In addition, a cord blood (for biochemistry and DNA analysis) and placenta (for epigenetic analysis) sample will be collected for all consenting newborns. The infant’s physical characteristics (birth weight, skinfold thickness, length, head circumference, arm circumference, and blood pressure) will be obtained within 72 hours of birth.

Post-delivery, each mother-baby pair will be followed at 6-weeks, 6-months, and annually (until age three). At these time points, information on infant and mother body composition, feeding practices, and health status will be obtained. In addition, a blood sample at 1-year and urine sample at 3-years will also be obtained for metabolic analyses.

**Appendix B**

1. **Supplementary Quotations**

**Setting the stage:**

|  |  |
| --- | --- |
| **Major Idea/Theme**  | **Supporting Quotation**  |
| There is consistent evidence that the grandmothers of this generation did not receive much verbal advice about pregnancy and health from their own mothers or grandmothers. Instead, they learned primarily through observation and “just being on our own”.  | “My mom would be gone to work and my dad would be gone to work. So just like our older sisters, we just had to do what we had to do. Make breakfast, clean the table often, you know, do stuff like that. So I don’t know, I guess when we had our kids it was just common sense what to do with them.” (Group interview 1)  |
| Back in their generation, a woman would be on her own once she got pregnant and was just “supposed to know what to do”, nobody talked with them about pregnancy and health in any detail (not their parents or their health care providers)—there was much reliance on maternal instincts | “Like back in our generation, you just got pregnant…you were on your own…and you were just supposed to know what to do. Nobody talked with us. We didn’t talk about stuff like that with our parents.” (Group interview 1) “I was just going to say that you just know what you have to do and you do it. Naturally, everything falls into place. You just know what to do after the baby comes.” (Group Interview 2)“When I had my kids, everything just came natural. No one was there to tell me how to do things. Do this or don’t do that. Or how to bathe them. It just comes natural.” (Group interview 1)  |
| The current generation of grandmothers grew up in a time where “you didn’t ask many questions” and were “independent from your mother.” Their mothers were “private” and “very close-mouthed” (including about the issue of pregnancy and prenatal health)  | “I guess I just felt like my mom was private. Im private. I don’t know. I probably did ask her something. I don’t remember asking a whole lot of questions.” (Group Interview 2) “My mom was just independent of her mom too, she did her own thing. My grandma was there but I didn’t ask her a lot of questions either. I do remember them telling me stories. I do remember that, about their deliveries.” (Group Interview 2) “I grew up in a time when you didn’t ask questions. Like I was taught not to ask questions as I grew up. I was not allowed to listen to my mother and dad talk. They spoke in their language. We just didn’t ask so [when I got pregnant] I just lived as I always lived and did as I always did, ate as I always ate.” (Group Interview 2) |
| They had to “learn for themselves” and did the best they could (perhaps even relied on books)  | “With being pregnant, I just kinda had to learn what I could myself.” (Group Interview 2) “So just learn as you go. Do your best, read.” (Group Interview 2) “When I was pregnant with him I wanted to know the things but I didn’t know, didn’t have anybody to ask. My sister already had kids before but she never talked about it, she never talked about anything. And my mother was really close mouthed about a lot of things, she never really talked much about anything and so what I did was, I read a book by Elizabeth Bing, the Mom’s method. I read that book from cover to cover when I was pregnant with my son and I still have that book.” (Individual Interview 1)  |
| This generation of Grandmothers grew up with having many chores, busy lifestyles –no time to sleep or “lay around” during their younger years (“that’s not the way we were brought up”) |  “We just had stuff to do. We had chores to do. We had bills to pay. There was no time to lay around. You just had to do what you had to do. Sleeping and laying around—that’s not the way we were brought up.” (Group Interview 1) “My upbringing might be a little different than [my childrens’] because when I was brought up, it was a lot different than it is now. My parents lived on a mixed farm. My dad was a farmer and he had all kinds of animals. We had to help with daily chores like feeding the chickens, gathering the eggs, cleaning the hen house, those kinds of things. It’s all different now.”  |
| **Pregnancy is a natural part of the life cycle; it is not an illness or a medical problem. It is advised that the pregnant woman continue on with her pre-pregnancy active lifestyle and avoid falling into a comfort zone where they baby themselves.**  | “Don’t sit for too long, don’t be lazy, move around. You are not sick.” (Individual interview 5)“And they can work and everything too, I think. You don’t really need to baby yourself. Because to me, pregnancy is a normal process. Maybe they need to baby a little bit toward the end of the pregnancy when you need an afternoon nap or pillows to support your belly. Because they do get into this comfort zone. Of pregnancy.” (Individual interview 2)  |
| It is not healthy to use the “comfort zone” of pregnancy to over-eat (“big eaters”) -lots of women get lazy and put on excess weight | “When you are pregnant, you’re so big, like that’s what I thought—no one is going to know what I ate, I’m big anyway. But you pay for it after” (Group interview 2) “You want to get up and eat food in the middle of the night, well, I never did that. But you know—you want to eat whatever because you think ‘Im big anyway’, but you shouldn’t do that.” (Group interview 2) “People overeat. I know that it is a hard thing not to do because it seems like you are always hungry. If she needs a snack there’s always salad or an apple, you know, that’s good if you are hungry. But if you eat starchy food like bread and potatoes and French fries, its wrong.” (Individual interview 6)  |
| You should keep doing things, don’t lay around, the more you move the better it is. | “The most important thing is not to stay in bed. I got up with the sun and gave thanks everyday for another day. I always tell them that. Not to stay in bed. Do your work. There are so many women that get lazy and put on weight.” (Individual interview 6) “I think it’s good for a pregnant mother to be busy, to be active” (Individual interview 3) “Healthy habits include getting up, rising with the sun and keeping yourself busy doing chores and looking after their children if they have children or doing their laundry and other everyday things.” (Individual interview 6) “You should all just eat healthy and keep doing what you do. You know you don’t have to lay around because you’re pregnant?! You got to do what you do because that’s just the way it is with Natives anyway. Some of them have a lot of kids, big families, and you got to keep doing. You can’t stop doing stuff.” (Group interview 2)  |
| Avoid becoming lazy because then your body is not going to be ready for the job of childbirth  |  “I don’t think [the problem] is too much sleep though. I think it’s being lazy and not getting the exercise and moving around because if you are sitting or laying around doing nothing then your body is not going to be ready for the job of having a baby. It is a big job. If you are just lounging around and not doing anything then all of a sudden you do lots of work, its going to be really hard. So that’s how it is having a baby too. So you have to be exercising and then its not going to be that much work or you would be able to handle it better.” (Individual interview 1) “Don’t lay around. Stay active.” (Group interview 1) “Mothers used to look after the households—they did all the laundry by hand and they washed the floors and stuff like that, right until they had their babies. They were active and this would keep the baby in a good position for birthing too because you were active and you’re not just laying around. If you lay around, the baby settles into where there is most space—which would be your back.” (Individual interview 1)  |
| There is recognition that “keep doing what you were doing” can be negative if you have bad habits (eating too much, drinking, smoking, drugs) and weren’t educated about the impacts it has on your child  | “I was a big eater. But I was also in a drinking time in my life when my son was born. So you know, I didn’t stop drinking because I wasn’t educated on what smoking and drinking and stuff like that can do to your child when you’re carrying a child.” (Group Interview 2)  |
| There should be balance between exercise and rest (don’t want to be too exhausted but you also don’t want to sit/lay around too much because the baby will get too big) | “They should carry on with their usual, a balance between rest and exercise. You can’t be too exhausted all the time. But, I think they should work because if they are just sitting around their babies are going to get really big. You know, trying to deliver a 10lb baby is not easy.” (Individual interview 2) “Everything in moderation is the goal. Aristotle’s theory isn’t it? Between extremes. If you go too much the other way too, that’s not good for your baby, to develop a normal, healthy baby.” (Individual interview 2)  |
| Pregnancy is so natural that if you don’t experience any health issues during pregnancy, there is really no need to seek medical attention from a doctor or other medical professional during that time | “Youre only in there for 3 minutes and then you’re out of [the doctor’s office]. You know I had no problems with nothing, so why am I seeing a doctor? If it aint broke, don’t fix it.” (Group interview 1) “We went to one pre-natal class. I decided never to go back to those again. It was a good experience, but I just didn’t see the purpose to it.” (Group interview 2) “Well, you see, I wasn’t going to a doctor until the last 2-3 months of my pregnancy. I was young you know, and I wasn’t a bad eater, and I didn’t smoke or drink, so I didn’t really have any weight issues that they needed to address. I didn’t have any issues to be paying attention to, it just seemed really simple.” (Group interview 2)  |
| **Pregnancy is also viewed as a sacred period (both the unborn baby and the pregnant woman are on the verge of two different worlds) “you’re right on the verge of it, you never know when the creator will take one of them back.” (Individual interview 2)**  | “They say that when you are getting ready for the baby to come, not to be too ready. Don’t get cribs and all kids of toys and all kinds of gadgets and stuff like that because you don’t know how long they are going to be here. And sometimes when you get too many things, they aren’t going to stay long. Have the necessities but don’t prepare too much.” (Individual interview 1)  |
| Pregnancy is a symbol of a spiritual state | “You’re right on the verge of two worlds” (Individual interview 2)  |
| It is important to stay vigilant during pregnancy, monitoring all symptoms, paying attention, being aware, listening to your body  | “So I think anything excessive should be monitored. Anything out of the ordinary should be minored, not taken lightly.” (Individual interview 2) “If there are premature signs of labour, it should all be looked at.” (Individual interview 2) “Eating foods that agreed with them, you know. If they didn’t watch what they ate, they would get indigestion, so they watched really well, you know, with that.” (Individual interview 3) “Nature will take care. If you have a craving for food—if you fulfill that craving, it is probably what your body needs. Listen to your body and do what feels right. And don’t feel guilty if you make a mistake. Just learn by it.” (Individual interview 7)  |
| **Give the baby “a chance to be healthy” (Individual interview 7)**  |  |
| Immunity (keeping baby away from large crowds, sick people, etc, adhering to standard immunizations) | “We were supposed to stay home for the first three months, not visiting other homes or out in public. And mothers don’t follow that anymore. If anybody wanted to see the baby, they would come here. There is a double duty of keeping the mother well and the baby not exposed to germs until she has built immunity. [Nowadays] right out of the hospital, they got to go shopping, and do this and do that. They should take more time—to give them a chance to be healthy.” (Individual interview 7) “Be mindful of your baby’s development. If they are supposed to take their needles, then get them to the doctor to get that immunity started because you never know who is going to be around that baby when he’s very young. So immunity is important. A lot of modern families I understand are not doing it. And they are putting their baby’s health at risk.” (Individual interview 3)  |
| Security (wrapping/bundling)  | “Wrapping the baby calms them down. Security. My mom always told me that. You bundle them up and take them into the cold. It’s supposed to be good for them.” (Group interview 1) “Babies need to feel secure. That’s what swaddling does for them. It helps them feel snuggled because they are not used to all this space. When they were inside mom they were all bundled up and if they are still like that outside, babies are more calm.” (Individual interview 1)  |
| Comfort for baby (use of a cradleboard instead of other carriers, building routines to teach them trust)  | “I dislike those baby seats. They would be a lot better if they were on a cradleboard. It’s better for their bones and spine. It must be uncomfortable for [the baby]. They all protest, they all cry. That’s definitely important. Making sure that baby is comfortable and not just buying things because they are available [and convenient].” (Individual interview 7) “It just bugs me when people take their babies out, I mean their eyes are new. They should keep them in a darker room for two weeks. But now you see women running around with little stiff clothes on and stiff hats on their little heads. And jeans. Hard jeans on their soft little body. That just bugs the heck out of me.” (Individual interview 5)  |
| Social development (reciprocal communication, talking to baby to help promote social development) | “Social development. [The baby] knows who are and all. He sees you, hears your voice, that’s one things that I told my grandchildren, talk to your baby. If you are going to change him, tell him that. He knows the tone of your voice, and if you keep talking to him, he’s going to respond. Eventually. So that’s the social development at a young age. Cause they are born with that wonderful thing called a brain and they start to think right away. You might not know it, but they do.” (Individual interview 3) “I think a mother should love and talk to her baby, listen to your baby and coo, make them laugh and smile. Don’t just let it lay there. The child has to be talked to, loved, and cared for. Listen to you child, talk to them, love them.” (Individual interview 6) |
| Parental responsibility (Staying with the baby instead of having someone else watch them (the first year is very important for building a strong bond). The first five years are very impressionable years. Mothers should take responsibility for their children. Although you cant force anyone to do anything—the belief that one should raise their own children is very consistent)  | “She should stay with the baby instead of having someone else watch them.” (Group interview 1)“If it was up to me to tell my daughter to stay home with her kids, I would tell her to stay home as long as she could with them.” (Group interview 1) “I think they should for at least a year if they can.” (Group interview 1)“I told my daughter, if you have children, you raise them, don’t stick them in daycare. They’re your children. You raise them, be there for them.” (Group interview 2) “There’s quite a bit of abuse separation you know. A lot of men leave their wives and it could be the other way around too with leaving their husbands with the kids and taking off. You see a lot of that. We were always there for them. You have to be there for your children.” (Individual interview 6)  |
| Breastfeeding (length and duration is a personal choice) -healthier for baby (more easily digestible, better for their development) -mother must be more cautious of her own diet (so baby gets all the necessary nutrients to grow)-easier on the budget -bonding -immunity  | “I know that breastmilk is better for the baby than formula. If you are able to breastfeed, you should breastfeed.” (Group interview 1)“Breastmilk is so compatible with the baby’s digestive system. It can get used real fast. It doesn’t stay in the body as long time like formula does because formula is so hard to digest. It’s the best food for the body.” (Individual interview 1) “Breastfed babies are smarter than bottle fed babies. My daughter can tell you that.” (Individual interview 6)  |

No teachings given about health during the pre-conception period. This stage in life was/is not planned, nor is advice asked for or given (limited sharing of advice)

“There’s, there’s no planning. I didn’t plan (Laughter). I was 27 and I just got pregnant (Laughter). Who plans these days?” (Individual interview 6)

“Planning? No body plans.” (Group interview 1)

“I really don’t – I really don’t know what to say about that. Neither one of them asked for advice – they both went out with their friends, drinking, and dancing and doing all of that – and they met their husbands, and uh – got married, and when they decided they were ready for kids, they just went ahead and got pregnant.” (Individual interview 4)

“I don’t know very many people who say they are trying. Its usually just sprung on me! So I don’t really give advice before they are pregnant.” (Individual interview 5)

Personal choice and ability

 -personal choice over breastfeeding and returning back to work post-natally

 -length and duration of breastfeeding

 -learning to listen to your body (rest, sleep, exercise post-natally) rooted by personal choice

-rigid recommendations don’t work for everyone (everybody is unique and is a different context) \*balance between content and context

Firm beliefs

 -no tolerance for abusive relationships (get out!)

 -no tolerance for taking anti-depressants during pregnancy

 -no tolerance for not raising your own children

Grandmothers do not interfere (or self-impose advice)

Traditional teas

 -to help with cold symptoms and to eliminate toxins/contaminants from food

 -cleanses the body

 -water is also very important in cleansing the body of toxins

-belief that traditional teas help to maintain health, youth, and prevents diseases such as diabetes

Trial and error helps to guide you on what you should be eating, how much, etc. (which becomes your own beliefs about pre-natal and postnatal health)

-Being told to “eat for two” and then learning to figure out that it is the personal choice of the woman to eat right and continue doing what you were doing before (belief: you shouldn’t be eating for two, learned through personal experience)

Learning from experience, learning from mistakes

-learning through observations (through watching family members, being around babies from a young age)

-advice on what to do/what not to do changes over the years (eg: around how to clean your baby), can also learn from the next generation

1. A group of six different Indigenous Nations who primarily reside in Southern Ontario. The six Nations include: Kanien'kehá:ka (The Mohawk Nation), Oneniote'á:ka (The Oneida Nation), Ononta'kehá:ka (The Onondaga Nation), Kaion'kehá:ka (The Cayuga Nation), Shotinontowane'á:ka (The Seneca Nation), Tehatiskaró:ros (The Tuscarora Nation). [↑](#footnote-ref-1)
2. Registered Indian refers to persons who are registered under the Indian Act of Canada. Registered Indians are sometimes also called Status Indians (Aboriginal Affairs and Northern Development Canada, 2015). [↑](#footnote-ref-2)
3. “The Indian Act is a Canadian federal law that governs in issues involving Indian status, bands, and Indian reserves. Throughout history it has been invasive and paternalistic, as it allows the Canadian federal government to regulate and administer in the affairs and daily lives of Registered Indians and reserve communities. This authority has including overarching political control (E.g. imposing governing structures on Aboriginal communities in the form of band councils) and the control over the rights of Indians to practice their culture and traditions. The Indian Act has also enabled the government to determine the land base of these groups in the form of reserves, and even to define who qualifies as Indian in the form of Indian status.

While the Indian Act has undergone numerous amendments since it was first passed in 1876, today it largely retains its original form.

The Indian Act is administered by Indian and Northern Affairs Canada (INAC), formerly the Department of Indian Affairs and Northern Development (DIAND). The Indian Act is a part of a long history of assimilation policies that intended to terminate the cultural, social, economic, and political distinctiveness of Aboriginal peoples by absorbing them into mainstream Canadian life and values.” (Indigenous Foundations: The Indian Act, 2009, University of British Columbia) [↑](#footnote-ref-3)
4. Treaty Indians are persons who belong to a First Nation or Indian band that signed a treaty with the Crown. Treaty Indians are sometimes also called Status Indians. [↑](#footnote-ref-4)