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Barriers and facilitators to the implementation of healthy eating strategies in schools in Alberta

by

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Dedicated to:

The Ones I Love. . .

My sweet husband, Frederico

My loving parents, Duarte and Anete

Abstract

The Alberta Nutrition Guidelines for Children and Youth were released in June 2008 aiming to provide schools with a tool to help students make healthy food choices. A multiple case study design (n=3) was used to identify what factors influenced the adoption and implementation of the guidelines and what healthy eating strategies case schools implemented due to the guidelines. Barriers and facilitators to implementation were also investigated. Semi-structured interviews and direct observations were used to collect data that were later analyzed using content analysis. Various healthy eating strategies were implemented within Cases A, B and C after the uptake of the guidelines. Support from the school superintendent and the work of a health champion were commonly described as facilitators to the adoption and implementation of the guidelines. In contrast, parents represented a commonly described barrier. This reinforces the importance of comprehensive school based programs that involve parents and the school community.

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List of Abbreviations

AHS: Alberta Health Services

AVHPSP: Annapolis Valley Health Promoting Schools Project

BMI: Body Mass Index

CAQDAS: Computer Assisted Qualitative Data Analysis Software

CATCH: Child and Adolescent Trial for Cardiovascular Health

CCHS: Canadian Community Health Survey

CDC: Centers for Disease Control

CFGHE: Canada's Food Guide to Healthy Eating

CHS: Canada Health Survey

CIHR: Canadian Institutes of Health Research

HBSC: Health Behaviour in School-aged Children

IOM: Institute of Medicine

IOTF: International Obesity Task Force

MQ: Maira Quintanilha

NHANES: National Health and Nutrition Examination Survey

SES: Socioeconomic Status

SNPI: School Nutrition Policy Initiative

TANGO: The Alberta Nutrition Guidelines Outcomes

TTM: Transtheoretical Model

Web-SPAN: Web-Survey of Physical Activity and Nutrition

Chapter 1. Introduction

1.1 Introduction

In recent years, targeting obesity has become a primary focus of disease prevention in children and youth from different ethnic groups due to the high rates observed in Canada and worldwide. (Hejazi, Dahinten, Marshall, & Ratner, 2009). In 1978-79, the Canada Health Survey and 2004 (Canadian Community Health Survey: CCHS), direct measurements of height and weight were obtained from nationally representative samples of Canadian children and youth. Between 1978-79 and 2004, the prevalence of overweight/obesity among 2-17 year-olds increased from 15% to 26%, and the prevalence of obesity alone was 2.5 times higher in 2004 (Shields, 2006). These dramatic increases were even more pronounced among 12-17 year-olds, as the combined overweight/obesity rate more than doubled, and the obesity rate alone tripled (Shields, 2006). In Alberta, a Web-Survey of Physical Activity and Nutrition (Web-SPAN), completed with 4932 students in grades 7 through 10 in 2005, indicated that 26.5% of boys and 16% of girls were either overweight or obese (Plotnikoff et al., 2009).

Poor nutrition, sedentary behaviour and physical inactivity are widely acknowledged risk factors for the development of excess body weight (Veugelers & Fitzgerald, 2005b). Poor nutrition is commonly described as low diet quality, low intake of fruit and vegetables and high intake of high-fat foods. Sedentary behaviour is commonly characterized by the number of hours (>2 hours/day) spent in sedentary activities (e.g., watching television, working

on a computer and playing video games) and physical inactivity more generally represents low frequency of moderate to vigorous physical activities (Budd & Volpe, 2006; Veugelers & Fitzgerald, 2005b). The poor diet quality of Canadian children and youth was evidenced by data from the 2004 CCHS, which demonstrated that foods that should be limited because of their high fat and sugar content represented almost one-quarter of the total energy intake of children between 4-18 years of age (Garriguet, 2007). In Alberta, an online survey conducted with school children in 2005 (Web-SPAN) indicated that a large percentage of boys (32%) and most girls (49.7%) had a poor diet quality because their diet met the daily recommendations for only one food group or less of Canada's Food Guide (Plotnikoff et al., 2009). Additionally, in 2010 the Alberta Centre for Active Living released a report indicating that only 12% of children and adolescents in the Canadian province of Alberta were meeting the recommended 90 minutes of physical activity per day (*An Environmental Scan of Active Transportation Programs in Alberta Schools*, 2010).

Childhood overweight tends to track into adulthood. Children who are obese or at risk of overweight at the age of 12 are most likely (93%) to become obese young adults (Nonnemaker, Morgan-Lopez, Pais, & Finkelstein, 2009). As childhood obesity tracks into adulthood, higher rates of obesity-related diseases, such as Type 2 diabetes, heart disease and certain types of cancer are predicted to emerge in young adults. Therefore, it is important to begin prevention efforts in the school years, when children's eating behaviours are still being established (McCargar & Wilkinson, 2008).

Children often spend approximately half of their daily waking hours in the school setting, and it is also where they consume one or two meals per day (Foster et al., 2008). Therefore, the school setting has been widely recognized as an optimal environment for promoting health since it has a potential impact on students' food choices, dietary quality, and health behaviours (Gittelsohn et al., 2003; Jaime & Lock, 2009; Parcel, Simons-Morton, & Kolbe, 1988; Ramanathan, Allison, Faulkner, & Dwyer, 2008; Veugelers & Fitzgerald, 2005a). School based healthy eating and well-being programs are of the utmost importance because they can reach almost all children and may enhance the learning process, provide social benefits, improve health during vital periods of growth and maturation, decrease the risk of cardiovascular disease and diabetes in adulthood, and help to establish healthy behaviours that can be sustained throughout their lives (Veugelers & Fitzgerald, 2005a).

Comprehensive school healthy eating programs that include policy and environmental changes are more likely to be successful (Veugelers & Fitzgerald, 2005a). A randomized control trial of a multi-component School Nutrition Policy Initiative (SNPI) among 10 elementary schools in Philadelphia (USA) found that in schools where the SNPI was implemented, there was a substantial and statistically significant decrease (~50%) in the incidence of overweight over a two-year period. This school based initiative included school self-assessment (each organization assessed its environment by using the CDC Health Index), nutrition education, nutrition policy, social marketing and parental outreach (Foster et al., 2008).

Indeed, environmental and policy changes in the school setting are the most commonly proposed strategies to address childhood obesity. The main purpose of these changes is to create healthy school environments that facilitate access to healthy food choices and encourage healthy lifestyles for the whole student population. Often these changes are accomplished by increasing the availability and lowering the cost of fruit and vegetables and decreasing the access to high fat foods and snacks (Jaime & Lock, 2009) . Within this context, there are nutrition guidelines, which can be simply described as nutrition standards for menu and nutrition education planning, in addition to the regulation of other meals/foods offered or sold in schools during special activities, celebrations and fundraisings (Jaime & Lock, 2009).

Indeed, nutrition guidelines often present nutritional standards that are utilized by school divisions or even individual organizations when developing food and nutrition school policies. In June 2008, the Alberta Nutrition Guidelines for Children and Youth were released by the Government of Alberta. The goal of these guidelines was "to equip facilities and organizations with the tools they need to provide children and youth with healthy food choices in childcare settings, schools, in recreation centres, at special events, and in the community at large" (*Alberta Nutrition Guidelines for Children and Youth*, 2008). The guidelines include a Food Rating System for food selection (e.g., choose most often, choose sometimes or choose least often), and suggestions for provision of safe, nutritious foods, and creation of healthy food environments. The guidelines complement Eating Well with Canada's Food Guide and reflect the ethnic and cultural diversity of Canada's

population (*Eating Well with Canada's Food Guide*, 2007); therefore, it represents an important resource for organizations that provide services for children and youth.

In general, guidelines targeting the overall population offer a consistent template to provide nutritional food choices for youth in the school setting. However, the processes by which schools adopt healthy eating initiatives (e.g. nutrition guidelines) or decide not to adopt them, cannot be understood without taking into consideration contextual factors of where they take place (Gittelsohn et al., 2003; Parcel et al., 1988).

1.2 Rationale

The rationale for this study is based on issues related to the school's adoption of innovations, such as nutrition guidelines, and some organizational characteristics that influence the adoption and implementation of school based innovations.

In a review of studies that examined the impact of implementation on program outcomes, Durlak and DuPre (2008) identified 23 contextual factors that influenced the implementation of programs targeted at youth health promotion in various settings, including schools. These contextual factors included variables related to communities, service providers and innovations, in addition to aspects of the prevention delivery system (e.g., organizational characteristics) and prevention support system (e.g., staff training and stability) (Durlak & DuPre, 2008). In the school setting, in particular, many studies have demonstrated that a combination of individual and organizational factors influence the adoption, implementation and maintenance of new school programs (Gittelsohn et al., 2003; Hoelscher et al., 2004; Osganian, Parcel, & Stone, 2003; Parcel et al., 1988). This knowledge can also be applied to school based healthy eating innovations, given that their adoption, implementation and sustainability are largely affected by each school's personnel (e.g., staff engagement and self-efficacy) and organizational factors (such as positive work climate, appropriate funding and resources and shared decision-making) (Durlak & DuPre, 2008; Gittelsohn et al., 2003).

The success of nutrition innovations targeted at schools depends upon the number of institutions that adopt the innovation, and the extent to which

each of them effectively implements the proposed changes. It is important to understand not only the processes by which schools adopt healthy eating programs, but also the processes that influence implementation and sustainability of nutrition innovations such as nutrition guidelines (Parcel et al., 1988).

The support of each school for changes in nutrition and foodservice is likely to be one of the most important contextual factors to be understood. Schools' support for healthy eating innovations is of considerable complexity because it involves schools' formal and informal organization, including the school board, administrative support, staff motivation/stability, parent council, and adequate financial and human resources (Durlak & DuPre, 2008; Gittelsohn et al., 2003). These organizational characteristics vary from one school to another and are usually described as school climate (Gittelsohn et al., 2003; Parcel et al., 2003). School climate, the "personality" of the school organization, is particular to each school, and it exerts significant influence on students' health behaviours and supportive actions by teachers (Gittelsohn et al., 2003; Parcel et al., 2003). For instance, School Wellness Policies among elementary schools in Mississippi were more likely to be successful when administrators addressed teachers' perceptions, understanding, and suggested changes (Lambert, Monroe, & Wolff, 2009). Furthermore, principal leadership and teacher interactions have also been described as relevant dimensions of school climate (Anderson & Shirley, 1995; Gittelsohn et al., 2003).

Some studies have investigated the relationship between school climate (organizational capacity) and the success or failure of school based

interventions (Durlak & DuPre, 2008; Gittelsohn et al., 2003; Parcel et al., 2003; Parcel et al., 1988; Payne & Eckert, 2010). Yet, most of these studies did not focus on specific aspects of the schools' organizational capacity, such as what factors motivated school staff support for school based interventions and affected principals' leadership. Thus, it is unclear how these factors influence the implementation of healthy eating innovations (e.g., food and nutrition policies or guidelines). In this context, the investigation of the support shown by school administration (superintendent and principal), and by key staff members (teachers, physical education instructor, or foodservice manager) for the Alberta Nutrition Guidelines for Children and Youth may help us understand some of the organizational factors of schools that have been pivotal to the successful adoption and implementation of the guidelines among schools in Alberta. This will inform policy makers and health promotion practitioners of the association between school climate and healthy eating strategies implemented within the school setting due to the guidelines. The knowledge about the characteristics of the school climate, and the processes, strategies, barriers and facilitators that have influenced the implementation of the guidelines will increase the understanding of how other "early-adopter" organizations (similar to the ones that were investigated) adopted and implemented school healthy eating innovations such as the Alberta Nutrition Guidelines for Children and Youth. Thus, it is expected that the knowledge of our selected cases could predict similar outcomes within other schools in Alberta (Yin, 2009).

1.3 Overall Purpose

The purpose of this research was to examine the influence of school personnel (e.g. principal, teachers, physical education instructor and foodservice manager) and the school superintendent on the *early adoption* of the Alberta Nutrition Guidelines for Children and Youth, and to describe *healthy eating strategies* that were implemented before and after the release of the guidelines and any barriers that were encountered during implementation. The *early adoption* of the Alberta Nutrition Guidelines for Children and Youth was defined according to the Transtheoretical Model (TTM) of organizational behavioural change (Berry, Plotnikoff, Raine, Anderson, & Naylor, 2007; J. M. Prochaska, Prochaska, & Levesque, 2001; J. O. Prochaska & Velicer, 1997). "Early-adopter" schools were those which were either in the preparation (were planning programs and/or had taken some steps), action (initiated changes due to the guidelines in the last six months), or maintenance (maintained the changes for at least six months) phase of the TTM – which represent later stages of change – within one year after receiving the guidelines, and before December 2009. For the purpose of this project, *healthy eating strategies* were characterized as activities, interventions and/or nutrition education designed to improve food availability and/or food choices primarily within the school environment.

1.4 Research Questions

Adoption

- How did school staff members' support for the Alberta Nutrition Guidelines for Children and Youth influence early adoption?
- What was the role of the School Division during the adoption of the guidelines?

Implementation

- What healthy eating strategies have been implemented by early-adopter schools?
- What barriers did early-adopter schools encounter before and after implementing new healthy eating strategies?
- What factors facilitated the implementation of new healthy eating strategies?

Chapter 2. Literature Review

2.1 Childhood obesity overview: prevalence and primary risk factors

Childhood and youth obesity is one of the major global health issues of the 21st century. Over the past few decades, the prevalence of overweight and obesity in children and adolescents has substantially increased in Canada and worldwide, among boys and girls of all ages, and ethnic groups (Hejazi et al., 2009; Jaime & Lock, 2009; Shields, 2006; Story, Sallis, & Orleans, 2009). From 1978/79 (Canada Health Survey) to 2004 (Canadian Community Health Survey: CCHS) the combined overweight/obesity rate increased 70% for each sex (Shields, 2006).

In the CCHS (2004), direct measurements of height and weight were obtained from a total of 8,661 Canadian children and youth aged two to seventeen years old. The calculated prevalence of overweight and obesity for this group was 26% and 8%, respectively (Shields, 2006). This prevalence of overweight and obesity among children and youth was calculated based on the criteria specified by the International Obesity Task Force (IOTF) (Cole, Bellizzi, Flegal, & Dietz, 2000), which recommended extrapolating the adult cut-offs of 25 and 30kg/m^2 for overweight and obesity, respectively, to create sex- and age-specific values (Shields, 2006). Although it was still not clear which body mass index (BMI) levels were associated with health risks at younger ages, the correlation between the BMI and direct measures of adiposity, blood pressure, and serum concentrations of insulin and lipids in

children was already well-established (Shields, 2006; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997).

The 2004 combined rate of overweight and obesity was significantly lower in 1978/79 (CHS) when 12% of 2- to 17-year-olds were overweight and 3% were obese, resulting in a combined rate of 15%. However, significant differences were found for various age groups. For instance, among 12- to 17-year-olds the obesity rate tripled from 3% to 9%, while the percentage of overweight and obese children aged two to five remained almost the same between 1978/79 and 2004 (Shields, 2006).

Canada is not the only country in North America facing the childhood obesity epidemic as this issue is also of great magnitude in the USA. The combined overweight/obesity rate of 26% for 2- to 17-year-olds in Canada was similar to the USA combined rate of 27% (data from the 1999-2002 National Health and Nutrition Examination Survey: NHANES) (Nonnemaker et al., 2009; Shields, 2006). However, American girls between 12 and 17 years old were two times more likely than Canadian girls to be obese: 13% versus 7% (Shields, 2006). In Europe the rates of excess weight among children and youth vary greatly between different countries and regions of the continent. Based on data drawn from the Health Behaviour in School-aged Children (HBSC) 2005/2006 survey, which covered 36 European countries, the prevalence of overweight (including obesity) in 11- and 13-year-olds varied from 5% in the Netherlands and Switzerland to more than 25% in other European countries, such as Italy and Malta (Carroquino, 2009).

The variance in the childhood levels of obesity observed in Europe is also found within Canada, where the prevalence of child and youth obesity varies considerably from province to province. When compared with the Canadian statistics for overweight and obesity, the combined overweight/obesity rate in the province of Alberta was 22%, which was significantly below the national statistics. However, the obesity rate alone, in the province was similar to the national level (Shields, 2006).

2.1.a Dietary intakes

Many factors that have been linked to the rapid rise in the prevalence of childhood overweight and obesity rates. Poor nutrition, physical inactivity and sedentary behaviour have been widely identified as primary risk factors for childhood and adolescent excess body weight (Garriguet, 2007; Plotnikoff et al., 2009; Shields, 2006; Storey et al., 2009; Veugelers & Fitzgerald, 2005b). The 2004 CCHS (Nutrition) surveyed Canadians' eating habits including what types of foods were being consumed, and where the food they ate was being prepared. Overall, the caloric intake of youth aged 2 to 19 had not increased significantly since the early seventies (1970/72 Nutrition Canada Survey); however, approximately 25% of the total calories consumed by this group came from "other foods" that were high in fat and/or high in sugar or salt (Garriguet, 2007).

In regards to specific food group intake based on Canada's Food Guide, the 2004 CCHS data showed that 59% of Canadian children and adolescents consumed less than five servings of fruit and vegetables per day,

and therefore did not meet Canada's Food Guide to Healthy Eating (CFGHE) recommendation of at least five daily servings of fruit and vegetables (Garriguet, 2007; Shields, 2006). Seven out of ten children aged 4 to 8 did not meet CFGHE recommendation for fruit and vegetables; and 68% of boys and 62% of girls, between the ages of 9 and13, did not meet the recommendation (Garriguet, 2007). Nevertheless, data from the 2004 CCHS provided evidence that the household population aged 2 to 17 who consumed fruit and vegetables five or more times a day, was significantly less likely to be obese (Shields, 2006).

In addition, the daily intake of milk products by the majority of 4- to 16-year-olds in Canada did not meet the recommended number of servings. For example, 83% of 10 to 16 year-old adolescent girls did not meet the recommendation of three-four servings of milk products per day (Garriguet, 2007). These findings are worrisome due to the importance of the nutrients found in milk and alternatives for bone accretion during adolescence.

The dietary habits of children and youth in the province of Alberta were also poor, and they were not different from the national patterns described by the CCHS. The assessment of the diet quality (defined as the overall adherence to CFGHE recommendations) of 4,932 adolescents, aged 11 to 17 years old, showed that 32% of boys and 49.7% of girls had a poor diet quality (Plotnikoff et al., 2009). The same trend was observed in another study of the diet quality of adolescents in Alberta and Ontario, which also showed that a high proportion of the sample had a poor (43%) or average (47%) diet quality. Those with poor diet quality reported higher intakes of fat and "other

foods" that are mostly sugar and fat, and lower frequency of breakfast consumption (Storey et al., 2009). Another study of school children in Grade 5 in Nova Scotia found that among their sample, those children who did not regularly eat breakfast were 1.5 times more likely to be overweight (Veugelers & Fitzgerald, 2005b). This highlights the importance of encouraging not only a healthy diet, but also healthy habits related to mealtime behaviours among children and youth, because these represent relevant strategies to prevent excess weight in childhood.

2.1.b Physical inactivity and sedentary behaviour

In addition to poor dietary habits, physical inactivity and sedentary behaviour are also well-established risk factors for childhood obesity. Based on data from the Alberta Centre for Active Living, in 2010 only 12% of children and adolescents in the Canadian province of Alberta were meeting the recommended 90 minutes of physical activity per day (*An Environmental Scan of Active Transportation Programs in Alberta Schools*, 2010). Evidence from a study of Grade 5 children in Nova Scotia showed that participating in physical activity more than seven times a week decreased the risk of overweight among children (Veugelers & Fitzgerald, 2005a). Additionally, children who engaged in physical education classes two or more times per week were approximately 50% more likely to have normal body weight. By contrast, more than an hour per day of the same sedentary activity significantly increased the risk of excess body weight among children (Veugelers & Fitzgerald, 2005b).

Janssen et al., in a study conducted with a nationally representative sample of Canadian youth (11 to 16 years old), found that physical activity levels were lower and television viewing was higher among overweight and obese boys and girls, compared to normal-weight adolescents. The odds of being overweight and obese decrease with increasing physical activity participation, which highlights the importance of physical activity in the prevention of childhood obesity (Janssen, Katzmarzyk, Boyce, King, & Pickett, 2004).

Overall, high childhood and youth BMI values represent a critical risk factor for adult overweight and obesity (Guo, Wu, Chumlea, & Roche, 2002; The, Suchindran, North, Popkin, & Gordon-Larsen, 2010). Furthermore, paediatric obesity is likely to contribute to elevated adult mortality and cardiovascular disease rates (Carroquino, 2009; Veugelers & Fitzgerald, 2005a). Given that childhood overweight and obesity tends to track into adulthood, the average age for the onset of non-communicable diseases, such as diabetes, cardiovascular disease and hypertension, is expected to decrease. This would not only increase the morbidity and mortality among young adults but also create a great burden on health services that would cost billions of dollars in health care (Carroquino, 2009; McCargar & Wilkinson, 2008; Veugelers & Fitzgerald, 2005b; Wang, Denniston, Lee, Galuska, & Lowry, 2010). Due to the relevance of the weight status of children and youth for public health, it is important to begin prevention of overweight and obesity in early years, when their eating habits and lifestyles can still be influenced and modified.

2.2 Prevention of childhood overweight and obesity: the importance of school based programs

In spite of the knowledge we have gained about the health consequences of excess weight, many children in Canada and worldwide have continued to gain weight rapidly and to a dangerous degree (Koplan, Liverman, & Kraak, 2005). A study conducted by Wang et al. (2010) using data from the 2000 National Medical Expenditure Survey (US) investigated the impact of a 1% reduction in currently overweight and obese adolescents on the number of normal weight, overweight and obese 40 year-old adults. They found that a 1% reduction in youth excess weight could reduce the number of future obese adults by 52,821, which could substantially decrease health care costs (Wang et al., 2010).

However, achieving this 1% reduction in youth excess weight represents a major global health challenge. The Institute of Medicine (IOM) report *Preventing Childhood Obesity: Health in the Balance* stated that obesity prevention efforts should focus on energy balance (calories consumed versus calories expended) (Koplan et al., 2005). But, it is well-established that many social, environmental and individual factors influence eating and physical activity behaviours (Koplan et al., 2005). On the individual level, self-efficacy is the most significant factor for positive behaviour change. Yet, cultural, social and community variables exert strong influences on self-efficacy and greatly affect eating and physical activity habits (Bandura, 2004; Budd & Volpe, 2006).

Brownell and colleagues (2009) have described "suboptimal defaults" as poor environmental conditions that encourage the consumption of nutrient-poor, calorie-dense foods (in large portion sizes), and discourage physical activity (Brownell, Schwartz, Puhl, Henderson, & Harris, 2009). Unfortunately, in our fast-paced society "suboptimal defaults" have rapidly become popular within communities, cities and cultures since they tend to offer faster, more practical, and cheaper choices. From a public health model perspective, we are faced with a toxic environment that facilitates unhealthy behaviours (Brownell et al., 2010; Brownell et al., 2009).

Promoting healthy behaviours among children and youth, and therefore preventing childhood and adolescent obesity, has recently become a national priority. In March 2011, the government of Canada released a "framework for action to promote healthy weights" which highlighted three main strategies to address the childhood obesity epidemic in Canada (*Curbing childhood obesity: an overview of the federal, provincial and territorial framework for action to promote healthy weights*, 2011). These three proposed strategies included: making childhood overweight and obesity a priority at all government levels (federal, provincial and territorial); creating environments supportive of healthy eating and physical activity among children; early prevention of excess weight in children and ongoing research and evaluation of collective efforts addressing the issue of childhood overweight and obesity (*Curbing childhood obesity: an overview of the federal, provincial and territorial framework for action to promote healthy weights*, 2011).

Koplan et al. (2005) also emphasizes the importance of supporting more prevention efforts through nutrition and physical activity programs and school grants; regulation of television commercials targeted at children through marketing and advertising guidelines; and regulation of the food industry nutrition labelling so that nutrition facts are clear and useful to parents and adolescents (Koplan et al., 2005).

The relevance of the school environment in the promotion of healthy eating, among other healthy behaviours, has been extensively discussed in the literature on the prevention of childhood obesity and school health (Briggs, Fleischhacker, & Mueller, 2010). Yet, most schools tend to focus on areas in which they are evaluated such as students' level of reading, writing and math (Bandura, 2004). Therefore, making healthy eating and healthy living a national priority might change the focus of schools across all provinces in Canada.

Schools present an optimal setting to address the health of a nation, since almost all children and youth spend approximately six hours per day, and eat one or two meals, in the school setting. Additionally, many lifelong habits that can negatively or positively affect an individual's health are consolidated during the school years (Bandura, 2004; Koplan et al., 2005; Veugelers & Fitzgerald, 2005a). Consequently, changes in the school environment represent one of the most frequently proposed measures to address the childhood obesity epidemic.

Not only can schools facilitate healthful eating, but they can also model healthy behaviours and support parents who are trying to raise health

conscious children. It has been established that school based policies can increase students' overall diet quality, especially through programs that are effectively designed to change both student behaviour and the school environment (Brownell et al., 2009). The 1991-1994 Child and Adolescent Trial for Cardiovascular Health (CATCH) – an intervention designed to reduce risk factors for heart disease that was implemented in elementary schools in California, Louisiana, Minnesota and Texas – was instrumental in shifting the focus from the individual to the school environment (Franks et al., 2007). After the three-year CATCH study, intervention schools showed a significantly greater proportion of time spent in moderate to vigorous physical activities when compared to control schools, and intervention cafeterias offered school meals that were lower in fat and saturated fat (Hoelscher et al., 2004; Osganian et al., 1996). The CATCH program was the largest school based health education program ever funded in the US and it was successful not only because of the positive outcomes observed in intervention schools' environment but also because it was maintained five years after the study finished (Hoelscher et al., 2004).

The positive results of the CATCH program emphasize the fact that comprehensive school healthy eating programs have been most successful in the prevention of childhood and youth obesity (Koplan et al., 2005; Veugelers & Fitzgerald, 2005a). These comprehensive school programs usually include most of the following components: improvements in foodservice outputs, especially to ensure that students have healthy options at the cafeteria; integration of nutrition topics in the school curricula; promotion of students'

self-esteem and self-efficacy; daily physical activity; staff training; family and community involvement; and program evaluation (Bandura, 2004; CDC, 1996; Koplan et al., 2005; Veugelers & Fitzgerald, 2005a).

The Pathways study was conducted with 1,704 Native American school children in Arizona, New Mexico and South Dakota. The intervention that was implemented by the Pathways study included changes in the school curriculum and foodservice, improvements in physical education, and family involvement. This three-year comprehensive intervention was able to increase out-of-school physical activity, and decrease the fat content of school lunches and students' dietary fat intake (Budd & Volpe, 2006).

In Canada, The Annapolis Valley Health Promoting Schools Project (AVHPSP) was a comprehensive school healthy eating program that was implemented in 1997 in seven schools in Nova Scotia. Children in all seven schools that were part of the AVHPSP for five years had significantly lower rates of obesity and overweight (17.9% *versus* 34.2%), higher intake of fruit and vegetable servings per day (6.7 *versus* 5.8), and better overall diet quality index score (64.5 *versus* 62.1) than those students in schools that did not have a nutrition program or that had less comprehensive nutrition programs (Veugelers & Fitzgerald, 2005a). The fact that the dietary habits of students from schools with nutrition programs (less comprehensive than the AVHPSP) and from schools without any nutrition program were similar, reinforced the importance of including as many of the aforementioned components of comprehensive school programs to any school based intervention (Veugelers & Fitzgerald, 2005a).

Still, most school healthy eating programs include only nutrition education and changes in foods offered within the school environment. Briggs, Fleischhacker et al. (2010) suggest that a total of 50 hours should be dedicated to nutrition education throughout the school year (Briggs, Fleischhacker et al., 2010). However, US Department of Education report in 2000 showed that on average, elementary school teachers spent only 13 hours on nutrition education per year. Furthermore, the report stated that many teachers had received very little training in how to prepare nutrition lessons and integrate nutrition topics into the school curriculum. Nutrition education initiatives are more successful when they address teachers' self-efficacy, include teachers' training, concentrate on changing specific habits of students, are age group appropriate, and involve multiple components considering a social ecological approach (Brenowitz & Tuttle, 2003; Briggs, Fleischhacker et al., 2010).

In addition, facilitating healthy choices within the school environment needs to supplement and corroborate what is taught to students through nutrition education. Recently many interventions have focused on changing the school food environment as a measure to provide healthier food choices for the whole student population. In a review of school based food and nutrition policies, Jaime & Lock (2009) found many studies in the US that had evaluated the outcomes of the adoption and implementation of nutrition guidelines. Some commonly reported outcomes were: a decrease in total and saturated fat on the school menu; an increase in fruit and vegetables availability; and a reduction in fat intake. The increase in fruit and vegetables availability had a positive impact on students' intake of these foods (Jaime &

Lock, 2009). Unfortunately, changes in foods offered in school cafeterias often pose a challenge for foodservice managers and principals since it is important for schools to meet children and adolescents' energy requirements, as well as their tastes and preferences. Moreover, schools may also struggle with the lack of sufficient human resources and the fear of losing revenue (Briggs, Fleischhacker et al., 2010).

Overall, school based programs to reduce obesity have been more effective in achieving some behavioural changes, such as reducing television viewing and limiting the consumption of sugar-sweetened beverages, than lowering school children's BMI levels (Brownell et al., 2009; Sharma, 2006). Yet, many authors have emphasized the importance of taking into consideration the length, components and design of school based interventions in order to properly evaluate them and inform policy makers (Jaime & Lock, 2009; Sharma, 2006).

In the US, since the *Child Nutrition and Women, Infants and Children Reauthorization Act of 2004,* various School Districts have established wellness policies that address nutrition and physical activity; with the main focus being regulation of what could be sold in school cafeterias (Brownell et al., 2010). More recently (May 2010), the First Lady's Task Force on Childhood Obesity released the report *Solving the Problem of Childhood Obesity within a Generation,* which highlighted many important factors in the promotion of children and infants' health including "Healthy Foods in Schools" (Raine et al., 2010). Once again, the role played by the school environment in the prevention of child and youth obesity has received national

attention, and it is expected that this will elicit more discussions about: necessary changes in the school curriculum and in school cafeterias, the significance of evaluating nutrition guidelines targeted at schools, the success of comprehensive school based programs and, above all, the importance of mobilizing all sectors of society to work together to reduce childhood obesity (*Curbing childhood obesity: an overview of the federal, provincial and territorial framework for action to promote healthy weights*, 2011).

2.3 School support for healthy eating innovations such as nutrition guidelines

The success of nutrition innovations targeted at schools depends upon the number of institutions that adopt the innovation, and the extent to which each of them effectively implements it. It is important to understand not only the processes by which schools adopt healthy eating programs, but also the processes that influence implementation and sustainability of nutrition innovations such as nutrition guidelines (Parcel et al., 1988). Dietary habits within schools cannot be understood without knowing the context of the school environments (Gittelsohn et al., 2003).

The Diffusion of Innovations model has been widely used to explain how innovations diffuse throughout social systems (e.g. the school organization); and the various characteristics of innovations and differences in organizations are likely to influence the adoption and implementation of an innovation (Rogers, 2003). For example, the attributes of an innovation (such as relative advantage, compatibility and complexity, among others), the nature

of communication channels that diffuse the innovation and the social system at which the innovation is targeted, represent some important variables that may affect the innovation's rate of adoption (Rogers, 2003).

Many studies have demonstrated that a combination of individual and organizational variables influences the adoption, implementation and maintenance of new school programs (Parcel et al., 1988). This knowledge can also be applied to healthy eating innovations, given that their adoption, implementation and sustainability are largely affected by each school's individual and organizational factors. The Pathways study was one of few studies that assessed these factors during the implementation of a comprehensive health intervention in elementary schools in the US. The Pathways research group found that teamwork among teachers and support from administrators, and foodservice staff, were important contributors to the implementation of the proposed intervention (Gittelsohn et al., 2003).

Two of the key factors described in the Pathways study – teachers' support (staff stability), and administrative support – are important attributes to what has been characterized as school climate. Other factors that also greatly influence school climate include adequate financial and human resources and informal organization (e.g., parents and students' councils). School climate, the "personality" of the school organization, is particular to each school, and exerts significant influence on students' health behaviours and supportive actions by teachers (Gittelsohn et al., 2003; Parcel et al., 2003). Furthermore, as Rogers (2003) demonstrates, when innovations such as healthy eating innovations, are compatible with individuals or organizations'

cultural values and beliefs (which may be highly influenced by each school climate) they become more readily adopted.

Although principal leadership and teacher interactions have been described as the most relevant dimensions of school climate (Anderson & Shirley, 1995; Gittelsohn et al., 2003), the superintendent's strong leadership has also been associated with successful cases of adoption and implementation of school based innovations (Parcel et al., 2003). It is possible that the superintendent may serve as an interpersonal channel of communication; and the face-to-face interaction between school superintendents and school principals may decrease the resistance to healthy eating innovations (Rogers, 2003). This also emphasizes the importance of top-down diffusion of school based healthy eating programs. In other words, the process of adopting and implementing school innovations is more likely to be successful if there is an institutional commitment from the School Board that trickles down to the school district (superintendent's level) and schools.

For example, studies of school improvement have found that new programs have a greater likelihood of succeeding when the school division strongly endorses them. However, information on the support or barriers posed by the school divisions has yet to be established (Gittelsohn et al., 2003; Parcel et al., 1988).

Within the school itself, the school climate exerts great influence on the adoption, implementation and maintenance of school based healthy eating programs, especially their "nutrition education" component (Parcel et al., 2003). This highlights the fact that school personnel need to be trained about

the innovation and they need to support healthy eating innovations in order to adopt and model healthful behaviours to students. As well, teachers need to learn how to make positive changes in their own lives and engage students in learning activities regarding healthy choices (Parcel et al., 1988). Indeed, teachers have a pivotal role in the success of any school wellness intervention, but if they feel unsupported or undervalued by their principal or school administration they may choose not to make an extra effort to carry out a new health program (Gittelsohn et al., 2003). As an example, the evaluation of a positive youth program in Hong Kong identified administrative support and the presence of dedicated teachers, as factors that facilitated the implementation of the program (Shek, Chak, & Chan, 2008).

In summary, the combination of enthusiastic teachers, committed administrators, and a cooperative school community (parents, students and foodservice workers) creates a strongly supportive school climate for school based healthy eating programs (Gittelsohn et al., 2003). In Alberta, various school based healthy eating programs have been implemented since the release of the Alberta Nutrition Guidelines for Children and Youth by the government of Alberta in June 2008. These guidelines can be described as a healthy eating innovation. The number of schools in Alberta that have adopted the guidelines, in addition to the depth of the implemented changes, may represent some of the positive outcomes of such innovations. Yet, we cannot truly evaluate the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth without examining the school climate of schools that have been using them.

2.4 The use of qualitative methods to examine school innovations

The term "evidence," as used in public health and other science-based fields, evokes notions of information or well-established facts that result from randomized controlled trials (Barbour, 2000; Jack, 2006). However, public health interventions in general, and school innovations in particular, can rarely be studied using randomized controlled trials since many programs are specific and innovative, and no comparative control groups can be established to build an experimental design. In addition, there are many contextual factors (resources, infrastructure, social and political environment) that influence the success or failure of the aforementioned innovations. Consequently, Ramanathan and colleagues (2008) advocate the investigations of "natural experiments", which, in public health, are a result of opportunistic changes in the built environment due to changes in policies and laws (Ramanathan et al., 2008). The release of the Alberta Nutrition Guidelines for Children and Youth by the Government of Alberta in the summer of 2008 has created some "natural experiments" within schools across the province that decided to adopt and implement the guidelines.

Even though data from these "natural experiments" may not stand alone as evidence of the success or failure of the Alberta Nutrition Guidelines for Children and Youth, they represent one of many factors about this healthy eating innovation to be appraised by policymakers in our province (Rychetnik, Frommer, Hawe, & Shiell, 2002). Additionally, the use of these local "natural experiments" to assess the adoption and implementation of the guidelines in

schools may clarify some barriers and contributing factors in the uptake of this provincial health initiative.

Although it is important to know how many schools have adopted and started to implement the guidelines, it is even more important to understand why some schools have decided to adopt and implement them and others have not. The need to understand the "natural experiment" – the adoption and implementation processes – of the Alberta Nutrition Guidelines for Children and Youth in schools has fostered particular ways of asking questions and thinking about problems that have led to the use of qualitative methods (Hesse-Biber & Leavy, 2011). The decision about studying the adoption and implementation of the guidelines within some schools in the province of Alberta has also led to the use of case study methods.

Qualitative research methods are very useful in evaluating the implementation of school policies and guidelines since the process of changing the school environment is subjective, and different outcomes are expected for each organization. Moreover, the use of a qualitative research design can provide investigators with a unique opportunity to address the complexity of nutrition guidelines in the school setting since it takes into account how social, political and economic factors influence people's eating behaviours and experiences (Jack, 2006; Ramanathan et al., 2008).

It is acknowledged that a qualitative research approach does not produce findings derived from commonly applied statistical methods and other means of quantification; this can be interpreted by some investigators as a limitation of the qualitative paradigm. On the other hand, qualitative research

is better defined by a naturalistic approach, that seeks to understand the phenomenon in an uncontrolled social, cultural and political setting (Harris et al., 2009). Because of this, qualitative research methods and findings may provide very useful insights into the complex issues such as changing schools' food environments.

Case study design

The case study approach is commonly used to investigate school innovations (Yin, 2009). In the sixties and seventies, in the US and UK, case studies became an important tool in order to evaluate and understand curriculum innovation in educational research. Over the years, the case study has been a widely accepted approach for evaluating complex educational innovations. More recently it has also been extended to other practice professions, particularly nursing, health care, social work and medicine, as a way to examine health policies and health settings such as hospitals and clinics (Simons, 2009). For instance, Baker & Daigle (2000) used a case study approach to understand the perceptions and experiences of Canada's Aboriginal population during hospitalization in a nonaboriginal hospital in the province of New Brunswick (Baker & Daigle, 2000).

2.5 The Alberta Nutrition Guidelines for Children and Youth: an initiative to promote healthy food choices among children and youth in schools in Alberta

The Alberta Nutrition Guidelines for Children and Youth were released by the Government of Alberta – Alberta Health and Wellness in partnership with Ministries of Children's Services, Education, Tourism, Parks and Recreation, Municipal Affairs and Alberta Agriculture – in June 2008 as a provincial initiative to facilitate access to healthy meals and snacks outside the home. Due to the fact that many of these eating occasions occur in schools, childcare facilities and recreational facilities, the goal of the guidelines is to provide schools (as well as childcare and recreation facilities) with the tools they need to provide children and youth with healthy choices (*Alberta Nutrition Guidelines for Children and Youth*, 2008).

The guidelines have been designed based on ten guiding principles, which include communities' needs, children and youth health and optimal growth, and also reflect the ethnic and cultural diversity of Canada's population. Additionally, the guidelines include a Food Rating System for food selection (e.g., choose most often, choose sometimes or choose least often) for different age groups and settings. For the school setting, for instance, the Alberta Nutrition Guidelines for Children and Youth establish that: 1) in elementary schools, 100% of the foods available should be from the choose most often category; 2) in junior high schools, 60% of the foods available should be from the choose most often and the remaining 40% them from the choose sometimes category; 3) in high schools, 50% of the foods available should be from the choose most often category and the other 50% of them from the choose sometimes category; 4) in multi-level schools, such as K-12 schools, 100% of the foods should be from the choose most often

category; 5) in all grade-level schools, when permitted, choose least often food choices should be offered in small portion sizes. The guidelines also include suggestions for the provision of healthy foods, access to an adequate eating environment, creation of a healthy food environment that models healthy behaviours to children and youth and positively influences parents/guardians and their food choices (*Alberta Nutrition Guidelines for Children and Youth*, 2008).

The Government of Alberta disseminated the guidelines by distributing a total of 4,265 copies to school boards in the province with a letter requesting that two copies to be sent to every school within their division. Since the release many school divisions' nutrition policies across Alberta have been developed based on the guidelines' content. However, it is important to highlight that the adoption of the guidelines by schools, as well as childcare facilities and recreation centres, is voluntary; and the Government of Alberta has not established any deadlines or particular policies regarding the implementation of the guidelines (http://www.healthyalberta.com).

Chapter 3. Cases & Methods

3.1 Previous research leading to the current project

This Master's thesis research is part of a larger project, entitled "The Alberta Nutrition Guidelines Outcomes" (TANGO). The purpose of TANGO was to investigate the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth in schools (as well as childcare facilities and recreation centres) in Alberta. The "The Alberta Nutrition Guidelines Outcomes" (TANGO) was a mixed-method project that was funded by the Canadian Institutes of Health Research (CIHR). As previously mentioned, the purpose of TANGO was to investigate the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth in schools (and childcare facilities and recreation centres) in Alberta. The study consisted of two phases: a cross-sectional telephone survey (*phase one*) followed by in-depth case studies (*phase two*). Only the studies related to schools will be discussed further.

The telephone survey *(phase one)* included questions adapted from a questionnaire used for the Alberta Heart Health Project (Appendix A) (Berry et al., 2007). The school's readiness to use the guidelines (denoted as intent-to-use) was based on the Transtheoretical Model (TTM) (J. M. Prochaska et al., 2001; Rogers, 2003). This intention was categorised into one of the five stages of change: 1) pre-contemplation (had not thought about using the guidelines), 2) contemplation (were thinking about using the guidelines), 3) preparation (were planning programs and/or had taken some steps to using the guidelines),

4) action (were currently promoting and using the guidelines and had started some programs using the guidelines) or 5) maintenance (had been promoting and using the guidelines for more than six months). Schools that were in preparation, action or the maintenance stages of change or readiness to adopt the Alberta Nutrition Guidelines for Children and Youth within one year after receiving them and before December 2009 were defined as early-adopters of the guidelines.

During phase one of TANGO (September-December 2009), 554 schools across Alberta were randomly selected to participate in a cross-sectional telephone survey that assessed their awareness and intent to use the guidelines. In total, 357 schools completed the survey (64% participation rate), and 65% of them had begun implementing the guidelines (32.7% were in preparation, 16.9% were in the action and 15.4% were in the maintenance stages of change). One-third of schools (31.5%) reported making changes to improve the nutritional quality of the foods offered at the school within the last year due to the guidelines (Down et al., 2011 - *In press*).

Design

For phase two of TANGO in schools, and the purpose of this thesis, a multiple case study design was used to examine the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth. In-depth case studies were conducted in three selected schools that had reported making changes to improve the nutritional quality of the foods offered within the previous year, due to the guidelines. Case study data were

collected mainly through participant interviews and direct observations within each school setting.

The case study approach, through extensive observation of some schools in Alberta (which could also be defined as "units of analysis"), interviews and document analysis, provided investigators the opportunity to evaluate, not only the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth within case schools, but also the contextual factors within these organizations that influenced the process of adopting and implementing the guidelines. This was extremely valuable since the boundaries between innovations – in this case the Alberta Nutrition Guidelines for Children and Youth – and the school setting were not clearly evident; and both of them influenced the success or failure of the Government of Alberta's initiative to address the prevention of childhood obesity in the school environment.

Recruitment

After the completion of the telephone surveys (phase one of TANGO), the existing database was used to highlight all schools that had begun implementing the guidelines (in the action or maintenance stages of TTM), and that had consented to be contacted for phase two of the study. The process of adopting and implementing the guidelines in each school in Alberta was defined as our unit of analysis – the "case" of the proposed research (Yin, 2009). A multiple case study design was used to identify characteristics of the school climate, and to describe the processes, implementation strategies,

barriers and facilitators to the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth within three schools, or cases, in Alberta.

3.2 Multiple case study design: Sample

A purposive sampling strategy was used to select three schools for in-depth case studies in Alberta (Patton, 2002). These three schools were selected in two distinct steps. Firstly, criterion sampling was used to choose schools from our database (phase one) that: 1) were early-adopters of the guidelines (in the preparation, action or maintenance stages of TTM); 2) had made changes in nutrition education, school environment, and/or foodservice within the last year mainly due to the guidelines; and 3) had indicated that they could be contacted in the future for a second phase of the study. A total of 59 schools met the aforementioned criteria.

Secondly, investigators from TANGO used an intensity sampling strategy to select cases from which we could learn the most (Patton, 2002). The initial list of possible case studies included eighteen potential schools (cases) that could help researchers to learn a great deal about school personnel motivation to adopt and implement the guidelines, the role of the principal and the school board, commonly implemented healthy eating strategies, and barriers and facilitators to the process of adopting and implementing the guidelines. These eighteen schools were highlighted during phase one of TANGO because the individual who responded to the telephone survey was enthusiastic about the guidelines and was able to demonstrate how they were

putting them into practice within their school. It was established that for the purpose of this Masters' thesis project a total of three case studies would be conducted so that literal or direct replication could be used to predict similar findings among other schools in Alberta that were also early-adopters of the guidelines.

Schools from the list of early adopters (n=18) were to be contacted in the Spring of 2010, and after contacting eleven schools, three schools agreed to participate in this research. The decision to conduct three case studies was made by the TANGO investigators taking into account the time and resources available to conduct each case study, and the fact that three case studies would provide an opportunity for a variety of interviews to investigate the research question. Eight schools that were contacted for phase two of TANGO did not participate. Reasons for non-participation included: inability to contact the principal, or the principal was going to leave their position by the end of the 2009/10 school year. The final sample of three schools was heterogeneous in terms of geographical location, school size and grades, socioeconomic status of the school population, and religious affiliation.

3.3 Multiple case study design: Data generation

Data were collected within each case school (*onsite*) through interviews, direct observation and analysis of documents that were provided to investigators by school staff members.

3.3.a Interviews

Semi-structured interviews were conducted with key informants in each school (Yin, 2009). A snowball sampling approach was used for identifying information-rich key informants within each organization (case) (Patton, 2002). It was important to interview individuals who knew about the Alberta Nutrition Guidelines for Children and Youth and/or who were directly involved with healthy eating strategies that had been implemented within the schools, as a result of the guidelines.

The school principal was selected as the first interviewee as they were, for all three case studies, the respondents to the telephone survey conducted during phase one of TANGO and, as a result, the contact person for the project within each school. Then they were asked to indicate key staff members who had been more involved in the adoption and implementation of the guidelines, and, therefore, that could take part in the study. Some individuals were interviewed after their names had been mentioned by a significant number of other key informants during their interviews. The number of interviewees varied according to each school. Interviews were carried out until the point of theoretical saturation – until no new information was obtained, and all types of comments and themes had been evoked from participants (Mayan, 2009).

For the semi-structured interviews, a self-developed interview guide was used (Appendix B), which has been described by Patton (2002) as a "framework" that helps interviewers to develop questions and appropriately sequence them. The interview guide outlined questions and subject areas that were to be approached in the course of interviews. Although the specific set of

questions was established, it was important to allow conversations with key informants to flow naturally and to go in unexpected directions. Overall, the nature of semi-structured interviews is uniform but flexible, so that researcher and respondent can interact.

Each of the interviews was conducted by the same interviewer/researcher; they were recorded (with participants' consent) using two digital voice recorders and then transcribed verbatim. The process of digital recording interviews might increase data accuracy and help the interviewer to focus on key informants' perceptions and experiences, rather than on taking written notes for further analysis (Patton, 2002).

Pilot testing interview protocol

Qualitative interviewing has become a very popular inquiry method because it offers an important tool to enter into another person's perspective (Patton, 2002). However, the quality of the information obtained during an interview depends on the skills of the interviewer, and on the techniques that are used. Given the importance of these skills, a pilot test of the interviews was conducted with two teachers and one principal of three distinct non-participant schools in Alberta during the summer of 2010 – before the beginning of the case studies – in order to enhance the skills of the interviewer (MQ) and to test the interview guide developed for this research.

Overall, the purpose of pilot testing the interviews was to prepare the interviewer to become more confident in making use of probes, delving into certain subject areas and perceiving participants' moods. In addition, pilot

interviews provided an opportunity to assess the feasibility and effectiveness of the interview guide (Hesser-Biber & Leavy, 2011). After the completion of three pilot test interviews, it was possible to make some adjustments to the interview guide, especially to avoid repetition and participant exhaustion.

3.3.b Direct observations

An additional "source" of evidence (Yin, 2009), was direct observations, which helped to validate and cross-check data obtained in interviews. The "settings" of the schools were closely observed over two full days by two trained researchers. Direct observations and note-taking were used to document healthy eating strategies that had been implemented within each school, and especially those that emerged during key informants' interviews. Microsoft Excel® tables were used to catalogue foods that were being sold in vending machines. However, written field notes were not taken because digital voice recorders were used to register observer's perceptions and impressions of each school setting, and of implemented and observed healthy eating strategies.

These observations provided a thick description of each case school, and added new dimensions for the understanding of the context in which the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth took place. Having two observers on site was advantageous because although the observations were made independently, at the end of each day in the school setting, the two observers shared their perceptions and discussed their conclusions. Overall, direct observations were crucial to the

interpretation of interview findings and the development of each case record during data analysis (Patton, 2002; Simons, 2009)

3.3.c Use of documents

There was no initial plan to collect school documents or conduct any document analysis. However, as soon as the interviews with key informants began, many of them provided documents that illustrated items that they had mentioned during interviews or that were relevant to their work. Thus, these were included as "data". In general, the documents included demographic information about the area where the school was located, community history, cafeteria menu (weekly or monthly), school district policies and division administrative procedures.

The documents provided more details regarding the information that had been collected through interviews and direct observations. In addition, they later became another rich source of information that added depth to each of the case studies (Patton, 2002; Simons, 2009).

3.4 Multiple case study design: Data analysis

3.4.a Content analysis

Thematic content analysis was used to analyze the qualitative data collected during interviews and direct observations. According to Patton (2002), content analysis is generally referred to as "any qualitative data reduction and sense-making effort" that searches for patterns in voluminous

case data. In the early stages of data analysis, the case studies were individually content-analyzed. Data were analyzed for each case at the time that it was obtained to investigate patterns and themes, and to continually assess study design and theoretical propositions (Yin, 2009).

Firstly, all interviews within each case were audio taped and transcribed, and direct observations and document analyses were included in a single Word document (field work report). In order to analyse thematic content of interview transcripts and field work reports for each case, an inductive approach was used that helped to determine patterns, themes and categories that emerged out of the data. Interview data and direct observations were similarly coded and triangulated to provide a rich data set. The voluminous data for each case was organized, classified and edited into separate comprehensive case records. These case records were very important for the final stage of data analysis when cases were compared and contrasted using a deductive approach. This means that the research questions were used to guide the last steps of data analysis, to inform the final results.

The research questions and literature review of this project guided the multiple case study analysis (Yin, 2009). Moreover, the credibility of the final results was dependent on the quality of each case record since it had to be analyzed, compared and interpreted to generate cross-case themes, patterns and findings.

3.4.b Organization of data

A coding book was developed for each case, as themes were identified and categories were created. A Computer Assisted Qualitative Data Analysis

Software (CAQDAS) – NVivo software (version 8; QSR International, Doncaster, Victoria, Australia) was used to organize the qualitative data.

3.5 Ethics

This research, as part of phase two of TANGO, was approved by the Health Research Ethics Board at the University of Alberta (Pro00009577) (Appendix C). However, upon the selection of the case-study schools, ethics approval was also sought from the School Divisions (those under which the selected organizations resided), and each School Principal (Appendix D). As previously mentioned, during phase one of TANGO, we asked all schools that we interviewed if we could contact them again for phase two of the project. Only schools that agreed to be contacted in the future were eligible for the individual case studies.

All interviews were conducted with one participant at a time in a private location (eg. participant's office, conference room). Individuals were not selected based on gender or health status; however, all key informants had to be over the age of 18. All participants were asked to provide signed consent (Appendix E).

Participants were assured that all their interview responses would be confidential and that all personal identifiers would be removed before entering data into NVivo software (solely identification numbers were used).

3.6 Rigor

The concepts of *validity*, *generalizibility*, and *reliability* that also define rigor in quantitative research were used to define rigor in this study (Morse,

Barret, Mayan, Olson, & Spiers, 2002). However, the definition of these terms was properly modified so that they were in accordance with qualitative research paradigms. *Validity* referred to our concern, as researchers, with drawing conclusions that genuinely came from collected data, rather than from our views and/or experiences (Harris et al., 2009; Mayan, 2009). We wanted to get as close as possible to school principal and staff members' views and experiences, and to be able to report how they perceived the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth. *Generalizibility* represented our efforts to collect data trying to capture experiences that deeply describe the phenomenon of interest (i.e. early adoption and implementation of the guidelines) so that we could use this information to understand similar situations; and to generalize our knowledge (Mayan, 2009). *Reliability* described the possibility of replicating our findings in future studies in this area.

In order to achieve rigor throughout our study, the following strategies were used:

Validity

- Member check (i.e. interviewees read over the transcript) to ensure accuracy and to avoid potential misrepresentation;
- Assessment of the feasibility of the interview protocol through pilot interviews;
- Saturation (effort to evoke all types of comments and themes from participants during interviews);

- Triangulation (interviews, direct observations, and documents were used as "sources" of evidence).

Generalizibility

- Use of replication logic, which means the process of adopting and implementing the Alberta Nutrition Guidelines for Children and Youth in case-study schools (purposefully selected) might predict similar results (literal or direct replication) in other schools that were also early-adopters of the guidelines.

Reliability

- Interviewer received training from researchers with expertise in qualitative interviewing;
- Pilot interviews provided a chance for the interviewer to improve interviewing skills;
- All interviews were conducted by the same interviewer;
- Two observers took field notes (for direct observation) and reviewed case records for each case study.

Chapter 4. Results

4.1 Recruitment

Eleven early-adopter schools were contacted in the spring of 2010; and three of them agreed to participate in this research. Reasons for non-participation included: inability to contact the principal or staff turnover at the administrative level.

4.2 Introduction to Cases A, B and C

Three case studies were conducted in schools across Alberta. These schools were coded as Cases A, B and C. These were located in different cities in Alberta, and were part of distinct School Divisions. They varied from one another in size, grade range and socioeconomic profile of the school community, as described by each school's administrator.

Case A was a small elementary school, which was located in a low socioeconomic status (SES) community in a small city in Alberta. There were ten teaching staff and 145 students in Case A. During phase one of TANGO, the principal of Case A identified healthy eating as a high priority within their school, and affirmed that the priority given to healthy eating had increased within the previous school year (2008-2009). In addition, the principal stated that there was someone in charge of foodservice in Case A.

Case B was a middle-sized school that provided for 373 students in grades 6 through 9. There were 35 staff members within Case B, and there was one person who was responsible for the cafeteria. The SES profile of Case B

was diverse because, according to the administration, there were high SES families as well as middle-income and low SES families. Healthy eating was also identified as a high priority in Case B and, similar to Case A, the priority given to healthy eating had increased during the previous school year (2008-2009).

Case C was a multi-level school (from kindergarten to grade 12). This school had 48 staff members and provided for 524 students – the largest school among all three case studies. According to the administration, the majority of the families who had children attending Case C were middle-income families. Case C also had someone in charge of the foodservice who was specifically trained for the position (the manager of the cafeteria was a Red Seal chef). Healthy eating was also identified as a high priority in Case C and, in the same way as Cases A and B, the priority given to healthy eating had increased during the 2008-2009 school year.

In total, interviews were conducted with six, eight and four key informants within Cases A, B and C, respectively. These key informants included: principal, vice principal, teacher, parent-volunteer, member of the parent council, social worker, social worker intern, health facilitator and foodservice manager. Interview findings were triangulated with direct observations and document analysis for each case study, and later reported in three independent case records – Cases A, B and C records. As previously described, the comparison and contrast of each case record using a deductive approach represented the last steps of this project's data analysis. The final

results of this project, which comprise Cases A, B and C commonalities and distinctions, are presented here.

4.3 School staff support for healthy eating innovations

We asked all participants, "What motivated you to participate in the adoption and implementation of healthy eating strategies in your school?" The most commonly described motives for supporting the adoption and implementation of the guidelines were combined into one category that was defined as personal factors. This personal factors category included personal interests, personal beliefs and personal experiences. Other key themes also emerged from the analysis of the responses to this question, including: 1) supporting children's healthy eating; 2) the content within the Alberta Nutrition Guidelines for Children and Youth; 3) hope; 4) helping volunteers with disabilities.

Personal factors

Various key informants noted that their personal interest in nutrition, physical education and related topics encouraged them to become more involved in healthy eating initiatives within their school, and to support the adoption of the Alberta Nutrition Guidelines for Children and Youth. For example, during one of the interviews healthy eating was taken very seriously by a parent-volunteer, and this fact was a key piece in her support as a parent and involvement as a volunteer. Her opinion about the importance of nutrition was illustrated by the following comment:

> "Having a child on the spectrum, I've been very concerned with nutrition. There are some theories that what you take into your body can contribute to cause of autism, so not that I follow those theories so much, but it has made me more aware of what goes in your body and how that can affect your behaviour."

Moreover, there was a strong belief among teachers, administrators and other participants in the importance of healthy eating as a factor in someone's overall health and wellness. They often mentioned the extent to which eating habits and physical activity could impact people's lives. Some teachers within Cases B and C described themselves as passionate about health or as "big believers" in nutrition and balanced, healthy lifestyles. One key informant went even further by characterizing himself as "an evangelist to make other people come into better nutrition." These key informants' personal beliefs influenced the support they have given to the adoption and implementation of the guidelines in Cases A, B and C settings.

In addition to participants' personal interests and beliefs, another personal factor that positively influenced their motivation to support the guidelines was their personal experiences. Personal experiences referred to experiences that they had throughout their lives, and that had increased their awareness of the importance of healthy eating and healthy lifestyles. These personal experiences were diverse and included trips, living abroad, previous employments, and challenges maintaining a healthy body weight and/or raising their own children. Examples of interview passages that described these personal experiences are included below:

> "I am the first person to admit that I have a struggle with sugar, and growing up that was – my mother loved her sugar and I find that I love my sugar and so it is an ongoing battle for me. I don't have it at home generally, because I know if it's there, I will eat it… so, for me, I'm going, if we're going to be supporting these children – and I think this is a lot of what the nutrition guideline says, we don't need to have it in their face all the time. That if it's not there, they will make a healthier choice, you know what I mean?" *(Member of the parent council)*
>
> "I did spend three years in Thailand teaching at the International School and over those three years, I noticed a phenomenon that was very - just kind of in your face. Historically, Thai children were, you know, well nourished and in shape and very slight of stature, that kind of thing. And within a ten year span, the children went from never having – never having a problem with obesity to suddenly a huge percentage." *(Principal)*

One personal factor that emerged from Case B key informants' interviews was unique to that case but worth noting because it was directly related to the rationale of this project. Some staff members mentioned that the fact they enjoyed the School B work environment, motivated their work and, most importantly, motivated their support for new healthy eating initiatives. In the foodservice manager's words, "I love my job here. I actually enjoy getting up and coming to work." The foodservice manager also added that the positive work environment within Case B, in addition to the support she always

received from the principal, motivated her to try new menu options that could better meet the nutrition guidelines.

Supporting children's healthy eating

The effort to improve the children's diets, through the provision of healthy foods in the school environment, commonly motivated key informants to support healthy eating strategies and the adoption of the guidelines. However, the main reason behind this motivation differed among all three cases.

Case A, for instance, was situated in a low SES community; therefore, for Case A participants they were providing children with a basic need, and not just any food but healthy food. This was what truly motivated them to support new healthy eating strategies due to the guidelines. The principal for Case A expressed his motivation to help children: "I'm interested in giving them [students] as healthy a food as we can because a lot of them don't get very healthy food at home or they don't get choices at home."

On the other hand, for key informants from Cases B and C, helping children to live healthier lives seemed to be a natural consequence of their personal motivation to follow healthy lifestyles: "I'm a big believer in nutrition and want to always, you know, have students' best interests at heart" *(Principal)*. However, Case B participants went even further by highlighting that they tried to teach children to make healthier choices, and to emphasize with staff members that they represented role models for students, who could truly learn by observing their teachers' examples of healthy lifestyles.

In addition, some Case B participants highlighted that the age of middle school children was an important factor that motivated them because around that period of children's lives it was easier to gain influence on them, and start the prevention of eating disorders such as anorexia and bulimia. In their opinion, middle schools represented the "perfect ground" because in elementary school parents played a pivotal role, and in high school the focus was on the curriculum, whereas during middle school it was possible to work on the health and wellness topic and still influence students' behaviours and lives. Within this context, trying to create an environment that sponsored healthy lifestyles for middle school students represented another motivation to support the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth.

The content within the Alberta Nutrition Guidelines for Children and Youth

Cases A and C described that the content within the guidelines contributed to the support of the schools' formal and informal organizations (school administration and parent council) for the adoption and implementation of the guidelines.

Case A participants reported that they became more aware of the nutrition facts of ingredients and foods, cooking techniques, and the frequency of fruit and vegetables on their menu after adopting and implementing the guidelines. Additionally, key informants' perception within Case C was that the guidelines provided them with ideas on how to create a school environment that would be consistent with the message teachers were passing

to students about nutrition, physical activity and wellness. As the principal described: “It is important because it is a guideline. It shows us how to steer sort of the . . . food-ship, I don’t know how else to say this but the nutrition, you know.”

Hope

The feeling of “hope” was described as a reason to support the guidelines by Case B key informants. They commonly described that, by supporting healthy eating strategies initiated because of the Alberta Nutrition Guidelines for Children and Youth, they hoped that what they were trying to teach the students would “sink in” and that in the future the children that they were trying to influence would become more health conscious parents. Therefore, slowly but steadily they would be helping change a whole generation.

Helping volunteers with disabilities

Some key informants within Case A worked closely with a group of volunteers who helped to prepare snacks and meals for the snack and hot lunch programs. This group of volunteers consisted of young adults who had some form of mental disability but who could perform simple tasks, such as cutting foods, washing dishes and assisting the foodservice manager during lunch break. In fact, 50% of interviewees within Case A mentioned that working with these volunteers motivated their continuing support for healthy eating strategies. The snack and lunch programs were clearly the most remarkable

healthy eating strategy within Case A; the fact that they were put together every day by individuals with disabilities was a very relevant piece to some staff members within that organization: "I just love having them here because I think they contribute so much to our environment. They really do and they have so much to offer." *(City community worker)*

4.4 The role of the School Division in the adoption and implementation of the guidelines

The School Division, especially through the work of the superintendent, had a pivotal role in the adoption of the guidelines in Cases A and B, which were following a nutrition policy and an administrative procedure, respectively, that had been developed by the division based on the guidelines. As Cases A and B participants described, schools were being asked by the division to adhere to the principles within the guidelines and to "become healthier." The significant role of Schools A and B divisions became even more evident when we asked one of the principals whether he would have adopted the guidelines if the school division had not mandated them and he stated:

> "You look at what it means to be - understanding nutrition and it's a good thing. So, would it have been something that I would have done as a principal if it wasn't mandated from the health and nutrition down to our school board? Probably not."

In addition, participants from Cases A and B perceived that the school division was responsible for mandating the guidelines, in other words, for

making sure schools adhered to them: “This directive and everything has come down from our superintendent, so it’s – ‘you guys have to do this and these are the guidelines and you have to stick to those.’ ” *(Teacher)*

Furthermore, key informants from Schools A and B commonly described the role of their superintendents as instrumental because they were directly involved with the translation of the guidelines into policies or procedures that could be mandated in schools.

Different from the other cases, within Case C the decision to adopt the guidelines did not come from the school division; it was the principal who received the guidelines and took the initiative to adopt them. The position of the school division was clearly stated in the following passage:

> “Well our school division has just given us support loosely. They haven’t really come on strong one way or the other. But they’ve certainly said it is fine to pursue these [guidelines].” *(Principal)*

However, it is important to note that the decision to adopt the guidelines within Case C was influenced by the decisions made by other school divisions that were located in the same geographical area where the school was situated. For the 2011/2012 school year, two other school divisions were going to adopt and implement the guidelines, and according to the principal from Case C, this fact certainly “leant more weight” to their decision as a school to follow the guidelines.

Although most key informants affirmed that the role of the school division was of the utmost importance in the adoption and implementation of healthy eating initiatives, they acknowledged that there were schools under the

same school division which were in different stages of change. Some schools, for instance, were at a great advantage because they had some well-established healthy eating strategies, whereas other schools were showing resistance to begin implementing the guidelines, as exemplified in the following quote:

> "In fact, I was just talking to a teacher at lunch hour and he was saying how at one school they were still selling suckers. They were still having bake sales (. . . .) and I looked at him and I said, 'Just remember that because they're doing it doesn't' mean it's the right thing'." *(Vice principal)*

Interestingly, the same possible explanation for the above mentioned fact was elicited by key informants within each school, one of them specifically said that even though the school division "carries a lot of weight in deciding" to adopt and implement healthy eating innovations, the "personalities you have in the school" (referring to school administration and staff) were more important in the effectiveness of the implementation of new healthy eating strategies.

4.5 The role of the school principal in the adoption and implementation of the guidelines

Staff members from Cases A, B and C (except for school principals) were asked about their opinion regarding the importance of the principal's support for the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth.

Staff from Cases A and B believed that complying with the division nutrition policy or procedure due to the guidelines was part of their principals' job description. Yet, they emphasized that Principals A and B had a very important role in the implementation of the guidelines within their schools. One of the school health champions described her opinion about the role of the principal in the adoption and implementation in the following quote:

> "Oh I think the role of the principal is very important. I don't think it's his job to actually implement them [guidelines], I think it's his job to openly support it and then to allow the people whose job it is to do that, to help them to do it."

In addition, the principal's ability for fundraising and community outreach (e.g. ability to establish partnerships throughout the city with private sponsors and food retailers) was also described as another factor that could influence the success of healthy eating strategies that had been implemented due to the guidelines.

The role of the principal within Case C was very different from Cases A and B because within the former case the principal was the individual who received the Alberta Nutrition Guidelines for Children and Youth from Alberta Education, read it and decided that as a school they should adopt it. The directive to adopt and start to implement the guidelines did not come from anyone else but the school principal because she believed in the importance of improving the school food environment as a measure to prevent child and youth obesity.

Overall, key informants from all three case schools perceived that if principals were not "in", they would easily become "another roadblock that you have to overcome." Moreover, in their opinion, principals' support for healthy eating initiatives within schools could determine the involvement of teachers and other school staff members.

4.6 Healthy eating strategies implemented in the school setting due to the guidelines

Initially participants were asked what healthy eating strategies were implemented to promote the guidelines in their school. However, because many of them were not familiar with specific aspects of the Alberta Nutrition Guidelines for Children and Youth, they were simply asked, "What healthy eating strategies have been implemented to promote healthy eating within your organization?"

The most commonly described strategies that had been implemented after the adoption of the guidelines were grouped into three main categories: 1) changes in schools' food environment; 2) nutrition education; 3) schools' programs and special activities. Each one of the aforementioned categories included two or more distinct healthy eating strategies as described below:

4.6a Changes in schools' food environment

Cafeteria's menu/options

There was a cafeteria located within Cases B and C school grounds that offered hot lunch options. Key informants from these two cases, including

foodservice managers, described that foods prepared and sold to students had improved substantially since the adoption and implementation of the guidelines. Data collected through direct observations corroborated what was commonly described by participants in terms of the cafeteria menus.

At Case C, for example, the cafeteria had gone through significant improvements within the last three years and especially after the adoption of the guidelines. One of the key informants within Case C described that in his opinion the improvements made in the school cafeteria represented the most relevant healthy eating strategy implemented in their school:

> "But I think our cafeteria has changed. I remember when I first came to this school about five years ago, poutine was a favourite. And poutine is like, you know, death on a platter. It's really unhealthy, and that was a really popular choice with the kids. We don't have that at all anymore. We have a lot more fruits and vegetables (. . . .)"
>
> *(Teacher)*

Indeed, Case C cafeteria offered fruit and vegetables daily, and all dishes and meals were prepared by the foodservice manager (who was also a Red Seal chef) from fresh and basic ingredients. For example, on pizza days, he made the dough from scratch on site and used fresh toppings.

The reality of Case B cafeteria was very different because, even though foods offered there had also improved, the lunch menu was still pre-ordered from fast food restaurants twice a week. However, it is important to emphasize that the foodservice manager had received some training from the school division health facilitator; and that in the last couple of years she

eliminated deep fried options and tried to include more vegetables and whole wheat products among their menu options. Yet, they continued to sell candies, brownies and commercial chocolate chip muffins every day – and those, according to the guidelines criteria, were all choose least often choices.

Vending machines

Case A, being an elementary school, did not have any vending machines filled with snacks on campus; there was one beverage vending machine close to the gym that was filled with bottled water and 100% fruit juice, which were both "choose most often" options. However, there was one or more snack vending machine within Cases B and C; and according to most key informants from both organizations, those had undergone significant changes since the adoption and beginning of implementation of the guidelines. Fried chips and candy bars were removed from Case B vending machines, which were stocked with healthier snacks. Some healthier snacks options included baked chips, baked fruit and granola bars. Only one company provided supplies for all vending machines across the school division, and in this way all schools were somewhat adhering to the guidelines. The participation of the vending machine supplier in this process of revamping schools' vending machines was described by the principal:

> "I think it goes all the way from the company that services our vending machines; and making sure that what they put into those machines is nutritious, but also what kids like to eat."

Although Case B revamped their vending machines in order to offer healthier snacks, data from direct observations showed that they were still not able to meet the recommendations within the guidelines. The Alberta Nutrition Guidelines for Children and Youth stated that for junior high schools 60% of foods offered had to come from the choose most often group and 40% from the choose sometimes category; however, during observations we found that for one of the vending machines that was stocked with snacks/solid foods, 22.9% of the products came from the "choose most often" category; 68.6% from the "choose sometimes" category and 8.5% from the" choose least often" category. The other vending machine that was stocked with beverages partially complied with the guidelines because 62.5% of the drinks came from the "choose most often" category but the remaining 32.5% of the same vending machine stock was "choose least often" products (*Alberta Nutrition Guidelines for Children and Youth*, 2008).

Case C was a multi-level school (from kindergarten to grade 12); therefore, all foods sold through the vending machines should be from the choose most often category (*Alberta Nutrition Guidelines for Children and Youth*, 2008). However, a group of parents within Case C was not in favour of the guidelines and did not accept this recommendation. The principal along with the parent council decided that 80% of the snacks in the vending machines would be from the "choose most often" category and the remaining 20% (10% and 10%) from the "choose sometimes" and "choose least often" categories. Although some key informants in Case C highlighted their efforts to improve products offered in the vending machines, direct observations data

showed that they had yet to achieve their proposed goal. The vending machine that was located in the cafeteria area but administrated by a member of the parent council contained 39.4% of "choose most often", 21.2% of "choose sometimes" and 39.4% of "choose least often" products.

Meal programs

The snack program represented the most commonly described healthy eating strategy within Case A (low income school) due to the fact that it was provided to all children (without any cost) on a daily basis. Even though the snack program was implemented there twelve years ago, many years before the release of the Alberta Nutrition Guidelines for Children and Youth, it significantly changed after the guidelines came out and were officially adopted by the school division, as illustrated by the following comment from the city community worker's interview:

> "I think we've changed the way we make things, if that makes sense. In the sense of, instead of putting mayonnaise in food, we have changed it to yogurt – low fat yogurt. We don't use salt. Salt does not go out. The district facilitator did some research on soups and we're now getting the low sodium soups which the kids love. They can't tell the difference. Whole wheat – we serve a lot more whole wheat instead of white. I try to do fruit and veggies every day, depending on – if I shop for them, yes. I still think it's really important to have that every day and choices. We try to get them to taste new things."

The overall concept of the snack program and its reach did not change after the guidelines were released but new recipes were implemented in order to offer healthier choices to the children, as explained in the following passage:

> "She [city community worker] has a lot of good recipe ideas. They're a combination of different things like a veggie – like I'd never seen a kid eat, it's a wrap with cream cheese and then cucumber slices and they love them. And then same with, she makes one, it is banana and cream cheese. So it's things that you probably wouldn't ever put together – same with hummus." *(Social work intern)*

Additionally, in 2009 Case A switched from 2% milk to 1% milk after a Grade 4 student noted to the teacher: "You guys talk about all this healthy eating and stuff. Why are we drinking 2% milk? We should be drinking 1% milk because it has less milk fat." Also, buns in which hot dogs were served with on Friday were switched to their whole grain version.

Two interviewees from Case A emphasized the importance of the snacks offered within school as a model of healthy choices. According to the parent-volunteer, her son learned what a healthy choice consisted of thanks to what was being served at school. Besides the snack program, Case A also offered a hot lunch program at a low cost of $2.00 per day. The hot lunch program was subsidized and represented an alternative for busy parents because their children received soup, sandwich, vegetables and fruit juice or chocolate milk. The nutritional quality of the hot lunch program, similar to the

snack program, had also improved greatly after the adoption and implementation of the guidelines in Case A.

4.6b Nutrition education

Nutrition education for children and youth

During phase one of TANGO, nutrition education – aiming to increase students' awareness and knowledge of healthy eating habits – was commonly identified as a healthy eating strategy among schools in Alberta. Within all cases, nutrition seemed to be part of the curriculum even before the adoption and implementation of the guidelines; and this might be a result of the fact that Alberta Education has included healthy lifestyles within different segments of the curriculum from kindergarten through Grade 9. Yet, after they were released in 2008, some teachers enhanced the overall content of their health and nutrition lessons. The principal from Case C, for example, proudly described nutrition education as a healthy eating strategy within her school:

> "In terms of nutrition, I think that A, the education component has been huge. I see - you know, I walk into classrooms and the kids are making sample menus and they're putting them on the computer and they're looking at the components and the balance and you know, what it should look like, all of that kind of thing."

Case B teachers described that they enhanced nutrition education by including a nutrition component to every health class. Also, the teacher responsible for home economics within Case B reported that she included more healthy recipes into their cooking lessons: "So the recipes that we choose

– we're very mindful that they're healthy and follow the food guide so that, in other words, we're not making any cake or cookies."

Nutrition education as a structured healthy eating strategy affected some other practices within Case B. For example, in order to be consistent with their classroom message, teachers no longer offered candies as rewards and tried to decrease the number of pizza parties during the school year. On the school level, they avoided chocolate sales for fundraising, and eliminated some former practices such as sucker sales on Monday (which used to be called "Monday Sucks") and "slurpee™ runs" during physical education classes. Additionally, students were no longer allowed to bring coffee, soft drinks and energy drinks to school.

In contrast, key informants from Case A clearly stated that within their organization nutrition education was not a priority. According to the principal, teachers tried to include nutrition education in health as much as possible, but one of the Case A teachers explained that other subjects such as math, reading and writing were perceived as more important: "I'm not going to lie to you, reading and writing and math are pretty much highest on our list and, not that it's not important, and not that we don't have to teach it."

In general, within Case A, the onus was on each teacher to include nutrition topics in their classes. Some interviewees highlighted that there were many opportunities to talk about healthy eating and nutrition, especially when snacks were served in class. One of the key informants from Case A, for instance, explained how she tried to incorporate nutrition into her lessons for higher grades in the passage below:

"Yeah, a little bit in health. So we go through the food groups and we go through looking at labels and really, you know, what are good levels of fat and what kinds of fat? And know when things say "low fat" there's other factors that you have to look at on your label and a lot of label reading, I guess." *(Teacher)*

Although nutrition education was not consistent within Case A curriculum, it was evident that some teachers not only talked about nutrition in class, but also about the Alberta Nutrition Guidelines for Children and Youth. The following passage, extracted from the parent-volunteer interview's transcript, offered an example of how some teachers were integrating nutrition and the content of the guidelines into their lesson plans:

"Last year the Grade 1 teacher did a unit on healthy eating and what she let the children do is make a collage. So they went through magazines and they found all junk food choices – not healthy choices. And then they made another collage of healthy choices. And then what she did was she made a list of sort of – some 'never,' 'once in a while,' 'sometimes' and 'always' vocabulary so the children chose what an 'always' choice was – so 'we always choose this,' a 'sometimes' choice and then a choice, do you know? And so my son came home after that unit and my mom had brought over fortune cookies and he said, 'Mom, do you know that is a sometimes choice?'"

Nutrition education for parents and families

Cases A and B tried to extend the reach of nutrition education to parents and families. One of the teachers from Case B, who was also a health champion, described that they tried to reach students' families by including information about nutrition and healthy lifestyles in their monthly school newsletter.

Within Case A, nutrition education targeting parents through newsletters and/or posters did not occur as frequently and consistently. Yet, school staff, casually and in a friendly way, tried to discourage parents from sending unhealthy food choices such as soft drinks, candy bars and sweets in their children's lunch bag. The experience of a parent-volunteer with this informal nutrition education strategy was described during this participant's interview:

> "When my son started four years ago, I sent a pudding and they sent it right back. They said this is not a healthy food choice. This is – we don't let junk food in our classroom. Yeah. So they wouldn't even let him open it. They went to the kitchen and got him a different snack, a healthy snack."

4.6c Schools' programs and special activities

School garden

Case A key informants who were more involved in the implementation of new healthy eating strategies indicated that they had set up a school garden due to the implementation of the guidelines. They emphasized that they had been trying to start a school garden for many years but they

could only receive funding to put the idea into practice after the release of the guidelines. For the first year they used straw bales, and they got approximately eight boxes full of tomatoes that were used for their meal programs.

Cooking club and community kitchen

Another healthy eating strategy implemented in Case A due to the guidelines was a cooking club. It took place during class time throughout the winter months, providing kids with an opportunity to safely learn basic cooking techniques and some aspects of food contamination and safety. In the same area where the cooking club took place, Case A staff members also organized an activity that was called community kitchen. The community kitchen was organized not only by school staff members but also volunteers; and it was subsidized by the school administration. Each participating family paid $20.00; and the money was used to purchase the food that was necessary for five recipes and in sufficient quantities for each family for a week. Whenever possible, the Case A principal also tried to add a nutrition education piece to the community kitchen activity by inviting a dietitian to talk to the parents about nutrition topics while or after they cooked their meals.

"No Junk Before Lunch"

Case B did change their morning schedule in order to encourage some new healthy eating habits among students. For the 2010/2011 school year, they established a healthy eating strategy called "No Junk Before Lunch", which stipulated that during the morning break (around 10:30am) all students should

go to their lockers and get their books along with a nutritious snack. Students had to bring their snack from home; and teachers tried to oversee what they were eating and to encourage the consumption of healthy options. It was observed that some commonly consumed snacks included fruit, fruit juice, granola bars, crackers and cheese strings.

Reversed Lunch Hour

Another change in the Case B schedule occurred when they reversed their lunch hour, and, as a result, children started their lunch break playing and chatting inside or outside before they could eat their meal (last fifteen minutes of their break). One of Case B key informants highlighted her perceived benefits of this change:

> "So I think that Reverse Lunch Hour makes a big difference as far as what the kids are eating, how much they're eating, that sort of thing and how they focus throughout the rest of the day. They get that little bit of energy burnt off and then they come in and eat; and then they're ready." *(Teacher)*

Promptly serving fruit and vegetables

In addition to improving the cafeteria menu, during the 2010/2011 school year, Case C administration instructed the foodservice manager and cafeteria staff to promptly serve fruit and salad to students. It was clear to them that students did not always eat what was served to them, and some of them complained about having fruit and vegetables put on their plate;

however, the intent of Case C administration was to encourage students to try new foods (especially from the fruit and vegetables group) and possibly acquire the habit of eating them. This initiative was also explained by the foodservice manager in the following passage from his interview:

> "We're not really forcing them to eat it. But we continue to introduce it and then over time they develop, you know, a taste for it, or texture, you know? Sometimes children look at things and they don't like it because of the way it looks. But you know, they taste it for a couple of times and they get to like it."

Special events

Cases A and B organized their special events with consideration given to nutrition. Every year Case A sought community involvement to organize Christmas and Easter dinners for all students: ". . . it's almost like a tradition we're sort of creating for the children at Christmas time and at Easter."

Within Case B, healthy eating and healthy lifestyles became the main theme of some special activities. For example, during March (Nutrition month) teachers put up bulletin boards and brought in special guests to talk about topics in nutrition such as portion sizes or Canada's Food Guide. Furthermore, they planned sports games between teachers and students as a way to engage the latter in physical activity.

Staff well-being

The promotion of health and wellness, including healthy eating, was strongly targeted at teachers and other Case B staff members as part of a school division program. The goal of this program was to encourage healthy eating habits, daily physical activity, and emotional well-being of school staff across the division.

For instance, Case B staff accumulated points if they ate breakfast, treated their colleagues kindly or engaged in some sort of new activity for example. At the end of each semester, those individuals who reached a certain number of points would receive gift cards for fitness stores, restaurants and movie theatres. It is important to emphasize that even though this initiative was planned by the school division, one of the teachers, who was also a health champion within Case B, was responsible for collecting point sheets from other staff and, most importantly, for keeping everyone motivated and engaged in the program.

4.7 Barriers to the implementation of the guidelines

All key informants for this study were asked about any barriers they had encountered before and after implementing the aforementioned healthy eating strategies. Some participants preferred to use the word "challenges" but in spite of that they all discussed factors that prevented them from seeing better or more results from the strategies that had been implemented within their organizations. The analysis of interviews and direct observations' thematic content revealed that within Cases A, B and C the most commonly described barriers were related to the following categories: 1) parents; 2)

challenges with foodservice management; 3) financial resources; 4) lack of support from the School Division. In addition, other barriers that emerged from the analysis of data but not across all three cases included: school location and confusion caused by the guidelines' supplementary documents.

4.7a Parents

Parents' low income and low level of education

One of the most commonly described themes that emerged from the analysis of the responses to the question about barriers across all cases was parents. Interviewees from Cases A, B and C often indicated that parents' low income, and sometimes low level of education, was a barrier to healthy eating strategies implemented within schools.

Key informants from Case A, for example, explained that parents' lack of money and knowledge, which were both perceived to be associated with the low socioeconomic status of the area where Case A was located, made it difficult for school staff to reach parents and get them involved in healthy eating initiatives. This fact was described below:

> "I don't know if you know much about the demographics of the school, but it is low income. And so parents, a lot of parents – I really think they would like to be involved but don't know how to be involved because their parents were never involved in school very much so they're not – school is just somewhere where their kids go for six hours a day." *(Teacher)*

Unfortunately, parents' lack of engagement in the school's healthy eating strategies commonly generated a disconnection between what students experienced in school and at home, where most parents did not emphasize the significance of good nutrition, as explained by one key informant:

> " Yeah, I think the barriers – the challenges that we have is – if you support the nutrition aspect of the school, you also need the support at home. And what we're finding that there's a disconnection between what we're doing here at the school and what's happening in the home." *(Principal)*

Despite acknowledging the difficulties that low SES families had to face, one of our key informants, who was a parent-volunteer, stated that from her personal experience it was possible for low income parents to make healthier choices but it did require more time to plan a grocery shopping list and weekly meals. This parent-volunteer described feeling frustrated because most times what children learned in school did not go home:

> " And what is frustrating for me is that what is taught in the school as far as healthy food choices and nutrition may go home with the child, but it doesn't always get to the parents' hands or to the parents' brains."

Parents' point of view

Particularly within Case C, the biggest barrier to the implementation of the guidelines was a group of parents who were part of the parent council. This specific group was resistant to the implementation of the guidelines and

defended that children must have choices and that, by changing the school food environment, they would be eliminating students' freedom to choose what to buy and eat from the vending machines. It was clear that the discussion about the implementation of healthy eating strategies within Case C became very focused on changing the foods offered in vending machines because the group of parents who were against complying with the guidelines' recommendations did not want to have chocolate, candy and chips removed from the school environment. Case C principal summarized her experiences with this group of parents after presenting the guidelines to them in the passage below:

> "But within a very short time of you know, explaining this initiative, the council became polarized. There was a small group that became very resistant. And that was a huge surprise. I was totally not expecting it in any way, shape or form (. . . .) We brought in our school nurse, our public school nurse and she was, I have to say, a little bit traumatized by what she saw at the council meeting. She really felt afterwards that there were a couple of parents that were really trying – she used the word 'bullying.' That wasn't my word, but she used the word 'bullying' other parents into somehow accepting their view points."

Moreover, in the beginning of the 2010/2011 school year, when Case C cafeteria staff started to promptly serve fruit and vegetables to students, the foodservice manager encountered issues with some parents who believed that

it was unacceptable to serve their children something they had refused. Some of these issues were described in the following quote:

> "(. . . .) because before, we used to give the children an option. If they don't want their veggies, they could say 'okay no,' we don't put it on their plate. But starting this school year, we said, okay, we will put a little bit on your plate, on everybody's plate. That was a challenge because so many children are getting, you know, thinking it's the end of the world if you put some veggies on their plate. And then you know, parents were thinking that their children if they said no to veggies, they shouldn't have to – they shouldn't have to have it on their plate. So that was a challenge, you know, educating the children, you know, the parent – not really forcing them."

4.7b Challenges with foodservice management

Customers' taste and preferences

Clients' taste and preferences was a commonly described barrier among Cases B and C that had a cafeteria which provided lunch (at a certain cost) for students and school staff. According to the Case B foodservice manager, after the guidelines were implemented, many healthy options such as fruit cups, yogurt parfaits and salads were temporarily incorporated into the cafeteria menu but due to the fact that students would not buy them, they had to be removed from the menu, as explained below:

> "Well we had a veggie salad, which was all the vegetables like cauliflower, broccoli, carrots, onions, mushrooms – a couple of

> teachers liked it, a couple of the students. It was a total waste. I tried fruit cups. They didn't sell. And then I tried fruit cups with light whipped cream on them. They still didn't sell. I tried Jello. That won't sell. I tried the ordinary salads, just a garden salad or a Caesar salad. They just – I ended up throwing out more than what I sold, which is sad."

Cases B and C cafeterias served lunch to students and teachers, and the taste and preferences of these two groups basically defined what was served there. It was also clear that students' taste and preferences had a great influence in the selection of fast food restaurants that provided lunch twice a week for Case B, and in the selection of snacks that were sold in the vending machine of both organizations. For example, the foodservice manager from Case B had to choose another restaurant to supply pizza once a week because students were complaining about the crust's texture and toppings' flavour of the pizza sold by the former supplier.

Planning a menu

One barrier that was mentioned and emphasized by key informants who were in charge of foodservice in Cases A and C was planning a menu. Planning a menu was even a greater barrier to one of the Case A key informants because this individual was a city community worker without any nutrition background. In spite of her lack of expertise, she had to plan menus for the school meal programs, and to deal with the needs of children affected

by food allergies and celiac disease. The experience of this key informant was detailed in one section of her interview:

> "Many times I have – because my background is not nutrition - I have taken what we serve here to the health unit and said: 'Okay guys, tell me what I need to do. Tell me how to make this better; keeping in mind who is putting it together, time is a factor, blah, blah, blah.' I'm not real successful there. They give some suggestions but I would love for them to put the menu together for me and say 'here it is.' But they don't do that anymore… We have lots of manuals, lots of books that tell us how to do it. I just don't want to do it. It sounds lazy, but it's also that mindset of 'Okay. What does this mean? What does that look like? What's that portion size and what does that look like?' and it is inherent, it is just not where my head is at. Yeah, so those are the barriers that – those are the things that frustrate me probably the most."

Although Case C foodservice manager was a professional chef, he also described that it was a challenge for him to plan a menu, especially varying the main course and dessert every day while still offering healthy options that children would like. In other words, planning a menu that was tasty, healthy and affordable was definitely a relevant barrier to individuals in charge of foodservice.

Human resources

Interviewees from Cases A and B who were directly responsible for foodservice within the above mentioned schools commonly described that, because they did not have any foodservice staff to assist them, they had limited time available to shop for groceries. The foodservice manager of Case B had a parallel job besides running the cafeteria; therefore she also had limited time to prepare foods, which had to be convenient. As a result, during two days a week, lunch offered in Case B came from fast food outlets (pizza and stir fry), and for the other days simple dishes, such as taco salad, hot dogs and macaroni and cheese, were prepared on site.

4.7c Financial resources

Funding

Funding was another commonly reported barrier among key informants from Case A. The principal, in particular, noted that he had to work constantly to bring in enough money that was necessary to run the snack and hot lunch programs. Not only Case A principal, but other interviewees also referred to funding as a frequent barrier to the initiatives they implemented within Case A: "Probably like funding and stuff because when there's no funding, you're spending, you're trying to save money so you're not buying the fresh fruit and you're not buying the fresh vegetable." (Social work intern)

Revenue

Cafeteria revenue was described as a very relevant barrier to Case B foodservice manager. She stated that abrupt changes that would not satisfy

consumers could not be made because the cafeteria was small, and the loss of revenue could substantially affect Case B foodservice inputs and outputs,

> "I think while it's just a small set-up like this, we're not looking for profit. So we're quite happy to break even every month. Now, if – when you're doing that, you can't afford to have things not work (. . . .) I don't see it being, ever being completely healthy, you know? I think you kind of have to keep your muffins. The brownies I'd have to really work on because they really like those."

Cost of healthy foods

Another barrier that emerged from many participants' interviews and direct observation data was the higher cost of healthy foods. Unhealthy food options, on the contrary, tended to be cheaper and more convenient. Case C key informants, for example, described that it was very difficult to find snacks that were healthy and affordable, and above all that students liked: "So things are very expensive. We're trying to – we have a couple of these vending machines and there's one over there, we're trying to implement healthy snacks. But finding a healthy snack is like – it's so difficult." *(Principal)*

4.7d Lack of support from the School Division

For Case C the fact that the guidelines were not mandated by the school division created the impression on resistant parents that the principal was making a personal decision and imposing it on them. Thus, the lack of support from the school division, especially by not mandating the guidelines

or reinforcing the importance of their adoption and implementation, created and exacerbated some barriers that were encountered during the adoption and implementation the guidelines within Case C. One participant expressed her perceptions of the above mentioned facts during her interview:

> "The fact that it wasn't mandated, I guess, on some level, made it a little bit more difficult in these particular circumstances just because then they felt it was just a decision she [the principal] was making." *(Member of the parent council)*

The lack of support from the school division was also a barrier to Case B; however in a very different way. As previously mentioned, the role of the school division was instrumental in the uptake of the guidelines by Case B but some key informants who were more involved with healthy eating initiatives in that organization described that they wished the school division would give them more support so that they could dedicate more time to plan health and wellness activities. Furthermore, interviewees added that sometimes teachers felt overwhelmed because trying to integrate nutrition and healthy lifestyles into the school curriculum in addition to their work load could be "too much."

Some key informants went even further by sharing their perception that teachers sometimes felt undervalued because the government almost automatically passed the task of fixing all problems in society to teachers and schools without giving them enough support. This fact is described in the following passage:

"We were talking about teacher stress and how more and more it seems like the government goes 'oh my goodness, look at this problem in society, let's pile it on teachers and they can fix it from the bottom and it'll all be fixed by the time these kids are adults'."

(Teacher)

Overall, interviewees perceived that healthy eating within the schools setting had yet to become a priority on a government level so that school staff would have appropriate resources to adopt and implement healthy eating innovations, as explained in the following quote:

" We've been told that these are the guidelines – this is what you're doing. Does that happen? Hmmm… unless the principal is really on board, probably not. It will happen, I think, but it's going to take time. We need to have the tools in order to implement it. Don't tell me what to do and just leave me out there to – it won't be a priority. Yeah, it won't be." *(Teacher)*

4.7e Other barriers

School location

The geographical location of Cases B and C represented another barrier to healthy eating strategies that both organizations were trying to implement due to the guidelines. Case C was situated across the street from two popular fast food restaurants, thus most high school students would leave the school campus to buy lunch at those restaurants. Case B, on the other hand, had a closed campus policy; however, many students would get off the bus

one stop before the school in order to buy junk food and coffee at a close by convenience store. Overall, direct observations of Cases B and C also demonstrated that the proximity of fast food restaurants and convenience stores to schools could certainly hinder the effort of improving students' eating habits in the school environment.

Confusion caused by the guidelines' supplementary documents

The content of the Alberta Nutrition Guidelines for Children and Youth in itself was another barrier to our key informants who were more involved in their implementation within Case C. They indicated that it was daunting to go shopping for foods to stock the vending machines with a multi-page document because whenever they found a new product that they thought would meet the guidelines they had to flip through several pages in order to confirm if they were actually correct about their initial impression.

In addition, one Case C key informant mentioned that they encountered an issue with one of the supplementary documents that followed the publication of the guidelines. This additional document provided them with some examples of foods from each category but they did not reinforce the initial recommendation that multi-level schools should offer 100% of foods from the "choose most often" category. As a result, some parents that were resistant to the implementation of the guidelines initiated another round of discussions affirming that the guidelines were no longer making that initial recommendation, as described below:

"(. . . .)one of the guidelines for a K to 12 school was that 100 percent of the food that was offered had to be falling within that green [choose most often category]. That wasn't specifically addressed in that second document(. . . .) when the other sort of school of thought within the school saw that that wasn't specifically addressed in that supplementary document, they said, "Oh well no, it doesn't apply. It doesn't say that a K to 12 school should only be 100 percent and therefore it doesn't matter anymore." And I went, that's a supplementary document. I don't think that that's what it's saying, just because they didn't reference it." *(Member of the parent council)*

4.8 Factors that have facilitated the implementation of the guidelines

We have described many barriers to the implementation of healthy eating strategies due to the guidelines in Cases A, B and C. However, we also asked our participants about factors that facilitated the process of implementing those strategies, and the themes that emerged from our data have been described here.

Presence and actions of health champions

The presence and actions of health champions within Cases A, B and C represented the most commonly described factors that contributed to implementation of various healthy eating strategies due to the guidelines. The health champions were individuals who occupied different job positions within each organization, e.g. teacher, city community worker, member of the parent

council. They had an instrumental role within Cases A, B and C because they planned, organized and participated in the execution of healthy eating strategies.

The Case A health champion had a pivotal role in improving their meal programs after the adoption the guidelines. She included more fruit and vegetables in the menu, substituted mayonnaise with low fat yogurt in egg and tuna salads, switched from 2% to 1% milk, and other changes. This was done regardless of the fact that many people disagreed with the proposed changes. Four out of six participants we interviewed in Case A strongly believed that the health champion's actions were the main reason why they had such a great snack program in their school. The teacher and the parent-volunteer stated that the health champion went above and beyond her job description, and they were not sure how the program would be like had she not been there to oversee everything:

> "She's done a really good job. That we're very lucky because it would look very different if there was somebody who wasn't that interested, right? Like our snack program would look, and our lunch program would look very different than it is now." *(Teacher)*

As the abovementioned quote showed, not only was the health champion responsible for the snack and hot lunch programs, but she also completed her tasks with care, always keeping the needs of children in mind. In addition, she represented a leader to every volunteer involved in the meal programs. They knew that the health champion was always there to solve any potential crisis and help them when more hands were needed. Interestingly,

our interviewees believed that the healthy eating strategies they had within Case A could be sustained after the current principal retired as long as the health champion kept working in the school setting.

Case B had two teachers who had assumed the role of health champions. They were responsible for organizing health and wellness activities for students and staff. The organizational skills and work of these two health champions were very important, especially during the "Heart and Stroke" and "Nutrition" months (February and March, respectively). Their role in the organization of special events was described by the principal of Case B:

> "February is Heart and Stroke month, okay? So other than it being an awareness aspect of putting posters up and saying "February's heart and stroke month," our health champions then take that a little further. So we're going to have various different physical activities throughout February that are going to promote heart and healthy lifestyles. So they're the ones that sponsor those things in order to take place in school(. . . .)They're the ones that really kind of work with staff in their awareness."

Within Case C, a group of parents in the parent council that was favourable to the guidelines truly facilitated their initial adoption and implementation. One member of the parent council was particularly described as a facilitating factor due to her support for the guidelines since their initial adoption. This individual later became responsible for a subcommittee that was in charge of discussing the actual implementation strategies of the

guidelines. Case C principal described the role of this parent-health champion in the following passage:

> "We had one of our parents who was very pro-active in wanting healthy lifestyles – did a lot of research for us and that was great. She actually went out and tried to purchase different things as samples that we could put in vending machines, those kinds of things."

Staff support and co-operation

Key informants from Cases B and C commonly described that teachers and other school staff members' support for the Alberta Nutrition Guidelines for Children and Youth facilitated the implementation of healthy eating strategies that resulted from the adoption of the guidelines. Case B interviewees, in particular, highlighted that School B staff had truly represented a facilitating factor for the successful uptake of the guidelines, as explained in the quote below:

> "When the principal and the vice principal came across to us and said, 'This is coming from Division. This is what we believe as a Division, it's what we're going to support – healthy eating, that sort of thing, this is how we're going to do it.' Nobody said, 'It can't be done.' It was all, 'What can we do to help?' And, 'What do you want us to do?'And so I mean, there's a few of us who are kind of the key people that are leading it right? But everybody else does so willingly. And they help and they're supportive of it as well." *(Teacher/Health Champion)*

Case B participants believed that the fact that teachers within their organization were young and highly motivated made it easier for them, as a school, to embrace the guidelines' content through the school division's nutrition procedure. In addition, the overall support and co-operation of Case B staff in the implementation of the guidelines facilitated the work of the health champions within Case B, as described in the next couple of quotes:

> "See it's interesting, because this staff is young – so they are athletic. Like we have such an athletic group (. . . .) I don't think our health champions have to do as much work as they would at another school." *(Vice principal)*

> "Well the biggest thing by far is our staff. We're – it's an awesome staff. The most positive people I've ever worked with, and they're – they're willing to do whatever. There's nothing that you can ask that's too much. So – and it's, everybody has done it, it's not just one or two people." *(Teacher/Health Champion)*

Case C principal also noted that she had not received any complaints from staff and that they seemed to be "on board." Another Case C key informant mentioned that teachers within Case C were "fairly young" and that most of them were "really into health and fitness", which facilitated their uptake of the guidelines. However, it is important to emphasize that changes within Case C were mostly concentrated on the vending machines; therefore, teachers had not been affected by the guidelines because they had not been asked to avoid or stop giving candies as a reward, to serve healthier options for class parties or to be role models for students. For instance, on the days of our

observations, teachers of a couple of classes were distributing ice cream sandwiches to their students, and some of them were having burgers that had bought across the street, at the same fast food outlet where most high school students went for lunch. Yet, these observations did not change the fact that so far Case C staff members were perceived by key informants as supportive and co-operative.

Support net

The support for the implementation of the guidelines provided by groups of volunteers (from the city community) and stakeholders (e.g. school division representatives) facilitated the work of teachers and other Case A and B staff members.

In fact, community support was vital to the execution of the snack and hot lunch programs within Case A; and networking and partnerships throughout the city were key components of establishing community support. This support was given through cash and food donations, and through volunteer work. For example, Wal-Mart™ donated fresh produce to the school every month. Additionally, the group of volunteers who prepared the snacks and foods for lunch were of paramount importance to Case A, and their role was described by the social worker intern: "There are the snack helpers, they're what makes the snack program run. It would be nonexistent without them."

One of Case B health champions mentioned that one division representative, for example, the health and wellness coordinator was a great

source of information, someone who helped them to plan activities and find appropriate tools. The thoughts of one health champion on the role of this division representative were expressed in the following statement:

> "Well as far as our school district goes, I think we're pretty advanced. We have a wellness coordinator and she has been excellent. She has visited all the schools and has looked at all the menu plans of all the schools, given us suggestions. She – she's very involved in making sure that there are activities that run for staff as well as students to keep them motivated, up to date, that sort of thing. And very, very, very helpful. If you have a question, she finds the answer, researches it for you, that sort of thing – provides you all the information that you need as far as health and wellness goes. So."

Interestingly, the division health and wellness coordinator described that the work of the school health facilitator for Alberta Health Services (AHS) facilitated her own work because she could turn to this individual whenever questions or concerns came up, especially regarding the guidelines.

Ready-to-use lessons

Teachers within Case A who were engaged in nutrition education and healthy eating initiatives found that ready-to-use lesson plans about healthy eating and physical activity bins (with materials and suggested activities) that sometimes were provided by the School Division were very helpful and made things easier for them. Planning a lesson required a lot a time, and the

availability of those prompt teaching tools was an incentive to address nutrition topics in class.

"Right timing"

Key informants in Case B believed that the age of middle school children contributed to students' behavioural changes, especially when teachers were constantly trying to be role models, and to encourage healthy habits through some of their initiatives such as "No Junk Before Lunch:" "They're more – you can influence them more here, definitely, because they're still open to various different aspects of you know, listening to what it is that you have to say." *(Teacher)*

One of our interviewees highlighted that some years they had such good classes of older students that it made it much easier for them to implement new strategies. This aspect was also described as the "right timing"

Experience of the foodservice manager

For Case C, the experience of the foodservice manager as a Red Seal chef, in addition to his previous training, facilitated the improvement of foods served in Case C cafeteria after the implementation of the guidelines. His professional background made him more aware of healthy choices and more qualified to plan and prepare balanced and healthy foods. The foodservice manager seemed to be satisfied with his role/position within School C but he added that encouraging younger children to eat healthy foods was easier than

older ones; thus he believed that starting healthy eating habits at an early age was of the utmost importance for successful outcomes.

Chapter 5. Discussion

This thesis research project investigated how the support demonstrated by key school staff members and by the school superintendent influenced the early adoption of the Alberta Nutrition Guidelines for Children and Youth. Additionally, it described what healthy eating strategies were implemented before and after the release of the guidelines and any barriers schools encountered during the implementation process. All five key research questions that were elaborated during the design of this study are discussed below. The following "Framework for the diffusion of the guidelines in early-adopter schools" (Figure 1) was elaborated to facilitate the discussion of some of this study's relevant results from Cases A, B and C.

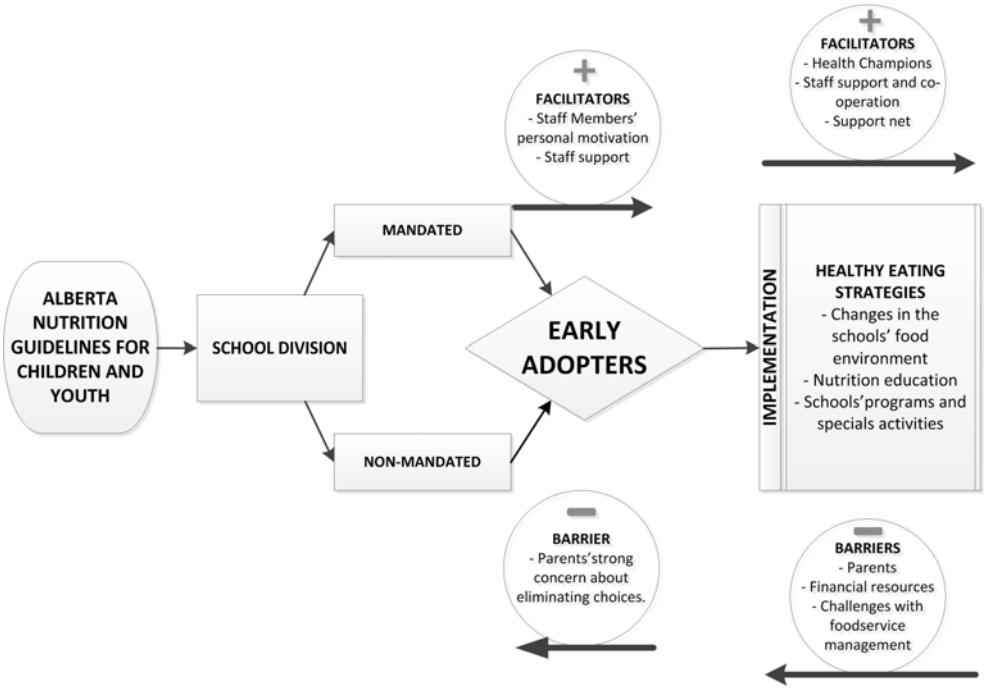

Figure 1. Framework for the diffusion of the guidelines in early-adopter schools

5.1 Adoption of the Alberta Nutrition Guidelines for Children and Youth

5.1.a How did school staff members' support for the Alberta Nutrition Guidelines for Children and Youth influence early adoption?

This study found numerous factors that motivated school personnel to support the adoption of healthy eating innovations such as the Alberta Nutrition Guidelines for Children and Youth. School staff members described that personal factors, such as personal interests, beliefs and experiences, and supporting children's healthy eating commonly motivated them to support not only the adoption but also the implementation of the guidelines within Cases A, B and C. In addition, key informants from all case studies often discussed that the nutrition guidelines – as an innovation – were compatible with their values and ideas; and this could have positively influenced their support for the guidelines (Rogers, 2003).

However, it is important to emphasize that school staff support for the guidelines did not exert great influence on the early adoption process within Cases A and B because the guidelines had been mandated by the School Division through nutrition policies or procedures. On the other hand, for Case C, the support of school staff, in particular the support of the school principal, for the guidelines was pivotal to their early adoption (before December 2009) as the decision to uptake the guidelines (received from Alberta Education) was made by the senior administrator.

The importance of the school principal in the "promotion of nutritional health" was also highlighted by Shahid (2003) who described the principal as

the individual responsible for managing forces and resources inside and outside schools. However, in Shahid's study (2003), principals' nutritional decisions (e.g. not allowing commercial vending machines on school campus) were motivated by other factors such as: "a) it was an unnecessary practice, b) it did not promote learning, c) they did not want the trash problem, d) the district did not allow it" (Shahid, 2003). These factors differed from our findings as the decision of Case C principal to adopt the guidelines was mostly influenced by personal beliefs and experiences.

In addition, it is plausible to say that for Case C the individual stage of change (TTM) of the principal highly influenced the early-adoption of the guidelines as the principal's personal motivation created the organizational mandate for healthy eating innovations such as the guidelines (Rogers, 2003).

Overall, within Cases A, B and C the principal had a key role in generating enthusiasm for the adoption of the guidelines and, most significantly, motivation among school staff during the implementation of healthy eating strategies due to the guidelines. This important role of school administrators was also observed by investigators of the "Blueprints" initiative to prevent violence; they described that for drug prevention programs the most "effective" school administrators were those who actively participated in the programs. School administrators who only demonstrated passive support for the prevention programs and were apathetic to implemented strategies negatively affected school staff as they felt unsupported and often lost motivation for their organization's drug prevention initiatives (Mihalic, Irwin, Fagan, Ballard, & Elliot, 2004)

5.1.b What was the role of School Division during the adoption of the guidelines?

As mentioned above, the role of the school division in the adoption of the guidelines within Cases A and B was instrumental, especially through the work of the school division superintendent who developed nutrition procedures and policies based on the guidelines that were then mandated to schools. The role of school division superintendents has been often perceived as mostly managerial and, for this reason, their role in the adoption of healthy eating innovations has yet to be more closely investigated (Lewthwaite, 2006). Nevertheless, it is reasonable to state that for Cases A and B the superintendent represented an "interpersonal channel of communication" because they personally interacted with Case A and B principals to develop a positive attitude toward the guidelines (Rogers, 2003). It is very likely that superintendents from Cases A and B affected the diffusion of the guidelines in a positive and significant way (Rogers, 2003).

Lewthwaite (2006), for example, explored the role of the superintendent on science curriculum delivery and emphasized that the beliefs held by school division superintendents regarding the importance of certain curriculum areas significantly influenced each school's decision to adopt innovations and to create school based policies. These findings were similar to those found within Cases A and B, where the mandates of the school division determined the adoption of the guidelines and influenced the healthy eating strategies that were later implemented within Cases A and B.

Overall, Cases A and B demonstrated that the support of the school division, especially through the work of the superintendent, was fundamental to the early adoption and implementation of the guidelines. Yet, Case C was an example of a different process, described by many key informants who commonly said that even though the school division "carries a lot of weight in deciding things," the "personalities" you have in the school are even more important.

It is important to highlight that for all three case studies – Cases A, B and C – school's formal organization (e.g., superintendent and school administration) had an instrumental role in the early adoption of the guidelines. In contrast, school's informal organization (e.g., parents, families, volunteers, etc) did not advocate for the adoption of the guidelines within Cases A, B and C. Many health promotion researchers and practitioners strongly advocate for community-based interventions because, among various factors, they are more easily sustained over time (Germann & Wilson, 2004; Raine et al., 2010; Snooks et al., 2011; Stake, 2006). However, conceptualizing, planning and executing community-based initiatives requires a great amount of time, and because of that it was unlikely that the decision to adopt the guidelines among early-adopter schools would have come from the "bottom-up".

5.2 Implementation of the Alberta Nutrition Guidelines for Children and Youth

5.2.a What healthy eating strategies have been implemented by early-adopter schools?

Many healthy eating strategies were implemented within Cases A, B and C due to the adoption of the guidelines. As an example, changes in the schools' food environment were described by key informants across all three case studies. Foodservice managers from Cases B and C described that from the beginning of the implementation of the guidelines they started offering more fruit and vegetables in the school cafeteria menus. In addition, foods that were high in fat, such as poutine and deep fried chicken, were eliminated from their menu. These findings are consistent with those described by Jaime and Lock (2009) in a review of nine studies reporting on outcomes of nutrition guidelines. The aforementioned authors reported in their article that schools' adoption of nutrition guidelines often led to increased availability of fruit and vegetables and decreased access to high-fat meals and snacks (Jaime & Lock, 2009).

Within Case A, the most commonly described healthy eating strategies were the snack and hot lunch programs. These meal programs provided elementary children from Case A with more opportunities to consume fruit and vegetables, 100% fruit juice, milk and whole grain products. In the US, for example, students in elementary schools who ate only National School Program meals were more likely to have a higher daily intake of fruit and vegetables and 100% fruit juice (Cullen, Eagan, Baranowski, Owens, & de Moor, 2000). Higher consumption of "fruit & vegetables" represents an important outcome of healthy eating strategies because foods from this group

are essential to children's healthy eating and in the future, when these children become adults, the habit of eating fruit and vegetables every day may also prevent certain types of cancer and decrease the risk of cardiovascular disease (*Eating Well with Canada's Food Guide*, 2007; *Fruit and Vegetable Consumption*, 2009) .

In addition, vending machines filled with snacks (solid foods) were not found within Case A; this finding was in agreement with other studies conducted in the US, which showed that most elementary public schools in the country (79%) did not have vending machines available for students (Arcan, Kubik, Fulkerson, Davey, & Story, 2011; Kubik et al., 2010). On the other hand, similar to the majority of middle and high schools in the US, Cases B and C had at least one vending machine on their campus. Although key informants from Cases B and C reported significant improvements in the foods and beverages sold in vending machines within their schools, over 30% of the options available in the beverage vending machine of School B and in the snack vending machine of School C were from the "choose least often category" (*Alberta Nutrition Guidelines for Children and Youth*, 2008).

Unfortunately, there is no baseline data – before the implementation of the guidelines – regarding the foods and beverages in vending machines within Cases B and C. This fact limits comparisons between this study and other studies that have investigated foods and beverages sold in school vending machines. For instance, an investigation of foods and beverages sold in alternative high schools' vending machines and school stores in Minneapolis/Saint Paul, Minnesota (US) showed that 60% of food and

beverage options were categorized as “foods and beverages to limit” (Arcan et al., 2011), which could have been reality within Cases B and C before the adoption of the guidelines. It is important to emphasize that providing school children with opportunities to consume sugar-sweetened beverages and high fat foods during school hours has been associated with a higher overall actual consumption of foods that are high in sugar and fat (Arcan et al., 2011).

Nutrition education was another commonly described healthy eating strategy within Cases A, B and C. However, we cannot affirm whether the amount of time dedicated to nutrition education within Cases A, B and C met the recommended 50 hours per school year – “as minimum amount necessary for facilitating behaviour change” (Briggs, Mueller, & Fleischhacker, 2010).

Establishing a school garden was another healthy eating strategy described by key informants within Case A. This strategy has also been successful within other schools in Alberta. Chunara & Anderssen reported that school gardens not only improve children’s consumption of fruits and vegetables but they also improve the quality of life of students, especially by bringing their families together (Chunara & Andressen, 2011). Indeed, the establishment of a school garden may represent an effective healthy eating strategy because it includes many important components of comprehensive nutrition interventions such as student experiential learning, family involvement and community participation.

The school setting is certainly the most commonly proposed setting for the promotion of healthy eating and prevention of child and youth obesity (Jaime & Lock, 2009; Veugelers & Fitzgerald, 2005a). However, through an

investigation of the experiences of junior high school principals and school foodservice directors with the School Nutrition Policy in Texas, Roberts et al. (2009) found that it was the opinion of many respondents, that parents should play a more significant role in their children's eating habits.

5.2.b What barriers have early-adopter schools encountered before and after implementing new healthy eating strategies?

In the present study parents were commonly described as a barrier to the implementation of healthy eating strategies based on the guidelines within Cases A, B and C. Moore et al. (2010) also described that parents' views negatively influenced the implementation of healthy eating policies in primary schools in Wales (Moore, Murphy, Tapper, & Moore, 2010). All of the above mentioned studies reinforce the importance of implementing comprehensive school healthy eating programs that include the participation of families and the school community in the promotion of children's healthy lifestyles (Briggs, Fleischhacker et al., 2010; Sharma, 2006)

Barriers related to foodservice management were also commonly described by key informants within all three case schools. Planning a menu that was nutritionally sound and satisfied children's tastes and preferences was a significant challenge to key informants within Cases A, B and C. The key informant from Case A, who was responsible for the menu of the meal programs, described her frustration with having to determine portion sizes and what would be served to children with food allergies and celiac disease even though she did not have any nutrition background. Within Case A the nutrition

aspect of the menu was a significant challenge that could be overcome if she had the assistance of a dietitian to plan the school meal programs' menu. On the other hand, foodservice managers from Cases B and C demonstrated great concern with the popularity of their cafeterias' menu. This was also reported by other authors who found that creating a menu that "looked and tasted good" and met children's nutritional needs was also a concern for school administrators and students from schools that followed the nutrition policies (Moore et al., 2010; Roberts, Pobocik, Deek, Besgrove, & Prostine, 2009).

The Case B foodservice manager, in particular, described that in many occasions she found herself restrained from trying to repeat new healthy foods in the cafeteria's menu when she perceived that most students did not appreciate them, because there was a general fear of losing revenue. As a result, students were unlikely to have time to adjust to menu changes and to accept healthier options (Roberts et al., 2009).

5.2.c What factors have facilitated the implementation of new healthy eating strategies?

Despite the barriers encountered during the implementation of the guidelines, the Case B foodservice manager described that the positive work environment of School B and the principal's support for her work constantly motivated her to try new healthy eating strategies due to the guidelines. As previously mentioned, a positive work climate has been found to be an important contextual factor that could significantly affect the successful implementation of youth prevention programs (Durlak & DuPre, 2008).

According to Durlak & Dupre (2008) another factor that significantly influenced the successful implementation of youth prevention programs was the presence and work of program champions: "The existence of at least one health champion has long been recognized as a valuable resource to encourage innovation." This study found that health champions had an important "linking position" (Rogers, 2003) within Cases A, B and C, and that they were able to positively influence other school staff towards the guidelines and to orchestrate various healthy eating strategies (Durlak & DuPre, 2008). Health champions in all three case studies truly facilitated the implementation of the Alberta Nutrition Guidelines for Children and Youth. They seemed to be highly placed in their organizations, to possess analytical and intuitive skills and to have staff and volunteers' respect. The "Blueprints" program to prevent violence found that social systems (e.g., schools) with strong champions experienced fewer problems during the implementation of initiatives to promote the program. In addition, the overall perception of the positive role of the champion by other staff was significantly related to the successful implementation of "Blueprints" programs (Mihalic et al., 2004).

In addition to the presence and work of health champions, Cases B and C key informants described that the support and co-operation of teachers also facilitated the adoption and implementation of the guidelines. Indeed, Gittelsohn et al. (2003) described that for the "Pathways Program" supportive teachers were more likely to get involved in the process of implementing the program (Gittelsohn et al., 2003). Moreover, teachers and other school staff members' supportive actions for school based programs have been identified

as one of the characteristics of a positive school climate that exerts significant influence on the successful implementation of youth prevention programs (Durlak & DuPre, 2008; Gittelsohn et al., 2003; Lambert et al., 2009).

Case B teachers, for instance, were fully committed to setting good healthy eating examples and had stopped the popular practice of giving candies and low nutrient foods as rewards to students (Roberts et al., 2009). On the other hand, the use of candies and low nutrient foods as rewards and fundraising options was still present within Case C, which highlights another common challenge in the improvement of the school food environment (Kubik, Lytle, Farbakhsh, Moe, & Samuelson, 2009; Roberts et al., 2009).

In spite of all the barriers and facilitators aforementioned, key informants from Cases A, B and C shared the perception that school based healthy eating programs should begin as early as possible so that students can become more adapted to healthy foods by the time they reach high school and start making their own choices. Current research shows that high schools tend to offer more foods that are high in fat and added sugars to students (Kubik et al., 2009). However, this may change when children who attend elementary and middle schools with currently well-established nutrition policies reach their high-school years. Therefore, it is of the utmost importance to consistently and frequently evaluate school based nutrition programs as a means to inform policy makers and practitioners of barriers, facilitators and successful and effective healthy eating strategies.

5.3 Strengths and Limitations

Strengths

This multiple case study included three purposefully selected case studies. The same two researchers conducted all direct observations within each case school; and this fact allowed for discussion of various factors related to school climate and existing healthy eating strategies within Cases A, B and C. The presence of two researchers for all three case studies and their exchange of ideas and perceptions contributed to the validity of this thesis project.

Three early-adopter schools that had adopted and started to implement the guidelines within one year after receiving them and before December, 2009 were selected as case studies. The careful and purposeful selection of three case studies may inform policy makers in Alberta about characteristics of early-adopter schools, especially in terms of school staff motivation and the role of the school division in the process of the adoption and implementation of the guidelines. Moreover, barriers, facilitators and successful healthy eating strategies described in this study will inform other schools in the province that may resolve to adopt the Alberta Nutrition Guidelines for Children and Youth. Due to the fact that the number of studies investigating the outcomes of provincial nutrition guidelines in Canada is still limited, this research will provide a reference for other provinces that are also planning school based nutrition interventions for the prevention of child and youth obesity and promotion of healthy eating.

Furthermore, this study went beyond acknowledging the relevance of the school climate – which has been widely acknowledged in other studies as an important contextual factor that affects the adoption and implementation of school innovations – because it also addressed the factors that influenced school staff members' motivation for supporting healthy eating innovations, such as the nutrition guidelines. The results from this study not only showed that school staff members' support could influence the guidelines' adoption and implementation, but it was also demonstrated what factors commonly motivated school staff to support the guidelines. This information can be helpful to policy makers, school division superintendents and health promotion professionals when designing strategies to disseminate, implement and sustain nutrition guidelines or policies targeted at the school setting.

Limitations

The TTM of organizational behavioural change was used to assess organizations' stage of change after the release of the guidelines and to help identify early-adopter schools (according to the criteria established for this project). This assessment was conducted during phase one of TANGO, when individual respondents were asked to define their organizations intent-to-use the guidelines. Given that the assessment of each organization's intent-to-use the guidelines was conducted based on the response given by one individual, it is important to note that the perception of a single respondent may not have reflected the school's overall intent-to-use the guidelines (Berry et al., 2007). Therefore, it is important to acknowledge that the use of the TTM to

categorize school's readiness to change may not be adequate if only the opinion of one individual within the organization is taken into account. This limitation of phase one of TANGO and the TTM could have influenced the total number of early-adopter schools identified.

Due to the rationale for this thesis project and its proposed research questions, non-adopter schools were not investigated through case studies. This represents a relevant limitation of this study as we did not gain knowledge of the factors that prevented some schools in Alberta from adopting the guidelines. Additionally, our total number of case studies (n=3) does not allow for theoretical replication, which means the prediction of contrasting results within schools that have opposite characteristics of those identified among this study's case schools (Cases A, B and C).

Moreover, students' opinions and perceptions were not addressed due to the scope of this research's rationale. For future studies, it would be interesting to understand children's experiences and perceptions of changes in the school food environment.

Lastly, it is important to highlight that our case studies did not include any on or off reserve Aboriginal schools. Given the high prevalence of obesity and co-morbidities among Aboriginal children (Willows, Johnson, & Ball, 2007), conducting in-depth case studies within Aboriginal schools is very pertinent. This would provide researchers, policy makers and practitioners with a better understanding of factors that may hinder healthy eating strategies in Aboriginal schools and, most importantly, of factors that can motivate and

facilitate the adoption and implementation of nutrition innovations such as nutrition guidelines.

5.4 Conclusions and Implications

Conclusions

This study demonstrates that various healthy eating strategies were implemented within Cases A, B and C due to the guidelines. Yet, each case school had only been able to work with some of the various components of comprehensive school based programs. This means that Cases A, B and C should continue to implement other new healthy eating strategies in order to increase the effectiveness of the guidelines in promoting healthy eating among children and youth in the school setting.

Case schools encountered many barriers before and after implementing healthy eating strategies. Parents, for instance, were a commonly described barrier; however, this should not deter the advancement of healthy eating strategies and nutrition policies in the school setting .On the other hand, it is important to increase parents' involvement in the planning and execution of healthy eating strategies because they represent one vital component of comprehensive school based nutrition programs.

In addition, school divisions should be highly encouraged to develop nutrition policies based on sound nutrition guidelines. In this way they overtly demonstrate their support for healthy eating innovations and serve as a communication channel, which may facilitate and encourage adoption and implementation of nutrition guidelines in schools.

To conclude, findings from this study highlight the value of addressing school staff perceptions and experiences and, most importantly, the relevance of keeping school staff members motivated through training and activities that may improve their self-efficacy and overall job satisfaction.

Implications

This multiple case study shows that identifying a health champion within each school may be one of the most important steps in the implementation of nutrition guidelines. Health champions are often able to coordinate new healthy eating strategies and to increase the interest of the school community in the process of adopting and implementing nutrition guidelines. Provincial and local education and health authorities should provide schools with financial and human resources that may be required to employ a health champion as a structured position.

Moreover, it is of the utmost importance to help schools to build a strong support network (through partnerships with organizations in their local areas and access to government representatives) that may facilitate the adoption and implementation of nutrition guidelines. In addition, providing school administrators and staff with examples of successful healthy eating strategies and different approaches to overcome common barriers may also increase the overall adherence to nutrition guidelines.

The adoption and implementation of nutrition guidelines in the school setting can be of great complexity. However, findings from this study indicated that school staff members from Cases A, B and C embraced the idea

of healthy eating, and used the Alberta Nutrition Guidelines for Children and Youth as a template to develop or improve school based healthy eating strategies. Indeed, Cases A, B and C implemented different healthy eating strategies using the human and financial resources that were available to them. If we could combine the strongest characteristics of each case study – the committed and enthusiastic health champion from Case A, the incredibly motivated staff from Case B and the experienced chef/foodservice manager from Case C – we would probably create an extremely positive school climate for the adoption and implementation of nutrition guidelines, which could ultimately result in an effective school based nutrition program.

To conclude, it is important to note the significance of following-up with these three schools and, in the future, examining the institutionalization of the guidelines. In other words, examining the sustainability of current healthy eating strategies, the perception of costs and benefits, and the goals that these three schools will have for the future (McLeroy, Bibeau, Steckler, & Glanz, 1988).

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Appendix A – Telephone Survey Questionnaire

Telephone Survey Questionnaire

State name and purpose of the phone call.

Hello my name is _____. I am calling on behalf of researchers at the University of Alberta regarding nutrition programs or policies within your facility.

Confirm the randomly selected facility.

Request to speak to the administrator of the facility.

1. How many employees are there in your organization? _____

2. How many youth does your organization provide for? _____

3. Is there a person in charge of food service within your organization?
   - □ Yes
   - □ No

4. Within your organization would you say healthy eating is a:

□Low priority □Medium priority □High priority □Don't know

5. Compared to one year ago, would you say the priority given to healthy eating within your organizations has:

□Decreased □Stayed the same □Increased □Don't know

6. a) Are there any current nutrition policies within your organization?
   - □Yes
   - □No

b) If Yes, What nutrition policies currently exist within your organization?

_____
_____
_____

7. Have you heard of the Alberta Nutrition Guidelines for Children and Youth?
   - □ Yes
   - □ No → (If answered no, the survey is completed here)

8. What have you heard about the Alberta Nutrition Guidelines for Children and Youth?

_____
_____

_____
_____

9. a) Have you made any changes to improve the nutritional quality of the foods offered in your organization since Fall 2008?
   b) If yes, please describe these changes

_____
_____
_____

c) Are any of these changes due to the Nutrition Guidelines for Children and Youth?

Yes □ No □ Don't know □

10. a) Is there a champion for promoting the Alberta Nutrition Guidelines for Children and Youth, this means someone who is very involved in promoting the guidelines?

Yes □ No □ Don't know □

d) If Yes, what is the "champion's" position in the organization?
□ Board of Directors
□ Management
□ Service-Provider
□ Other (please specify)_____
□ Don't know

11. a) Which of the following best represents your facility's intent-to-use the Alberta Nutrition Guidelines for Children and Youth?

□ We have not thought about it

□ We are thinking about it

❑ We are in preparation (planning programs and/or taking some steps)

❑ We are currently promoting and using the Alberta Nutrition Guidelines for Children and Youth and have started some programs. *(note: <6 months time frame)*

❑ We have been promoting and using the guidelines for at least 6 months and have ongoing programs.

b) If no intention to use: What are the reasons for not intending to use the guidelines?

_____
_____
_____
_____

c) If intention to use: How does your organization intend to use the guidelines?

_____
_____
_____
_____

Thank you for participating in this survey.

Appendix B - Interview guide

INTRODUCE YOURSELF AND THE STUDY CLEARLY

The Alberta Nutrition Guidelines Outcomes

- To Gain a better understanding of barriers and facilitators to the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth

- Funded by the Canadian Institutes of Health Research

ENGLISH AS SECOND LANGUAGE

- Let the participant know that English is not your first language and that they can ask for clarification at any time

CONFIDENTIALITY

- The name of the school, as well as the name of all participants, will not be disclosed

- Freedom to stop the recorder at any time

- Freedom to be removed from the study even after the end of the interview, in other words, freedom to be removed from data analysis

***Record participant's *NAME, AGE* and *JOB POSITION* within school**

1. How did you hear about the Alberta Nutrition Guidelines for Children and Youth?

2. How did you become involved in the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth? (Try to get a description of interviewee's role)

3. What motivated you to participate in the adoption and implementation of the guidelines?

4. How would you describe the role of the School Board in the adoption and implementation of the guidelines in your school?

5. How do you perceive the role of the principal in the adoption and implementation of the guidelines? (TEACHERS AND STAFF ONLY)

6. What healthy eating strategies have been implemented to promote the guidelines within your school?

7. Could you please describe any factors that helped implementing the guidelines?

8. Could you please describe any barriers to implementing the guidelines?

9. Which aspects of the adoption of the guidelines have been the most successful?

10. How do you plan to sustain the healthy eating strategies your school has already put in place?

11. Has the participation of a health champion/facilitator influenced the adoption and implementation of the guidelines? How? **(If applicable)**

12. What is your opinion about the role of schools in the promotion of healthy eating?

13. So far, have you been able to perceive any benefits from the adoption and implementation of the guidelines?

Appendix C – Ethics approval & re-approval

Study ID:	Pro00009577
Study Title:	The Alberta Nutrition Guidelines Outcomes (TANGO): A multiple case-study analysis
Study Investigator:	Linda McCargar
Funding/Sponsor (free text):	There are no items to display
Funding/Sponsor (validated):	CIHR - Canadian Institutes for Health Research CIHR
Approval Expiry Date:	December 10, 2010

I have received your application for research ethics review and conclude that your proposed research meet the University of Alberta standards for research involving human participants (GFC Policy Section 66). On behalf of the Physical Education and Recreation, Agricultural, Life & Environmental Sciences and Native Studies Research Ethics Board (PER-ALES-NS REB), I am providing research ethics approval for your proposed research.

The research ethics approval is valid for one year and will expire on December 10, 2010.

A renewal report must be submitted prior to the expiry of this approval if your study still requires ethics approval at that time. If you do not renew before the renewal expiry date, you will have to re-submit an ethics application. If there are changes to the project that need to be reviewed, please file an amendment. If any adverse effects to human participants are encountered in your research, please contact the undersigned immediately.

Sincerely,

Pirkko Markula
Physical Education and Recreation (PER), Agricultural Life & Environmental Sciences (ALES) and Native Studies (NS)

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Notification Re-approval

Date:	November 23, 2010
Principal Investigator:	Linda McCargar
Renewal ID:	Pro00009577_REN1
Study ID:	Pro00009577
Study Title:	The Alberta Nutrition Guidelines Outcomes: A multiple case-study analysis
Approval Expiry Date:	December 9, 2011

Thank you for returning the request for re-approval of this study. We have reviewed the file on this project for which all documentation is currently up-to-date, and conclude that the proposed research meets the University of Alberta standards for research involving human participants (GFC Policy Section 66). On behalf of the Physical Education and Recreation, Agricultural, Life & Environmental Sciences and Native Studies Research Ethics Board (PER-ALES-NS REB), I am providing a re-approval for the study referenced above.

The expiration date for this approval is noted above. A renewal report or closure report must be submitted next year prior to the expiry of this approval. You will receive electronic reminders at 45, 30, 15 and 1 day(s) prior to the expiry date. If you do not renew on or before that date, you will have to submit a new ethics application.

If there are changes to the project that need to be reviewed, please file an amendment. If any adverse effects to human participants are encountered in your research, please contact the undersigned immediately.

Sincerely,

Kelvin Jones, Ph.D.
Chair, Physical Education and Recreation (PER), Agricultural Life & Environmental Sciences (ALES) and Native Studies (NS)

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix D – Letter to superintendents

UNIVERSITY OF ALBERTA

May 31, 2010

Dear XXX:

We would like to invite the XXX to participate in a study investigating the adoption and implementation of the Alberta Nutrition Guidelines for Children and Youth by Alberta schools. This study is part of a larger project that began in September 2009. The first phase of the study included a telephone survey asking schools about healthy eating environments for children and about their awareness and use of the nutrition guidelines. During the first phase of the study we asked schools if it would be possible to contact them again to complete the second phase of the study that will examine the adoption and implementation of the guidelines with a select number of schools that were considered "early-adopters" of the guidelines. XXX indicated that they may be interested in participating in this project. It was clear from our telephone survey with them that they would be an excellent school to include in this study as they are currently engaged in very innovative approaches to the promotion of healthy eating. We would like to seek your approval to contact them to participate in the project during the 2010/11 school year. We understand that the Principal, Mr. XXX, will have the ultimate decision as to whether or not the school decides to participate. The information obtained from this study will provide examples of best practices for schools across the province.

As part of the project, we would like to conduct interviews with the Principal and key staff members (ie., teachers) from the school to gain a better understanding of the process of adopting and implementing the guidelines within the school. We would also like, if the Principal agrees, to conduct observations of the types of food that are offered and sold at the school. All interviews will be conducted with one participant at a time in a private location. Identification codes, not participant names or organization, will be used in the data analysis and all data will be confidential. Participation in this study is voluntary. Attached to this letter is a copy of 1) the information letter for the study 2) the consent form for interviews and 3) the consent form for making observations of the foods available at the school.

This study has been approved by the Faculties of Physical Education and Recreation and the Agricultural, Life and Environmental Sciences Research Ethics Board at the University of Alberta. This research is funded by the Canadian Institutes of Health Research.

If it is possible, we would like to arrange to speak with you about this project. We are aware that school boards and schools are asked to participate in many research studies, and we do not wish to create any additional burden for you. If there is anything we can do to make it easy for XXX to participate, please let us know. One of our staff will call you to determine your interest in the study. In the meantime, if you have any questions, please contact Shauna Downs at (780) 492-4182 or by e-mail at downs@ualberta.ca. Thank you for considering this request. We hope to have the opportunity to work with you on this important project.

Sincerely,

Shauna Downs, MSc	Linda McCargar, PhD, RD
Research Coordinator,	Professor,
Dept of Agricultural, Food	Dept of Agricultural, Food
& Nutritional Science	& Nutritional Science
University of Alberta	University of Alberta
Phone: 780-492-4182	Phone: 780-492-9287

In the case of any concerns or complaints, please contact: Dr. Wendy Rodgers, Chair of the PER-ALES Research Ethics Board, at (780) 492-8126. Dr. Rodgers has no direct involvement with this project.

Appendix E - Consent form

UNIVERSITY OF ALBERTA

CONSENT FORM- Schools

Project: The Alberta Nutrition Guidelines Outcomes (TANGO): A multiple case-study analysis

Investigators:
Dr. Linda McCargar, Professor
Department of Agricultural, Food and Nutritional Science
Phone: (780) 492-9287
Email: Linda.McCargar@ualberta.ca

Maira Quintanilha, Graduate Student
Department of Agricultural, Food and Nutritional Science
Phone: (780) 504-8393
Email: Maira@ualberta.ca

Purpose: The purpose of this project is to describe how your school is implementing the Alberta Nutrition Guidelines for Children and Youth. We also want to know about the short term impact of implementing the guidelines.

Please circle YES or NO to the statements below related to the information in the information sheet.

Do you understand that you have been asked to be in a research study?
YES NO

Have you read and received a copy of the attached Information Sheet?
YES NO

Do you understand the benefits and risks involved in taking part in this research study?
YES NO

Have your questions been answered by the Information Sheet?
YES NO

Do you understand that you are free to withdraw from the study at any time, without having to give a reason?
YES NO

Has confidentiality been explained to you on the Information Sheet?

YES NO

Do you understand that only the research team will have access to the data?
YES NO

Do you consent to being interviewed?
YES NO

Do you understand that people at the school may know that you participated in the interviews, but they will not know what was said?
YES NO

Do you consent to being audio-taped (no names will be identified)?
YES NO

Third Party Contact: If you have concerns about this study, you may also contact the Research Ethics Office at (780) 492-2615.

Participant Name: _____

Participant Signature: _____

Date: _____