School staff identified barriers, facilitators, and perceptions of implementing a school nutrition policy in a First Nation community school

by

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Abstract

School health policies establish nutrition standards for schools and provide guidelines for the operation of a health-focused school environment. Little research has been conducted to understand implementation of school nutrition policies, and even fewer studies have assessed policy implementation in Aboriginal schools. Historical, cultural, and societal differences between Aboriginal and non-Aboriginal schools may play an important role in the adoption and implementation of health and wellness policies and practices in First Nation communities.

The present thesis utilized a community-based participatory research approach to generate a school staff-focused perspective of school nutrition policy implementation in a First Nation community school in Alberta. The research was an evidence-based process evaluation that aimed to understand policy implementation strategies by investigating staff perceived facilitators and barriers of policy implementation, as well as the relationship between staff eating habits and policy implementation. A concurrent triangulation mixed methods approach utilized results of a quantitative survey and qualitative interviews to understand school staff perceptions. Themes derived from the qualitative interviews were woven and integrated with the statistical frequencies derived from a quantitative survey; subsequently a comprehensive set of findings was presented to the community school research committee for review and interpretation.

Significant enabling factors for policy implementation were found to be the school environment, administrative and personnel support for the school nutrition policy, and preceding foundational health programming. An innovative facilitator of policy implementation was the identification of the school as a role model for First Nation community members, for example in leading health initiatives, providing a place for nutritious food and physical activity opportunities, and as a health resource for all community members. The health behaviours of school staff played a role in policy adoption. Staff members who self-rated their diets as above average were more likely to agree with policy tenets and to perceive fewer barriers to school nutrition policy implementation.

Barriers to school nutrition policy implementation such as inconsistent policy implementation by staff and parents' lack of awareness of policy can be respectively addressed by increased staff nutrition education opportunities and improved communication avenues with families of students. An unanticipated barrier was a perceived discordance between the foods served at First Nation cultural events such as bannock or wild game and federally derived policy nutrition standards such as those of Canada's Food Guide that emphasize a low-fat diet. Staff members spoke to the perceived conflict between public health initiatives to promote appreciation for Aboriginal traditional foods with public health messaging that also encouraged Canadians to reduce saturated fat intake, which would be present in traditional foods such as wild game.

In conclusion, staff's personal healthy practices, perceptions of the school nutrition policy and support for the policy were significant influencing factors for

the adoption and implementation of school nutrition policy, and therefore are also important factors for student, family, and community health. The conclusions presented encourage consideration of First Nation wellness perspectives in policy development, and inclusion of traditional foods and cultural activities as part of a First Nation school nutrition policy.

Dedication

To my parents,

I grew up to become a woman, who wasn't afraid to fall,

as I always had you there to catch me.

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List of Abbreviations

ACCFCR: Alberta Community, Child, and Family Research Centre

ADEPT: Analysis of Determinants of Policy Impact

ANGCY: Alberta Nutrition Guidelines for Children and Youth

APPLE: Alberta Project Promoting active Living & healthy Eating

CBPR: Community-Based Participatory Research

CSH: Comprehensive School Health

DPA: Daily Physical Activity

FBSS: Food and Beverage Sales in Schools

FNIM: First Nations, Inuit, and Métis

FNLHP: First Nations Lung Health Project

NEAHR: Network Environments for Aboriginal Health Research

REB: Research Ethics Board (University of Alberta)

SNP: School Nutrition Policy

SPSS: Statistics Package for the Social Sciences

1 Introduction

1.1 Aboriginal Peoples of Canada

The term *Aboriginal peoples* is a collective name referring to the original (i.e., indigenous[1]) inhabitants of North America and their descendants. In the Canadian Constitution, Aboriginal peoples encompass three unique and diverse populations: North American Indian (more commonly referred to as First Nation), Métis, and Inuit (Department of Justice Canada, 1982). These groups are distinct from each other, and therefore, they have unique histories, cultural practices, spiritual beliefs and languages. *First Nations* has evolved as a term to describe Aboriginal peoples who neither recognize themselves as Inuit or Métis, ordinarily replacing the historically used government word, *Indians*. Approximately half (44.0%) of First Nations peoples reside on land called reserves and in communities on Crown land (Statistics Canada, 2011). A reserve is a tract of land, the legal title to which is held by the Crown, set apart for the use and benefit of an Indian band. The *Inuit* are a group of Aboriginal peoples of Arctic Canada who primarily live in Nunavut, the Northwest Territories (NWT), Northern Québec (Nunavik) and Labrador (Health Canada, 2003). Métis individuals are Aboriginals of First Nation and European descent. Recognized Métis settlements are scattered throughout the Prairie Provinces (Alberta, Saskatchewan, and Manitoba), and to a lesser extent in Ontario and Québec (Health Canada, 2003).

[1] 'Indigenous' has gained prominence as a term to describe Aboriginal peoples in an international context. In Canada, it is also now being used in place of Aboriginal in some writing. Indigenous people may prefer to identify themselves by specific local terms based on family and community location and traditional names.

First Nations peoples represent the largest group of Aboriginals in Canada at 60.8% of the Aboriginal population, followed by Métis who represent 32.3%, and Inuit who account for 4.2% (Statistics Canada, 2011). The remaining 2.7% either identify with more than one Aboriginal group or report being a Registered Indian and/or Band member without reporting an Aboriginal identity (June Yi, Landais, Kolahdooz, & Sharma, 2015).

The Aboriginal population in Canada is young and rapidly growing due to high birth rates. It currently represents 4.3% of the population (Statistics Canada, 2011). In just five years, from 2006 to 2011, the Aboriginal population (*First Nation*, *Metis*, and *Inuit*) grew 20.1%, compared to 5.2% for the non-Aboriginal population (Statistics Canada, 2011). The rapid growth of the Aboriginal population is because 46.2% of the Aboriginal population is under the age of 25 years compared with 29.5% of the non-Aboriginal population, and the median ages of the Aboriginal and non-Aboriginal populations of Canada are 28 and 41 years, respectively.

Aboriginal youth, aged 15-24 years, represent 5.9% of all youth in Canada (Statistics Canada, 2011). Aboriginal children aged 14 years-old and under account for 28.0% of the Aboriginal population. In contrast, non-Aboriginal children 14 years-old and younger under account for 16.5% of the non-Aboriginal population. Due to the youthful demographic of the Aboriginal population, such projections estimate continued significant growth of Aboriginal peoples in Canada (Demosim Team, 2011). Given the poorer health outcomes of First Nations, Inuit, and Métis individuals, it is essential to develop effective policies

and policy implementation strategies that address the health issues that affect Aboriginal peoples (Browne, Hayes, & Gleeson, 2014).

1.2 Aboriginal Child Health Disparities in Canada

The health status of Aboriginal peoples living both on and off-reserve is poorer than that of non-Aboriginal peoples. There is substantial evidence for health disparities between Aboriginal peoples and the rest of the Canadian population (Health Canada, 2003). Compared to the general population, Aboriginal peoples have a higher prevalence of Type 2 diabetes mellitus, heart disease, infant mortality, tuberculosis, and obesity. They are also more likely to experience depression, suicide, anxiety, and emotional stress (Health Council of Canada, 2005). All of these factors culminate in a lower quality of life and life expectancy than that of the non-Aboriginal population (Health Council of Canada, 2005).

The health disparities that exist between Aboriginal and non-Aboriginal peoples are mostly attributed to differences in the 'social determinants of health' or the living conditions experienced by each group. The social determinants of health in Canada include factors such as Aboriginal status, education, employment and working conditions, food insecurity, gender, housing, and health services (Mikkonen & Raphael, 2010). The inequality in health status between Aboriginal and non-Aboriginal peoples can be partially explained by the more adverse social situations experienced by Aboriginal peoples including poverty, inadequate housing, unsanitary water supply and waste disposal, unemployment, alcohol and substance abuse, and family violence (Health Canada, 2009). These

determinants, when considered alongside the cultural, nutritional and historical transitions that Aboriginal peoples have experienced as a result of European colonization, help explain the health challenges facing this segment of the Canadian population (Smylie, 2001). Other factors adversely affecting Aboriginal health include colonization, globalization, migration, loss of language and culture, disconnection from the land, and the transition away from a traditional way of life that has led to poor diets and sedentary lifestyles (King, 2014; Health Council of Canada, 2005).

Aboriginal youth experience a high prevalence of many health conditions, such as diabetes and overweight and obesity (Wahi, et al., 2013). In order to have a better understanding the health inequities experienced by Aboriginal children requires applying the social determinants of health framework (Greenwood & Leeuw, 2012). It has been argued that although obesity at all ages is a public health issue, given the limited resources and the importance of preventing the early life development of risk factors for chronic disease, obesity prevention efforts in Aboriginal communities should focus preferentially on children (Willows, Hanley, & Delormier, 2012). According to the most current and comprehensive assessment of First Nations childhood obesity, 20.3% of First Nations children (ages 2-11 years) are considered overweight and 42.2% are deemed obese (First Nations Information Governance Centre, 2012). Lack of physical activity and poor nutrition are key components of Aboriginal obesogenic environments, though significant evidence points to cultural, historical, social, and environmental factors as equally important considerations when

implementing childhood health interventions (Willows, Hanley, & Delormier, 2012).

A recent systematic review, conducted in 2014, of the diets of school-age Aboriginal youth in Canada suggested the nutritional quality of this population's dietary intake is in need of improvement. This is because many youth have diets that do not include an adequate number of foods from all food groups, that are inadequate for some micronutrients, and that are high in energy-dense, nutrient-poor store-bought foods (Gates, Skinner, & Gates, 2014). Recommendations from the review included the further investigation of the importance of traditional foods in Aboriginal children's diets to their health, and "as each Aboriginal community is unique, more detailed information about a wider range of communities is necessary, especially if programs and policies aiming to improve diet quality are to be established" (Gates, Skinner, & Gates, 2014). The authors concluded that many Aboriginal school-based nutrition initiatives have met with only marginal success at reducing obesity rates and thus childhood nutrition interventions may need to be more family and community-based to be more effective.

In the general population, prevention and treatment interventions for childhood obesity that have overlooked social and environmental influences often have had little impact (Ebbeling, Pawlak, & Ludwig, 2002). As each First Nation and Inuit community and Métis settlement is unique, so must be the interventions and policy developments that are implemented to rectify the high rates of childhood obesity. There is little evidence regarding the effectiveness of health policies in addressing childhood nutrition and related health outcomes and even

less research surrounding the effects of health policy in an Aboriginal context (Gortmaker, et al., 2011). Attention to culture is required for the development and successful implementation of health policy in Aboriginal communities, in order to most effectively reduce the adverse health status projected for the expanding population of Aboriginal children and youth.

1.3 Understanding the Importance of a Contextualized School Nutrition Policy in a First Nation School: Thesis Contributions

Schools have become a dominant setting for public health interventions. Schools provide a population of students and staff, in an environment conducive to learning. School health interventions occur in a semi-closed environment with a semi-stable cohort of children of various grades and ages that can be tracked over time in contrast to an open or public population. Furthermore, the school as a whole can permeate ecological categories of individual, familial, and community interactions (Sallis, Owen, & Fisher, 2008). The strong relationship between students' and school staffs' physical, mental, emotional, and social health status and educational outcomes is undervalued and presents an opportunity to design future school healthy interventions under an ecological framework (Lohrmann, 2010). Considering unique Aboriginal conceptualizations of health and the ecological, connectedness, and relational notions that they carry, school nutrition policies have the potential to more broadly impact nutrition in First Nation family settings, and consequently in the larger community.

First Nation communities and schools are commonly at a disadvantage regarding the availability of nutritious food options, thus factors which could be facilitators and barriers to the implementation of school nutrition policy must be explored to ensure that children have access to healthy food at school. The process of school nutrition policy implementation has seldom been explored in Aboriginal communities, despite its importance to the success of policy implementation and health promotion practices. Historical, cultural, and societal differences between Aboriginal and non-Aboriginal communities may play an important role in the adoption and implementation of health and wellness policies and practices in First Nation communities. For example, the high prevalence of food insecurity experienced by many First Nations peoples means that families might not have physical or economic access to healthy foods (Willows & Farmer, 2013). There is also disproportionate funding for Aboriginal schools compared to non-Aboriginal schools, and in some cases Aboriginal schools receive up to 40% less funding per student (Sniderman, 2012). Schools located in First Nations communities therefore often seek funding to support programs and services that schools located off reserve take for granted, and might not be able to support hot lunch or other meal programs. These unique factors must be taken into account when considering the policy implementation cycle.

1.3.1 Research Description

The research objective was to use a community-based participatory research (CBPR) approach to examine school staff perceptions of a school nutrition policy, and complete an evidence-based process evaluation of its

adoption and implementation in a First Nation school in Alberta. The focus was staff due to their role as key policy implementers. This research may contribute to improved child health as a result of understanding school staff perceptions of the barriers and enabling factors in nutrition policy implementation in a First Nation school.

The Education Department in the community had developed a healthy school nutrition policy, which was adopted by the community school in March 2014. In September 2014, members of the community's education research steering committee alongside university researchers began drafting the methodology for assessing the implementation of the school's nutrition policy. The policy in the school was developed with the intention that it would ripple into the broader community and improve community member health and wellbeing. The school nutrition policy was developed by administrators and provided to school staff members for uptake. The first ripple in this community-focused school nutrition policy was to the school staff, many who were community members. Policy statements related to the role of school staff members in policy implementation required them to disseminate information about healthy food choices and nutrition to students, and to provide a supportive, comprehensive school health environment. The hope was that students would then bring their school health experience home to their parents and families. The policy, upon knowledge translation to community members and families, would therefore have a broader impact than the school itself.

The focus of the study described herein is the quantitative and qualitative evaluation of school staff perceptions of the nutrition policy. Another graduate student will focus on the students' and parents' perceptions of the policy. Staff members are critical policy adopters; they are responsible for carrying out the policy, communicating with students on a daily basis, and are able to promote the nutrition and health goals set out by administration in the school nutrition policy. It is important to gather the feedback of staff members at such an important time in policy implementation in order to improve the content of the policy, reduce staff barriers to adopting administrative health goals, and strengthen factors which facilitate staff policy adoption and implementation.

The project was funded by the Alberta Centre for Child, Family, and Community Research (ACCFCR) with additional graduate student support funded by the Network Environments for Aboriginal Health Research (NEAHR) of the Canadian Institutes of Health Research.

1.3.2 Thesis Research Goal

The purpose of this research was to understand the perceptions of school staff surrounding the implementation of a school nutrition policy in a First Nation school. The desired outcome was to improve the implementation process of the school nutrition policy by understanding the barriers and enabling factors for key stakeholders affected by the policy. The school nutrition policy intends to ensure that the school environment provides children and staff with access to healthy food choices for all foods and beverages served and sold within the school. Fidelity of policy adoption and implementation is critical to ensuring the

effectiveness of the policy. The evidence-based process evaluation study of policy implementation had one primary aim with two objectives.

Aim: To explore staff-identified barriers, facilitators, and perceptions of the implementation of a school nutrition policy in a First Nation community school.

a) *Objective I:* To explore barriers and facilitators of implementing a school nutrition policy in a First Nation school.
b) *Objective II:* To understand the influence of staff personal nutrition habits and knowledge on perceptions and practices of the implementation of a school nutrition policy.

To accomplish *objectives I* and *II*, a paper-based survey was developed for this study. It was given to all school staff members to voluntarily complete in May 2015. All school staff members were given the opportunity to voluntarily participate in an individual interview in either May or June 2015. A concurrent triangulation mixed methods approach was used to collect and analyze all data. Survey data and interview data were not linked by respondent as the survey was completely anonymous and had no identifying information.

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2 Literature Review

This literature review aims to provide an overview of school nutrition policy implementation and its relation to childhood health, in an effort to serve as the basis for informing the rationale for the research objectives described in the present thesis. These objectives were designed to contribute to promoting healthy eating behaviours and increasing health promotion in a First Nation community

school. An emphasis on CBPR reflects the importance of such an approach in a First Nation community.

School nutrition policy implementation strategies aim to alter the school environment such that healthy food choices are available, affordable, and prioritized for students. They also aim to provide nutrition education for increased student and staff awareness of the importance of nutrition to health and wellbeing. There are numerous phases of policy implementation and various factors that affect the effectiveness of a policy (Vine & Elliot, 2013).

2.1 Defining and Exploring School Nutrition Policies

Given that it is a place where youth spend a large number of their waking hours, the school is an important setting in which to focus nutrition policies and interventions. School environments potentially present a threat to student health as the foods available in cafeterias, vending machines, canteens, and at special events and fundraisers are often selected to appeal to student palates or to accommodate cost-cutting measures (Leo, 2007). There is high importance to fostering a school setting that supports healthy eating and prioritizes nutrition and physical activity through enforced school policy.

School nutrition policies have the potential to create supportive environments that will enable children to be active and make healthy food choices, ultimately reducing the future morbidity and mortality associated with the present trends in childhood overweight and obesity (Taylor, McKenna, & Butler, 2010). However, the scope of Canadian school nutrition policies is variable. Some policies are drafted and implemented on a school-by-school basis

such as those in Sturgeon School District in central Alberta whereas other policies include province-wide guidelines and programs such as Healthy Schools BC (Vine & Elliot, 2013). Furthermore, current Canadian school nutrition policies are often a patchwork quilt of weak, inconsistent standards that tend to be generically drafted and variably implemented (Leo, 2007).

2.1.1 Development and Structure of School Nutrition Policy

Government health agencies have advocated for the development of nutrition policies, recommending the education system as the most effective venue for dissemination and adoption of such guidelines. In Canada, The Ministry of Health of the federal government has encouraged the use of public policy to create and support environments that promote health and wellbeing, specifically requesting that schools implement policies. The Ministry of Health called for the development of school nutrition policies in 1990 and again in 1996 (McKenna, 2000).

> "Policies are an opportunity for schools to elucidate their philosophy regarding healthy eating, and can be incorporated into whole-school efforts to promote health through linking education with school services, school environments, and with students' homes. Policies can also serve as a reference point for action and assist in putting nutrition on the agenda of school administrators,

> staff, students, parents, food-service caterers, and food suppliers." (McKenna, 2000).

Similar support of school nutrition policy exists in other countries; in England and Wales, the Department of Health in 1989 took initiatives to address nutritional concerns through policy, stating intentions to re-establish national nutrition standards for school meals, which were abolished in 1980 (Department of Health, 1989). In the United States, the Department of Health and Human Services recommended in a millennial report that schools provide healthy food selections and meals consistent with the Dietary Guidelines for Americans (Splett & Story, 1991). Schools have become a crucial setting for childhood health initiatives with nutrition policy implementation being no exception.

Structurally, school nutrition policies are inconsistent and varied. Recommendations from the World Health Organization (WHO) and federal health departments tend to guide the goals and features of a nutrition policy but regionalism and context plays a major role in the specifications of a policy (McKenna, 2000). School nutrition policy fundamentals include specifications regarding both access and adequacy (McKenna, 2000). Access refers to the ability of students from diverse economic backgrounds to obtain food, most often through a free or subsidized school meal program, while adequacy refers to the requirement of school meals to supply students with a certain proportion of daily nutrition, for instance, school lunches providing one-third of the daily nutritional needs of a child. Both access and adequacy were policy inclusions historically derived in England to ensure young men being screened for the military were of

acceptable nutritional status (Helsing, 1997). Modern school nutrition policies have evolved to include specifications of moderation such as setting limitations for saturated fat and sodium in school meals or limiting the availability of certain foods. Additionally, schools are increasingly seen as ideal environments for health promotion thus school nutrition policies are ever more including reference to nutrition education and school health promotion initiatives (McKenna, 2000).

The variation and diversity of standards reflected in current school nutrition policies in Canada can potentially be attributed to the relatively small amount of research dedicated to understanding the most crucial mandates of a school nutrition policy. Only with reliable evidence regarding the content and implementation strategies of health policies in education settings (Howie & Stevick, 2014) can school nutrition policies achieve optimum student and community health (Blackwell Publishing Inc, 2008). Historically, in Canada provincial governments have primarily assumed the responsibility for education, whereas the legislative and financial responsibility for nutrition, public health, consumer protection, and child protection has long been implemented by local, provincial *and* federal governments. The situation is even more complex for Aboriginal peoples in that the federal government is responsible for education and health programming in all First Nation reserves across the country and in some Inuit communities. School nutrition, to support the health of children, is therefore sometimes the victim of "jurisdictional parochialism" (Leo, 2007). That is, programs and policies suffer from jurisdictional conflicts, and may be developed solely on the interests of a single level of government.

2.1.2 School Nutrition Policy and Comprehensive School Health

School nutrition policies are an integral aspect of comprehensive school health. Comprehensive School Health (CSH) encompasses a multivariable approach to student and staff health within the school. CSH, a Canadian term, is also called Health Promoting Schools or Coordinated School Health in international contexts (Veugelers & Schwartz, 2010). Teaching and learning, the social and physical environment, partnerships and services, and healthy school policy make up the four CSH pillars (Joint Consortium for School Health, 2008). The four pillars must work together in order to sustain CSH and often each one interacts with and affects the others. For instance, the Alberta Project Promoting active Living & healthy Eating (APPLE) is a CSH intervention that incorporated "creating healthy living policies" as a requirement and key feature of school participation in the project (Fung, et al., 2012). As part of CSH, healthy school nutrition policy can change the physical environment of the school, for example, by removing unhealthy foods from the cafeteria, as well as incorporating nutrition material into the school curriculum for teaching and learning and creating partnerships with dietitians in the community (Joint Consortium for School Health, 2008). At the very least, healthy school policies set a standard for the school and provide guidelines for the operation of a health-focused environment.

The potential outcomes of school nutrition policies are not limited only to changes to the school food environment. Other consequences of policy implementation and adoption may include: the fostering of a health-focused school culture, the redistribution of funding to support nutrition programming and

education, and the consequential effects on parents, families, and the surrounding community members. To achieve the most sustainable positive effects, it is essential in CSH that policies be developed, implemented and tailored to capture the school-specific context, ideologies, cultures and priorities (Veugelers & Schwartz, 2010). Participation by students, staff, parents and other stakeholders in the development and implementation of policy is therefore essential. The involvement of families, community organizations, health agencies, and other partners allows communities to develop, sustain, and increase their capacity to implement CSH (Veugelers & Schwartz, 2010).

The benefits of CSH are innumerable. Healthy physical and social school environments have been shown to aid in the development of healthy lifestyle habits leading to a reduction in risk of overweight and chronic disease, improved quality of life, and the avoidance of future health care costs (World Health Organization, 1998). An additional benefit of CSH, perhaps lesser often considered, is improved student academic performance. In situations where physical activity time reduces classroom-learning time, student academic performance is not impacted, suggesting advantageous effects of physical activity on student learning (Florence, Asbridge, & Veugelers, 2008). CSH thus offers a bridge between the two silos of education and health to promote the health and wellbeing of Canadian children.

2.2 Stages of Policy Adoption and Implementation

The policy cycle is often theorized as an iterative cycle in which there is no conclusive end and constant revision. It varies by individual policy, organization

and environment, and resources, yet the cycle retains the integral components of problem identification, policy development, adoption, implementation, and evaluation. Each component of the policy cycle can be varied in length of time (The University of Texas at Austin, 2012). Based on the findings of policy evaluation, in the case of the present research – process evaluation of policy implementation, there may be a requirement to consider policy amendment or to draft additional policies.

Problem identification, alternatively termed 'agenda setting' or 'issue definition' is founded on the goal setting intention to "begin with the end in mind" (Covey, 1989). Identifying or selecting a certain community issue or population problem additionally entails asserting that the development of a policy has the potential to solve the acknowledged problem. Problem identification is subjective and based on contextual factors such as social influence and historical factors. Policy seeks to guide "hot topic" issues and may not tackle most global fundamental population issues. Policy formulation is often a result of public pressure, and while not all policies are embraced or eagerly implemented by the public, they are in fact an outcome of addressing a contested public issue (Kerr, 2010).

Virtually all policy process cycles explicitly include a distinct stage of outcome evaluation, yet it can be argued that evaluation of policy is useful during all stages of the policy process to influence and potentially increase the success of policy implementation (Hanafin & O'Reilly, 2015). This study used a type of policy evaluation called "process evaluation," (Young & Sharpe, 2016). Process

evaluation can be used to monitor and document the implementation of an intervention or policy. The information gained from the process evaluation can help researchers to better understand the relationship between the policy components and outcomes as well as provide integral information for future implementation (Young & Sharpe, 2016). Early identification of barriers to policy implementation may allow for timely amendments of the policy or to an increase in strategies to facilitate policy adoption and policy implementation. There is often a sharp distinction between policymakers and policy implementers, as policy tends to be designed by managerial decision-makers whereas implementation is an administrative duty. The separation of these two crucial pieces of the policy process can challenge the success of policy change. Policy implementers can adopt policies as they were written, adapt policies, co-opt the policy designs or simply ignore new policies; hence, implementers are crucial actors whose policy 'buy-in' and actions have the potential to determine the success or failure of policy initiatives (Sutton, 1999).

The effect of implementers on the uptake of policy or success of policy change cannot be disregarded. Policy implementation is a nonlinear and continuing process that requires explicit management. It "requires consensus building, participation of key stakeholders, conflict resolution, compromise, contingency planning, resource mobilization and adaptation" (Sutton, 1999). Critical management of policy implementation is an evaluative process that identifies key stakeholders and the shifting roles of policy facilitators. Utilizing an adaptive process of policy implementation requires the continuous monitoring of

policy adoption and considerations for policy change, amendment, and enforcement (Hanafin & O'Reilly, 2015).

This study uses the bottom-up policy process defined by Kent Buse (Buse, 2012). Buse defines the "bottom-up policy implementation approach" as a social, cultural, and community-involved process that includes a network of policy makers and implementers. The present research defines policy adoption as the formal mandating of the school nutrition policy that includes the dissemination of policy to staff in a meeting in March 2014. Policy implementation can be defined as the enactment of policy mandates and incorporation of policy tenets into practice (Odden, 1991). A process evaluation of policy implementation is the assessment of how a policy is being implemented, as compared to an impact evaluation that would assess how critical outcome variables have changed after policy implementation, such as student BMI, student sugar intake, or nutrition knowledge gained (Odden, 1991).

2.3 Factors Affecting School Nutrition Policy Implementation

Nutrition policies and health programs are highly researched and based on a broad history of successful results. There are a variety of factors that enable a program to be successful, perhaps most significantly, the adoption and implementation processes (DuPre & Durlak, 2008). In the ADEPT (Analysis of Determinants of Policy Impact) policy development and implementation model, created for health promotion policy formation, four major factors were identified that influenced the impact of a health policy (Abu-Omar, Gelius, & Rutten, 2010). Determinants identified through ADEPT included the goals (specificity and

appropriateness), obligations (scientific or ethical obligations to better the health of a population), resources, and opportunities (organizational, political, or population environments have better or worsened the success or results of a policy change) (Abu-Omar, Gelius, & Rutten, 2010). The factors outlined in the ADEPT model can become barriers or facilitators and do not work in isolation. The interaction of factors, both barriers and facilitators, has the potential to change the effectiveness or impact of the policy.

Changes in the environment (political, physical, population) and changes in the conditions in which the policy development process began affect the final outcome or policy impact. Understanding the balance between fidelity and adaptation is critical to the effectiveness of a program, or in this case, a school nutrition policy. The foundational rationale of the policy is arguably universal to all national school nutrition policies, with contextual components that vary based on school setting, resources, and cultural influences. Additionally the policy adoption process and how the policy is disseminated and carried-out vary amongst settings (DuPre & Durlak, 2008). Each school has a unique environment that is conducive to supporting different aspects of nutrition policies, signifying the importance of evaluation and policy amendment and adaptation (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010).

2.3.1 Facilitators in Implementing School Nutrition Policies

The literature regarding adoption of school nutrition policies in First Nation schools is extremely limited yet there is a significant amount of evidence being

generated for factors affecting non-Aboriginal school health policy implementation. It is important to understand barriers that affect school nutrition policy implementation, which is what the majority of recent research has tended to explore, yet it is also important to understand 'what works' in school nutrition policy implementation by assessing facilitating factors of policy adoption (Downs, et al., 2012).

Facilitators are factors that aid in policy implementation. Similar to barriers, facilitators can significantly influence the effectiveness of a policy (Kehm, Davey, & Nanney, 2015). Support for policy initiatives is one of the most discussed facilitators in the literature, defined as community, family, administrative, and stakeholder support. Family and community support has been shown to increase schools' utilization of healthy eating strategies, the number of healthy food options available for students, staff support for physical activity, and school sport opportunities for children (Kehm, Davey, & Nanney, 2015). In addition, administrative support for school health policies, particularly provincial-level policies that tend to be top-down in nature, is associated with policy implementation (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013). In addition, enhanced communication between policy stakeholders including policy developers and those responsible for policy implementation can improve the success of policy outcomes (Vine & Elliot, 2013).

Motives for support of the adoption and implementation of a healthy school policy are most often personal factors (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013). Interests, beliefs, and experiences were described as

frequent personal motives for adoption of the Alberta Nutrition Guidelines for Children and Youth (ANGCY) in schools in Alberta, Canada (2013). Stakeholder personal interest in nutrition, physical education, and related topics was associated with involvement in the healthy eating strategies in the school and support of the adoption of school nutrition and physical activity policies of ANGCY (2013). Personal experiences, perhaps in raising healthy children or with maintaining a healthy body weight for example, can influence policy stakeholder support for health policy implementation.

Aside from personal motives for policy support and implementation, another factor that facilitates policy success is the availability of appropriate resources (Masse, Naiman, & Naylor, 2013). In order to implement a health policy that includes daily physical activity (DPA) for example, adequate resources are needed, such as ready-made physical activity bins for classrooms, an available school gymnasium or sufficient proximate facilities, and a physical education specialist to assist in activity planning. Additional resources cited to support policy adoption and implementation are established programs that were in place before the dissemination of the policy, a nutritionist available to the school, and having local food and beverage suppliers that complied with school nutrition guidelines (Masse, Naiman, & Naylor, 2013).

Another facilitator reported in the literature, in addition to community and administrative support; personal factors; and sufficient resources is home support. As lack of parental support of nutrition and health promoting activities in the school is a major *barrier* to nutrition policy implementation (Quintanilha, Downs,

Lieffers, Berry, Farmer, & McCarger, 2013), it can be proposed that parental *support* of nutrition and physical activity policies can be a facilitating factor. Home access to nutritious food is a major predictor of parental support for school nutrition initiatives and can influence student food preference and acceptance of healthy food offered or sold at school (Wadsworth, McDonald, Jahns, Morin, Liu, & Nicklas, 2013).

Finally, student involvement in nutrition programs, such as a breakfast or lunch program, is important when considering sociocultural factors that affect policy implementation (Vine, Elliot, & Raine, 2014). Gardening programs and hands-on learning situations that involve food and nutrition discussions are important for encouraging students to take ownership of health initiatives and provide an opportunity for leadership and role modeling (MacLellan D, 2010). Exposure to fruits and vegetables through gardening and taste-testing programs, such as an initiative in a First Nation Cree community in central Alberta, has been show to increase student knowledge of nutrition (Hanbazaza, et al., 2015). The same school gardening program increased student preferences toward vegetables and fruit both at school and at home (Triador, Farmer, Maximova, Willows, & Kootenay, 2015). Student and community culture that is supportive of healthy eating is an important facilitating component of policy implementation (Vine, Elliot, & Raine, 2014).

Facilitating factors for policy implementation are less frequently described in health policy literature as compared to barriers. It is important to consider the impact that facilitating factors can have on the adoption and implementation of

school nutrition policies. Stakeholder support, adequate and appropriate resources, and home access to nutritious foods are all important considerations in facilitating a healthy change in school environments.

2.3.2 Barriers to Implementing School Nutrition Policies

Barriers to policy implementation are highly researched, as compared to factors that support policy implementation. There are significant funding barriers and societal influences regarding federal health policy development and nutrition program implementation, as such, major local-level barriers to school nutrition policy adoption and implementation will be discussed. In Canada, provincial barriers may exist which are different from one another and even more diverse are community-level barriers and school-level barriers (McKenna, 2000). Each school may face a unique set of barriers in regards to school nutrition policy implementation though common trends tend to exist despite differences in contexts. Environmental constraints and proximity to unhealthy local food establishments, parent resistance, cost for supporting nutritious food served or offered at school, sociocultural factors, and policy complexity are factors discussed in the literature that negatively affect school nutrition policy implementation (Vine & Elliot, 2013).

An environment conducive to healthy school initiatives is crucial. Both the physical environment and economic environment can influence policy outcomes. Cafeterias that are profit-based and rely on student selection of unhealthy foods and access or proximity to fast-food establishments can significantly influence the

implementation of a school nutrition policy (Masse, Naiman, & Naylor, 2013). Schools can be in competition with fast-food outlets, convenience stores, and restaurants in close proximity to the school, and this juxtaposition of eating establishments also results in inconsistent messaging about food for students and staff (Vine, Elliot, & Raine, 2014).

Significant reference to the influence of parental resistance on the implementation of school nutrition and physical activity policies has been made in the literature, in terms of both parent nutrition knowledge and lack of financial resources to support health strategies. Referring to the adoption of the ANGCY in schools in Alberta, Canada, it was found that schools' healthy eating strategies created a disconnect between what students experienced in school and at home, where some parents did not emphasize the significance of good nutrition (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013). An additional parental barrier identified in the implementation of school nutrition policies in Prince Edward Island, Canada was inadequate communication with parents regarding changes at the school, including making parents explicitly aware of the nutrition policy (Maclellan, Holland, Taylor, McKenna, & Hernandez, 2010). In that province, parent and student resistance to certain menu changes and the removal of unhealthy foods from the school environment also negatively impacted the effectiveness of policy implementation (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010).

The cost of healthy foods is often identified by school administrative staff, including school district representatives and principals, as a barrier to the

implementation of a school nutrition policy (Vine, Elliot, & Raine, 2014). Described as the "economic environment" factor by Vine, Elliot, and Raine in their analysis of the Ontario School Food and Beverage Policy, the economic environment includes the high cost of healthy food for sale in cafeterias, the relationship between the cost and quality of healthy foods, and the impact on cafeteria revenue (2014). School nutrition policies that require the majority of food sold or offered at school to be healthy or "choose most often" items often require the school to alter contracts with food vendors and this results in selling higher priced healthy foods. High costs to purchase food at school can deter some students from choosing these foods, particularly those who have limited funds to buy lunch at school, and results in a school having lower cafeteria and canteen sales (Vine & Elliot, 2013). The economic environment barrier was evident in the literature for virtually all schools but was more pronounced in schools where a larger percentage of the school population was considered low income (Vine & Elliot, 2013).

The sociocultural barrier to school nutrition policy adoption and implementation refers to the culture of the school nutrition environment, which appears to be majorly dependent on the buy-in of key school-level personnel (Vine & Elliot, 2013). School principal and teacher buy-in are critical as role modeling is a key predictor of successful policy implementation, thus lack of buy-in or support presents a barrier to school nutrition policy implementation (2013).

Finally, complexity can be a barrier to school nutrition policy implementation. The restrictiveness of a policy in terms of policy-acceptable

choices offered or sold at school, lack of knowledge and skill related to implementing the policy, and other factors that include high staff turnover, rurality of a school, and whether a policy is school developed or provincially developed are related to the complexity of implementing a school nutrition policy (Downs, et al., 2012). Policies that require nutrition education and staff member role modeling may require time commitment from staff members. A lack of staff commitment can be a barrier to successful implementation of a nutrition policy, particularly if staff knowledge or staff nutrition education is required for implementation of the guidelines.

Similar to the case made for policy facilitators, it is difficult to assert blanket statements in regards to barriers to school nutrition policy implementation, as there can be stark differences between schools and settings in their experiences. There are certainly definitive themes that have emerged from the literature that include those discussed, the internal physical environment and the age range catered to in the school, the external environment and proximity to unhealthy food establishments, parental resistance to school nutrition policy initiatives, the cost associated with offering policy-abiding healthy foods, the sociocultural stigma of being unable to afford and consume healthy school foods, and the complexity of the implementation of a school nutrition policy (Vine & Elliot, 2013). The earlier the identification of barriers in a policy implementation process, the easier it can be to address and overcome the barriers, such as reducing nutrition environment constraints by including more healthy food options for students, enlisting resources to assist teachers with nutrition education,

educating staff members, or communicating policy changes with parents. This potential impact of the identification of barriers on policy impact emphasizes the importance of constant evaluation of a policy implementation process.

2.4 Stakeholder Perception of School Nutrition Policies

A school environment is considered a semi-closed and controlled environment; therefore, an optimal setting for a childhood health intervention or policy implementation. The school environment however, affects many stakeholders in a community including the students, staff members, administrative school staff, foodservice providers, parents and families, and community members. The various perceptions of stakeholders can be influential barriers or facilitators to school nutrition policy adoption and implementation (Vine & Elliot, 2013). Stakeholder perceptions of school nutrition policies are varied in the literature and tend to capture large public schools and their respective school boards with little research surrounding rural, isolated, or Aboriginal schools and school boards (Willows, 2005). It is important to consider stakeholder perceptions, no matter the context, and how these shape and influence the successful implementation of a school nutrition policy. The most notable perceptions are student, parent, principals or administrative staff, and teachers.

Student perceptions

As the focal recipients of school nutrition policy objectives and tenets, students are importance stakeholders to take into consideration regarding school policy implementation. Student taste preference is identified as a significant factor

that influences policy implementation (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010). Students are the targeted population in policy development and thus their food preferences are unquestionably going to play a major role in whether or not the policy is accepted and implemented. Peers can influence food intake, therefore student support for changes to the school food environment may increase acceptance of new foods introduced as a result of the school nutrition policy (2010). Furthermore students who at home practice behaviours and knowledge similar to those described in a school health policy are more likely to accept school changes and understand the reasons for implementation of such a policy (Vecchiarelli, Takayanagi, & Neumann, 2006). Student perceptions can be influenced by the authoritative figures around them such as teachers and administrative staff members, thus the consideration of the practices and perceptions of those individuals is essential to understanding policy implementation.

Parent perceptions

Parents play an important role in the school community as home practices and parental support can either parallel school efforts or conflict with school health initiatives. Parental support is a significant facilitating factor identified in the literature, as such; resistance from parents can pose a significant barrier to school nutrition policy implementation (MacLellan, Holland, Taylor, McKenna,

& Hernandez, 2010). Parents desire the best outcomes for their children, with evidence from multiple studies suggesting that parents agree that health and nutrition should be a priority in their child's school and that schools can make a positive difference in students' eating habits (Vereecken, van Houte, Martens, Wittebroodt, & Maes, 2009). There is a common perception among parents that school meals are inherently less nutritious than home-cooked meals and the overwhelming majority of parents indicate confidence in their ability to distinguish whether or not food is healthy for their child (Golembiewski, Askelson, Elchert, Leicht, Scheidel, & Delger, 2015). Parental perceptions are generally positive surrounding child health initiatives, however issues surrounding restrictions on what foods parents can send to school with their children and the role of a school (versus parent) in feeding children can be contentious and can have a major impact on school nutrition policy implementation and effectiveness. Strong communication between school staff and parents can help lessen parental confusion and dissent (Vereecken, van Houte, Martens, Wittebroodt, & Maes, 2009).

Administrative perceptions

Principals and administrative staff are the most involved school staff members in policy development and dissemination. School policies tend to be initiated by school boards or departments using a top-down approach (McKenna, 2000). School board members express more confidence in their schools and school personnel to implement policies and subsequent changes, as compared to

wellness advocates and school nutrition directors (Agron, Berends, Ellis, & Gonzalez, 2010). School board members, as compared to other administrative school stakeholders, are also more likely to expect positive student health, nutrition education, and financial impacts as a result of wellness policies (Agron, Berends, Ellis, & Gonzalez, 2010).

Teacher perceptions

Teachers and school staff that work directly with students on a daily basis, such as teacher assistants and cafeteria or food service staff, are important stakeholders to consider regarding perceptions of school nutrition policy implementation. Teachers act as role models and mentors for students, as such, their agreement with policies and initiatives to implement healthy changes may directly influence student perceptions of the policy; hence, policy implementation effectiveness. Teachers have been found to perceive the top-down development of school health and wellness policy as exclusionary and too centralized in district administration (Harriger, et al., 2014). Teachers claim in many cases to be seldom involved in policy decision-making and without an avenue to contribute to the conversation. As a result, teachers in previous studies were aware of the school policies, however many could not articulate the policy tenets, requirements, and policy statements in detail. Teacher perceptions are based on what they perceive are the implications of the policy and what they perceive are the requirements to implement the policy, and are not necessarily based on a complete knowledge of the content of the policy (Harriger, et al., 2014). Teachers indicate lack of time and a lesser priority on "additional health initiatives" as reasons that they have not

thoroughly read, adopted, or implemented policies (2014). Regarding policy impact, teachers perceive parent involvement as a key factor in the long-term success of a health and wellness or nutrition policy (2014).

A study looking at the implementation of a British Columbia mandated Daily Physical Activity (DPA) and Food and Beverage Sales in Schools (FBSS) guidelines found that implementation of the guidelines was influenced by teacher perceptions that the guidelines: were relatively advantageous compared to the status quo, were compatible with school mandates and teaching philosophies, were complex to understand and implement, and had observable positive impacts (Masse, Naiman, & Naylor, 2013). Masse, Naiman, and Naylor emphasize the importance of policy-developers constructing the policy in a way that is relatively advantageous for staff members to adopt and implement, compatible with school staff and environment, and that reduces the perceived complexity of the policy mandates (2013).

Teacher perceptions of school nutrition policies can have significant influence on student perceptions of the initiatives. In order for a policy to have maximum effectiveness teachers need to perceive the school nutrition policy as relatively advantageous with significant and noticeable positive outcomes, as well as being simple to incorporate into their daily classroom activities and curriculum (Masse, Naiman, & Naylor, 2013). School nutrition policies majorly originate out of public health, thus school staff and education departments implementing and

prioritizing the goals and objectives of federal or provincial public health organizations is crucial for policy success (McKenna, 2000).

2.5 Aboriginal School Health in Canada

Comprehensive school health and comprehensive community health are increasingly popular areas of research, yet these topics in the context of an Aboriginal setting are largely unexplored (Willows, 2005). It has been suggested that nutrition and health policies are crucial in 'closing the gap' of health disparity between Aboriginal and non-Aboriginal peoples (Browne, Hayes, & Gleeson, 2014). The priority of nutrition and physical activity policies varies by province, region, and First Nation band; however, evaluation of actual policy implementation in these Aboriginal contexts is largely understudied (Browne, Hayes, & Gleeson, 2014). The importance of Aboriginal health policies as context-specific entities in federal public health objectives is fundamentally nonexistent (Ministry of Health, 2010). Different barriers and enablers of school nutrition policy implementation may exist for Aboriginal schools (Tagalik, 2010). Comprehensive school health and comprehensive community health are intertwined in a First Nation setting (Lee, Bonson, Yarmirr, O'Dea, & Mathews, 1995). The school is a foundational part of an Aboriginal community thus the health and nutrition policy and practices of the school have the potential to influence the broader community.

Limited literature suggests programs aimed at reducing obesity in FNIM children are highly unsuccessful and often fail to take into account structural and

cultural barriers (Towns, Cooke, Rysdale, & Wilk, 2014). Successful school health policies are those that are fully assessed and adapted to the needs of the individual school (DuPre & Durlak, 2008). First Nation programs and policies must be relevant to and owned by the community itself (Tagalik, 2010). Policy implementation is critical and rarely studied in an Aboriginal school context (Willows, 2005). In order to have successful policy implementation and ultimately a successful increase in healthful practices in the First Nation school environment, assessing the most effective nutrition and physical activity policy facilitating factors for implementation is vital.

Community-identification of health goals and objectives is ideal, in regards to both the implementation and success of these goals in a community and the philosophy of CBPR practices. Western health perspectives often influence First Nation community health programming, and while this approach may not be ideal and fail to include much of the holistic nature of Aboriginal health models, this approach does allow for reliance on previously evaluated and practiced school health models. Adaptation of existing school models to allow for community involvement and control is a cost-effective alternative to promote health for Aboriginal communities (Naylor, McKay, & Scott, 2009). Facilitation of affordable localized cultural adaptations and support for rural and remote locations has been identified as one alternative to overcome the challenges of fitting a 'square' provincial health policy into a 'circle' community (Naylor, McKay, & Scott, 2009). Collaboration with Aboriginal health and education organizations provincially and locally and the provision of training for local

community stakeholders was suggested by Naylor et al. as a viable way forward to adapt the *Action Schools! BC* model to Aboriginal communities throughout the province of British Columbia (2009).

2.6 Bridging Community-Based Participatory Research and Aboriginal School Health Policy

More participatory approaches to research intervention development and implementation are needed to address the complex set of social and environmental health determinants and those factors associated more specifically with racial and ethnic inequities in health (Israel, Eng, Schultz, & Parker, 2012). In Aboriginal communities, CBPR initiatives are an effective and commonly used strategy for acknowledging important social and cultural differences regarding the implementation of health promotion tactics. Interventions and public health strategies developed in Canada are often established for a blanketed use in a multitude of settings across the country, discrediting the notion that contextual differences significantly influence the effectiveness of a health intervention (Willows, Dyck Fehderau, & Raine, 2015).

Derived as an approach to resist and replace 'Western research methods,' CBPR acknowledges the impact that historic colonization events have had on Aboriginal peoples and the lasting effects of colonization that exist in the present. In previous experiences Aboriginal peoples were abused and mistreated by Eurocentric research methods whereby researchers would "helicopter" into a community, collect data and assess the health disparities of Aboriginal peoples

often without informed consent, and return to the ivory tower of academia without concern for the betterment of the community (Darroch & Giles, 2014). CBPR adheres to grass roots participatory methods such as those theorized by Freire. Collaboration and co-creation of knowledge between researchers and community members is fundamental and serves to address community-identified issues (Freire, 1971).

CBPR has the ability to democratize knowledge and use research to advance community action and social change (Darroch & Giles, 2014). There is a promising call for "decolonizing methodologies" in Aboriginal research and for policy initiatives that engage in meaningful dialogue with communities to establish priorities and conduct research that is successfully collaborative (Adelson N. , 2005). As a simple example of the disparity of public health initiatives that attempt to address Aboriginal health issues, the word *health* has a very different meaning in Aboriginal and non-Aboriginal contexts. 'Health' from a Western perspective is often associated with the absence of disease and is considered a personal possession, whereas in many Indigenous cultures health is considered to be a holistic set of relationships and responsibilities that include the environment, families, the tribe and ancestors (Tagalik, 2010). A public policy objective such as the prevention of a chronic disease through an initiative such as monitoring blood glucose levels would not be a complete solution for the prevention of type 2 diabetes mellitus in a First Nation community where a cultural definition of health requires a holistic, relational, and interconnected perspective (King, 2014). Community influence, using a CBPR approach, in the

development and assessment of nutritional interventions would allow for the incorporation of community values and priorities and reflect the goals and objectives of those affected by such interventions (Israel, Eng, Schultz, & Parker, 2012). It is unknown whether findings from one setting can be applied to other situations, contexts, and populations (Willows, 2005). For this reason, to develop effective strategies to address the health issues among Aboriginal peoples, there is a need to involve community members in all aspects of the strategies to ensure that they build on strengths and resources within the community (Israel, Eng, Schultz, & Parker, 2012).

A well-established committee comprised of community members that support research in the community and school informed the research described in this thesis. It was crucial that the committee was a shareholder of knowledge gained from the research and that committee members included community school educators and education administrators that could put findings to practical use and be involved in the dissemination of results (Parry, Salsberg, & Macauley, 2013). Inclusion of community members as decision makers enhanced the quality of the data and analysis, and the ability of community members to utilize results (Wallerstein & Duran, 2006). CBPR literature emphasizes equitable engagement while CBPR policy research allows for a more expanded linkage to social justice and social change (Cacari-Stone, Wallerstein, Minkler, & Garcia, 2014).

The research conducted in the present study can be considered decolonizing research (Smith, 1999), as the collaboration with the established community research committee enabled community members to work as researchers in their

own community. Aboriginal community ownership of initiatives and policy development is crucial to policy adoption and implementation (Adams, Burns, Leibzeit, Ryschka, Thorpe, & Browne, 2012). The CBPR approach used in this study allowed community members to be involved in all aspects of the research process (Israel, Eng, Schultz, & Parker, 2012). School administrators, who developed the school nutrition policy, were involved in the process evaluation of the implementation of the policy. School staff members who were school nutrition policy facilitators were involved as research participants and shared a voice in the evaluation of the policy. Results from the research were immediately discussed and interpreted with community members and school administrators, who then were able to enact changes in a timely fashion. This is a comprehensive example of community self-determination and a clear display of decolonizing research practice (Simpson, 2001) (Bull, 2004).

Smith regards the process of community research in an Aboriginal community as being more important than the outcome. In the case of the present research, the process of bringing academic researchers and community members to the table for lengthy, frequent, inspiring, and respectful meetings was as critical as the research objectives themselves (Smith, 1999). An example of how our work used decolonizing methodologies, was that academic researchers did not start from a theoretical perspective but rather used Aboriginal ethical protocols to develop methods that would respectfully represent the Indigenous population (Marsh, Cote-Meek, Toulouse, Najavits, & Young, 2015). A community member of the research committee brought the project to a meeting of Chief and Council

of the Nation for approval. We also had Elder input at community research committee meetings. Decisions at meetings were not approved unless at least half of meeting participants were community members. These factors contributed to a decolonizing approach to research (Adams, Burns, Leibzeit, Ryschka, Thorpe, & Browne, 2012).

2.7 Conclusion

Recent explorations suggest nutrition and health policies are vital in 'closing the gap' in health disparities between Aboriginal and non-Aboriginal peoples (Browne, Hayes, & Gleeson, 2014). Prioritization of nutrition and physical activity policies varies across Canada; however evaluation of actual policy implementation in a multitude of rural, Aboriginal, or low socioeconomic status contexts is generally understudied (Browne, Hayes, & Gleeson, 2014). In order to best assess the implementation of contextually specific school policies, evidence suggests using a community-based participatory research approach with community goals and action-oriented research being integral to all projects (Patel, et al., 2009). Input from community members and community organization involvement in policy implementation and research goals will enhance the success of health objectives identified by school stakeholders. Research presented in this thesis emanated from collaboration with a community research committee to co-create knowledge and assess an unexplored aspect of school nutrition policy study, the staff-identified factors affecting implementation of a First Nation school nutrition policy.

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3 Methodology

The objectives of the present thesis were met using a mixed methods approach within an exploratory design (Yin, 2009). *Objective I* was to explore barriers and facilitators of implementing a school nutrition policy in a First Nation school while *Objective II* was to understand the influence of staff personal nutrition habits and knowledge on perceptions and practices of the implementation of a school nutrition policy. Evaluation of school nutrition policy implementation demands a research approach that can account for multiple perceptions and cultural influences (National Institute of Health, 2010). This study was an evidence-based process evaluation of the implementation of a school nutrition policy in a First Nation school. The mixed methods design obtained an in-depth understanding of the phenomenon of First Nation School nutrition policy implementation by staff members, within its real-life context (Yin, 2009). This study is one part of a larger study that will include parent and student perceptions of the policy.

Setting

The setting for this research was a Cree First Nation community in one of the Canadian Prairie Provinces. It is approximately a one-hour drive from a large metropolitan area. Over 60% of the community's land is being utilized for agricultural and grazing purposes. The population is approximately 1,500 persons of which about 850 reside on the reserve. Cree is acknowledged as the official language of community members. The English language was adopted and chosen

as the language to be used by the people for communication with non-Aboriginal people.

The First Nation community's Education Department endeavours to create and build programs and services that are consistent with the desires of the community. The mission of the First Nation is to encourage physical, emotional and mental wellbeing for every member of the community through the provision of quality health, social, cultural, and education programs. Central to the community, according to multiple community stakeholder, is the kindergarten to grade 12 school, with an enrollment of close to 250 students. The school has been incorporating a health-focus since 2008, through multiple CBPR partnerships with researchers at the University of Alberta. The school was able to support the implementation of a school nutrition policy based on capacity built through the previous health-focused projects and research that occurred at the school. The school, through its collaboration with academics that held research grants, had been able for many years to partially or completely fund a staff member to support comprehensive school health initiatives. As well, the school had its own capacity to implement such a policy. The school had a fully functioning kitchen, had the financial ability to hire a school cook, had the resource of a dietitian to consult, had a Director of Education that had a graduate degree and devoted a significant amount of time to writing grants to support health initiatives, and had many school staff that lived in the community and thus were invested in the health of their students and the community. These characteristics of the school are important because they signify its readiness and capacity to adopt and implement

a school nutrition policy. Other First Nations schools may not have the same favourable conditions.

After months of development and revision by the First Nation's Education Department, in March 2014 the school finalized and disseminated a school nutrition policy to be adopted immediately by all staff and students. That same month, administrative staff held a staff meeting for school employees to become familiarized with the policy and their role in it.

Research Approach

This study intended to fill knowledge gaps in school nutrition policy implementation research by drawing on the strengths of both qualitative and quantitative methods. Quantitative methods were employed to assess magnitude and frequency of constructs while qualitative methods explored the meaning and understanding of constructs (National Institute of Health, 2010). A survey generated quantitative data and semi-structured face-to-face interviews generated qualitative data. When used in tandem to produce integrated results, a richer comprehension of phenomena is possible compared to employing either method in isolation (Claasen, Covic, Idsardi, Sandham, Gildenhuys, & Lemke, 2015).

A defining aspect of mixed methods research is the focus on research questions that pertain to real-life contexts and perspectives. The concurrent triangulation mixed methods approach used in the present thesis was appropriate to evaluate educational policy implementation (Creswell & Plano Clark, 2010). It allowed a statistical description of barriers and enablers for school nutrition policy implementation, as well as a qualitative understanding of the experience of policy

implementation, and why there were certain barriers to and attitudes towards the process of policy adoption from key stakeholder perspectives (Creswell & Plano Clark, 2010).

Mixed methods research has been recognized as the third research paradigm separate from qualitative and quantitative methods, and is not simply an extension of either one (Johnson, Onwuegbuzie, & Turner, 2007). Integration of both quantitative and qualitative elements occurred at all stages of the research, an approach referred to as concurrent triangulation mixed methodology (Carayona, Kianfara, Lia, Xieb, Alyousefc, & Wooldridge, 2015). It is the combination of both techniques during the entire research process including data generation, data analysis, and knowledge dissemination that provides uniqueness to the data and results. The findings derived from the multiple data sources are synthesized using triangulation to increase the validity of the study findings and to strengthen the conclusions drawn from the results (Guion, Diehl, & McDonald, 2002).

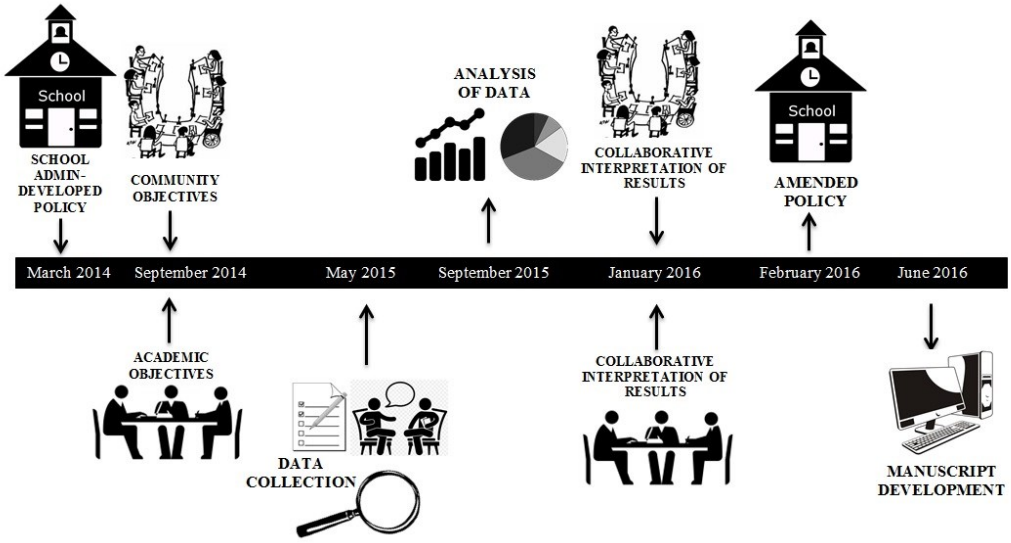
Mixed methods research designs are inevitably challenging and present difficulties not inherent to using either qualitative or quantitative methods alone (Creswell & Plano Clark, 2010). Employing multiple methods in a mixed methods research design requires distinct motives to do so, thus the thesis research drew on a 16-item list developed by Bryman (2006) that includes reasons such as 1) triangulation or greater validity, 2) offsetting weaknesses of either quantitative or qualitative, 3) credibility, 4) context, and 5) utility or the effective use of results. The inherent challenges in approaching research with a mixed methods design are thought to be counteracted by the benefits derived from such

an approach. This approach to leveraging both data sources together is gaining popularity in the social and health sciences (Ruffin, Creswell, Jimbo, & Fetters, 2009).

A community-based participatory research approach was adopted (Israel, Eng, Schultz, & Parker, 2012). Community-based participatory research is an approach that is widely used and is defined in a multitude of ways. The present study utilizes the Israel et al. definition of CBPR as, "active involvement of community members, organizational representatives, and researchers in all aspects of the research process. Partners contribute their expertise to enhance understanding of a given phenomenon and to integrate the knowledge gained with action to benefit the community involved," (Israel, Eng, Schultz, & Parker, 2012). The CBPR approach that we used desegregated knowledge for the benefit of the community members (Kapucu, 2016). The research objectives were generated collaboratively with the community's school research advisory committee to ensure that the research met the needs of the school and the First Nation community's education department while also being scientifically rigorous. The qualitative and quantitative research tools developed to answer the objectives were also developed with the assistance of the school research advisory committee. An iterative process was used whereby the research advisory committee discussed which data would be of value to them in terms of evaluation of the implementation of the school nutrition policy. A draft tool would be developed by the graduate student with input from her academic advisory committee to ensure that the community's needs were obtained using

scientifically rigorous measures. The tool would then be reviewed by the community research committee, revised according to the committee's recommendations and suggestions by the student's academic advisory committee, and subsequently reviewed again by the community's research committee before it was finalized. This iterative and systematic process is described in Figure 3-1.

Figure 3-1: Iterative research process of collaboration established for a Community-University Partnership (CUP) to understand barriers, facilitators, and perceptions of school nutrition policy implementation



Eligibility Criteria

All staff members with a school mailbox who were employed at the First Nation school in classroom instruction as teachers or education assistants, in school administration (e.g. principal and vice-principal and school secretary), the librarian, and the school counselor were eligible to participate in both the survey and the interview (n=35). Excluded from participating were school maintenance staff and First Nations Elders working at the school as cultural advisors who did not have a mailbox and/or did not maintain a regularly scheduled school presence.

Eligible staff members were considered key school nutrition policy facilitators in assessing the first ripple effect of policy implementation.

3.1 Data Collection Tools

Paper-based Survey

Development

The anonymous survey was intended to quantitatively identify staff-perceived barriers and enablers to nutrition policy adoption and implementation in the First Nation school, as well as assess self-rated nutrition habits of staff members. The survey was developed based on a review of previously conducted studies, including the survey questions assessing adoption of the ANGCY (Downs, et al., 2012) and the qualitative interview guide developed by Roberts et al. for Texas school nutrition policy implementation (Roberts, Pobocik, Deek, Besgrove, & Prostine, 2009), in addition to consultation with the community research steering committee. Survey questions were adapted from studies previously mentioned or were originally developed, thus all survey questions were not validated. It contained 28 questions; however, due to an inadvertent misprinting of surveys, five questions surrounding deliverance of quality nutrition education were omitted from the survey. The 23 questions that were completed by staff members focused on many aspects of the school nutrition policy and its implementation in the school including agreement with statements directly from the policy, preparedness of the school environment for such a policy, influence of policy on staff and student eating habits, and identification of staff-perceived

barriers to delivering quality nutrition education to students. The definition of environment chosen in the present thesis is intended to represent the "health environment," which has been conceptualized as "all factors that can affect an individual's health-related behaviors, are external to the individual, and are shared by members of the individual's community" (Wechsler, Dever, & Collins, 2000). There were 20 multiple-choice questions with Likert scale (n=16) or dichotomous (n=4) response options, and three open-ended questions (n=3). Demographic information (i.e. age, gender) for staff members who participated in the survey was not collected in order to retain anonymity of participants of this relatively small case study. The survey that was administered to staff members is in Appendix D (page 187).

Administration

Surveys were distributed to eligible staff through personal mailboxes at the school in May 2015. Staff members were supplied with an information sheet regarding the survey (Appendix C; page 185), the survey itself (Appendix D; page 187), an envelope to place the survey in if the staff member chose to complete the survey, an information sheet regarding the option to participate in an individual interview (Appendix E; page 191), a contact sheet for the individual interview (Appendix E; page 191), a separate envelope to place the contact sheet for the individual interview so as to keep the survey answers anonymous from the interview contact information, and a twenty-five dollar grocery store gift card. Staff members were given three weeks to complete surveys and drop them into a sealed survey drop box, located in the front office of the school. Staff who agreed

to be contacted for an interview also placed sealed envelopes containing the interview contact forms in the drop box.

Gift cards were included with all staff surveys as prepaid incentives to compensate staff members for survey completion time. This means of distributing gift cards meant that staff never had to disclose their name to receive the incentive (Ulrich, Danis, Koziol, Garrett-Mayer, Hubbard, & Grady, 2005). Studies have shown that prepaid incentives yield significantly higher response rates than promised incentives (Church, 1993). If everyone, even non-respondents receive the incentive, it cannot be perceived as coercive.

Semi-Structured Individual Interview

Development

Qualitative interview questions were developed in tandem with the development of the paper-based surveys. The interview topic guide (Appendix F; page 194) therefore was not informed by survey results. This was done to ensure the collection of information from staff members about school nutrition policy implementation at the end of the first year of policy implementation. Had survey results informed qualitative interviews, or vice versa, the study would not have been completed by the end of the 2014/2015 school year.

Interview questions were designed to elicit a further understanding of responses to the staff surveys. Questions were asked about perceptions of the school nutrition policy, awareness of changes to the food environment at the First Nation School, and perceptions of the importance and relevance of the school

nutrition policy to student and staff health. Initial 'icebreaker' questions began the interview, eased the participant into the interview, and focused the conversation on the key subjects (McCance, McKenna, & Boore, 2000). Responses to icebreaker questions surrounding the topics of personal nutrition, favourite foods, and conceptions of "healthy eating" were included in the analysis. Probes were developed to accompany key questions in the interview for use in situations where interview participants faltered in responding to a question. Probes also served to help steer conversation back to key topics surrounding the nutrition policy and school nutrition education (McCance, McKenna, & Boore, 2000).

Administration

The semi-structured interviews occurred in private at the school to allow freedom of thought and expression of views that may not be consistent with policy developers and school administrators (Cohen & Crabtree, 2006).

3.2 Data Analysis

Quantitative

Survey data were analyzed using the Statistics Package for the Social Sciences (SPSS) (Inc., Chicago, IL, USA), version 22.0. Quantitative survey data were analyzed for response frequency. Due to the small sample size, responses to Likert scale questions were aggregated. For example, "strongly agree" and "agree" were combined. The Chi-square test for independence was used to determine if there were statistical associations between two dichotomous categorical variables. Fisher's was used when assumptions of the Chi-square test

were violated (e.g. cells with <5 observations). Academic committee members reviewed data with expertise in epidemiology and quantitative research.

Qualitative

Interviews were digitally recorded and transcribed verbatim. Data generation and data analysis occurred concurrently (Hsieh & Shannon, 2005). Transcripts were examined using conventional content analysis, which is a systematic technique for compressing words into content categories based on rules of coding, a strategy designed for research with little theory to base results on (Ritchie, Lewis, & Elam, 2003). Conventional content analysis shares similar initial stages to grounded theory and phenomenology, but it does not go as far as to develop a theory (Hsieh & Shannon, 2005). Developing theory was not the goal of the research and thus conventional content analysis was deemed appropriate.

As the present thesis describes school nutrition policy implementation in a small First Nation school, all personal identifiers were removed from interview quotes to protect the identity of staff members; as well, identifying names, staff positions, or school subjects taught were masked to maintain anonymity of staff interviewees. As the community research committee reviewed the preliminary findings prior to finalization of results, all identifiers were removed immediately after data analysis.

Using an iterative process of inductive and deductive coding for all interview transcripts, themes were identified in the data. Data were reviewed by the researcher to determine the themes and codes, and the relationship among categories to develop a coding scheme. Microsoft Office Word was used to

organize and manage the qualitative data (Inc., Redmond, WA, USA). The university academic advisory team reviewed the thematic analysis and conceptual ordering of the data. Qualitative themes were quantified in order to numerically establish the noteworthiness of themes (Creswell & Plano Clark, 2010). Qualitative codes were scored based on the frequency of the code in the data and the number of interviewees that mentioned the particular code. It was decided by the research team that codes must have been mentioned by more than two interviewees (>25% of participants) for the code to be considered noteworthy. If only one or two interviewees mentioned a particular code, at least one of them must have mentioned it more than three times during the interview for it to be quantified. For example, "lack of funding" was mentioned as a barrier by a single interviewee, however as this was only identified as a barrier once, it was excluded from the theme development. This methodology is based on the process outlined by Castro et al. in the Journal of Mixed Methods Research (Castro, Kellison, Boyd, & Kopak, 2010). An external qualitative researcher and the community research steering committee reviewed the themes and preliminary results of the data for credibility and dependability of interpretations.

Triangulation of Quantitative and Qualitative Results

Quantitative survey data were integrated with the themes that were inductively coded from qualitative data, thus achieving triangulation. Mixed methods designs require an explicit point of interaction between qualitative and quantitative data. The point of interaction can occur in the research design phase, data collection phase, data analysis phase, or interpretation phase (Creswell J. ,

2006). In regards to the present thesis, the point of interaction was predetermined to occur at the data analysis stage. Mixing occurred during the stage of the research process when the researcher was analyzing the two sets of data by integrating the quantitative and qualitative strands (Creswell J. , 2006). The researcher quantitatively analyzes the data from the quantitative strand and qualitatively analyzes the data from the qualitative strand (Krippendorff, 2013), and then, using an interactive strategy of merging, the researcher explicitly brings the two sets of results together through a combined analysis (Bryman, 2006). Themes in the present thesis were derived primarily from qualitative data and cross-referenced, supported, and confirmed by quantitative data (Fetters, Curry, & Creswell, 2013). For example, the researcher analyzed the quantitative and qualitative results by relating them to each other in a matrix that facilitated comparisons and interpretations. Statistical frequencies derived from the quantitative data were woven with and mapped onto the themes derived from the qualitative data and a comprehensive set of findings was presented. A diagram of this methodology is presented in Appendix A (page 182).

The results for *objective I* in the next chapter are shown as a joint display of themes as a way to integrate the data by bringing it "together through a visual means to draw out new insights beyond the information gained from the separate quantitative and qualitative results" (Fetters, Curry, & Creswell, 2013). Themes were derived primarily from qualitative data that were cross-referenced, supported, and confirmed by quantitative data (Fetters, Curry, & Creswell, 2013) (Guetterman, Fetters, & Creswell, 2015). In some cases, themes were exclusively

drawn from qualitative data. Themes that were derived exclusively from qualitative data were not displayed with a paired statistical analysis in the joint display. The joint display for concurrent triangulation mixed methods research, as outlined by Guetterman, Fetters, and Creswell, shows how the results derived from each method are confirmed by comparison (Guetterman, Fetters, & Creswell, 2015). Results obtained to meet *Objective II* were presented separately, statistical quantitative results in one segment and qualitative thematic results in a separate segment in order to compare the two, which provided congruent findings.

Ethics

The study was approved by the University of Alberta Research Ethics Board (REB) 1 in January 2015. The study was also reviewed and approved by the First Nation's school research steering committee. The study received funding from the Alberta Centre for Child, Family, & Community Research (ACCFCR). The Principal Investigator, Noreen Willows, was a Health Scholar funded by Alberta Innovates Health Solutions.

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4 *Objective I:* Exploring Barriers and Facilitators of Implementing a School Nutrition Policy in a First Nation School

4.1 Introduction

Efforts to curb obesity and promote healthy weights are critical to ensuring that Aboriginal peoples in Canada live longer, healthier lives. In part, obesity is the result of the nutrition transition to more sedentary behaviours, an increase in store-bought foods and drinks high in sugars and unhealthy fats, and a reduction in the consumption of unprocessed foods accessed through traditional activities such as fishing, herding, hunting, gathering, and agriculture (Uauy, Albala, & Kain, 2001; Willows, 2005). While obesity at any age is an important public health issue, given limited resources and the importance of preventing the early life development of risk factors for chronic disease, obesity prevention efforts should focus primarily on Aboriginal children (Willows, Hanley, & Delormier, 2012). Comprehensive, multi-component interventions that target both physical activity and healthy eating strategies at multiple ecological levels have the greatest potential for the primary prevention of childhood obesity (Hoelscher, Kirk, Ritchie, & Cunningham-Sabo, 2013) (Tran, Ohinmaa, Kuhle, Johnson, & Veugelers, 2014). However, while physical activity plays a role in obesity prevention, diet is the key determinant of successful obesity prevention efforts (Hawkes, et al., 2015).

As children spend the majority of their waking hours at school, schools are important settings for implementing health behaviour change interventions.

School nutrition policies are an important pillar in comprehensive school health that seek to guide and create a healthy learning environment for students (Joint Consortium for School Health, 2008). Healthy school nutrition policies can change the food environment of a school through actions such as removing or reducing the availability of unhealthy foods, incorporating nutrition concepts into the school curriculum for teaching and learning, and creating partnerships with health professionals in the school's community (Joint Consortium for School Health, 2008). Healthy school policies set a standard for the school and provide guidelines for the operation of a health-focused environment.

It would be inappropriate to directly import a health policy developed for children in non-Aboriginal schools to Aboriginal schools due to cultural and historical differences between the two cultural groups. For example, a mainstream Canadian biomedical perspective is that health is a personal possession, while many Aboriginal peoples perceive health as a set of relationships rather than focusing narrowly on the physical body (Tagalik, 2010) (Poudrier & Kennedy, 2008). For some Aboriginal peoples, health translates in their own language as 'being alive well,' a term which encompasses emotional, spiritual, and mental aspects of wellbeing (Adelson N. , 2000). Aboriginal children may perceive healthy foods to include those foods of their own cultural group (Pigford A. A., Willows, Holt, Newton, & Ball, 2012). Aboriginal peoples may also more positively value larger body sizes than the mainstream majority (Adelson N. , 2000) (Poudrier & Kennedy, 2008). Aboriginal schools may have different curricular priorities than do mainstream Canadian schools (Lessard, Caine, &

Clandinin, 2015). For all of these reasons, Aboriginal schools may decide to develop and implement their own health policies (Kakekagumick, et al., 2013).

In Canada there has been little evaluation of health policy implementation in Aboriginal schools (Browne, Hayes, & Gleeson, 2014) apart from intensive evaluation of a few community schools (Kakekagumick, et al., 2013). The barriers and enablers of nutrition policy implementation in an Aboriginal school setting may be unique (Tagalik, 2010). It is important to measure and report on the progress of Aboriginal school health initiatives so that their approaches can be adjusted, if necessary, to ensure their success. Knowledge gained from such efforts can also be used by Aboriginal communities endeavouring to implement or improve their own school health policies.

The intent of this study in a First Nation community school was to explore staff-perceived facilitators and barriers that affected the implementation of a locally developed and recently implemented school nutrition policy. The study explored factors that were potentially unique to school nutrition policy implementation in a First Nation community school setting (Tagalik, 2010). Evaluation of school nutrition policy implementation demands a research approach that can account for multiple perspectives and cultural influences (National Institute of Health, 2010). In order to fill knowledge gaps in school nutrition policy implementation research, this study drew on the strength of both qualitative and quantitative methods.

4.2 Methodology

Setting

The mission statement of the First Nation community that was the location for the research is to facilitate physical, emotional and mental wellbeing for every member of the community through the provision of quality health, social, cultural, and education programs. At the center of the community is the kindergarten to grade 12 school, which has an enrollment of about 250 students. The school began to adopt a health focus in 2008, through multiple community-university participatory research partnerships with researchers at the University of Alberta. In March 2014 the First Nation's Education Department finalized a school nutrition policy for immediate adoption by all staff and students. In September 2014 a collaborative research partnership between the Education Department and academic researchers at the University of Alberta occurred to explore staff-perceived barriers and facilitators of implementing the nutrition policy.

Research Approach

A community-based participatory research approach was adopted (Israel, Eng, Schultz, & Parker, 2012). Collaborative research between the community's school research advisory committee and academic researchers ensured that the research met the needs of the First Nation community's education department while also being scientifically rigorous. The school research advisory committee reviewed the findings for credibility and dependability of interpretations (Israel, Eng, Schultz, & Parker, 2012). To this end, the aim of the research; the

information obtained from the qualitative and quantitative research tools; and the interpretation of findings were all joint community/academic efforts.

Research Design

This exploratory study of the implementation of the school nutrition policy used a concurrent triangulation mixed methods approach (Yin, 2009) to synthesize the findings from the qualitative and quantitative methods used to explore staff-perceived barriers and enablers of school nutrition policy implementation (Creswell & Plano Clark, 2010). Staff members were considered eligible to participate if they were employed at the First Nation School and had an internal mailbox in the school staff room. These criteria excluded school elders and school maintenance staff members from participating.

Data Generation

A survey generated the quantitative data and semi-structured face-to-face interviews generated the qualitative data. The paper-based survey (Appendix D; page 187) was developed to quantitatively identify staff-perceived barriers and enablers to nutrition policy adoption and implementation. It was distributed to staff through personal school mailboxes in May 2015. The survey's 23 questions focused on many aspects of the nutrition policy and its implementation including agreement with statements from the policy, preparedness of the school environment to implement the policy, influence of policy on staff and student eating habits, and identification of staff-perceived barriers to delivering quality nutrition education to students. There were 20 multiple-choice questions with

Likert scale (n=16) or dichotomous (n=4) response options, and three open-ended questions (n=3). Identifying information was not asked on the surveys so that respondents could remain anonymous.

Qualitative interview questions were developed at the same time as survey questions. The aim of interview questions was to elicit a deeper understanding of responses to the staff surveys (Appendix F; page 194). There were eight interview questions. Interviews took place in May and June 2015 in a private room at the school and were digitally recorded.

Data Analysis

Quantitative survey data were analyzed using the Statistics Package for the Social Sciences (SPSS) (Inc., Chicago, IL, USA), version 22.0. Response frequencies were calculated. Chi-square and Fisher's exact tests were used to analyze associations between dichotomous categorical data.

Interviews were transcribed verbatim; and transcripts were analyzed using conventional content analysis (Krippendorf, 1989). Open coding was used to develop descriptive labels that were assigned to transcript excerpts. Codes were quantified based on the frequency of their occurrence in transcripts and the number of interviewees that mentioned them (Castro, Kellison, Boyd, & Kopak, 2010). Codes were aggregated into themes based on similarity and relationship to each other (Auerbach, 2003).

Facilitators and barriers to school nutrition policy implementation from the qualitative interviews were organized initially using a socio-ecological framework to represent a hierarchical understanding of the dynamic

interrelationship among factors, which had been placed in nested ecological levels (Willows, Hanley, & Delormier, 2012). When this framework was reviewed at a meeting of the school research committee, community members recommended reorganizing factors into four categories (staff; student; school; and community and culture) in relation to the school environment (Solmon, 2015) and placing factors within the four quadrants of a First Nations Medicine Wheel to represent a holistic and culturally appropriate interpretation of findings (Graham & Leeseberg Stamler, 2010). The Medicine Wheel was considered an appropriate framework to provide structure for the organization and categorization of the qualitative data since the factors were perceived by community members to be relational, not hierarchical as is the case with the social-ecological framework (Bell, 2014). Criticisms from scholars such as Andrea Bear Nicholas of the misappropriation and misuse of the Medicine Wheel were acknowledged and intimate consultation with the community was conducted to reflect appropriate representation (Bear Nicholas, 2007). The Cree Medicine Wheel was used to describe results as it provided a non-hierarchical and relational way to categorize all components and stakeholders of school nutrition policy implementation (Wenger-Nabigon , 2010).

Each quadrant of the Medicine Wheel was used to operationalize results to enhance policy implementation as each quadrant represented a distinct category containing barriers and facilitators of policy implementation. The staff quadrant encompasses factors that can be controlled by staff members as the key school policy facilitators such as individual staff attitudes or behaviours that enhance or prevent policy implementation. The student quadrant includes student

receptiveness to policy change and student attitudes that could improve or delay policy implementation. The school quadrant has two components: the role of administrative staff and the nutrition environment of the school. Factors that can be included in the school category are those that can be controlled by school administrative and educational staff. The community and culture quadrant is a relational category, representing the peripheral effect of school nutrition policy implementation. The community and culture category considers factors involving external stakeholders such as parents and community members and the cultural aspects of school nutrition policy implementation.

Quantitative and qualitative data were synthesized to produce integrated results resulting in a rich comprehension of phenomena (Claasen, Covic, Idsardi, Sandham, Gildenhuys, & Lemke, 2015) and increased validity and reliability of the results (Schadewaldt, McInnes, Hiller, & Gardner, 2014). Using an interactive strategy of merging, qualitative and quantitative results were brought together through a combined analysis (Bryman, 2006). Specifically, themes explaining the staff-perceived challenges and enabling features of school policy implementation derived from qualitative data were cross-referenced, supported, and confirmed by quantitative data (Fetters, Curry, & Creswell, 2013) (Guion, Diehl, & McDonald, 2002).

4.3 Results

Description of Participants

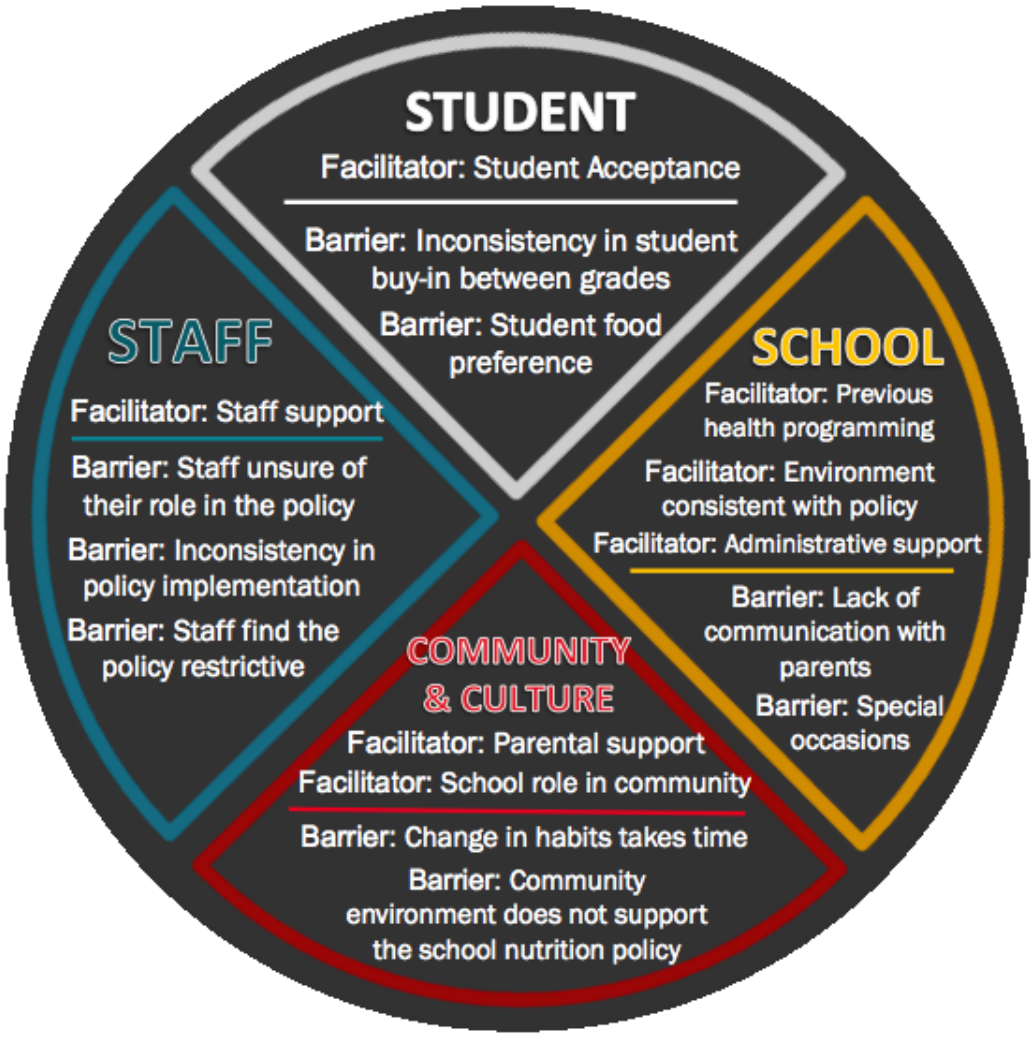
Of the First Nation school staff members who were eligible to participate in the study, 80% completed the survey (n=28 of 35). Of the 28 participants, 27

(96.4%) answered all closed-ended questions and 24 (85.7%) additionally answered the open-ended questions. Of survey respondents, 13 (53.8%) provided contact information for the individual interview, and of these 7 were interviewed. Interviews lasted an average of 30.8 ± 7.2 minutes. Interviewees were employed in a variety of roles at the school.

Facilitators and Barriers of school nutrition policy adoption

Figure 4-1 shows themes derived from qualitative interviews that identified facilitators or barriers to school nutrition policy implementation, organized within the four quadrants of the Medicine Wheel. Each quadrant represents a distinct ecological category, which are student, staff, school, and community and culture. The colours used in the Figure are appropriate for a Cree Medicine Wheel from the community where research took place, with the red in the south (bottom), white in the north (top), blue in the west (left), and yellow in the east (right.)

Figure 4-1: Staff perceived facilitators and barriers to First Nation school policy implementation organized within the quadrants of a traditional First Nation medicine wheel



4.3.1 Facilitators of School Nutrition Policy Implementation

(Table 4-1) shows the score for each theme derived from qualitative interviews that identified facilitators of school nutrition policy implementation, within each of four ecological categories. A score is provided for each theme that is a product of the frequency (f) of occurrence of each code within the seven transcripts multiplied by the number (n) of interviewees whose transcripts mentioned the code. Table 4-1 also shows exemplar quotes derived from the

qualitative interviews that support each theme, in addition to supportive statistics derived from the survey. Facilitators are ranked in the table, from highest to lowest scores.

Table 4-1: Staff-perceived facilitators of school nutrition policy implementation within each ecological category ranked by their score, and accompanied by an example interview quote and supporting survey statistic.

Theme	Score[#] (f * n)	Exemplar interview quote (Interviewee #)	Quantitative survey statistic
STAFF FACTORS			
Staff support for the nutrition policy	**20**	"[Staff] all work together and bring our ideas together [around healthy alternatives]." (5)	26.3% (n=5/19) of staff indicated in an open-ended survey question that other knowledgeable staff helped them the most to deliver quality nutrition education to students.
STUDENT FACTORS			
Student acceptance	**18**	"In elementary [grades] they do talk about health. They have to learn it in school, right? So they come home and say, '*No kukum [grandmother in the Cree language], that's not good for you, you need to eat this,*' you know, celery or whatever." (1)	67.9% (n=19) of staff members believed the school nutrition policy has impacted the way students are eating at school.
SCHOOL FACTORS			
Previous healthy school programming	**60**	"The school's done well, we're the first APPLE* School for First Nation School Boards, we had EarthBox [garden] planting vegetables and things like that,	The majority of interview participants (71.4%; n=5) mentioned previous programs that have created a healthy school environment previous to the policy

		and the apples, and now this nutrition policy." (5)	dissemination.
Environment consistent with policy	**20**	"Whoever is shopping for the canteen knows what they're doing and then the hot lunch program, the cook is on board too and so there's fruit and vegetables. The kids have noticed the difference having a healthy lunch and having energy." (5)	78.6% (n=22) of staff members agreed or strongly agreed that healthy food was available and 64.3% (n=18) of staff members agreed or strongly agreed that administrators have created a school environment that helps children eat healthy foods.
Administrative support	**20**	"We had a meeting at the beginning [of the year] and we went over the policy in great detail." (6)	67.9% (n=19) of staff members agreed or strongly agreed that administrators had helped them prepare to implement the school nutrition policy.
School role as support system and role model in community	**48**	"It's huge for First Nation culture for us at [the school] to be a role model." (5)	Not applicable. Question about this topic not asked on the survey.
Parental support	**20**	"I know that parents have been trying to make an effort, you know have healthier choices." (6)	89.3% (n=25/28) of staff indicated that they had not been contacted by parents regarding resistance to the school nutrition policy or the change in foods available to students.

*Alberta Project Promoting active Living and healthy Eating

[#] A score is provided for each theme that is a product of the frequency (f) of occurrence of each code multiplied by the number (n) of interviewees whose transcripts mentioned the code

4.3.1.1 Staff support for the nutrition policy

Staff support for healthy changes within the school environment and awareness that resulted from policy creation and dissemination was a facilitating factor. The majority of staff (57.1%, n=16) indicated on the survey that the school nutrition policy impacted the way they ate at school. School administrators reviewed the school nutrition policy with all newly hired staff. The incorporation of a nutrition policy in the school has increased staff personal nutrition reflections and dialogues with Interviewee 5 stating, "*more people are getting on board and if they, hopefully if they have questions they are asking why, well then it's opening up discussions.*" Discussion amongst staff members and school administration provides an avenue for knowledge diffusion. Staff spoke of relying on their colleagues for information, ideas for how to adapt to policy changes, and for support.

4.3.1.2 Student acceptance

Staff perceived that student acceptance of healthy eating was a major facilitating factor of policy implementation. According to the survey, 67.9% (n=19) of staff believed the school nutrition policy had impacted the way students are eating at school. Additionally, interviewee 5 believes the students are bringing what they learn at school home with them, claiming, "*The kids, now they go home and [say], 'I had an apple today at school, the teacher gave us fruit!'"*

4.3.1.3 Previous healthy school programming

When interviewees were asked explicitly if they saw the healthy changes in the school as a gradual process or a quick development after the policy was disseminated, the majority of interviewees who had taught at the school the year prior (80.0%; n=4) acknowledged the change as gradual, often citing health-based community research projects that dated back almost a decade (Willows & Farmer, 2013). Interviewee 1 suggested that previous health programs and research initiatives in the community had provided plenty of groundwork for the development of a school nutrition policy saying, *"[Healthy changes] were kind of happening before, just slowly bringing in a little bit of things, you know, and then when the policy came in it wasn't like a shock to everybody.*" An environmental transition that took place over a longer period of time, removing unhealthy foods from the canteen and incorporating more fresh and nutritious ingredients into the school lunch menu, was viewed by staff as a significant enabler to the implementation of the school nutrition policy. Staff took notice of the environmental changes, with Interviewee 6 noting, "*The kitchen staff is making sure that they have the assistance of a dietitian to plan menus.*" 71.4% (n=5) of interview participants specifically mentioned previous programs that have assisted in creating a healthy school environment previous to the policy dissemination. The exposure to health-oriented programming such as EarthBox Kids, which was a classroom gardening program, and APPLE Schools, which was an evidence-based and cost-effective program to motivate change and transform the school environment to promote comprehensive school health, was a significant influence

in preparing the staff and student mindset for applying healthy changes, eventually leading to the initiation and development of the presently described school nutrition policy.

4.3.1.4 Environment consistent with policy

A theme identified by staff as a facilitating factor for school nutrition policy implementation is the consistency of the school environment with the school nutrition policy tenets and the availability of nutritious options for students and staff. In regards to the food environment 78.6% of staff (n=22) agreed or strongly agreed that healthy food was available at the school. Additionally, 64.3% of school staff (n=18) felt that administrative staff had created a school environment that helps children eat healthy foods. While all staff members had not unanimously implemented the school nutrition policy, there were key "health champions" that supported the policy and were themselves crucial factors that provided a conducive environment to policy implementation.

4.3.1.5 Administrative support

Most (67.9%; n=19) staff agreed or strongly agreed that administrators had helped them prepare to implement the school nutrition policy. Interviewees mentioned the policy orientation meeting in which administrative staff took the opportunity to introduce the school nutrition policy, its objectives and tenets, and staff requirements. Administrators were able to answer staff inquiries as to the necessity of the policy and the reasoning behind it.

Furthermore, staff members cited instances in which administrative-run staff functions were organized to reflect the nutrition policy with healthy choices for food, and staff members felt supported in doing the same. Interviewee 1 said, "*[Administration] tries to promote healthy [alternatives] when we have functions here without the kids. We have all the fruits and vegetables and sandwiches and I haven't heard any complaints*." As the school nutrition policy was administrator-driven, the support for healthy changes has been consistent and maintained since policy development.

4.3.1.6 School role as support system and role model in community

A significant community and cultural factor identified by staff as a facilitating factor for school nutrition policy implementation is the school's role in the First Nation community. The role described is one of support, modeling behaviour, and resource. According to community members, the First Nation School is central to the community, both geographically and socially. Staff recognized the importance of their double role, first as educators at the First Nation School and second as community role models and the effect that their leadership with school policies and nutrition initiatives could have on the health of the entire community. "*It's going to be a trickle effect in people's lives and that's good for all of us. Change is hard*," indicated Interviewee 5, also saying, "*At least at the school, we can provide healthy alternatives and that has been just rolling out to individual people now and they're going to be thinking, 'well if at the school I can't bring candy or cookies and cupcakes, well then what about my own eating?'*" The process of changing old habits, in terms of nutrition and

healthy living, was identified by staff members in both the school and community, and presented an important relationship between the two. Staff identified that the school had a role model effect in the community and the health initiatives occurring within the walls of the school would most likely not stay in those confines. Interviewee 7 states eloquently, "*I think it's one of the best things we could be doing for the students and for the community because ultimately that's who it's going to affect.*"

4.3.1.7 Parental support

A community and culture theme identified as a facilitator in school nutrition policy implementation is support from parents of students. Staff that was interviewed gave no indication of parental resistance, occasionally indicating that parents were completely unopposed and supportive of the school nutrition policy. For instance, Interviewee 1 explained, "*Kids when they come in with birthdays, some parents bring fruit instead of a birthday cake, which is cool.*" Interviewee 6 recognized that parents are not resistant to the school nutrition policy and perhaps are attempting to make changes to abide by it, saying, "*I think for the most part parents have been compliant. I know that parents have been trying to make an effort, to you know, have healthier choices... parents bring fruit instead of birthday cake!*"

4.3.2 Barriers of School Nutrition Policy Implementation

Table 4-2 shows the score for each theme derived from qualitative interviews that identified barriers to school nutrition policy implementation,

within each of four ecological categories. A score is provided for each theme that is a product of the frequency (f) of occurrence of each code multiplied by the number (n) of interviewees whose transcripts mentioned the code. Table 4-2 also shows exemplar quotes derived from the qualitative interviews that support each theme, in addition to supportive statistics derived from the survey. Barriers are ranked in the table, from highest to lowest scores.

Table 4-2: Staff perceived barriers of school nutrition policy implementation within each ecological category ranked by their score, and accompanied by an example interview quote and supporting survey statistic.

Theme	Score (f * n)[#]	Exemplar interview quote (Interviewee #)	Quantitative survey statistic
STAFF FACTORS			
Staff find the nutrition policy restrictive	**33**	"I personally don't think I should have to eat healthy all the time because that's not how I eat. I'm kind of putting this false façade into these kids like I'm some kind of nutrition freak but I'm not." (3)	Only 6 of 11 (46.2%) staff who indicated they ate a diet of average quality agreed or strongly agreed with the policy statement that only healthy food will be served at school and classroom celebrations, compared to 13 of 15 (86.7%) staff who stated that their diet was "above average" (p-value* = 0.096).
Inconsistency of staff policy implementation	**12**	"To be honest I didn't even know there was a policy until you [researchers] came here." (1)	25% (n=5/20) of staff responded that staff resistance or staff refusing to abide by policy was a barrier to nutrition policy adoption.
Staff unsure of role in policy	**12**	"Just for the position that I have now I don't feel that I get to have a bigger role in	Staff were more likely to strongly agree with policy statements that were explicit (57.1%;

		[nutrition] education." (7)	n=16/28) compared to statements that were vague (39.3%; n=11/28).
STUDENT FACTORS			
Student preference for unhealthy foods	**45**	"When their palettes are used to that kind of food and then they come here and they have the option of healthy food versus something packaged then you know, their tendencies are to go with something they're comfortable with." (7)	"Lack of interest from students" was cited as a moderate or major barrier to providing quality nutrition education in accordance with the policy by 39.3% of staff members (n=11/28).
Inconsistency of policy adoption by students in higher grades	**40**	"Elementary children always… listen to what their teachers say and their parents say but by the time they get to junior high of course the teachers don't know anything." (6)	When asked about the biggest barrier to adopting the school nutrition policy, 30% (n=6) of staff suggested student resistance was a significant barrier, with 33.3% (n=2) of those who suggested student resistance explicitly citing high school students as the most non-compliant.
SCHOOL FACTORS			
Lack of communication with parents	**24**	"I don't think some of the parents understand there is a nutrition policy." (1)	89.3% (n=25) of staff members indicated that they had not been contacted by parents regarding resistance to the school nutrition policy or the change in foods available to students at school. "Resistance from parents of students" was cited as a moderate or major barrier to providing quality nutrition education in

			accordance with the policy by 50.0% of staff members (n=14).
Special occasions	**9**	"I notice that in the kitchen she makes cupcakes and stuff, [saying] 'Ugh just this once,' but like just this once is once a month." (4)	71.4% (n=5) of interview participants explicitly mentioned exceptions or treats or moderation and lack of clarity in the policy about such situations.
COMMUNITY & CULTURE FACTORS			
Change in habits takes time	**15**	"It's always, like the first few years when you try anything you're not going to see the total effects." (6)	Not applicable. Question about this topic not asked on the survey.
Community environment does not support the school nutrition policy	**10**	"Then you kind of throw out the health thing for [culture], but then we want everyone to be healthy, but we want [the students] to know the culture, so you're just kind of clashing there… if this is cultural, if this is important to us, then why can't we have that every day?" (3)	Not applicable. Question about this topic not asked on the survey.
*Fishers exact #A score is provided for each theme that is a product of the frequency (f) of occurrence of each code multiplied by the number (n) of interviewees whose transcripts mentioned the code			

4.3.2.1 Staff find the nutrition policy restrictive

The policy tenets that allowed for only healthy food to be offered or sold at school were viewed by some staff as too restrictive and consequently staff chose not to follow or role model the policy for students. As Interviewee 3 stated, "*I*

personally am a walking contradiction then to this policy but I don't have time to pack a healthy lunch every day and to have healthy things prepared for myself to each in front of the kids all the time." Staff finding the policy restrictive presents a challenge for consistent implementation across school classrooms, as certain interviewees mentioned providing unhealthy snacks for students or eating an unhealthy lunch in front of students. The resistance from a portion of the staff to adopt and implement the nutrition policy was observed by other staff who indicated on the survey that staff resistance or staff refusing to abide by policy was a barrier to implementing the policy.

4.3.2.2 Inconsistency of staff policy implementation

Staff members were in different stages of policy adoption and implementation. One staff member (Interviewee 1) admitted to not being aware there was a policy until researchers had arrived to ask about it, and another (Interviewee 3) said they were aware of the policy but had never taken the time to read it saying, "*That's my fault, because they had a couple printed out but I didn't actually go through it. I don't have time to go through it. I have like, no prep.*" On the other end of the spectrum, other staff members were fully aware of the policy and had implemented changes into their classroom environment. For instance, Interviewee 5 said, "*I put up the Canada Food Guide, both our Cree one and our English one and the kids are over there reading it… we count our number of fruits and vegetables we're getting in our lunch meal… they run over to the chart and say, '[I am] supposed to have seven to eight a day.'*" While some staff immediately changed their habits and made nutrition a priority in both discussions

with students and daily classroom activities, others felt that other competing student issues were higher priority, as explained by Interviewee 7, "*There are just so many issues sometimes at the school, whether it's cell phones, whether it's attendance, whether it's language, whether it's you know food is just like sometimes you need to pick battles and if you want kids to come to school, what are you going to pick? Are you going to take away their chips?"* While this is a dynamic factor that is likely to change with time as the mandatory nutrition policy is further disseminated and as staff turnover occurs, at the current stage of policy review, the inconsistent delivery of policy objectives by school staff presents a barrier to policy implementation.

4.3.2.3 Staff unsure of role in policy

Staff was uncertain of their roles as nutrition policy facilitators, advocates, and enforcers. In particular, staff did not feel it was their role to enforce the school nutrition policy and were unsure what to provide students for healthy snacks that followed the policy.

Staff cited, for example, competing priorities and anxiety over being the only enforcer as reasons for refraining from taking on a policy advocate role. As the vast majority of staff are not health educators, many felt the school nutrition policy was not part of their daily classroom responsibility, as one interviewee stated, "*I'm a [subject taught[2]] teacher, so I'm not going to like, stop in the middle of [subject taught] class and talk about nutrition.*" In terms of direct

[2] Subject (i.e. science, math, or English) removed to retain anonymity of participant

policy statements about staff members' role in school nutrition policy adoption, exemplification, and implementation, staff were more likely to strongly agree with policy statements that were explicit such as "School staff will limit the use of food items as rewards. For example, no candy for cleaning out desks or finishing work early," (57.1%; n=16) compared to more ambiguous policy statements such as "School staff will establish linkages between health education and foods available at the school" (39.3%; n=11)

Staff was unsure which healthy snacks to provide to students in their classrooms. Some staff had stopped giving any snacks after being informed they could no longer provide certain packaged foods to students, saying, "*I've been concerned about [what to give students as snacks], when the kids don't want to eat what's being served from the kitchen, what do you do? You've got nothing to give to them.*" However, other staff ignored the policy and continued to provide food, claiming that unhealthy food is better than no food at all. As Interviewee 3 articulated, "*I don't think about the nutrition policy, I think about, okay, this child is hungry so I'm going to satisfy the hunger, whether it's a granola bar with chocolate chips in it or whether it's an orange.*"

4.3.2.4 Student preference for unhealthy foods

Student food preference is a significant barrier in regards to students eating healthier. Staff identified student food preference as the biggest barrier to implementing the school nutrition policy, 30% (n=6). When students prefer not to eat the food at school, they may decide not to eat at all, a detriment to their

learning, or to bring foods to school from elsewhere. Staff mentioned food wastage as an issue, with 86.7% (n=6) of interview participants indicating observations of food waste and giving examples of meals or foods that students resisted. Interviewee 3 explained, "*We throw away food because they won't eat it, they refuse to eat this food because it doesn't taste good to them and they end up throwing most of the lunch away.*" As well Interviewee 4 said, "*A lot of the food is wasted… they buy different stuff that the kids are not used to.*" One staff member (Interviewee 1) did point out that student acceptance of healthy foods may improve with time, stating, "*The kids are still kind of getting used to it though, you know they're so used to the simple foods, and they're kind of getting used to the salads with beans or something like that."*

4.3.2.5 Inconsistency of policy adoption by students in higher grades

The First Nation School has a student age range of four to eighteen years, thus there is a significant array of factors that could be associated with age-specific implementation barriers. School staff identified elementary grades as having greater compliance with the school nutrition policy as compared to junior secondary students. Additionally junior secondary students had greater access to unhealthy foods sold outside of the school than did younger students.

Two staff in the interview cited high school student non-compliance as a barrier. Interviewee 7 said, "*It's tough when you have an older group of kids that haven't bought into it yet.*" Junior secondary students have access to the same school programs as the elementary students but have additional access to external

food vendors, namely the local community gas station convenience store located about one kilometer from the school that sells almost exclusively non-nutritious snack foods. The same teacher stated, "*I'm a high school teacher so it's tough especially in high school because a lot of kids have access to that store [gas station in community] so they'll come here with a bag of chips or they'll come here with a pop or something like that.*"

4.3.2.6 Lack of communication with parents

While parental support of school nutrition changes and the school nutrition policy was designated as a facilitating factor to policy adoption and implementation, lack of communication with parents regarding the policy changes was generated as theme that may be a barrier to school nutrition policy adoption and implementation. 89.3% (n=25) of staff indicated that they had not been contacted by parents regarding resistance to the school nutrition policy or the change in foods available to students at school. Parents may still be sending meals and snacks to school with their children that do not comply with a policy they are unaware of, as well, those parents that *are* informed of the policy have shown little resistance to the change and this factor can serve as a facilitator in policy implementation.

It was apparent that lack of communication with parents and families was seen as a barrier by staff members to the implementation of the school nutrition policy. "Resistance from parents of students" was perceived as a moderate or major barrier to providing quality nutrition education in accordance with the

policy by 50.0% of staff members (n=14) in the school staff survey. Staff perceived potential parental involvement as a beneficial factor in school nutrition policy implementation, with Interviewee 4 claiming, "*Gradually making [parents] aware of what's going on at the school, about the nutrition policy because personally I don't think some of the parents understand there is a nutrition policy.*" Staff members did not perceive parents to currently be resistant to the school nutrition policy, but saw the parents as potentially unaware there was a policy or what it required of them as parents of students attending the school. Interviewee 6 emphasized this barrier by saying, "*We still need to have avenues where we meet with [parents], where we could talk directly to parents and to show them the benefit too of leading, of teaching by example."*

4.3.2.7 Special occasions

Staff members stated that the school environment reflected the healthy food requirements outlined in the nutrition policy; however a barrier that was consistently mentioned was the "special occasion." The school nutrition policy states: "All school and classroom celebrations will follow the FNMI food guide and Alberta Health Services Guidelines for healthy living." It additionally states that the school community should ensure that healthy foods are available for special celebrations. 71.4% (n=5) of interview participants explicitly mentioned 'exceptions,' 'treats,' 'moderation,' or 'special occasions' and the resistance of some staff members to uphold the policy in such situations. Staff viewed the unhealthy foods at special occasions as a barrier to policy implementation as students are given unclear messages as to the nutrition standards at the school.

Interviewee 7 indicated how they felt about the allotment of treats and the improper justification for it, "*I don't know who makes those calls and who says no to one thing and yes to another and why it's okay on special days but not on other days.*" This theme of special occasions may be a decreasing trend as the policy is considerably more accepted over time, then further adopted and implemented.

4.3.2.8 Change in habits takes time

The significant theme of length of time for habits to change was deemed a barrier considering the timing of this research, as the staff members were surveyed just one year post-dissemination. Assessing the implementation of the school nutrition policy and the subsequent implementation relatively immediately post-dissemination has the potential to identify barriers that will recede over time. "Old habits" or the "change in habits" was mentioned by staff as a potential barrier to policy implementation as it affects students, staff, parents, and indirectly the community members. For example, speaking about the parents of students Interviewee 1 explains, "*They've had all of these unhealthy snacks for a long long time, you know. They're getting used to the idea of what's nutritious and what's healthy and you know to give their kids snacks and bring to school or pack their school lunches.*" Change in habits as a barrier has the potential to diminish over time.

4.3.2.9 Community environment does not support the school nutrition policy

An important theme derived from the data was the juxtaposition between the community nutrition environment and the nutrition policy in the school. There are

three main theme characteristics that exemplify the community environment not supporting the school nutrition policy. First of all, that foods served at cultural events may differ from those endorsed by the policy. Secondly, the home food environment may not support healthy eating. Finally, the community's only store has few healthy food options.

Staff members perceived both health and culture as important school priorities. Staff viewed cultural feasts and celebrations as a significant part of First Nation culture but indicated that not all foods, including Cree foods such as bannock and wild game, served at such events held at the school adhered to the school nutrition policy. As Interviewee 7 mentioned, "*You know sometimes we have feasts and cookies are passed around and so, there seems to be exceptions anyway.*" During these school events, staff members were unsure how to enforce the policy. Interviewee 3 stated, "*It's traditional food so we're not counting calories, we're not counting nutritional factors because it's about the culture, but really if you take a look at it, it's not healthy… We want everyone to be healthy, but we want [the students] to know the culture, so you're just kind of clashing there. You get mixed information and if as a staff [member] I'm getting mixed information how much more confused are the kids, right?*" Staff members could easily identify instances in which they were confused over whether the policy was to be enforced and if and how "moderation" applies to cultural food situations.

Home food environments may not support healthy eating. Staff members acknowledged that as policy facilitators, they can only control what is served or offered at school and not restrict foods brought from home or sent by parents.

Unhealthy foods at home may influence student resistance to adopting healthy eating practices at school, as Interviewee 4 remarked, *"The kids never have stuff like that [beans and zucchini]… they don't eat that at home so they're not going to eat it here*." Interviewee 2 touched on the challenge of educating students to eat healthy at school when there is potentially a contrasting food environment at home, "*It's hard for [staff members] to train them how to eat in school; especially [when] you don't know what they're eating at home.*"

Another example of how the community nutrition environment does not reinforce the healthy school nutrition policy and its efforts to only serve or sell exclusively healthy food is that in the First Nation community there is only one convenience store where food is available. It does not provide nutritious options. Staff members occasionally referred to the school nutrition policy as "restricting" based on the local context, with Interviewee 3 stating, "*I find there needs to be a nice balance between this nutritional policy and what's rational and what's ideal for this community and for this school.*" Staff members were unsure how to approach this juxtaposition between community nutrition environment and the school nutrition policy that could potentially hinder policy implementation, particularly as it relates to the importance of First Nation culture and community.

4.4 Discussion

The objective of this study was to explore school staff-perceived barriers and facilitators of the implementation of a nutrition policy in a First Nation community school through a mixed methods investigation. Themes derived from qualitative staff interviews were integrated with results from a staff-completed

quantitative survey. Themes were placed into four ecological categories of staff, student, school, and community and culture. They were scored and ranked to identify the most notable facilitators to support and augment an enhanced policy implementation in each category, as well the most substantial barriers to rectify (Townsend & Foster, 2011).

The school organizational category had the most staff-perceived enabling factors for policy implementation, which were administrative support, an environment that offers and encourages healthy food choices, and previous health-oriented programming. These same factors have been identified by other researchers as supporting school health policy (Watts, Mâsse, & Naylor, 2014) (Whatley, Beaudoin, O'Brien, Polacsek, Harris, & O'Rourde, 2011) (Lohrmann, 2010). The highest scoring facilitators of school nutrition policy implementation at the school were the many years of health programming that preceded the implementation of the policy, and the school's central role as a support system and role model in community. The school has a history of foundational health programming that supports student and staff health initiatives. Teachers had been expected in the past through APPLE Schools and EarthBox gardens to promote healthy eating, vegetable consumption, and the delivery of nutrition education. The school nutrition policy was an extension of the preceding healthy initiatives and was supported by healthy initiatives such as physical activity initiatives that were concurrent with it.

The school is central to the community and provides a location for social gathering, learning, and positive role modeling (Davison & Hawe, 2012). Staff

discussed the school's role as a model for community members in leading health initiatives, providing a place for nutritious food and physical activity opportunities, and as a health resource for students, staff, families, and community members. This important role for staff members as leaders of health and wellness initiatives in the community enhanced school nutrition policy adoption by situating the policy in the larger context of community wellness. Staff members were able to see the importance of their role as health promoters for the betterment of community health. Staff saw beyond the student impact and was able to understand the importance of the school nutrition policy to the broader First Nation community.

The highest scoring staff identified barriers to policy implementation were student preferences for unhealthy foods, resistance to policy adoption by students in higher grades, and staff finding the nutrition policy restrictive. Student preference for unhealthy foods may be due in part to student's home environment where unhealthy foods may be present. It is related to their limited exposure to healthy foods and that a longer duration of time is needed for them to adapt to a changing food environment (Atik & Ertekin, 2011). It is important that students, as the primary target of the policy, are receptive to its tenants. Resistance to policy adoption by students in higher grades had a variety of causal explanations from staff members including teachers in higher grades being less supportive of the policy and having more freedom to purchase unhealthy snacks at the local convenience store. Staff finding the policy restrictive was the third highest scoring barrier. Staff turnover at the school could change the salience of this barrier over

time. Administrative school staff has worked to educate staff members on the importance of healthy eating and provide nutrition education curriculums for teachers to implement in their classrooms. These actions are intended to reduce the number of staff who feel restricted by the school nutrition policy.

A noteworthy finding from this study regarding contextual facilitating factors specific to First Nation school nutrition policy implementation included the staff-perceived role of the school in the community. Staff discussed the school's role as a model for community members in leading health initiatives, providing a place for nutritious food and physical activity opportunities, and as a health resource for students, staff, families, and community members. The school is central to the community and provides a location for social gathering, learning, and positive role modeling (Davison & Hawe, 2012).

Support from all stakeholders, including students, staff, parents, administrators, and community members, is critical to policy implementation. Family and community involvement have previously been associated with schools more frequently utilizing healthy eating strategies and offering students healthier food options, speaking to the importance of the facilitating factor described as "parental support" (Kehm, Davey, & Nanney, 2015). Parents were supportive of changes to the school environment for the health and wellness of their children.

A distinctively First Nations barrier to school nutrition policy implementation identified by staff was the perceived disparity between the federal and provincial nutrition guidelines that were the basis of the policy that emphasized a low-saturated fat diet (Jessri , Nishi, & L'Abbé, 2015) (Anand, et

al., 2015) and the nutrition quality of traditional First Nation foods served at cultural events in the community and school. These foods include bannock (i.e., a traditional Aboriginal quick bread made of white flour, baking powder, salt, and a fat such as lard, margarine, or butter) and wild game of the region (e.g., moose, deer, rabbit, duck, etc.). Canadian scientific literature emphasizes the health benefits of consuming traditional unprocessed animal and plant foods harvested from the land, water, and air as they are associated with better diet quality and higher vitamin and mineral intake (Sheehy, Kolahdooz, & Schaefer, 2015) (Sheehya, Kolahdoozb, Roacheb, & Sharma, 2015) (Downs, Arnold, Marshall, McCargar, Raine, & Willows, 2009) (Kuhnlein & Receveur, 2007). First Nation peoples value these foods because they connect them to their culture (Willows, 2005). Even young children in this First Nation community hold the foods of their culture in high regard (Pigford A.-A. E., Willows, Holt, Newton, & Ball, 2012). Staff members perceived that the traditional foods served at school cultural events were contradicting the school nutrition policy. Regardless of their nutritional value, staff felt that cultural foods must be prioritized over nutritionally acceptable market foods recommended in the policy due to their important role in Aboriginal tradition and culture. While some cultural foods such as bannock if made with white flour and lard are unhealthy and not aligned with the school nutrition policy, game meat does not violate nutrition guidelines (Health Canada, 2007). This finding suggests that the policy should be revised to specify healthy traditional food options for students, and that staff training about healthy traditional food options is needed. For example, game meat typically contains less

saturated fat than meat from domesticated animals and baked bannock made using whole wheat flour, berries and vegetable oil is healthier than other versions (British Columbia Minstry of Forests, Lands, and Natural Resource Operations, 2013).

Facilitators and barriers of healthy nutrition policy implementation in this First Nation School were presented in a culturally appropriate way using a Medicine Wheel Framework (Wenger-Nabigon , The Cree Medicine Wheel as an Organizing Paradigm of Theories of Human Development, 2010). Each of the Medicine Wheel's four quadrants represented an ecological category and its accompanying themes. The lack of hierarchy in the Medicine Wheel suggests that all four categories must equally support and reinforce healthy eating for the most successful and comprehensive policy implementation to occur (Wenger-Nabigon , 2010). Indeed, support from all stakeholders, including students, staff, parents, administrators, and community members, is critical to policy implementation. Research in Alberta studying the uptake and implementation of provincial healthy eating guidelines found that facilitating factors included support from school division administrators, staff support promoted by personal factors, and changes in the school environment (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013). Family and community involvement have previously been associated with schools more frequently utilizing healthy eating strategies and offering students healthier food options (Kehm, Davey, & Nanney, 2015). Parental influence was identified as an important determinant of ANGCY adoption (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013) and

in the implementation of school nutrition policy in Prince Edward Island (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010).

In the future a longitudinal study assessing the progression of factors that affect policy implementation over time may demonstrate that certain barriers diminish as the cycle of policy implementation occurs (Kyriakides, Creemers, Antoniou, Demetriou, & Charalambous, 2015). Barriers identified in the present study that could be subject to substantial weakening or decline over time include the staff inconsistency in policy implementation as stuff turnover occurs and more staff members implement the policy in their classrooms, and parental unawareness as more parents become informed of the school nutrition policy (Siegrist, Visschers, & Hartmann, 2015). As the mandatory school nutrition policy becomes fully implemented in the school environment and as staff turnover occurs, barriers to policy implementation may be overcome. More studies of First Nation communities in Canada that are implementing school health policies would provide additional direction in creating culturally relevant health policies (Gates, Skinner, & Gates, 2014).

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5 *Objective II:* To Understand the Influence of Staff Personal Nutrition Habits and Knowledge on Perceptions and Practices of the implementation of a School Nutrition Policy.

5.1 Introduction

School nutrition policy implementation strategies aim to alter the school environment for healthy food choices to be available, affordable, and prioritized for students, and to provide nutrition education for increased student and staff awareness of the importance of health and wellbeing. Staff perceptions of school policy can influence policy adoption and implementation. The "sociocultural" factors or the culture of the school nutrition environment, appear to be majorly dependent on the buy-in of key school personnel (Vine & Elliot, 2013). School principal and teacher buy-in are critical as role modeling is a key predictor of successful policy implementation (Vine & Elliot, 2013).

Teachers and school staff can role model and mentor students, as such their agreement with the policy and initiative to implement healthy changes may directly impact student perceptions and policy implementation (Harriger, et al., 2014). According to previous studies in Canada, in order for a policy to have maximum effectiveness or impact, school staff needs to perceive the school nutrition policy as relatively valuable with significant positive outcomes (Masse, Naiman, & Naylor, 2013).

Reports of stakeholder perceptions of nutrition policies tend to emanate from large public schools and their respective school boards with little research

surrounding rural, isolated, or Aboriginal schools (Willows, 2005). It is important to understand stakeholder perceptions of school nutrition policy and how these shape and influence the implementation of school nutrition policies in a First Nation school context (Paquette & Fallon, 2010).

The study outlined in the present thesis is based on a policy constructed with school staff as key facilitators of the policy and its outcomes. For example, according to the school nutrition policy, "[First Nation School] community will examine their nutrition practices and provide opportunities, support, and encouragement for staff and students to eat healthy foods. In fulfilling this expectation staff may do things such as create their own health and wellness team that includes staff, parents and students, and choose healthy fundraising options." School administrators drafted and revised the school nutrition policy and disseminated the new mandatory parameters to all school staff members. A staff meeting was held at the onset of policy dissemination in order for school administrators to answer questions about the policy and its implications from school staff, so as to attempt to create staff consistency in policy implementation. Assessment of staff perceptions of their eating habits and perspectives on the school nutrition policy were completed approximately fourteen months after the policy dissemination took place.

School staff members adopting personal health goals related to the school nutrition policy can have significant influence on policy uptake and implementation, thus understanding staff habits and perceptions shortly after the

policy was adopted is of interest (McKenna, 2000). Therefore, the objective of the present study was to understand the influence of staff personal nutrition habits and knowledge on perceptions of a school nutrition policy in a First Nation school and practices related to the implementation of the policy.

5.2 Methods

The same methodology presented in Chapter 3 of the present thesis was designed to collect mixed methods data about the First Nation school staff members' personal eating habits and perspectives regarding nutrition policy implementation.

Data Generation

All staff members employed at the First Nation school, excluding maintenance staff and school elders, were eligible to participate in both the survey and the interview (n=35). Paper-based surveys were distributed to all staff members employed at the school in May 2015. Survey questions focused on many aspects of the school nutrition policy and its implementation in the school including: agreement with statements directly from the policy, preparedness of the school environment for such a policy, influence of policy on staff and student eating habits, and identification of staff-perceived barriers to delivering quality nutrition education to students. The individual interviews conducted were semi-structured in format and occurred in privacy within the school, allowing for freedom of expression of opinions. Interview questions were designed to elicit a

further understanding of the multiple choice questions asked in the paper-based surveys.

Data Analysis

Survey data were analyzed using the Statistics Package for the Social Sciences (SPSS) (Inc., Chicago, IL, USA), version 22.0. Quantitative data was analyzed for frequencies, Chi-square, and Fisher's exact measures. Interviews were digitally recorded and transcribed verbatim. Data from individual interviews was examined using conventional content analysis, which is a systematic technique for compressing excess words into content categories based on rules of coding, a strategy designed for research with little theory to base results on. (Ritchie, Lewis, & Elam, 2003) Data generation and data analysis occurred concurrently (Hsieh & Shannon, 2005). Conventional content analysis consisted of researcher immersion in data, rereading of interview transcripts, and analysis of specific questions asked of the interviewee regarding personal nutrition habits and personal nutrition knowledge or background. Participants were categorized as either having a self-perceived "healthy" diet or "unhealthy" diet based on their responses to interview questions about food preferences, healthy eating, and personal nutrition. Participants were also categorized as either "policy supporters" or "policy non-supporters" based on their responses to policy implementation questions in the interview.

The school research advisory committee reviewed the preliminary results of the data for credibility and dependability of interpretations. As the present study describes a mixed methods exploratory study, the synthesis of quantitative and

qualitative results is integral to the research design. In concurrent triangulation mixed methods data generation, sources of data were collected simultaneously and did not seek to inform one another. Triangulation of the data included cross referencing of both quantitative and qualitative data, increasing the validity and reliability of the study (Schadewaldt, McInnes, Hiller, & Gardner, 2014). Exemplar quotes were derived from staff member individual interviews to support emergent themes. Statistical response frequencies to support the theme were derived from the paper-based surveys. The major theme from the data is based on analysis of quantitative data, qualitative data, and the subsequent combination of both (Guion, Diehl, & McDonald, 2002).

5.3 Results

Of the eligible First Nation school staff members, 80% completed the staff survey (n=28). Of the 28 participants, 27 (96.4%) answered all closed-ended questions and 24 (85.7%) answered the open-ended questions. Of participating staff members, 37.1% (n=13) provided contact information for an individual interview, and of those, 53.8% (n=7) responded to an interview request. Interviews lasted an average of 30.8 ± 7.2 minutes. Interviewees were employed in a variety of roles in the school.

Both qualitative and quantitative data resulted in a similar conclusion; that the personal nutrition habits of staff members had significant influence on staff policy implementation. Qualitative analysis of interview transcripts related to participant descriptions of favourite foods, food preferences, and attitudes towards healthy eating that were mapped onto actions undertaken to implement policy

change and perceptions of the school nutrition policy. Quantitative analysis of staff surveys revealed statistical trends associating self-rated eating habits and agreement with the policy tenets and perception of potential barriers related to the policy adoption and implementation.

5.3.1 Qualitative Results

Staff food preference and beliefs about healthy foods

Individual interviews with school staff began with the questions and probes about food preferences and nutrition knowledge that were meant to create a rapport with interviewees, and help ease the conversation into questions about the school nutrition policy implementation. The first query was, "Please describe your favourite meal to me. Tell me what it is about this meal that makes it your favourite one." Participants were probed about types of food and drinks they liked to have for lunch and supper and why. The second query was, "Please share with me examples of food and drinks that you feel are healthy. Explain why you consider them to be healthy." Based on responses, two participants were categorized as "unhealthy" eaters (28.6%; n=2/7) while five were considered "healthy" eaters (71.4%; n=5/7). Participants were categorized as "policy supporter" (n=5/7; 71.4%) or "policy non-supporter" (n=2/7; 28.6%) based on their responses to the interview question, "What role, if any, do you think the school should play in ensuring good nutrition and healthy eating for students?" The two participants categorized as "unhealthy" eaters were also "policy non-supporter."

Mapping of personal food preferences and nutrition knowledge to policy adherence and adoption

Responses to questions about policy adoption, implementation, and adherence, and agreement with policy statements, were mapped onto the categories of unhealthy and healthy eaters as shown in Table 5-1. Interviewees who spoke of enjoying "unhealthy" or "junk" foods in their daily lives were less likely to agree with the policy statements and more likely to be in the earliest stages of policy implementation. For example Interviewee 3 described their eating habits as, "*unhealthy and healthy all together… just once and a while, even in a day, even if my whole diet was healthy, at the end of the day I'm craving something unhealthy,*" and went on to talk about whether or not they role modeled healthy behaviour in the classroom, explaining, "*I personally am a walking contradiction then to this health policy but I don't have time to pack a healthy lunch every day and to have healthy… things prepared for myself to eat in front of the kids all the time.*"

Interviewees who discussed daily healthy habits and were interested in health and nutrition were more likely to agree with policy statements, and could provide examples of ways in which they had begun implementing the school nutrition policy. For example, Interviewee 2 had recently adopted healthier habits in their personal life and was a progressive policy implementer at the school, stating, "*now that I feel better, I can let [the students] know the things I am doing.*" In another example, Interviewee 6 described their eating habits by stating, "*we prefer to make our food at home; it's a balance following the four food*

groups. I like to make sure that its good wholesome foods that we put into our bodies," and then went on to discuss their implementation of the school nutrition policy, saying, *"[It's our role] to model. To run by example, from what [the students] see around them. I think that was important, that staff is on board too because we can't enforce things if we are not doing it.*"

Table 5-1: Personal food preferences and nutrition knowledge mapped onto personal perceptions of the school nutrition policy and its implementation.

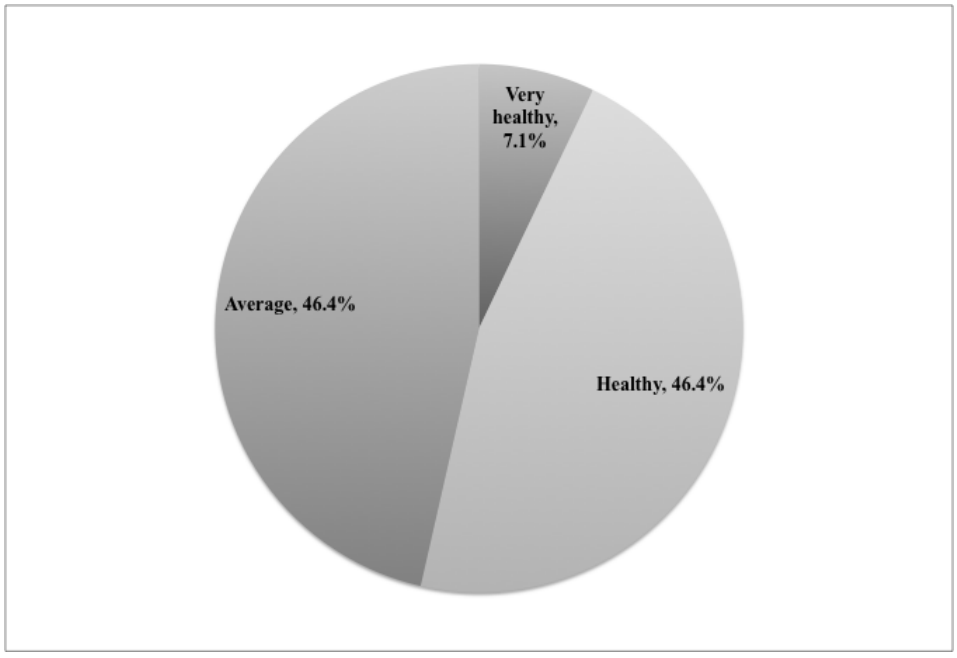
Interviewee	Food preferences and nutrition knowledge	Self-perceived diet	Perceptions of school nutrition policy adherence and implementation	Policy supporter /non-supporter
1	*"It's hard to get away from you know, bringing a bag of chips or [laughs] chocolate you know when you have a special occasion"*	Unhealthy	*"To be honest I didn't even know there was a policy until you guys came here."*	Non-supporter
3	*"I kind of eat unhealthy and healthy all together kind of thing, just once and a while, even in a day, even if my whole diet was healthy, at the end of the day I'm craving something unhealthy."* *"I don't know the whole… I don't read every, you know guide on there or how many percents, I don't do that."*	Unhealthy	*"I personally am a walking contradiction then to this health policy but I don't have time to pack a healthy lunch every day and to have healthy… things prepared for myself to eat in front of the kids all the time."*	Non-supporter

2	*"I don't drink pop. I used to drink pop every day sometimes two cans a day, now I quit that… I really watch what I eat now."*	Healthy	*"We're doing things the old habit way, like I was just saying even myself, but I think eventually even the high school kids will catch on."* *"People shouldn't quit what they're doing… kids will adapt to it (the policy) as it goes."*	Supporter
4	*"[I know] about the sugar, because I'm a diabetic myself."*	Healthy	*"I just followed the [new policy] rules, you know."* *"I was bringing lemonade and stuff like that but I quit that now. I don't do that because they told me not to."*	Supporter
5	*"This is just an interest of mine and then I took that nutrition course as part of my degree and it really got me thinking about eating healthier."*	Healthy	*"As soon as the policy came in that made us all step up and say ok, this is our policy now, so it forced us to find even for us adults and our staff parties, alt- healthy alternatives."*	Supporter
6	*"I do have a nutrition background from my university days."* *"We prefer to make our food at home; it's a balance following the four food groups."* *"I like to make sure that its good wholesome foods that we put into our bodies."*	Healthy	*"[It's our role] to model. To run by example, from what [the students] see around them. I think that was important, that staff is on board too because we can't enforce things if we are not doing it."*	Supporter
7	*"I really like to balance out foods and you know, a lot of vegetables… lean meats like chicken or turkey."* *"I watch a lot of videos on fitness, or on health, on meditation, all these things."*	Healthy	*"When I am adamant on achieving those [health and fitness] goals then it's something that is brought into my house all the time and especially reinforcing with my kids right, so that makes it easier for me to bring it to [the students]."*	Supporter

5.3.2 Quantitative Results

Associations between survey responses regarding personal health and survey responses concerning agreement with policy statements and perception of barriers relating to policy implementation were analyzed statistically. Considering the small number of respondents, a p-value of <0.05 was considered evidence for a statistical relationship between variables while p-values of >0.05 and <0.2 were considered to indicate a trend (Bruce, Pope, & Stanistreet, 2013). Staff members were asked to self-evaluate their eating habits and had the choice of five response options: "very healthy," "healthy," "average," "unhealthy," and "very unhealthy." No participants selected "unhealthy" or "very unhealthy" as their self-rated eating habit (Figure 5-1). For analytic purposes, participants who selected "very healthy" and "healthy" were group together as "healthy" eaters.

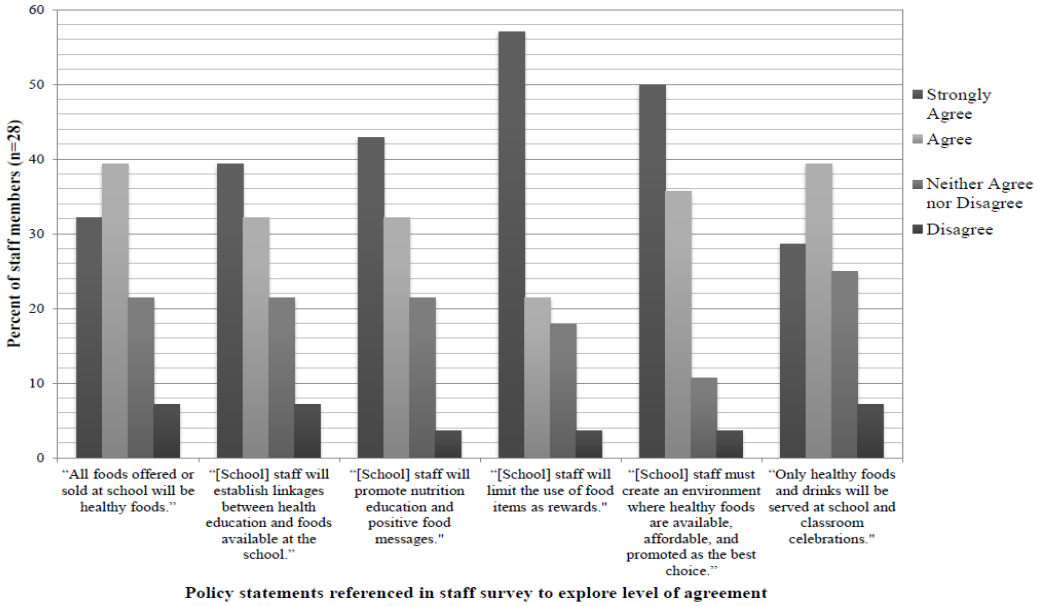
Figure 5-1: Staff response frequencies to the survey question, "Think about what you usually eat every day at school, at home, and at other places. Do you feel your eating habits are...? (n=28)



5.3.2.1 Staff eating habits and policy statement agreement associations

Using a 5-point Likert-scale, staff members rated their agreement with policy tenets, including those in which staff members had obligations to deliver nutrition education, refrain from handing out snacks, or make linkages from nutrition education to the healthy foods served at school. The preponderance of staff agreed or strongly agreed with all policy statements. No respondent chose 'strongly disagree' for any statement (Figure 5-2). "[School] staff must create an environment where healthy foods are available, affordable, and promoted as the best choice," was the most agreed upon statement with 85.7% (n=24) of staff agreeing or strongly agreeing with it. "Only healthy foods and drinks will be served at school and classroom celebrations," was the least agreed upon statement with 67.9% (n=19) of staff agreeing or strongly agreeing with the statement.

Figure 5-2: Staff survey responses (n=28) to agreement with school nutrition policy statements



Staff member self-rated eating habits (Figure 5-1) were analyzed for their agreement to policy statements (Figure 5-2) as displayed in Table 5-2 using Fisher's exact test because the assumptions of the Chi-Square test were violated due to small sample size. Those who self-rated their diet as "very healthy" or "healthy" (n=13; 86.7%) were more likely to agree with the policy statement "All foods offered or sold at school will be healthy foods," as compared to those who ate "average" (n=7; 53.8%) (p=0.096). Staff members who ate "very healthy" or "healthy" were more likely to agree with the policy statement "[School] staff will establish linkages between health education and foods available at the school," (p=0.096), "[School] staff will establish linkages between health education and foods available at the school," (p=0.042), and "school staff will promote nutrition education and positive food messages," (p=0.198).

Table 5-2: Relationship between self-rated staff eating habits and agreement with statements from the school nutrition policy (n=28)

Policy statement	Survey Response	Self-rated staff eating habits		p-value
		'Very healthy' or 'Healthy' (n=15)	'Average' (n=13)	
"All foods offered or sold at school will be healthy foods."	*'Strongly agree'* or *'Agree'(n=20)*	13 (86.7%)	7 (53.8%)	0.096[#]
	'Neither agree nor disagree' or *'Disagree'(n=8)*	2 (13.3%)	6 (46.2%)	
"[School] staff will establish linkages between health education and foods available at the school."	*'Strongly agree'* or *'Agree'(n=20)*	13 (86.7%)	7 (53.8%)	0.096[#]
	'Neither agree nor disagree' or *'Disagree'(n=8)*	2 (13.3%)	6 (46.2%)	
"'[School] staff will	*'Strongly agree'* or *'Agree'(n=21)*	13	8	0.198[#]

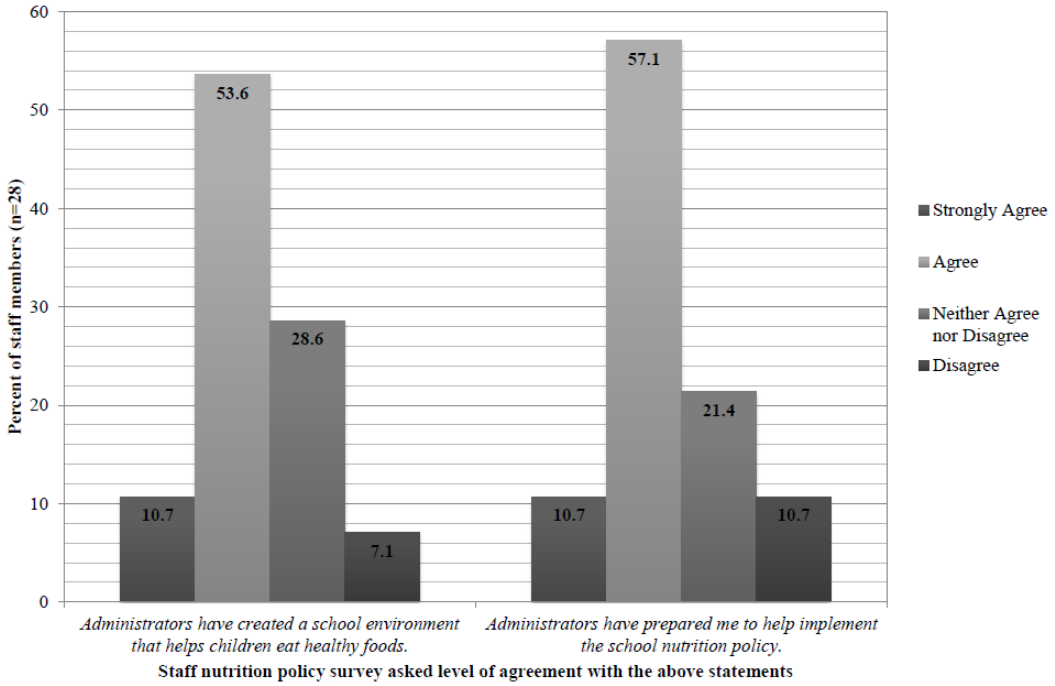
promote nutrition education and positive food messages."		(86.7%)	(61.5%)	
	'Neither agree nor disagree' or *'Disagree'(n=7)*	2 (13.3%)	5 (38.5%)	
"[School] staff will limit the use of food items as rewards."	*'Strongly agree'* or *'Agree'(n=22)*	13 (86.7%)	9 (69.2%)	0.372[#]
	'Neither agree nor disagree' or *'Disagree'(n=6)*	2 (13.3%)	4 (30.8%)	
"[School] staff must create an environment where healthy foods are available, affordable, and promoted as the best choice."	*'Strongly agree'* or *'Agree'(n=24)*	14 (93.3%)	10 (76.9%)	0.311[#]
	'Neither agree nor disagree' or *'Disagree'(n=4)*	1 (6.7%)	3 (23.1%)	
"Only healthy food and drinks will be served at school and classroom celebrations."[A]	*'Strongly agree'* or *'Agree'(n=19)*	13 (86.7%)	6 (46.2%)	0.042[#]
	'Neither agree nor disagree' or *'Disagree'(n=9)*	2 (13.3%)	7 (53.8%)	

[#]Fishers exact test
[A]Examples were listed in the survey question as talent shows, birthday parties, parent teacher interviews, Christmas concerts, and graduations

5.3.2.2 Staff eating habits and perception of administrative support associations

Staff rated their agreement to two statements regarding school administrators creating a school environment that helped children eat healthy foods and preparing them to help implement the school nutrition policy using a 5-point Likert scale. About two-thirds of staff 'agreed' or 'strongly agreed' with the statements. Although no staff 'strongly disagreed' with the statements, a minority disagreed that administration has provided appropriate preparedness (Figure 5-3).

Figure 5-3: Staff survey responses (n=28) regarding administrative preparation for policy implementation



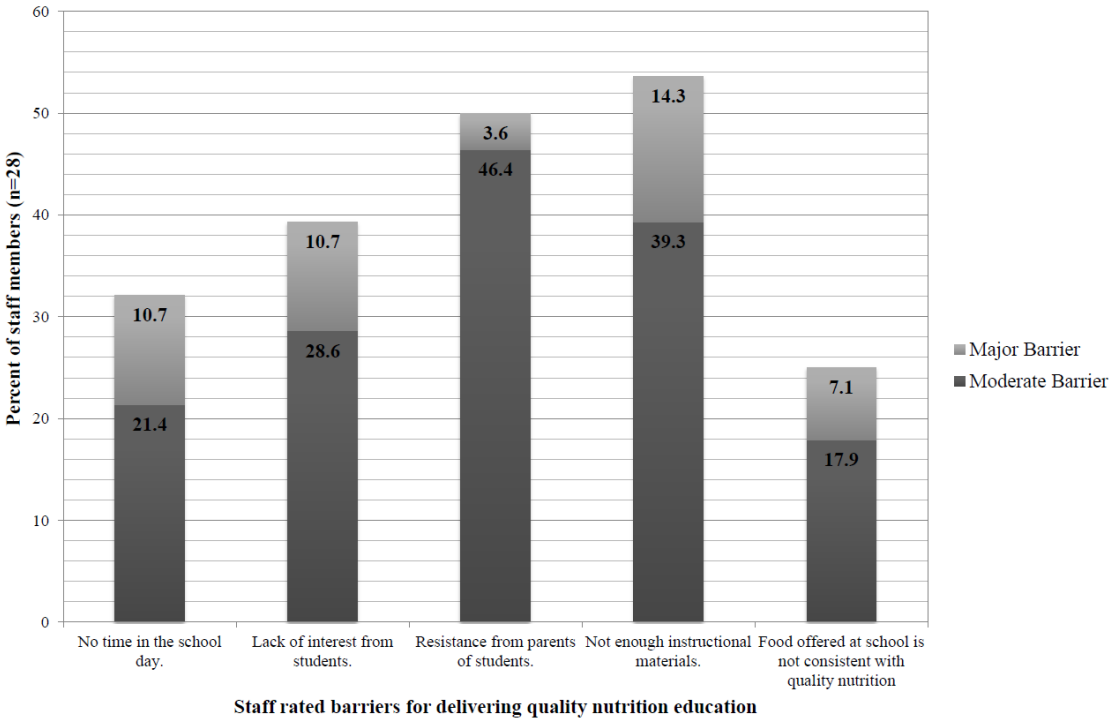
Staff member self-rated eating habits (Figure 5-1) were analyzed for associations with perception of administrative support (Figure 5-3) as shown in Table 5-3 using Fisher's exact tests. Those who self-rated their diet as "very healthy" or "healthy" (n=12; 80.0%) were more likely to agree with the statement "Administrators have created a school environment that helps children eat healthy foods," as compared to those who ate "average" (n=6; 46.2%) (p=0.114).

Table 5-3: Relationship between self-rated staff eating habits and agreement with statements from the school nutrition policy (n=28).				
Policy statement	**Survey Response**	**Self-rated staff eating habits**		**p-value**
		'Very healthy' or 'Healthy' (n=15)	**'Average' (n=13)**	
"Administrators have created a school environment that helps children eat healthy foods."	*'Strongly agree'* or *'Agree'(n=18)*	12 (80.0%)	6 (46.2%)	0.114[#]
	'Neither agree nor disagree' or *'Disagree'(n=10)*	3 (20.0%)	7 (53.8%)	
"Administrators have prepared me to help implement the school nutrition policy."	*'Strongly agree'* or *'Agree'(n=19)*	11 (73.3%)	8 (61.5%)	0.689[#]
	'Neither agree nor disagree' or *'Disagree'(n=9)*	4 (26.7%)	5 (38.5%)	
[#]Fishers exact test				

5.3.2.3 Eating habits and perception of barriers associations

Staff were asked to rate five potential barriers to delivering quality nutrition education using four response options: "major barrier," "moderate barrier," "not a barrier," or "don't know." The percent of staff members that rated each one as a major or moderate barrier is shown in Figure 5-4. The majority of staff (53.6%; n=15) perceived not having enough instructional materials as a barrier to delivering quality nutrition education whereas only 25.0% (n=7) of staff felt that the food offered at school was a barrier to providing nutrition education.

Figure 5-4: Staff survey responses (n=28) to questions regarding barriers to delivering quality nutrition education



Staff member self-rated eating habits (Figure 5-1) were analyzed for association with perception of barriers to delivering quality nutrition education (Figure 5-4) as shown in Table 5-4 using Chi-square and Fisher's exact tests. Staff members who self-rated their diet as "very healthy" or "healthy" as compared to those who ate "average" were less likely to perceive "lack of interest from students" (p=0.130), "resistance from parents of students" (p= 0.031), "not enough instructional materials" (p-value=0.069), and "food offered at school is not consistent with quality nutrition" (p=0.185) as barriers.

Table 5-4: Relationship between self-rated eating habits and perception of potential barriers preventing staff from delivering quality nutrition education (n=27).

Barrier	Survey Response	Self-rated staff eating habits		p-value
		'Very healthy' or 'Healthy' (n=15)	'Average' (n=12)	
No time in the school day	*'Major'* or *'moderate'* barrier (n=9)	5 (33.3%)	4 (33.3%)	1.000[#]
	'Not a barrier' or *'Don't know'(n=18)*	10 (66.7%)	8 (66.7%)	
Lack of interest from students	*'Major'* or *'moderate'* barrier (n=11)	4 (26.7%)	7 (58.3%)	0.130[#]
	'Not a barrier' or *'Don't know'(n=16)*	11 (73.3%)	5 (41.2%)	
Resistance from parents of students	*'Major'* or *'moderate'* barrier (n=14)	5 (33.3%)	9 (75.0%)	0.031[^]
	'Not a barrier' or *'Don't know'(n=13)*	10 (66.7%)	3 (25.0%)	
Not enough instructional materials	*'Major'* or *'moderate'* barrier (n=15)	6 (40.0%)	9 (75.0%)	0.069[^]
	'Not a barrier' or *'Don't know'(n=12)*	9 (60.0%)	3 (25.0%)	
Food offered at school is not consistent with quality nutrition[A]	*'Major'* or *'moderate'* barrier (n=7)	2 (13.3%)	5 (41.2%)	0.185[#]
	'Not a barrier' or *'Don't know'(n=20)*	13 (86.7%)	7 (58.3%)	

[#]Fishers exact test
[^]Chi-Square test
[A]Quality nutrition is defined by Eating Well with Canada's Food Guide: First Nations, Inuit, and Métis

These findings indicate that personal nutrition habits and knowledge have an effect on staff member perception of policy statements, readiness and willingness to implement such a policy, and perceived barriers to policy implementation. Staff members who had healthy nutrition habits, such as eating well and having a general understanding of quality nutrition, were more likely to accept school nutrition policy statements, feel they were supported by administration and ready to implement the policy, and perceive fewer barriers to implementing the policy, as compared to staff with less healthy nutrition habits or a lack of knowledge.

5.4 Discussion

Using mixed methods this study sought to understand if staff personal nutrition habits and nutrition knowledge were associated with their perceptions of a school nutrition policy and its implementation in a First Nation school. As school staff members are key policy facilitators, their buy-in and perception of the policy is critical to successful implementation. A principle of mixed methods research is to draw on the strengths of both qualitative and quantitative research, while minimizing the limitations of each, through an integration of the two (Creswell & Plano Clark, 2010). Through comparison of qualitative and quantitative data, the present study revealed that school staff personal nutrition habits, beliefs, and knowledge, were associated with attitudes towards a school nutrition policy, likelihood of adopting and implementing the policy, and perceptions of the barriers to delivering quality nutrition education. The findings demonstrated that staff who had perceived healthy nutrition habits were more

likely to agree with school nutrition policy statements, feel they were supported by administration, implement the policy, and perceive fewer barriers to implementing the policy, as compared to staff who perceived their eating habits to be less healthy.

Staff member, teacher, or facilitator beliefs, habits, and knowledge have been identified in other studies as factors important to school policy implementation (Vine & Elliot, 2013) (Masse, Naiman, & Naylor, 2013). Teachers with unhealthy classroom eating habits are less likely to value or support a healthy school environment (Rossiter, Glanville, Taylor, & Blum, 2007). Teachers may not read, adopt, or implement policies due to a perceived "lack of time" or because they do not prioritize "additional health initiatives" (Harriger, et al., 2014). In the present study, whether staff perceived "lack of time" as a barrier to policy implementation depended on their perception of their own eating habits. Staff members with average eating habits, as compared to above average eating habits, were more likely to perceive a lack of time, lack of interest from students, resistance from parents, and the food offered at school not being consistent with quality nutrition as barriers to delivering quality nutrition education.

In this study, staff members who rated their eating habits as "very healthy" or "healthy" were more likely to agree with statements directly from the policy such as, "all foods offered or sold at school will be healthy foods" and, "only healthy foods and drinks will be served at school and classroom celebrations." Staff members who had personal nutrition beliefs that aligned with those in the policy, such as the importance of healthy food, nutrition education, and physical

activity, were more likely to accept and implement the policy (Quintanilha, Downs, Lieffers, Berry, Farmer, & McCarger, 2013). Overall, the present study supports previous evidence suggesting that stakeholder eating habits and nutrition beliefs and knowledge affect perceptions of school policies and impact of policy implementation (Harriger, et al., 2014). One implication for these findings is that schools could consider integrating educational nutrition sessions for staff members to improve their outlook toward nutrition policies.

A limitation of this study is that eating habits were self-rated instead of being measured. The self-rated eating habit survey question and other questions asked staff members to use the Eating Well with Canada's Food Guide: First Nation, Inuit, and Métis, as a reference to define "quality nutrition" and "healthy eating." Self-report tools are cost-effective and easily administered methods of data collection (Adjoian, Firestone, Eisenhower, & Yi, 2016). An objective measure of healthy eating such as dietary intake assessment (e.g. 24-hour dietary recall) may have strengthened the study, although dietary intake reports often substantiate self-rated diet quality (Loftfield, Yi, Immerwahr, & Eisenhower, 2015).

In conclusion, staff member or policy facilitator personal nutrition practices having an impact on the effectiveness, or complete uptake, of policy implementation suggests the need for school administration to provide nutrition education to all school staff to eat healthier in the school environment, and encourage staff members to participate in school health-related activities (Vine & Elliot, 2013).

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6 Conclusions and Recommendations for Future Research

6.1 Summary of Findings

Poor nutrition accompanied by obesity particularly affects First Nations children living on-reserve (Assembly of First Nations, 2007) (First Nations Information Governance Centre, 2011). Increasingly evidence indicates that school nutrition policy implementation is one way to potentially encourage healthy choices for children at school (Fung, et al., 2012). For this reason it is imperative to develop school nutrition policies and strategies for their adoption and implementation to promote healthy eating behaviours for Aboriginal children.

Recent investigations suggest health policies are vital in 'closing the gap' in health disparities between Aboriginal and non-Aboriginal peoples (Browne, Hayes, & Gleeson, 2014). Prioritization of nutrition and physical activity policies varies across Canada; however evaluation of policy implementation in a multitude of First Nation, Inuit, and Métis contexts is generally understudied despite its importance to child health (Browne, Hayes, & Gleeson, 2014).

Objective I explored staff-perceived facilitators and barriers to policy implementation in a First Nation school. Nine barriers and seven facilitators of school nutrition policy implementation were identified by staff in four ecological categories (i.e. student; school; staff; and community and culture) (Townsend & Foster, 2011). The school had the most facilitators to policy implementation and provided a foundation of support and healthy choices for staff and students.

Staff support, student acceptance, previous health-oriented programming at the school, a healthy school environment reflective of the policy, administrative

support, parental support, and the school role in the First Nation community were all perceived by staff members to be facilitating factors for policy implementation. An important contextual facilitating factors specific to First Nation school nutrition policy implementation included the staff-perceived role of the school in the community, and as a place for innovation and healthful change in the community. In the context of the present research, the school was central to the community and provided an environment for social interaction and role modeling (Davison & Hawe, 2012).

Barriers to policy implementation included staff members finding the nutrition policy restrictive, staff members being inconsistent in their policy implementation, staff members unsure of their role in the policy, inconsistency between students in lower and higher grades in buy-in of policy, student food preference, special occasions allowing unhealthy food, time required for behaviour change, parent unawareness, and the perceived disconnect between the foods served at community and school events such as wild game and federally derived policy nutrition standards that emphasize eating less dietary saturated fats (Jessri , Nishi, & L'Abbé, 2015). Staff members perceived cultural foods as being unhealthy yet observed these foods being prioritized over nutritionally acceptable foods due to their important role in Aboriginal tradition and culture. This observation potentially speaks to the difficulties that the Canadian public experiences in interpreting Eating Well with Canada's Food Guide (Brown, Timotijevic, Barnett, Shepard, Lahteenmaki, & Raats, 2011). The food guide makes recommendations to select lean meat and alternatives, stating that foods

from this group provide protein, fat and many other important nutrients including iron, zinc, magnesium, and B vitamins. Examples of lean meat cuts are provided for wild game such as moose, caribou, and deer. This finding indicates that there needs to be better knowledge translation to Aboriginal peoples of federal nutrition guidelines pertaining to the consumption of traditional foods.

Objective II was designed to understand if there was a relationship between school staff member personal nutrition habits and beliefs and individual policy implementation and attitude towards the school nutrition policy. Staff members who had healthy nutrition habits, such as eating well and having a general understanding of quality nutrition, were more likely to accept school nutrition policy statements, feel they were supported and ready to implement the policy, and perceive fewer barriers to implementation of the policy, as compared to staff with less healthy nutrition habits. Staff members who had personal nutrition beliefs that aligned with those in the policy, such as the importance of healthy food, nutrition education, and physical activity, were more likely to accept and implement the policy. These findings align with those identified in previous literature that staff member personal beliefs, attitudes, and knowledge affect the success of the policy. School administrators, principals, and school board members should recognize the importance of staff nutrition education, promoting healthy staff habits, and providing opportunities for discussion with staff regarding the importance of role modeling healthy behaviours for students.

6.2 Strength of the Study

This study is innovative because, to our knowledge, little formal research has been done to understand the barriers and facilitators of First Nation school nutrition policy adoption and implementation. As well, there has been scant exploration as to whether First Nation school staff's personal eating habits and nutrition knowledge can influence perception of nutrition policy and effectiveness of policy implementation. Results of this thesis are novel because they include Aboriginal contextual understanding of school nutrition policy implementation.

For a school-based study, a high proportion (80.0%) of staff members participated in the school nutrition policy survey. For this reason, I am confident that results are representative of the staff, in general. In addition, 20% of staff members were interviewed and provided insight into staff perspectives of the school nutrition policy.

Collecting multiple sources of data across multiple levels strengthened the conclusions drawn from this study (Creswell J. , 2006). Triangulation of the evidence enabled conflicts and consistencies to emerge and be addressed in a transparent and systematic fashion. It enabled a more in-depth understanding of factors and perceptions affecting school nutrition policy adoption and implementation (Koorts & Gillison, 2015). The concurrent triangulation mixed method approach provided a comprehensive examination of responses to the research questions and was integral to the development of results.

6.3 Limitations of the Study

In order to retain anonymity, surveys did not collect demographic data and did not ask respondents about the length of time that they worked at the school, the grade they taught, or about the subjects that they taught. Identifying characteristics were removed from all survey transcripts. It was also not possible to link respondents' survey results to their interview data. A further limitation of the survey is that it was not pilot-tested. It was not feasible to pilot a survey in such a small school, as we would have had to include the same school staff members in the piloting of the survey and in the completion of the final version. The lack of pilot survey data did present a limitation, as we were not able to evaluate its adequacy as a research instruments; however, some questions on the survey were borrowed from other validated surveys and the remaining questions had all be reviewed for appropriateness by community members of the school research committee.

Reviewers of research reports recurrently criticize the choice of statistical methods when analyzing data from Likert scales with parametric methods. For example, as Jamieson (2004) states, "the response categories in Likert scales have a rank order, but the intervals between values cannot be presumed equal". Therefore, Likert scales fall within the ordinal level of measurement, and ordinal data should be measured with non-parametric statistics (Jamieson, 2004). Therefore, calculating the mean (and standard deviation) for ordinal data is not appropriate, and assuming that Likert-type scale categories have interval-type values is not correct (Cohen, Manion, & Morrison, 2000). Blaikie (2003) also

argues that the intervals between values cannot be presumed equal yet researchers frequently assume that they are.

Five survey questions were inadvertently misprinted and left out of the staff nutrition policy survey. All five questions were related to providing nutrition education to students, such as confidence of staff members in providing quality nutrition education or frequency of providing quality nutrition programming and education to students. Excluded questions could have provided insight into the delivery of nutrition education at the First Nation School, which is significant as nutrition education is required by the school nutrition policy.

The inclusion criteria for survey and interview participation required staff members to have a school mailbox and a regularly scheduled presence at the school, which resulted in the exclusion of First Nation school elders. Elders at the school could have provided unique insight into the school nutrition policy implementation as many have been working as cultural advisors at the school for a significant length of time. They would have potentially been able to discuss the policy implementation process at the school as they observed it, from the beginning of policy development to its implementation, with knowledge of First Nation culture, traditions, and health perspectives. The results may be limited by exclusion of the First Nation elder perception.

Since the data generation took place in only one Aboriginal community, results are not generalizable to all First Nations, or to Aboriginal peoples in general. Instead, they provide some insight into the staff perspectives of the process of school nutrition policy a implementation in one setting.

6.4 Research to Practice: Implications of the Study

A key component of the research was its community-based participatory research approach (Israel, Eng, Schultz, & Parker, 2012). Elders, Departmental representatives, school staff, and educators working in the community, contributed to the development of the study. The relative success of the process evaluation and of the timely application of the research results to practice can be attributed to the collaboration with community partners. Community self-determination was evident in many aspects of the study. The research process, from grass roots research objective development to immediate uptake and practical application of research results, was a substantial example of decolonizing research (Smith, 1999). In the context of the present thesis, the partnership between community members and academic researchers enabled a collaborative working relationship that created the space and necessary resources for community self-determination of research processes (Zavala, 2013). Research that is a continuation of the process evaluation of school nutrition policy implementation is occurring in the First Nations community that includes the experiences of additional stakeholders such as students and parents. Community self-determination means that community members are engaged in this continued research, maintain the capacity to further complete the process evaluation, and have engaged school health champions to advocate for the sustained improvement of school health and wellness (Smith, 1999) (Bull, 2004).

Results from the present study, reviewed by the school research advisory committee, were put into action to enhance the school nutrition policy

implementation. School administrators built on the identified facilitating factors by providing continued support, offering or serving consistent healthy choices at school as approved by a community dietitian, and continuing to seek additional funding for physical activity resources and after-school health oriented programs.

The Education Department reviewed the barriers to policy implementation and submitted the school nutrition policy for review at the close of the 2015 – 2016 school year. Changes were made to the original school nutrition policy (outlined in Appendix B, page 183) to reduce barriers to implementation that were identified in the present study. The amended policy (Appendix H, page 197) was introduced in February 2016.The new version of the policy provides staff members with clearer roles as policy facilitators. It also provides a school snack list and ideas for teachers to include nutrition as part of their classroom culture. Additionally, the new policy more clearly outlines the zero-tolerance tenet for non-healthy foods at special occasions such as birthday parties.

School staff, administration, and Education directors aimed to reduce parent unawareness of the school nutrition policy and increase the level of communication with parents. The First Nation School held an inaugural parent conference in February 2016 in order to inform and educate parents on the school's activities, curriculums, programs, and policies. The First Nation School health facilitator and school district dietitian presented five nutrition and physical activity sessions throughout the conference to inform parents of the school nutrition policy, what is required from students and parents, and what the school is doing to promote nutrition and healthy eating for students and staff.

Based on findings of the present study, evidence for the effectiveness of school nutrition policy to improve the school nutrition environment and increase staff and student nutritional diet quality is promising. APPLE Schools is expanding to include northern Alberta First Nation schools. Schools that work in partnership with APPLE Schools are required to develop and implement a school nutrition policy as a pillar in comprehensive school health (Joint Consortium for School Health, 2008). APPLE Schools is drawing on the results of the present thesis to inform supportive factors for policy implementation, strategies for reducing barriers, and insights into policy amendments that could serve to better implement a school nutrition policy.

Other Canadian First Nation communities and schools can use these results to help develop and implement a school nutrition policy. The school described in the present study had a foundation of previous health programming and a school that had the infrastructure, administrative support, and capacity to begin the process of policy development and implementation. Results indicated that the school environment and personnel support were integral to policy implementation, thus other First Nation schools should identify these as primary factors in the policy process. School health champions and the ability to offer or serve healthy food choices for students are considerable aspects of successful nutrition policy implementation.

6.5 Concluding Remarks

School staff perceived administrative support, a school environment that offered and encouraged healthy food choices, and previous school health-oriented programming as facilitators for school nutrition policy implementation. It is important that policy-developers construct policies that are relatively advantageous for staff members to adopt and implement, compatible with school staff and environment, and that reduce the perceived complexity of the policy mandates (Masse, Naiman, & Naylor, 2013). Additionally, staff members that feel supported in policy implementation by school administration, particularly school principals, are more likely to adopt and implement the policy (Lambert, Monroe, & Wolff, 2010).

6.6 Future Directions

School nutrition policies were derived from public health agencies to improve child health in the structured environment of a school (McKenna, 2000). Integration of health initiatives into the education system has proved inconsistent and varied in the Canadian context. School nutrition policies can range in content, scope, and whether or not they are of mandatory implementation. Though effective policy adoption and implementation are crucial in the policy change process, often the evaluation of the two stages is incomplete (DuPre & Durlak, 2008). The present thesis describes the implementation process from a key stakeholder perspective, as well provides insight into strategies, challenges, enablers, and various contextual considerations of school policy implementation. Future school nutrition policy evaluations should continue to focus on staff

members as key policy facilitators, and consider the inclusion of other stakeholders such as students and parents. Additional studies in other school settings (rural, Northern, public, private, elementary, secondary, etc.) could strengthen findings and provide insight into additional contextual differences for school policy implementation. As well, studies are needed that focus on the ripple effect of school policy change to understand the student, parent, and community impact of school nutrition policy implementation. The present study reflects the first component of a bigger study that will explore the ripple effect of school policy implementation in a First Nation community.

Staff members identified parental support as a facilitating factor for the implementation of a school nutrition policy, and parent unawareness as a barrier to school nutrition policy implementation. Parent involvement is important for nutrition consistency in children's diets (Mendelson, 2007). Future studies could focus on parent perspectives of school nutrition policy implementation, which could potentially open communication between families and schools regarding health and nutrition. Parents that agree with and support a school nutrition policy could be more likely to adopt similar practices and habits in their home, creating consistent healthy environments for students. However, serving healthy meals may be difficult for Aboriginal families, many which live below the poverty line and endure food insecurity (Genuis, Willows, Alexander First Nation, & Jardine, 2014). For this reason, research is being done in the presently described community to understand parent perspectives of the school nutrition policy and challenges to healthy eating.

To date few studies have been conducted to determine if school nutrition policies affects dietary intake of students (Alaimo, et al., 2015), thus research on this topic is crucial (Funga, McIsaaca, Kuhlec, Kirk, & Veugelers, 2013). The limited evidence suggests that school nutrition policies have the ability to positively impact student dietary intake, for example by reducing consumption of sugar-sweetened beverages (Funga, McIsaaca, Kuhlec, Kirk, & Veugelers, 2013). Future research is needed to investigate whether school nutrition policies positively impact dietary outcomes in Aboriginal children. With high overweight and obesity rates especially in First Nations children, it is imperative to investigate creative and impactful healthful eating initiatives (Willows, 2005).

6.7 Personal Reflections: Insider-Outsider Experience of Being a Métis Researcher in a First Nation Community

The following expression is a personal reflection regarding the experience of researching a First Nation community as a Métis graduate student. I am Métis, and proud of it; however I didn't grow up influenced by the negative effects of a scarred Canadian Indigenous past. I grew up in a privileged world, going through life without awareness of how much pain and excruciating history went into my Métis bloodline. Leaving undergraduate school with a new learned perspective of Indigenous history in Canada, I was interested in reconciliation in Indigenous health. I wound up in the capable hands of Dr. Noreen Willows, esteemed professor and researcher with expertise in community-based research who had an established and flourishing working relationship with the First Nation community

in central Alberta. I began work with Dr. Willows and the community to complete a process evaluation of First Nation school's nutrition policy implementation. The research project was entirely collaborative with the established community research committee and provided the most impeccable working example of truly equitable community-based participatory research. As a Métis student, who wanted to become more in touch with my Cree ancestry and felt an internal pull to invest myself in Indigenous health and wellbeing, I was also facing the struggle of being a complete outsider to the First Nation community. I felt that I was, essentially, a researcher not unlike those who committed such demeaning and undignified "helicopter" research practices in the past. I submitted myself to far more self-reflection that I ever imagined in this research experience.

In the academic realm, I felt other academics perceived my research as more credible due to my Métis ancestry. I was perceived as an insider to the academy, but someone because of their indigeneity who brought legitimacy to the research as an outsider. My heritage gave the project a 'stamp of approval' – it was an affirmation that the most respectful Indigenous decolonizing research was being conducted. On the other hand, working in the First Nation community, I felt I was an outsider, a typical urban researcher who couldn't possibly understand the First Nation history and the legacies of intergenerational trauma and adverse population health status. Although, members of the First Nation research committee made me feel welcome, were gracious in sharing cultural teachings with me, and supported my research at the school. I felt in either realm that I was on the edge, not quite on one side or the other. It made my community-based

participatory research practice special, but also confusing and challenging. I struggled to understand where I fit, which side I deserved to be on and wanted to be on, or if I even needed to choose a side. I also struggled to understand where the bridge was that joined one side to the other. Could I be both an insider and outsider? Could I quite possibly use my passion for decolonizing research in Indigenous Health and ancestral linkage to the Métis Nation, as well as my academic education and understanding of scientifically rigorous research practices to act to improve Indigenous health? I reconciled myself to become the bridge. I could be a link, an insider and an outsider for decolonizing research practices in Indigenous health. Positioning myself as a bridge in no way implies I have knowledge or an extensive background of either side. It means I attempt to understand both sides. I empathize with both sides in their struggle to understand what lies across the bridge. I allow a communicative path between one side that contains academic research protocols and University ethics approval boards with another side that contains Chief and Council meetings, Elder blessings, and tobacco offerings. In most cases of research where respect and trust has been violated between groups on either side of the bridge, the groups have turned their back on one another. They haven't realized that across the bridge, there is the potential for open arms, open minds, and a blossoming understanding of how to do decolonizing research and a sincere desire to engage in it.

I cannot definitively say that I fully yet understand my positioning as a Métis person in Indigenous health research. What I can state is that I know I am closer to understanding my situation than I was before my experience in First

Nation community-based participatory research. One of the most important lessons I learned in this research process was that no one should turn their back on respectful and honest curiosity. One more question, one more story, one more insightful paradigm, and piece by piece I build the bridge.

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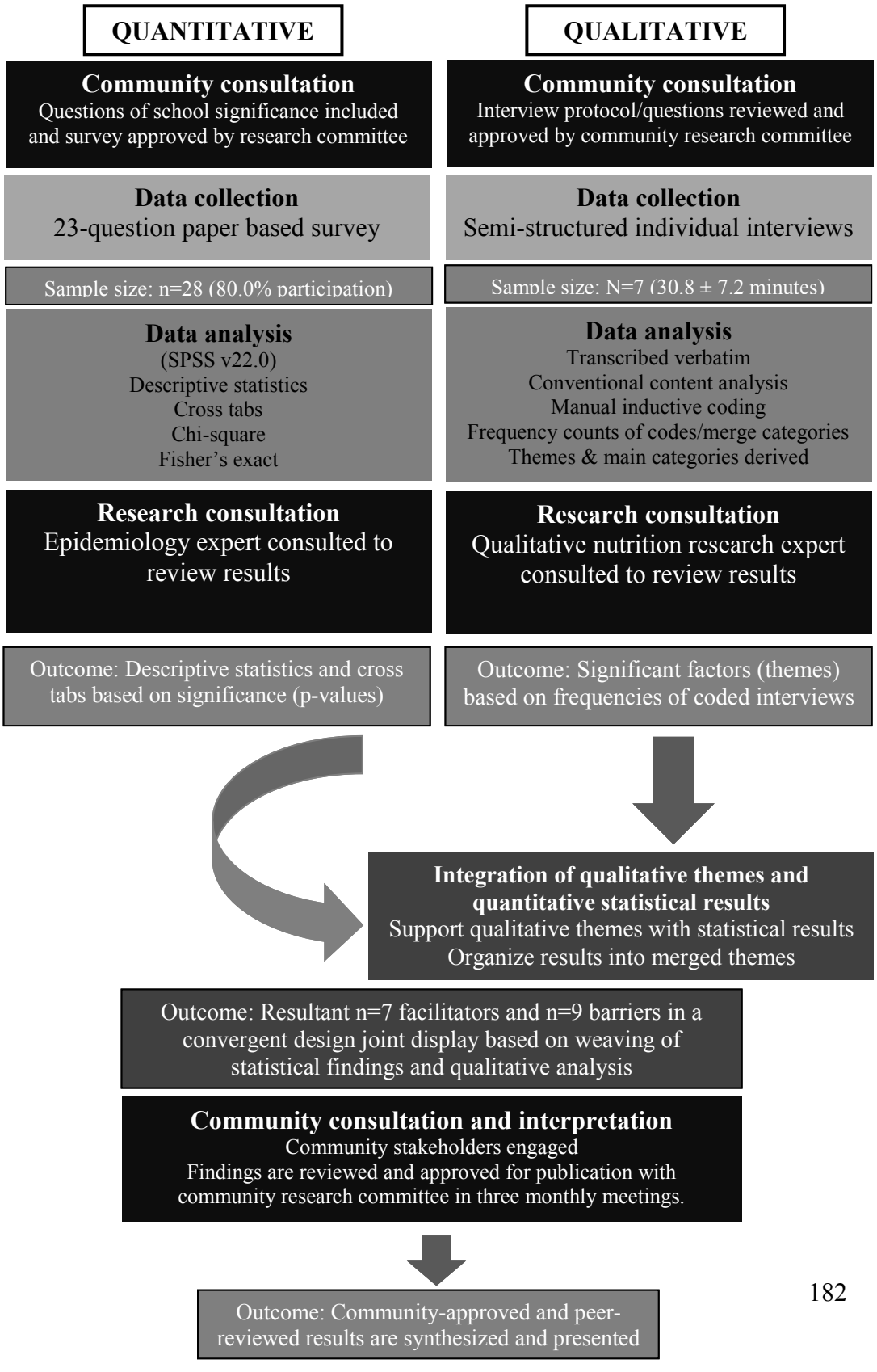
8 Appendices

8.1 Appendix A: Methodological Design



8.2 Appendix B: First Nation School Nutrition Policy

POLICY 126: NUTRITION AND PHYSICAL EDUCATION

(Implemented March 2014)

Policy Statement: The [First Nation School] will promote and provide nutritious snacks and meals consistent with the First Nation Metis Inuit (FMNI) Food Guide while promoting nutrition education and daily physical activity.

Guidelines:

1. All [First Nation School] Staff must ensure that strategies are in place to foster the knowledge, skills and attitudes that promote healthy eating. In fulfilling this expectation [First Nation School] staff will:
    a. establish linkages between health education and foods available at the school,
    b. promote nutrition education and positive food messages provided by Alberta Health Services Website and Canadian FNMI food guide,
    c. Limit the use of food items as rewards, e.g. no candy for cleaning desks or finishing work early.
    d. All school and classroom celebrations will follow the FNMI food guide and Alberta Health Services Guidelines for healthy living. (for example *talent show, round dance, pow wow, birthday parties, Halloween, meet the teacher, parent teacher interviews, Christmas concert, Christmas parties, career fair, graduation, track and field, prom, Easter, year-end parties, 100th day of school celebration and in addition to any other school celebrations*).
    e. Hot lunch menu and canteen menu to be posted in the monthly newsletter.
2. [First Nation School] will promote healthy, reasonably priced food choices when food is sold or otherwise offered. In fulfilling this expectation, [First Nation School] Staff will plan to:
    a. access expertise in the community through partnerships, programs, referrals, etc.,
    b. offer foods that are from the FNMI Food Guide
    c. All fundraisers must follow the FNMI Food Guide and Alberta

Health Services guidelines for healthy living.

3. [First Nation School] school community will examine their nutrition practices and provide opportunities, support and encouragement for staff and students to eat healthy foods. In fulfilling this expectation staff may do things such as:
    a. create their own health and wellness team that includes staff, parents and students
    b. choose healthy fundraising options
    c. create an environment where healthy foods are available, affordable and promoted as the best choice,
    d. review options with food suppliers to maximize the nutritional value of the items
    e. define the frequency of special celebrations in yearly calendars and ensure that healthy food items are available on those days
    f. will promote positive food messaging on lunch and snack items provided by parents ([First Nation School] staff are not responsible for unhealthy food choices brought from home)

4. Physical Activity

In addition to regularly scheduled physical education programming, [First Nation School] will provide opportunities for additional daily physical activity e.g. Daily Physical Activity (DPA) Bins, extracurricular sporting events, running club, energizers, etc. either within classroom time or outside of classroom time.

8.3 Appendix C: Staff Survey Information Sheet and Implied Consent Form

School Staff Nutrition Policy Survey

Project Title: Evaluation of [School]'s nutrition policy and nutrition activities

Investigator	**Role**
Community Member	Community Partner
University Researcher	Principal Investigator

Purpose of Research: The community First Nation School has a Nutrition Policy. The aim of the policy is to ensure that the school will promote and provide nutritious snacks and meals. Food and drinks are to be consistent with the Canadian First Nation Metis Inuit Food Guide. All staff is being asked to ensure that strategies are in place to foster the knowledge, skills, and attitudes that promote healthy eating.

First Nation Education and researchers at the University of Alberta are working together to improve the nutrition environment for students and staff. The aim of this survey is to find out teachers' and administrative staffs' thoughts on the school nutrition policy. Education administrators would like to know what is helping you to adopt the policy. We also want to find out any barriers to its adoption.

Study Procedure: The 23 question survey is voluntary. It is also confidential and anonymous. The survey takes about 20 minutes to complete. If you agree to complete the survey, please do not write your name on it. *When you are finished the survey, please put it in the envelope that is provided with the survey. Then seal the envelope and place it in the box provided in the front office.* Do not put your name on the envelope. A researcher from the University of Alberta will pick up the sealed envelope.

A $25 grocery store gift certificate is included with this survey to thank you for your time. You can keep the gift certificate even if you decide to not complete the survey.

Confidentiality: Your responses to survey questions will remain anonymous since you will not put your name on the survey. All surveys from teachers and administrative staff will be combined. The only people who will have access to surveys are the researchers at the University of Alberta. Surveys will be stored in a locked cabinet at the University of Alberta for five years. After this time they will be destroyed. Electronic data will be kept on password-protected computers at the University of Alberta. The FN Education Department will be given aggregate data. For example, the FN education department will be given frequency of responses to all survey questions. The education department will never see your survey results.

Voluntary Participation: This survey is voluntary. You can choose whether to complete this survey or not. Your decision to participate in this study will not affect your position at the school.

If you are willing to participate, please complete the survey. After you place your survey in the sealed envelope and into the drop box, you cannot withdraw from the study. This is because we will not know which sealed envelope contains your survey.

Risks: It is not expected that participation in this study will harm you in any way. If answering some questions makes you feel uneasy, you can choose to not answer them.

Benefits: The findings may help to improve the community school nutrition policy.

Approval: This study is approved by the Community Research Committee. Chief and Council approved it. It is approved by a Research Ethics Board at the University of Alberta.

Contact Information: If you have any further questions about the study, don't hesitate to contact:

Name	**Email**	**Phone**
Community Member	cmember@gmail.ca	XXX-XXX-XXXX
University Researcher	researcher@university.ca	XXX-XXX-XXXX

If you have any questions or concerns regarding your rights as a participant, or how this study is being conducted, you may contact the Research Ethics Office at the University of Alberta, at 780-492-2615. This office has no affiliation with the study investigators.

By completing this survey, you consent to participate in this study.

8.4 Appendix D: Staff Paper-Based School Nutrition Survey

[School] Staff Nutrition Survey

There are **23** questions in this survey.

The following 6 statements are directly from the School Nutrition Policy. Please put a check in the **one** box that best represents your agreement with each statement.

	Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
1. *"All foods offered or sold at school will be healthy foods."*					
2. *"[School] staff will establish linkages between health education and foods available at the school."*					
3. *"[School] staff will promote nutrition education and positive food messages provided by Alberta Health Services Website and the Canadian Food Guide for First Nation, Inuit, and Métis."*					
4. *"[School] staff will limit the use of food items as rewards. For example, no candy for cleaning desks or finishing work early."*					
5. *"[School] staff must create an environment where healthy foods are available, affordable, and promoted as the best choice."*					
6. *"Only healthy food and drinks will be served at school and classroom celebrations. These include talent shows, birthday parties, parent teacher interviews, Christmas concerts, and graduations."*					

Survey continues on next page.

For multiple choice questions 7 to 14 please choose the **one** best answer.

7. Do you agree with this statement? *Administrators have created a school environment that helps children eat healthy foods.*
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

8. Do you agree with this statement? *Administrators have prepared me to help implement the school nutrition policy.*
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

9. Do you agree with this statement? *Healthy foods are available at the school.*
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

10. Think about what you usually eat every day at school, at home, and at other places. Do you feel your eating habits are…?
    a. Very healthy
    b. Healthy
    c. Average
    d. Unhealthy
    e. Very unhealthy
    f. I don't know

11. Has the School Nutrition Policy impacted the way you are eating at school?
    a. Yes
    b. No

Survey continues on next page.

12. In your opinion, has the School Nutrition Policy impacted the way students are eating at school?
    a. Yes
    b. No
    c. Don`t know

13. Have any parents contacted you regarding the foods or drinks available at school?
    a. Yes
    b. No

14. Have any parents contacted you regarding the School Nutrition Policy?
    a. Yes
    b. No

[The school] would like to support you in delivering the best quality nutrition education to students. For statements 15 to 19, please rate the extent to which each issue is a barrier to you providing quality nutrition education. Please put a check in only **one** box for each statement.

	Not a barrier	**Moderate barrier**	**Major barrier**	**Don't know**
15. No time in the school day.				
16. Lack of interest from students.				
17. Resistance from parents of students.				
18. Not enough instructional materials.				
19. Food offered at school is not consistent with quality nutrition, as defined by *Eating Well with Canada's Food Guide: First Nations, Inuit, and Metis*.				

For multiple choice questions 20 to 24 please choose the **one** best answer.

20. Are KEC students receiving the required amount of nutrition education they need to enable them to make healthy food choices?
    a. Far above requirements
    b. Above requirements
    c. Meets requirements
    d. Below requirements
    e. Far below requirements
    f. Don't know

21. What measures did administrative staff take to familiarize you with the School Nutrition Policy?

_____

_____

_____

_____

_____

22. Please tell us what has helped you the most to deliver quality nutrition education to students.

_____

_____

_____

_____

_____

_____

_____

23. Please tell us what you believe are the biggest barriers to [the school] adopting the School Nutrition Policy.

_____

_____

_____

_____

_____

_____

Thank you for completing the survey.

Please place the survey in the envelope, seal the envelope, and place it in the survey collection box in the front office of the school. The sealed envelope will be given to a researcher at the University of Alberta associated with the study.

8.5 Appendix E: Staff Individual Interview Information and Contact Form

Staff Interview Information Sheet

Project Title: Evaluation of [School]'s nutrition policy and nutrition activities

Investigator	**Role**
Community Member	Community partner
University Researcher	Principal Investigator

Purpose: The First Nation Education Department is trying to make sure that children have healthy food at school. We invite you to discuss healthy eating for school children and the nutrition policy initiatives set forth by administrative staff. These are the aims of the individual interview.

- To find out what staff and teachers think about the school nutrition policy.
- To find out what staff and teachers think is the school's role in ensuring good student nutrition.
- To find out how staff and teachers can support student and coworkers eating healthy at school.
- To find out what staff and teachers understand to be the purpose and the content of the school nutrition policy.

Procedure: Teachers and staff employed at the community First Nation School will participate in individual interviews. They have the option of being interviewed at any time after school or during a prep period in the remaining school year. Interviews will be held at the school in a private room. Staff will talk about student nutrition and school nutrition policy initiatives for about 30-45 minutes.

Interviewees will receive a $25 grocery store gift card to thank them for their time and for sharing their thoughts.

The interview will be audio recorded. This way, researchers will know exactly what staff or teachers said. The recording will be typed out. All interviews will be combined and analyzed together.

To make an appointment with the researcher to be interviewed, please provide an email address on the last page of this information sheet. The research team will contact you by email.

Voluntary Participation: If you agree, you can participate in the interview. Participation is voluntary. You are able to change your mind at any point in time until the interview transcript analysis begins. The audio recording and written transcript will be destroyed if such is the case.

Privacy: Interviews will take place at the school; therefore other people at the school might know that you participated in an interview. All precautions will be taken to anonymize data. Names will not be included in the transcript for anonymity.

No names will be typed. Your name will never be used in papers or talks. What everyone says will be put into a computer at the University of Alberta. The computer will be protected by a password. The typed notes and recordings will be locked in a file cabinet at the University for 5 years. They will then be destroyed.

Approval: This study is approved by the Community Research Committee. Chief and Council approved it. It is approved by a Research Ethics Board at the University of Alberta.

Risks: It is not expected that participation in this study will harm you in any way. If answering some questions makes you feel uneasy, you can choose to not answer them.

Benefits: The findings may help to improve the school nutrition policy at the First Nation community school.

Contact Information: If you have any further questions about the study, don't hesitate to contact:

Name	**Email**	**Phone**
Community Member	cmember@gmail.ca	XXX-XXX-XXXX
University Researcher	researcher@university.ca	XXX-XXX-XXXX

If you have any questions or concerns regarding your rights as a participant, or how this study is being conducted, you may contact the Research Ethics Office at the University of Alberta, at 780-492-2615. This office has no affiliation with the study investigators.

Consent Form

Have you read and received the study Information Sheet?	Yes	No
Do you know that if you agree, you can participate in an individual interview?	Yes	No
Do you know that what you say will be used in a study?	Yes	No
Do you know that your name will not appear in the study findings?	Yes	No
Do you know that you have the option to opt out of the interview even after the tape recorder has started?	Yes	No
Do you know that you will be given a $25 grocery store gift card for being in the study?	Yes	No
Do you know the benefits and risks of taking part in this study?	Yes	No
Do you know that the tapes and notes will be kept at the University of Alberta? They will be destroyed after 5 years.	Yes	No

I have read and understood the information letter. I agree to be interviewed about school nutrition.

The research team can contact me to schedule an interview using the following email address: _____.

Participant's name (Print):

_____

Participant's signature:

_____

Date:_____

IF YOU WOULD LIKE TO PARTICIPATE, PLEASE PUT THIS COMPLETED PAGE IN THE ENVELOPE INCLUDED WITH THIS INFORMATION SHEET. IT CAN BE PLACED IN THE SURVEY COLLECTION BOX IN THE FRONT OFFICE OF THE SCHOOL. YOU CAN KEEP THE REST OF THE INFORMATION SHEET.

8.6 Appendix F: Staff Individual Interview Protocol

Individual interview questions for staff about school nutrition

Icebreaker questions

1. Please describe your favourite meal to me. Tell me what it is about this meal that makes it your favourite one.
   Probe: Ask about types of food and drinks participants like to have for lunch or supper, and why.

2. Please share with me examples of food and drinks that you feel are healthy. Explain why you consider them to be healthy.

Broad questions about the school nutrition policy

[The school] recently developed a healthy nutrition policy to support students and staff to eat nutritious food and drinks. Because of the policy, all food and drinks offered or sold at school are supposed to be healthy. This means food and drinks served at breakfast, at the hot lunch and for school celebrations. It includes food and drinks sold at the canteen and for fundraisers. The policy says that [school] staff will promote nutrition education and positive food messages. It also says that [school] staff will establish linkages between health education and foods available at the school.

I would like to ask you questions about this policy and nutrition education at school.

1. What role, if any, do you think the school should play in ensuring good nutrition and healthy eating for students?
   Probe: Who do you feel is primarily responsible for ensuring a child eats well at school? Parents, school administrators, teachers, or children?
2. Do you agree or disagree with this statement? *Administrators have created a school environment that helps children eat healthy foods.* Why do you agree or disagree?
   Probe: Do you feel these changes in healthy food or nutrition education were a result of the policy or did they happen before the policy came into effect? Why do you feel this way?

3. Do you agree with this statement? *Administrators have prepared me to help implement the healthy nutrition policy.* Why do you agree or disagree?

    Probe: Do you feel you were included in the policy implementation process? In what ways?

    Probe: Were you fully aware of the reasoning behind the development of the [school] nutritional policy?
4. Please tell me what things have helped you to adopt the nutrition policy? Why have they been helpful to you?
5. Please tell me what things have been the biggest barriers to you adopting the nutrition policy? Why have they been barriers to you?
6. Do you feel that you have been adequately supported to teach children about healthy food choices? Why or why not?
7. How can you as a staff member best support or promote children having healthy food and drinks at school?
8. As a last question, how best could you be supported to deliver quality nutrition education to students?

    Probe: What additional resources would be beneficial to you?

8.7 Appendix G: Frequency Results Table for Staff Survey

Table 6-1. May 2015 Staff School Nutrition Policy Survey Response Frequencies (n=28)					
The following 6 statements are directly from the School Nutrition Policy. Please check the box that best represents your agreement with each statement.	**Strongly Agree n (%)**	**Agree n (%)**	**Neither agree nor disagree n (%)**	**Disagree n (%)**	**Strongly Disagree n (%)**
1. "All foods offered or sold at school will be healthy foods."	9 (32.1)	11 (39.3)	6 (21.4)	2 (7.1)	0
2. "[School] staff will establish linkages between health education and foods available at the school."	11 (39.3)	9 (32.1)	6 (21.4)	2 (7.1)	0
3. "[School] staff will promote nutrition education and positive food messages provided by Alberta Health Services Website and the Canadian Food Guide for First Nation, Inuit, and Métis."	12 (42.9)	9 (32.1)	6 (21.4)	1 (3.6)	0
4. "[School] staff will limit the use of food items as rewards. For example, no candy for cleaning desks of finishing work early."	16 (57.1)	6 (21.4)	5 (17.9)	1 (3.6)	0
5. "[School] staff must create an environment where healthy foods are available, affordable, and promoted as the best choice."	14 (50.0)	10 (35.7)	3 (10.7)	1 (3.6)	0
6. "Only healthy foods and drinks will be served at school and classroom celebrations. These include talent shows, birthday parties, parent teacher interviews, Christmas concerts, and graduations."	8 (28.6)	11 (39.3)	7 (25.0)	2 (7.1)	0
7. Do you agree with this statement? *Administrators have created a school environment that helps children eat healthy foods.*	3 (10.7)	15 (53.6)	8 (28.6)	2 (7.1)	0
8. Do you agree with this statement? *Administrators have prepared me to help implement the school nutrition policy.*	3 (10.7)	16 (57.1)	6 (21.4)	3 (10.7)	0
9. Do you agree with this statement? *Healthy foods are available at [School]*.	6 (21.4)	16 (57.1)	4 (14.3)	2 (7.1)	0
	Very healthy	**Healthy**	**Average**	**Unhealthy**	**Very unhealthy**
10. Think about what you usually each every day at school, at home, and at other places. Do you feel your eating habits are…?	2 (7.1)	13 (46.4)	13 (46.4)	0	0
	Yes	**No**	**Don't Know**		
11. Has the School Nutrition Policy impacted the way <u>you</u> are eating at school?	16 (57.1)	12 (42.9)	-		
12. In your opinion has the School Nutrition Policy impacted the way <u>students</u> are eating at school?	19 (67.9)	5 (17.9)	4 (14.3)		
13. Have any parents contacted you regarding the foods or drinks available at school?	2 (7.1)	26 (92.9)	-		
14. Have any parents contacted you regarding the School Nutrition Policy?	1 (3.6)	27 (96.4)	-		
Please rate the extent to which each issue is a barrier to you providing quality nutrition education.	**Not a barrier**	**Moderate barrier**	**Major barrier**	**Don't know**	
15. No time in the school day.	12 (42.9)	6 (21.4)	3 (10.7)	6 (21.4)	
16. Lack of interest from students.	10 (35.7)	8 (28.6)	3 (10.7)	6 (21.4)	
17. Resistance from parents of students.	5 (17.9)	13 (46.4)	1 (3.6)	8 (28.6)	
18. Not enough instructional materials.	6 (21.4)	11 (39.3)	4 (14.3)	6 (21.4)	
19. Food offered at school is not consistent with quality nutrition, as defined by *Eating Well with Canada's Food Guide: First nations, Inuit, and Métis*.	14 (50.0)	5 (17.9)	2 (7.1)	6 (21.4)	
	Far above requirements	**Above Requirements**	**Meets Requirements**	**Below Requirements**	**Far below requirements**	**Don't know**
20. Are [School] students receiving the required amount of nutrition education they need to enable them to make healthy food choices?	0	2 (7.1)	18 (64.3)	6 (21.4)	0	2 (7.1)

8.8 Appendix H: Amended School Nutrition Policy

POLICY 126: SCHOOL NUTRITION POLICY
(Implemented March 2013; Revised February 2016)

Policy Statement: The [First Nation School] will promote and provide nutritious snacks and meals consistent with the First Nation Metis Inuit Food Guide while promoting nutrition education and daily physical activity.

Department of Education Policies

1. The Principal of [First Nation School] and the Daycare Supervisor must ensure that strategies are in place to foster the knowledge, skills, and attitudes that promote healthy eating. In fulfilling this expectation the school and daycare will:
    - Establish linkages between health education and foods available at the school,
    - Promote nutrition education and positive food messages provided by Alberta Health Services Website and Canadian FNMI food guide,
    - Schedule lunch breaks that provide time for eating and recreation,
    - Limit the use of food items as rewards, e.g. no candy for cleaning desks,
    - Include food items from the '*choose most often'* and '*choose sometimes'* categories on special occasion days.
2. The [First Nation School] and the daycare will promote healthy, reasonably priced food choices when food is sold or otherwise offered. In fulfilling this expectation, the school principal and daycare supervisor will plan to:
    - Access expertise in the community through partnerships, programs, and referrals, etc.,
    - Offer healthy foods in meal combinations in all places,
    - Offer foods that are in the *'choose most often' and 'choose sometimes'* categories.
3. The [First Nation School] and the daycare will examine their nutrition practices and provide opportunities, support and encouragement for staff, students, and children to eat healthy foods. In fulfilling this expectation staff may do things such as:
    - Create their own health and wellness team that includes staff, parents, and students. E.g. [Community] Research Committee,
    - Choose healthy fundraising options,
    - Create an environment where healthy foods are available, affordable, and promoted as the best choice,
    - Review options with food suppliers to maximize the nutritional value of the items,
    - Define the frequency of special food days in yearly calendars and ensure that healthy food items are available on those days.

Scope

The [First Nation School] Nutrition Policy affects all activities that involve food. This includes: food as rewards, food sales, serving food, celebrations and holidays, fundraisers, displays creating a healthy environment, classroom education and staff wellness.

a) Food as rewards – the staff at [First Nation School] and the daycare will choose alternatives to food and beverages as rewards for academic performance and desired behaviour.
b) Food sales – Foods and beverages sold at the school will follow "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
    - This includes but is not limited to hot lunches, canteen, and classroom fundraisers.
c) Serving food – Food and beverages offered during school/daycare hours, at school/daycare supported events, including those outside school/daycare hours, will follow "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
    - This includes but is not limited to meet the teacher night, parent teacher interviews, whole school events, lunchroom supported lunches, and the hot lunch program.
d) Celebrations and Holidays – we believe celebrations that involve food should support healthy eating. When food is served it should follow "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
    - This includes but is not limited to Halloween, Christmas, Valentine's Day, and the end of the year celebrations.
    - [First Nation School] and daycare staff who choose to provide or organize snacks for their class will send home a list to parents regarding quantity and kind of snack to ensure the food meets the "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
e) Student/child birthdays – With the support of parent feedback student birthdays will be celebrated using non-food related items as much as possible (stickers, pencils, erasers, "treats but not sweets" items, etc.) When food and beverages are used then selections will be made with "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
f) [First Nation School]/Daycare Fundraising – To support students' health, and nutrition education at school and daycare, we encourage fundraising activities that promote physical activity and healthy eating. Healthy eating fundraisers will follow "The Food Rating System" and be considered a 'choose most often food' or food from "School and Daycare Snack List."
g) Healthy Messaging – [First Nation School] and daycare support healthy messages within our departments and will promote and reinforce the healthy choices and messages being taught in classrooms.
    - This includes bulletin boards and displayed art and school work.

h) Staff Wellness – [First Nation School] and daycare staff recognize that role modeling enhances healthy behaviour for students. All staff events staking place in the school/daycare will only select foods that align with “The Food Rating System” and be considered a ‘choose most often food’ or food from “School and Daycare Snack List.”

Student Differences

[First Nation School] and daycare recognize that each individual is different and accommodations will have to be made depending on situations that arise. The [First Nation School] and daycare staff is asked to use their discretion when making healthy choices to ensure that students/children are being sent the appropriate messages about healthy choices at school/daycare and in their daily lives.

CHOOSE MOST OFTEN DAILY SNACKS	**CHOOSE SOMETIMES** TWICE A WEEK SNACKS
Fresh fruit or vegetables	Crunchy snack mix (dried cereal, air popped popcorn)
Canned fruit cup packaged in water or 100% juice	Yogurt tube or container of flavoured yogurt
Chewy snack mix (dried fruit)	Whole wheat crackers & cheese
Applesauce cup	Fruit with yogurt as dip
Smoothie with milk, ice, & fruit	Smoothie with milk, yogurt, & fruit
Frozen grapes	Whole wheat pita with hummus
Celery with pea butter & raisins	Yogurt & nut free granola
Dried fruit bar	Goldfish crackers
Milk (2%, 1%, or skim)	
Cheese strings	

School & Daycare Snack List

Suggested Packaged Brand Name Foods for school and daycare

- Canned fruit cup:
  - Del Monte (diced peaches canned in water)
  - Dole (pineapple & tropical fruit in fruit juice)
  - Eating Right (peaches, mandarin orange, & fruit salad in fruit juice)
- Applesauce:
  - Compliments (apple)
  - Dole Squishems Liquid Fruit Snack (mixed berry, strawberry, apple)
  - Eating Right (apple strawberry, field berry apple, apple)
  - Great Value (apple peach, apple)
  - Mott's Fruitsations (apple pomegranate, apple, harvest apple, blueberry delight, peach medley, strawberry kiwi)
- Fruit Snack:
  - Sun-Rype 100% Fruit Snack (berry blend & very cherry to-go fun bites, raspberry squiggles, & very cherry fruit twists)
- Fruit Bar:
  - Sun-Rype Fruit Source plus veggie bar (raspberry)
  - Sun-Rype Source Bar (strawberry, cherry berry, & blueberry pomegranate)
- Crackers:
  - Triscuit (parmesan garlic, sweet chili, rosemary & olive oil, & low sodium original)
  - Dare Breton (garden vegetable)
  - Pepperidge Farms (goldfish baked snack crackers cheddar or cheese trio)
- Granola Bars:
  - Compliments (8 whole grain chewy muesli, banana strawberry chewy, flax & fibre chewy)
  - Kellogg's All Bran bars (oatmeal cinnamon & original)
  - Quaker Oatmeal to go (oats & honey)
  - Quaker Yogurt Bar (vanilla, strawberry, & blueberry)
  - Christie Snack Packs (teddy grahams honey, soft baked double chocolate, & oatmeal cinnamon cookies)
  - Kashi Fruit and Grain (pumpkin pie & raspberry chocolate)
  - President's Choice Blue Menu Omega 3 (cranberry & blueberry)

For a more extended list please refer to the "Single Serving Packaged Food List 2011" website http://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-single-serving-pkg-food.pdf.