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Adoption of the Alberta Nutrition Guidelines for Children and Youth: Assessing Organizational Behaviour Change in Childcare Organizations

by

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Abstract

In 2008, the Alberta Government released the Alberta Nutrition Guidelines for Children and Youth as a resource for childcare facilities to translate nutrition recommendations into practical food choices. Using a multiple case study method, early adoption of the guidelines was examined in two childcare centres. Characteristics of the guidelines and organizational and contextual factors influencing uptake of the guidelines were assessed. Data were collected through direct observation, key informant and focus group interviews, documentation of field notes, and obtaining food menus. Qualitative data were analyzed using content analysis, and food menus were compared to the guidelines to assess menu quality and compliance. Overall, the guidelines were perceived positively by childcare providers. Factors found to influence organizational behaviour were leadership, networking, and organizational culture. Organizational characteristics and contextual factors of early adopters are important to understand as they provide insight into what factors influence uptake of nutrition policies in childcare settings.

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Table of Contents

List of Tables

List of Figures

List of Abbreviations

ANGCY	Alberta Nutrition Guidelines for Children and Youth
DoI	Diffusion of Innovations
CCHS	Canadian Community Health Survey
CHMS	Canadian Health Measures Survey
CFS	Canada Fitness Survey
BMI	Body Mass Index
CLASS	Children's Lifestyle and School-Performance Study
CDC	Centers for Disease Control and Prevention
NLSCY	National Longitudinal Survey of Children and Youth
DRI	Dietary Reference Intake
AI	Adequate Intake
RDA	Recommended Dietary Allowance
HBM	Health Belief Model
TTM	Transtheoretical Model
SCT	Social Cognitive Theory
SLT	Social Learning Theory
CATCH	Child and Adolescent Trial for Cardiovascular Health
OD	Organizational Development Theory
TANGO	The Alberta Nutrition Guidelines Outcomes
CIHR	Canadian Institutes of Health Research

Chapter 1: Literature Review

1.1 Introduction

The purpose of this thesis was to examine the variables influencing the early adoption of the Alberta Nutrition Guidelines for Children and Youth (ANGCY) in two childcare centres in Alberta, Canada. Specifically, the intent of this study was to: 1) evaluate the characteristics of the guidelines in terms of usability and functionality as perceived by the intended user: childcare providers and 2) to understand the organizational processes and strategies that influenced early adoption of the guidelines in childcare centres using Diffusion of Innovations (DoI) (1) as the theoretical framework guiding the overall study design. DoI theory provides a framework for examining the factors that may influence the adoption and maintenance of new practices in society, such as health policies, by describing the elements of the diffusion process and the progression of social change (1).

1.2 Background and Literature Review

In June 2008, the Government of Alberta released the Alberta Nutrition Guidelines for Children and Youth (ANGCY). The guidelines were developed as a resource for Albertans to translate nutrition recommendations into practical food choices intended to promote the overall health for children and youth (2). Many Canadian provinces are currently in the process of developing and/or implementing organizational nutrition guidelines or policies; however, few have planned evaluations (3).

British Columbia (BC) and Prince Edward (PEI) Island have conducted evaluations but the evaluations focus mainly on outcome measures with little attention to process evaluation. There is a lack of an appraisal of the organizational factors and procedures

that influence adoption and implementation of nutritional food policies and programs. For example, in 2003-2004, British Columbia implemented a best-practice model called *Action Schools! BC* (4) in elementary schools integrating physical activity and healthy eating among children. A comprehensive outcome evaluation was conducted for the targeted health outcomes and demographic characteristics of the schools and their attendees; though, only a brief description of the process evaluation was included entailing satisfaction ratings of the varying elements of the program and possible areas for improvement. Notably, the organizational strategies and procedures were not evaluated (4).

Prince Edward Island elementary schools adopted a provincial school nutrition policy in 2006 to address issues such as the quality of food available in the school environment, student access to food, food used in fundraising initiatives, food safety, and nutrition education (5). PEI is the first in Canada, and possibly only province, to examine the possible link between a provincial school nutrition policy and food consumption patterns. Only outcome variables related to food consumption patterns were assessed, while process characteristics were not a part of the evaluation (5).

As Alberta is one of the first provinces in Canada to develop nutrition guidelines for children and youth, it is critical to evaluate the attributes of the guidelines and the processes and strategies influencing early adoption of the guidelines in daycare settings (6,7). Several bodies of literature were reviewed to examine the underlying concepts for the development of the guidelines and factors that may influence adoption behaviour. A background search was conducted surrounding the rates, complications and subsequent health risks of childhood overweight/obesity followed by the rates of use of childcare facilities in Canada and their respective nutrition environments. Additionally, a

review of the literature and critical analysis and summary was conducted to describe the use of behavioural change theories in analyzing organizational behaviour change and how this may impact adoption of nutrition policies.

1.2.1 Childhood Overweight/Obesity

The prevalence of childhood obesity has been increasing rapidly to the point where it is now an epidemic in developed countries such as Canada and the United States (US) (8). In Canada, rates of childhood overweight and obesity have been steadily increasing over the last three decades. Findings from the 2004 Canadian Community Health Survey (CCHS) (Nutrition, cycle 2.2) revealed that 26% of Canadian children and youth between the ages of 2-17 years old were overweight or obese, at 18% and 8% respectively (9). This shows a considerable increase from data obtained from the Canada Health Survey in 1978/79 where 15% of Canadian children and youth between the ages of 2-17 years old were overweight or obese, at rates of 12% and 3% respectively (10). These data demonstrate that the overall rate of childhood overweight and obesity has nearly doubled over the last 30 years while the rate of childhood obesity has nearly tripled.

More recently, results from the 2007-2009 Canadian Health Measures Survey (CHMS) confirm that Canadian children are getting heavier (11). The CHMS measured body composition and fitness levels of children aged 6-19 years old and when compared to the findings from the 1981 Canada Fitness Survey (CFS) for children aged 7-19 years old it was found that children are heavier than they were in 1981. Results from the study show statistically significant increases in both body mass index (BMI) and waist circumference for both boys and girls. On average, BMI increased from 19.3 kg/m^2 to

20.6 kg/m² and waist circumference increased from 65.5 cm to 70.0 cm indicating that increases in weight are related to increased adiposity not greater muscularity (11).

In Alberta, the prevalence of overweight children and youth was below the national average at 14%; however, the obesity rate was similar to the national average of 8% (10). According to these data, over one-quarter of Canadian children and youth are overweight or obese. These findings are particularly important when considering the health consequences associated with early childhood overweight and obesity.

1.2.2 Health Risks and Complications of Overweight/Obesity

The complications of childhood overweight/obesity can be severe. Obesity in childhood may result in serious medical and psychological problems such as: type 2 diabetes, high blood pressure and elevated blood cholesterol, metabolic syndrome, liver disease, bone and joint problems, asthma, sleep disorders, fatigue, eating disorders, early onset of puberty, low self-esteem, social isolation, depression, stress and anxiety, and behavioural and/or learning problems (12); therefore, prevention of obesity is key. In addition, the consequences of childhood obesity can track into adulthood. Early childhood obesity is a major predictor of obesity in adolescence and early adulthood (13); approximately one-third of obese preschool-aged children and half of obese school-aged children become obese adults (14). Adult obesity is a major contributor to cardiovascular disease, type 2 diabetes, arthritis, and several types of cancer (15,16). Even more alarming, the prevalence of childhood overweight/obesity is now being linked to decreases in overall life expectancy in the US (17).

A recent study conducted in the United States revealed that the direct costs of childhood obesity were just over $14.3 billion annually (18). An even larger cost is

incurred when obese children became obese adults totaling approximately $147 billion in annual costs (18). In Canada, direct and indirect costs of obesity were estimated at $4.3 billion in 2001 (19), a dramatic increase from 1997 when direct and indirect costs of obesity were estimated at $3.5 billion (20). These results suggest that strategies to prevent childhood obesity should be initiated at an early stage of life.

The greatest benefit of reducing childhood overweight and obesity is the improvement in quality of life through the subsequent decrease in health complications. However, there is also a substantial economic benefit associated with lower rates of overweight and obesity. Small investments in childhood obesity prevention programs may protect some children from becoming overweight/obese adults, thereby reducing the health and economic burden of obesity-related disease on society (21). In the US, it is estimated that spending $2 billion a year would be cost-effective if it reduced obesity among 12 year olds by one percent (16).

The effectiveness of obesity prevention and reduction programs and strategies is not well established; though, this may be due to a lack of pre-intervention data as well as differing evaluative strategies (22). However, when comparing school interventions the results look more promising. For example, the 2003 Children's Lifestyle and School-Performance Study (CLASS) conducted in 282 schools across Nova Scotia found that schools participating in healthy eating programs consistent with The Centers for Disease Control and Prevention (CDC) recommendations had lower rates of overweight and obesity. Conversely, schools which offered healthy food choices but did not participate in a program did not show any substantial benefits (22). The Healthy Buddies program which is a comprehensive school-based health promotion program first piloted in 2002 in British Columbia also demonstrated positive benefits. Children participating in the

program showed an increase in health knowledge such as better knowledge of nutritious versus non-nutritious foods and beverages and exertive versus non-exertive activities, health behaviour such as an increased report of healthy eating and physical activity, and health attitudes (23). These examples highlight the importance of comprehensive, multi-factorial programs but, also, the importance of early intervention. It is well documented that treating adult obesity can be very challenging and, often, with little or no long-term benefits. Therefore, attempts to address unhealthy eating attitudes and behaviours at an early age are critical as prevention of obesity is key to addressing the health risks and associated complications of childhood overweight and obesity.

1.2.3 Determinants of Childhood Overweight/Obesity

Obesity is a complex multi-factorial chronic disease; however, it is widely accepted that one of the major causes of overweight/obesity is an imbalance of energy consumption to energy expenditure, where the proportion of calories consumed exceeds the proportion of calories expended resulting in weight gain (9,12). Excess energy consumption results from overconsumption of foods and beverages but, also, from the types of foods and beverages consumed. Energy dense, nutrient poor foods are major contributors to overall energy imbalances as these foods have high caloric values and low to zero nutrient contributions. The main causes for increases in energy consumption for Canadian children have been found to be increased portion sizes, increased intake of fatty and processed foods and increased consumption of sugary beverages (9). In addition, limited consumption of nutrient rich foods such as fruit and

vegetables and dairy products is a contributing factor to obesity and poor health status, along with reductions in physical activity (24-26).

Data obtained from the 2004 Canadian Community Health Survey (CCHS) (27) reveal that, on average, Canadian children aged 4-18 years are deriving 31% of their total energy intake from grain products followed by 22% from the "other foods" category. The top three foods and beverages accounting for most calories from "other foods" were soft drinks, salad dressings, and sugars and syrups (27). US data demonstrate similar results, whereby findings from four nationally representative surveys conducted between the years of 1977 to 2006 showed increased food consumption related to snacking (28). Snacking trends of US children have increased by an average of 113 calories per day; the largest increases have been in salty snacks and candy, although desserts and sweetened beverages remain the major source of calories from snacks (28). Additionally, Canadian children did not meet Health Canada's recommended intakes for fruit and vegetables or milk products; reported consumption was 4.5 servings of fruit and vegetables and 2.3 servings of milk products (27). Specific statistics for Alberta were not available; however, data were available for the "prairie" provinces. These data showed slightly higher rates for calories consumed from "other foods" at 24% and slightly lower rates for servings in all other food group categories except for fruit and vegetables where there was a significant difference noted with intake at 4 servings per day (27,29). It is important to note that because these data represent Alberta, Saskatchewan and Manitoba, it may be more difficult to generalize to children living in Alberta specifically as the prevalence of overweight children and youth was found to be slightly lower than the national average (10).

In contrast, specific data for Alberta is available for the distribution of percentage of calories consumed from fat, protein and carbohydrates. For Albertan children aged 4-18 years, these values were reported at 30.2%, 14.7% and 54.8%, respectively (29). Food sources for the macronutrient distributions were not reported. Therefore, although the distributions are within the acceptable range for age for all three macronutrients (30) the dietary quality is not known.

These data demonstrate the lack of information available regarding food consumption patterns for children in Alberta. More research is required in this area as optimal nutrition is critical during childhood to ensure proper development and to lay the foundation for future health. Childhood is a time when important health perceptions and behaviours are formed that may persist into adulthood. As such, this is an ideal time to begin teaching children the importance of healthy eating and to support the development of healthy eating behaviours.

1.2.4 Childcare in Canada

In Canada, rates of use for childcare outside the home have been consistently increasing. It has been reported that children are spending more time in childcare outside the home then they were 15 years ago (31). An overview of childcare in Canada as reported by Canadian families to the National Longitudinal Survey of Children and Youth (NLSCY) was produced in 2006 as a report by Statistics Canada. The report (31) profiles childcare experiences of children aged six months to five years over the eight year period from 1994-1995 to 2002-2003.

A summary of the findings from the report indicate that, nationally, in 2002-2003, about 54% of Canadian children aged six months to five years of age were in some

type of non-parental childcare[1] (31). This rate represents a significant increase from the 42% of children in non-parental childcare eight years earlier in 1994-1995. The rise in rates occurred for children from almost all backgrounds, regardless of geographic location, household income, family structure, parental employment status or parental place of birth (31). The biggest increase was in daycare centre usage where the rate rose from 20% in 1994-1995 to 28% in 2002-2003. 'Other' care, which includes nursery school or preschool, before or after school programs, or other unspecified non-parental care, accounted for 5% and the rates remained relatively stable between 1994-1995 and 2002-2003 (31).

Time spent in non-parental childcare varied as a function of many factors. However, taking into account all reported non-parental care arrangements, in 2002-2003 children spent approximately 29 hours per week in all of their arrangements combined (31). In terms of full-time care, 52% of children were full-time (30+ hours per week) in all of their arrangements combined (31). Children whose main care arrangement was a daycare centre spent more time there per week (31 hours), on average, than did children in any other kind of non-parental care arrangement (31). These data indicate that children aged six months to five years are, on average, spending six hours per day (36%) of their time (based on 12 hour days) in childcare representing approximately one-half to two-thirds of meals and/or snacks that are to be provided for by childcare facilities. As a result, childcare facilities represent an ideal setting to implement and evaluate policy interventions because they are an important venue for

[1] Non-parental childcare refers to the care of a child by someone other than a parent or guardian. These different types of care arrangements fall into the following six categories: 1. Care outside the child's home by a non-relative (does **not** include daycare centres); 2. Care outside the child's home by a relative; 3. Care in the child's home by a non-relative; 4. Care in the child's home by a relative (including care by a sibling); 5. Care in a daycare centre; and 6. 'Other' care which includes nursery school or preschool, before or after school programs, or other unspecified non-parental care.

targeting large numbers of children.

1.2.5 Nutrition and Childcare

There are few studies that examine the consumption patterns and the dietary quality of children's diets in childcare centres. Examining the link between childcare centres and children's consumption patterns is an emerging area of interest. As a result, preschool-aged children represent an underserved population with respect to studies and programs (32,33). There is little reported in the peer-reviewed literature and underreporting and under evaluation is a problem with this age group. There are limitations to conducting evaluations in a systematic fashion due to the different types of childcare facilities and the difficulty in monitoring them, such as with private day homes. A one-size-fits-all approach is unlikely to work in all childcare centres due to their varied organizational structures. As well, follow-up has been noted as a difficulty with this population due to the transient nature of enrolment in childcare facilities as a result of parents changing centres and children moving on to school as they age (33). Longitudinal studies are needed to get a firm understanding of the factors involved in addressing this issue and parental commitment is critical. Consequently, little is known regarding the dietary patterns of children in childcare centres across Canada. However, reviewing the literature on studies conducted in the US suggests that children may not be meeting their nutritional requirements.

More than 25% of federally funded daycares in the US are not providing the recommended minimum number of daily servings of fruits and vegetables (34-36). French fries and baked potatoes are the most common vegetables provided in US daycares; while sweetened beverages represent the major source of fruit (37). In other

surveys of dietary intake of preschool children in daycares, children consistently failed to meet food pyramid recommendations for grains and vegetables (38,39). Under consumption of bread, cereal, pasta, and rice were especially notable at the childcare centres (40). According to these data, childcare facilities in the US may not be providing children with the recommended variety and types of food that are needed to meet their nutritional requirements. Often energy requirements are met but not micronutrient.

In Canada, there is little data available regarding the nutritional adequacy of foods provided in childcare centres. However, evidence to date support findings consistent with the US. A review of the literature produced two studies regarding the nutritional adequacy of foods provided outlined in menu plans in childcare centres. The first study conducted in 35 childcare centres across Nova Scotia looked at the nutritional adequacy and quality of the foods served in licensed full-day childcare centres by evaluating current four-week menu plans provided by each centre (41). Menus were compared with Dietary Reference Intakes (DRIs). It was found that calories were insufficient in 64% of childcare centres. Only 46% of centres had menus that provided at least 45% of calories from carbohydrates and no menus provided one-third of the Adequate Intake (AI) for fibre and Vitamin D or one-third of the Recommended Dietary Allowance (RDA) for Vitamin E. In addition, menus were inadequate for fat (18% of centres), calcium (21% of centres), iron (32% of centres), and folate (57% of centres) (41). Overall menu quality showed that the majority of menus met criteria for milk and milk products (82%) and fruits and vegetables (75%). However, just over half of menus met the criteria for breads and grains (57%) and less than half of menus met the criteria for meat and meat alternatives (43%) (41). These results show that childcare menus in

Nova Scotia were not providing one-third of the daily nutrient requirements as specified by Nova Scotia legislation (42).

The second study conducted in three childcare centres in Hamilton, Ontario examined the challenges faced by childcare staff in supporting healthy eating among preschoolers (43). Based on a social ecological model, the qualitative study conducted focus groups and interviews to identify intra- and interpersonal factors and factors related to the physical environment. Intrapersonal factors were children's picky eating behaviours; some children would not eat at all, others would only eat single foods such as bread, and some would only eat foods they liked (43). Interpersonal factors included behaviour of parents and staff members; parents often encouraged unhealthy eating by telling their children it is okay to not eat the foods they do not like, such as vegetables, and staff members often used practices inconsistent with health professional recommendations such as bribing children with dessert to encourage eating (43). Physical environment factors included a lack of accessibility to adequate amounts and types of healthy food and perceptions from childcare workers that "some parents do not consider their children's healthy eating a priority" and "that children have unhealthy food at home" (43). This evidence suggests that further research in these areas is needed to get a better understanding of the nutritional quality of menus in childcare centres in Canada as well as the factors that affect implementation of healthy eating practices. In addition, it demonstrates a critical need to evaluate the adoption of the ANGCY, particularly in settings such as the childcare setting where children spend a substantial component of their time and where the potential to influence dietary intake is high. The lack of evidence regarding organizational factors that affect adoption and implementation of nutrition guidelines in childcare settings such as dissemination

strategies and the structural and contextual characteristics of childcare centres emphasizes the need for formative and process evaluations to determine the influence of these factors on uptake behaviour.

1.3 Behaviour Change Theories

Childcare organizations provide us with a unique condition when examining organizational behaviour change. Due to differing dynamics in organizational structure, the characteristics and behaviour principles of childcare organizations are difficult to define and, typically, do not fit into either individual or organizational categories of classification with respect to behaviour change. Depending on the construct of the facility, childcare organizations may be highly formalized (for example if it is a very large organization), individual (such as with day homes), or be positioned somewhere in the middle (such as with daycares). Childcare organizations within the different organizational structures may then represent three different environments in which to assess the models of behavioural change; thus, highlighting the need to apply a theory that is both relevant and adaptable to different constructs.

In selecting a theory that was well suited to examine behaviour change in childcare organizations a review of some commonly used theories in nutrition was conducted. The following section will review the Health Belief Model, the Transtheoretical Model and Stages of Change, Social Cognitive Theory, Organizational Theory, and Diffusions of Innovations. These theories were selected to highlight differences between individual and organizational theories to provide a rationale for the use of Diffusion of Innovations as the theoretical framework for the study design. A summary of each theory will be provided delineating a brief history, strengths and

limitations, relevance to the topic, and, finally, a justification for exclusion or inclusion. Table 1 (p. 23) is a summary of the proceeding list of theories.

1.3.1 The Health Belief Model

The Health Belief Model (HBM) is a psychological model used to explain and predict health behaviours (44). The HBM was first developed in the 1950s to explain the widespread failure of people to participate in programs to prevent and detect disease (45). Since that time the model has been extended and revised growing to focus on the attitudes and beliefs of individuals and has become one of the most widely used models in health behaviour (45). Today, the HBM is categorized as a value-expectancy cognitive theory. Value-expectancy is an individual's perception that an action will result in an expected outcome. The important point here is perception. The likelihood of performing a health-related action is based on a cost benefit analysis of what would happen if the individual did not perform that action.

The key concepts of the HBM are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (45). The individual not only needs to feel personally threatened by not taking an action but, also, must perceive high value in an expected outcome and have the confidence in their ability to take action. In other words, it is an individual's estimate of personal susceptibility to and severity of an illness, and of the likelihood of being able to reduce that threat through personal action (45).

Although, the HBM can be applied to understanding perceived barriers of a health behaviour it applies to individual behaviour change and perceptions about oneself; it does not explain the behaviour of the organization as a whole. One could

argue that organizations are comprised of many individuals and, therefore, individual behavioural theories could explain organizational behaviour; however, in this case, the HBM lacks causality and linking agents for behaviour change that affects others. It does not explore the interpersonal links of organizational behaviour nor does it explain the processes and strategies of adoption. Therefore, for the intent and purpose of this study, the HBM is not a practical theory to apply when examining the factors influencing the adoption of nutrition policies.

1.3.2 The Transtheoretical Model and Stages of Change

Unlike the HBM that explains change as an action that occurs at a single point in time, the Transtheoretical Model (TTM) describes change as a continuum of changes, hence the name Stages of Change (46). The TTM has concentrated on five stages of change, ten processes of change, the pros and cons of changing, self-efficacy, and temptation and is based on critical assumptions about the nature of change and interventions that can best facilitate such change (45). For each step or stage in the process something different is occurring such that different theories are applicable (46). In other words, the TTM divides the process of change into multiple stages utilizing different theories and models of behavioural change depending on where the individual is in the continuum of change.

Using a *transtheoretical* approach to move through the stages enables the tailoring of programs and interventions to target the specific needs of each stage. For example, in early stages people apply cognitive, affective, and evaluative processes to progress, whereas in later stages they rely more on commitments, conditioning, contingencies, environmental controls, and support (45). This can be a very effective

strategy for designing programs and interventions and, also, for evaluating the success or failure of such efforts. However, it also suggests that the progress people make following health promotion programs directly relates to the stage they were in at the start of the intervention (45). In that case, we could hypothesize that early adopters were already in a stage set for action such as contemplation or preparation. If receiving the guidelines was the instigator for progressing to the next stage leading to adoption then that could possibly explain why they were able to adopt the guidelines so quickly.

Although, the TTM is categorized as an individual behavioural change theory, it could be applied to an organizational construct to locate the stage of change the organization is in such as was done in Phase 1 of the study to assess *awareness of* and *intent-to-use* the guidelines. However, to go beyond understanding movement through the stages of change a more comprehensive theory would be a more practical approach to understand not only how and why early adopter organizations were able to adopt the guidelines but also to uncover the organizational processes and strategies these organizations used and had available to them.

1.3.3 Social Cognitive Theory

Social Cognitive Theory (SCT) synthesizes cognitive, emotional, and behaviouristic principles of behaviour change as a function of environment (45). SCT is built on the concepts of Social Learning Theory (SLT) which posits that behaviour is a result of observational learning and motivation (46). That is, if an individual is motivated to learn a new behaviour they can achieve change through observational learning. Observational learning has two important features; it teaches the individual how to perform the behaviour through modeling and it demonstrates the consequence of

performing or not performing the behaviour such as positive or negative reinforcement (46). However, SLT lacked causality between having the confidence and skill to perform the behaviour and between environment and behaviour. As a result, Albert Bandura extended this theory by including the concepts of self-efficacy and reciprocal determinism resulting in the conception of SCT (47,48).

Self-efficacy extends SLT by suggesting that motivation alone is not sufficient to achieve a change in behaviour; individuals must also have the confidence in their ability to perform the behaviour. Moreover, reciprocal determinism is the idea that behaviour is the result of the interaction between environment, person, and behaviour. It is this notion of reciprocal determinism that revolutionized SCT taking it from an individual theory to a social ecological theory. The idea that behaviour is a consequence of the interaction between environment, person, and behaviour, i.e., reciprocal determinism, led to its use as a framework for understanding and integrating organizational and individual approaches to health behaviour change (45) and, as a result, has provided the foundation for many school health promotion programs (49).

Examples of school health promotion programs using SCT as the theoretical framework can be seen in trials such as the Child and Adolescent Trial for Cardiovascular Health (CATCH) and Gimme 5 Fruit, Juice and Vegetables for Fun and Health that were designed to improve nutrition and/or physical activity in school-aged children (50,51). The premise for these interventions was the interrelatedness of environment, personal, and behavioural factors (50,51). Outcome evaluation measures for the CATCH trial included fat content of foods offered at schools, the amount of moderate-to-vigorous physical activity of physical education classes, and physiological and psychosocial factors (50). The Gimme 5 trial measured the increase in consumption of fruit, juice, and

vegetables along with psychosocial measures (51). As these studies illustrate, SCT is effective for developing and evaluating interventions that target both intra- and interpersonal behaviour change; however, is not typically applied as an organizing framework for understanding organizational behaviour change because it lacks the constructs needed to evaluate the structural characteristics and the operational procedures of an organization. For the purpose of this study, we want to go beyond exploring the social ecological connections and delve deeper into the process of adoption.

1.3.4 Organizational Development Theory

Organizational Development Theory (OD) uses a human relations perspective to improving organizational effectiveness (45). OD is a set of planned activities, based on the behavioural sciences, initiated and facilitated by a consultant, designed to improve both organizational performance and quality of work life (45,52). That is, OD is the process of designing and implementing interventions based on behaviour change theories to improve organizational functioning and/or performance by improving human relations. OD is based on three concepts: organizational climate, organizational culture, and organizational capacity. The basic premise is that the three concepts are interrelated; climate and culture of an organization affect its capacity to function effectively and the overall capacity, in turn, affects the climate and culture of the organization (45). However, to change climate, culture, or capacity, a strategy called action research is most often employed.

Action research is based on Lewin's unfreezing, moving, and refreezing strategy, and consists of four steps: diagnosis, action planning, intervention, and evaluation (45).

As the name implies, action research is a directed approach to problem solving. Essentially, once an organization identifies a problem or a need, *diagnosis*, the next step is to plan an intervention to fulfill the need, *action planning*. During action planning the organization must take inventory of all available resources and strategies to develop the best course of action. Once a plan of action has been established the *intervention* can be implemented and after adequate time has passed the intervention goes through an *evaluation* process to evaluate the progress of change. An important and unique feature of OD is that action research requires a consultant for both diagnosis of the initial problem/need of the organization and problem solving among its members throughout the entire process (45). This caveat alone implies that OD is for large organizations that have both the monetary and human capital to warrant such a need. The organizations we are exploring, however, do not possess this type of capital.

Additionally, although OD addresses organizational processes and strategies and does so by acknowledging the interrelated connection between climate, culture, and capacity, we are examining more than the intra- and interpersonal effects of organizational functioning, and more than the processes and strategies of organizational change. We are not trying to improve organizational performance or effectiveness. We are trying to understand why organizational performance was effective. Moreover, we are examining the effects of the dissemination of the guidelines and the reasons for adoption behaviour. Within that we will be looking at the social ecological connections and the organizational processes and strategies that enabled adoption of the guidelines but, specifically, we want to examine the diffusion process and the extent of adoption. Accordingly, then, the most practical approach to explore these questions is to use Diffusion of Innovations theory to guide the overall design of the study.

1.3.5 Diffusion of Innovations

Diffusion of Innovations is a framework for understanding the process of adoption by explaining how, why and at what rate innovations are adopted among members of a social system (1). The goal of Diffusion theory is "to identify predictable patterns of program adoption among a variety of population groups and across a range of innovations" (53). Essentially, Diffusion theory attempts to understand and explain how and why innovations diffuse across populations and tries to identify the strategies and processes by which adoption of innovations occur.

Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system; a kind of social change by which alteration occurs in the structure and function of a social system" (1). An innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (1). It is important to note, however, that as long as the idea, practice, or object is *perceived* as new by the individual or organization it is considered an innovation; *new* is not objective but, rather, subjective to the user.

Uptake, or adoption, of an innovation can vary greatly between users due to factors such as communication of the innovation and the relative characteristics of innovations as perceived by individuals. Communication of an innovation, *diffusion*, can occur passively, as the natural flow of information, or actively, as a direct approach for knowledge transfer referred to as dissemination (1). Active dissemination increases the rate of *awareness* of an innovation for potential users; however, knowledge of an innovation does not mean it will be adopted nor does it explain the rate of adoption between users. For example, the ANGCY were actively disseminated to 3300 childcare

facilities in Alberta yet not all facilities adopted the guidelines and for those that did, the rates of adoption varied greatly (54).

Rogers (1) lists five characteristics of innovations that help to explain their different rates of adoption: 1) relative advantage; 2) compatibility; 3) complexity; 4) trialability; and 5) observability. How individuals perceive these characteristics affects their rate of adoption. For example, innovations that are perceived as having greater relative advantage, compatibility, trialability and observability and lower complexity will be adopted more rapidly than others (1). Therefore, the theory would predict that childcare facilities characterized as early adopters perceived the guidelines as having a relative advantage to what they were previously using; were compatible with their current goals and objectives; not difficult to understand or communicate; simple to try; and easy to see results. Diffusion of Innovations theory, however, states that innovation in organizations is also influenced by structural characteristics and organizational innovativeness that need to be considered.

Rogers (1) lists six structural characteristics that influence innovation in organizations: 1) centralization (the degree to which power and control in an organization are concentrated to only a few individuals); 2) complexity (the level of knowledge and expertise of members); 3) formalization (the degree to which bureaucracy is emphasized); 4) interconnectedness (the degree of interpersonal networks); 5) organizational slack (the level of available resources); and 6) size (the size of the organization relative to the number of personnel and total assets). In agreement with Rogers, a meta-analysis of manufacturing and service organizations found that organizations will adopt innovations more readily if they are decentralized, have a high degree of professional knowledge and specialization, have a low degree of formalization

functioning with small autonomous units, have a high degree of interconnectedness, a high degree of slack resources, and large size (1,55). On the other hand, organizational innovativeness is related to individual characteristics such as leadership, internal organizational structural characteristics (as listed above), and external characteristics of the organization such as system openness (the degree to which individuals within the organization are linked to individuals outside the organization) (1). Interestingly, though, studies have consistently found a low correlation between structural characteristics and organizational innovativeness (1,55). Although both structural characteristics and organizational innovativeness consistently show significant, positive associations, they do not appear to be correlated (1,55). That is, structural characteristics show a positive correlation to organizational innovativeness as do organizational innovativeness determinants; however, they do not show a significant influence on one another. With respect to childcare organizations, the organization could have excellent leadership such as a "health champion" that is well connected to other outside health promoting organizations but not have the structural characteristics of large organizations and still be an innovative leader or, rather, an early adopter. For example, health champions have been found to be a key determinant in the adoption of school nutrition policies regardless of the presence or absence of structural factors; internal motivation and personal beliefs were shown to be the prime motivator for wanting to adopt the ANGCY in schools independent of structural characteristics (56).

Diffusion of Innovations theory is a framework for understanding the factors that influence adoption of innovations and adopter characteristics for both individuals and organizations. Using Diffusion of Innovations theory provides us with an organizing framework to not only explore the multiple levels of involvement but, also, to examine

the structural characteristics of the organization as well as the organizational processes and strategies influencing adoption of the guidelines. In addition, Diffusion theory includes a third element: it examines adopter characteristics using an ecological approach by looking at outside factors such as social networks and organizational characteristics that influence both diffusion and adoption of innovations. This is important in understanding the characteristics of childcare facilities as they are unique settings and, therefore, require a theory that takes a multilevel approach.

Table 1. Overview of Behaviour Change Theories.

Behaviour Change Theories					
Theory	**Classification & Description**	**Strengths**	**Limitations**	**Best Fit (Yes or No)**	**Justification**
Health Belief Model	• Individual • Value-expectancy cognitive theory	• Framework for understanding attitudes and beliefs of individual behaviour • Acknowledges the influence of perception and self-efficacy in shaping behaviour	• Does not explore interpersonal links or structural characteristics involved in organizational behaviour	No	• Applies to individual behaviour change and perceptions about oneself • Does not have the capacity to explain or understand organizational behaviour
Transtheoretical Model and Stages of Change	• Individual • Stage construct involving multiple theories/models	• Enables tailoring of programs/interventi ons to specific behaviours • Describes change as a continuum of changes; acknowledges time	• Does not explore interpersonal links or structural characteristics involved in organizational behaviour	No	• Relates success/failure of interventions to stage individuals were in at time of intervention, i.e., useful only if facilities were ready to take action upon receiving the guidelines • Does not explain structural characteristics or processes used by organizations
Social Cognitive Theory	• Based on SLT • Synthesizes	• Behaviour is depicted as dynamic	• Emphasizes intra- and interpersonal	No	• Can be used to evaluate intra- and

	cognitive, emotional, behaviouristic principles as a function of environment	• Explores interpersonal links between person and environment, i.e., "reciprocal determinism"	factors and their effects at the individual level		interpersonal behaviour change • Does not explain structural characteristics or processes used by organizations
Organizational Development Theory	• Based on the interrelatedness of organizational climate, culture and capacity • Uses action research strategy	• Takes a human relations perspective • Acknowledges ecological connection	• Use of external consultant required • Not useful for small organizations • Requires high capital/resources	No	• Addresses organizational processes and strategies as a means of improving organizational performance and quality of work life • Useful for large organizations
Diffusion of Innovations	• Explains how, why and at what rate innovations spread through culture • Identifies predictable patterns of program adoption	• Emphasizes intra- and interpersonal factors at the macro level, i.e., at the organizational level while also acknowledging the individual level • Takes an ecological perspective • Acknowledges social networks and physical environment	• Not useful for understanding why adoption does not occur as unsuccessful diffusion efforts are difficult to trace	Yes	• Addresses organizational processes and strategies • Explains structural characteristics and processes used by organizations • Examines adopter characteristics through multilevel approach • Considers interrelatedness of multiple levels

1.4 Alberta Nutrition Guidelines for Children and Youth: Childcare Centres

The ANGCY were developed "in response to requests from individuals and organizations who work with children and youth for guidance to create supportive environments that enable healthy food choices" and are intended "to promote and achieve optimal growth, development, and overall health for children and youth" (2).

It is recognized that many meals and snacks are consumed outside of the home; on average, preschool- and school-aged children consume approximately one-third to two-thirds of meals and snacks in daycare or in school (3,31). Therefore, it is important to

ensure that children have access to healthy and nutritious food choices wherever they go. In light of that, the goal of the guidelines is "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" (2). The guidelines provide practical examples of nutrition recommendations such as serving size, food group categories, and how to meet serving requirements to list a few. This initiative was led by Alberta Health and Wellness, in partnership with the Ministries of Children's Services, Education, Tourism, Parks and Recreation, Municipal Affairs and Alberta Agriculture and is one of the first initiatives to bring together several interprovincial sectors. Dissemination of this educational resource for Albertans to promote healthy eating behaviours within healthy environments was limited to passive dissemination strategies consisting of 3300 printed copies of the guidelines distributed to childcare facilities via mail, including an electronic format accessible to public on the Government of Alberta Website (2). Updates of this resource are limited to Web-based access (57) and printed materials are no longer distributed.

1.5 Study Rationale

This study is part of two phases of an evaluation framework of a larger study evaluating the adoption and implementation of the ANGCY in multiple settings: schools, childcare facilities, and recreational facilities. Phase 1 of the study addressed **awareness of** and **intent-to-use** the guidelines by conducting telephone surveys with 488 childcare facilities in Alberta (488 out of 602 randomly selected facilities resulting in an 81% response rate) during the months of May-October of 2009. Phase 2 of the study

evaluated **adoption** of the guidelines in the multiple settings. Results from Phase 1 were used to inform and guide the development of Phase 2.

Phase 1

In Phase 1, both urban and rural childcare centres were surveyed including daycare programs, out-of-school care programs, and preschool programs[2] representing a cross-section of Alberta. Of the childcare centres surveyed, 65% were aware of the ANGCY and of the three types of programs, daycare programs had the highest rate of awareness. Urban facilities, centres with a health champion, and centres with someone in charge of food service were significantly more likely to be adopters. Key barriers associated with implementation of the ANGCY were parents' resistance and lack of knowledge, cost, and children's preferences (54).

Phase 2

Building on the findings from Phase 1, this thesis specifically examined organizational behaviour change in childcare facilities by evaluating the **early adoption** of the guidelines using Diffusion of Innovations as the theoretical framework. Diffusion of Innovations (1) theory offers a systematic explanation for adopting an innovation. Diffusion theory sets forth that the perceived attributes of innovations such as relative advantage, compatibility, complexity, trialability, and observability affect adoption of an innovation (1). These factors have been identified by several studies as aspects of the innovation that may have an impact on the rate of adoption.

[2] "Daycare program" was defined as a childcare program provided to infants, pre-school children and kindergarten children for four or more consecutive hours per day. "Out-of-school care program" was defined as a childcare program provided to kindergarten children and school-aged children in any or all of the following periods: before and after school, during the lunch hour, and when schools are closed. "Pre-school program" was defined as a childcare program provided to pre-school children and kindergarten children for less than four hours per day (59).

1.6 Use of DoI as a Framework to Evaluate Early Adoption of the ANGCY

Many studies have investigated the outcomes of nutrition interventions relating to changes in anthropometric measures, knowledge and/or behaviour. However, there is a gap in the literature regarding the evaluation of food environments and the implementation of food policies, and even less is known about how these variables influence organizational behaviour, particularly in the childcare setting. The purpose of this research was to assess to what degree the guidelines have been adopted in childcare organizations in Alberta and to identify what variables influenced how and why these particular organizations adopted these guidelines. It is important to understand the behavioural components involved in policy adoption and implementation, and this was examined using a Diffusion of Innovations theoretic framework. DoI theory provides a framework for examining the factors that may influence the adoption and maintenance of new practices in society, such as health policies, by describing the elements of the diffusion process and the progression of social change (1).

It is widely recognized that behaviour is influenced by factors at multiple levels. The failure of many large-scale behavioural interventions has illustrated the importance of context in understanding behaviour (58). In other words, behaviour needs to be recognized as a result of the interaction with and among the surrounding environment. The ecological framework is built on this concept positing that individual, interpersonal, community, organizational, and governmental factors interact to influence health (45). With this reasoning, behaviour change in childcare organizations was evaluated at three levels: 1) the organizational level, 2) the individual level, and 3) the food environment to understand the factors and the connections among these variables that influenced the

early adoption of the guidelines. Given that organizations are comprised of many layers ranging from the surrounding environment to the overall organizational structure to networking groups to individual members, we also assessed the effect of these layers on the intent to adopt the guidelines using an ecological perspective (45). This enabled us to study the influence of different organizational processes on guideline adoption and helped us to understand how this influences behavioural components of policy adoption and implementation.

Evaluating adoption of the guidelines is significant for the following reasons: 1) assessing childcare provider perceptions of the characteristics of the guidelines will serve as a baseline *formative* evaluation for the guidelines which will contribute to the improvement of the guidelines. 2) The *level* of adoption will give insight to the extent of implementation of the guidelines childcare facilities are practicing. Extent of implementation indicates changes in the food environment as well as the nutritional adequacy of the meals/snacks children are eating relative to the recommendations specified in the guidelines, subsequently, indicating the level of adherence to the guidelines. And finally, 3) the *process* of adoption describes how the childcare facilities implemented the guidelines. Through this assessment, the resources, processes and strategies used by the organization were identified. In addition, by understanding the process of adoption the barriers and challenges faced along the way as well as the facilitators and supports that aided the implementation of the guidelines were ascertained.

The findings from this study will potentially inform health practitioners and policy makers both locally and nationally of the factors that may affect organizational change and the factors leading to adoption of nutrition guidelines in childcare facilities.

Describing the process of adoption may serve as a framework for understanding organizational behaviour change in childcare facilities by outlining the factors involved in the adoption process. In addition, evaluating childcare provider perception of the guidelines and adoption of the guidelines in childcare organizations will contribute to the overall evaluation of the guidelines targeted to children and youth.

1.7 Research Questions and Objectives

There is little published information that examines the characteristics of the childcare setting and the adoption of nutrition guidelines; therefore, it is worthy of further exploration. To understand the factors that affect adoption of nutrition guidelines, it is important to understand the factors that affect and influence behaviour that lead to adoption within the setting that adoption occurs. In other words, understanding the factors that lead to change within the organization is key. In this case, that means understanding the factors that played a role in the adoption of the ANGCY in the childcare setting, such as the factors that led to the decision to adopt the guidelines and the barriers and challenges faced throughout the implementation process. Thus, this study explored behaviour change at the organizational level.

Behaviour change at the organizational level is influenced by factors that affect the individual, the organization, and the environment. This represents a triadic relationship, possibly, with reciprocal influences. As such, there are three major areas influencing behaviour change of the organization that required investigation: 1) adoption of the guidelines, 2) organizational processes and strategies, and 3) the nutrition environment. Diffusion of Innovations theory (1) was used as the framework for understanding the factors that influence adoption because it considers adopter characteristics for both

individuals and organizations. In addition, Diffusion theory includes a third element: it examines adopter characteristics using an ecological approach by looking at external factors such as social networks and organizational characteristics that influence both diffusion and adoption of innovations.

1.7.1 Research Questions

Adoption of the Guidelines

Adoption of the guidelines was assessed at both the individual and organizational levels by examining the following objectives:

1. What factors (barriers and/or facilitators) influenced adoption of the guidelines?
2. How were the guidelines perceived in terms of:
    a. Relative advantage to what was currently in use?
    b. Compatibility with current practices?
    c. Complexity of the guidelines?
    d. Trialability of the guidelines?
    e. Observability of change, i.e., was a change in dietary practice observed?

Organizational Processes and Strategies

Organizational behaviour change was assessed by examining the following objectives:

1. What are the structural characteristics of early adopter organizations:

a. What is the degree of centralization within the organization, i.e., how is authority divided within the organization?
b. What is the degree of formalization within the organization, i.e., the degree to which bureaucracy is emphasized?
c. What is the degree of complexity within the organization, i.e., the level of knowledge and expertise of members?
d. What is the degree of interconnectedness within the organization, i.e., do any interpersonal networks exist within the organization?

2. What processes and strategies did early adopter organizations use to adopt the guidelines?

Nutrition Environment

The nutrition environment was evaluated with the following objectives:

1. What foods are provided to children for snacks/meals and are those foods in accordance with the ANGCY guidelines?

Thus, the overall aim of this research was to understand how and why some childcare facilities were able to adopt the ANGCY. By identifying the barriers and facilitators to adoption of the guidelines and uncovering the structural characteristics and the processes and strategies used by the organization in the adoption and implementation of the guidelines we hoped to better understand behaviour change in childcare organizations. Additionally, examination of the food environment provided us with some insight as to the nutritional quality of childcare menus in Alberta.

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Chapter 2: Methods

2.1 Methods

This Master's thesis was part of the Phase 2 evaluation framework of The Alberta Nutrition Guidelines Outcomes (TANGO) study, funded by the Canadian Institutes of Health Research, evaluating the implementation of the ANGCY in multiple settings: schools, childcare facilities, and recreational facilities (1). In Phase 1 of TANGO, *awareness of* and *intent-to-use* the guidelines was assessed in 488 childcare facilities in Alberta, Canada (May – October 2009) using a cross-sectional telephone survey based on the Stages of Change constructs (2) which addressed key concepts related to awareness, adoption and barriers to implementing the guidelines in childcare facilities. The Phase 2 evaluation addressed uptake of the ANGCY in the multiple settings (schools, childcare facilities and recreational facilities). Case studies were conducted in the three settings to get an in-depth understanding of the processes and factors affecting *adoption* and *implementation* of the guidelines such as dissemination, guideline content, and organizational characteristics. Case selection for Phase 2 was based on early adopter characteristics identified in Phase 1.

2.1.1 Overview of Phase 1 Study Design and Results

Phase 1 of TANGO was a cross-sectional telephone survey of childcare facilities in Alberta, Canada that addressed *awareness of* and *intent-to-use* the ANGCY. Of approximately 1800 licensed childcare facilities in Alberta, 674 were randomly selected to take part in the study. Childcare facilities included both urban and rural daycare programs, out-of-school care programs, and preschool programs. The telephone survey

consisted of a combination of 17 closed- and open-ended questions (Appendix A). Survey questions addressed organizational characteristics, organizational structure, and awareness of and intent-to-use the guidelines. Closed-ended questions addressed specifics related to: number of children, number of staff, whether there was someone in charge of food service, whether there was someone very involved in promoting the guidelines, that is a health champion, level of priority given to healthy eating and whether that priority had changed within the last year, current nutrition policies (if any), awareness of the ANGCY, and intent to use the guidelines. Open-ended questions were used to supplement closed-ended questions to provide more information on participant responses. Open-ended questions addressed description of nutrition policies, awareness of the ANGCY, changes made by centres to improve the nutritional quality of foods offered, intent to use the guidelines, and barriers to implementing the guidelines. A total of 488 centres participated in the survey; however, centres that were unaware of the guidelines were not asked survey questions related specifically to adoption, intent-to-use, or implementation.

Adoption of the guidelines was based on the Stages of Change constructs (2). Respondents rated their facilities as being in 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 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) (3). Childcare centres that were in the preparation, action or maintenance stages of change were defined as adopters of the guidelines whereas centres in the pre-

contemplation or contemplation stages were defined as non-adopters. These criteria were determined during Phase 1 of the study. The following sections will describe results only pertinent to Phase 2.

Overall, 488 childcare centres participated in the Phase 1 telephone surveys representing a 72% response rate (1). Of the 488 childcare centres that participated in the study, 65% were aware of the ANGCY. Among the childcare centres surveyed, daycare centres had the highest rate of awareness at 72% compared to out-of-school care programs (61%) and preschool programs (60%). Of the childcare centres that were aware of the guidelines, 13% were in the pre-contemplation stage, 15% were in the contemplation stage, 20% were in the preparation stage, 20% were in the action stage, and 32% were in the maintenance stage. Adopters reported the most common ways for using the guidelines was as a resource for menu planning and as a reference source for child and parental nutrition education. The most common barriers to using the guidelines reported by adopters were parents' resistance and lack of knowledge, cost, and children's eating preferences. The main reasons for not using the ANGCY reported by non-adopters were the existence of other guidelines or policies, cost, lack of time, and lack of knowledge. For a complete review of the Phase 1 results, see Farmer et al. (3). The results of Phase 1 were used to inform and guide the design of Phase 2.

The intent of this Master's thesis was to assess adoption and implementation of the ANGCY in childcare centres. As such, only childcare centres that were aware of the guidelines and had implemented them for a period of six months or greater, and therefore, 101 centres (21%) were selected for further investigation. The following sections describe the methodology for Phase 2 of the study.

2.1.2 Study Design

Due to gaps in the literature regarding uptake of nutrition guidelines in childcare settings, an exploratory case methodology was used to try to build a theoretical basis for understanding this process. DoI served as a framework to guide the development of the evaluation and analysis of the research. Multiple case study method was used to explore two exemplary cases and an intrinsic case analysis was undertaken with each case. A multiple case design refers to the use of more than one individual case study in various settings and is often used as an exploratory approach to gaining an in-depth understanding of the processes involved in specific innovations (4). Exemplary cases were selected to gain an understanding of what is unique or different about them to try to understand how and why some centres were able to adopt the guidelines while other were not. Intrinsic case study is undertaken when a deeper understanding of the case is required (5) and when the focus of the study is on the case itself because the case represents an unusual or unique situation (6).

The constructs from the DoI framework were used to guide the development of an interview protocol based on the perceived attributes of the guidelines, structural characteristics and organizational innovativeness. According to the DoI framework, attributes of the guidelines such as relative advantage, compatibility, complexity, trialability, and observability as perceived by childcare providers were considered. A priori framework was used to guide the analysis of the results spanning from guideline content, layout, organization, presentation, format, and comprehensiveness to dissemination in order to gain an understanding of how features of the guidelines affect the adoption process. In keeping with DoI, structural characteristics and organizational

innovativeness were used to identify the strategies and processes used by childcare centres in adopting and implementing the guidelines. Structural characteristics included: centralization (the degree to which authority in an organization is concentrated to only a few individuals), formalization (the degree to which an organization emphasizes following rules and procedures), and complexity (the degree of specialization of job roles). Organizational innovativeness addressed factors such as leadership, networking, organizational culture, and teamwork in childcare organizations (7). Analysis of these factors included: size of the organization, such as number of staff and number of children; ratio of staff to children; awareness of the guidelines; decision making within the centres; communication; information sharing; and childcare practices (Appendix B).

2.1.3 Sampling

Two urban daycare centres in Alberta, Canada, identified as "early adopters" were selected from a group of childcare centres ("daycare programs", "out-of-school care programs", and "pre-school programs") to examine the characteristics of the ANGCY. A "daycare program" was defined as a childcare program provided to infants, pre-school children and kindergarten children for four or more consecutive hours each day the program is provided; an "out-of-school care program" was defined as a childcare program provided to kindergarten children and school-aged children in any or all of the following periods: before and after school, during the lunch hour, and when schools are closed; and a "pre-school program" was defined as a childcare program provided to pre-school children and kindergarten children for less than four hours each day the program is provided (8). "Early adopters" were defined as "implementation strategies initiated

within one year of receiving the guidelines" (i.e., before December 2009). Cases were selected purposefully based on adopter characteristics identified from the initial cross-sectional telephone surveys conducted in Phase 1 (n=101). Inclusion criteria for case selection included: 1) centres had to have made changes to the nutritional quality of foods offered as a result of the ANGCY, 2) changes had to have been implemented for a period of six months or greater, and 3) centres must have granted consent and interest for further contact during the initial telephone surveys (n=66). Additionally, in trying to understand the unique features of early adopter centres, further selection criteria was defined to identify exemplary cases. Additional inclusion criteria included: 4) all meals/snacks had to be provided by the centre (to reduce external barriers to implementation) (n=27), and 5) degree of implementation as identified from responder comments was assessed. For example, sites with the greatest degree of implementation, i.e., sites that most closely followed the guidelines, were considered exemplary sites (n=6). Finally, in an effort to minimize differences between centres, due to the limited sample size, 6) only urban centres were considered for inclusion (n=4). This resulted in four childcare centres that were eligible for participation.

2.1.4 Access and Recruitment

Recruitment was based on a purposive sample (n=4) of centres that included the following: made changes to the nutritional quality of foods offered as a result of the ANGCY; implemented changes for a period of six months or greater; gave approval for further contact during the Phase 1 telephone surveys; provided all meals and snacks; were considered exemplary sites based on degree of implementation; and were located in urban geographical locations. Selected sites were contacted by telephone (see

Appendix C for initial telephone conversation) and informal meetings were held with directors at the potential centres to formally inform them about the study (Appendix D) and to ensure sites met the selection criteria listed above. Following confirmation of case selection, a formal consent process was undertaken with site directors for interviews (Appendix E) and direct observation (Appendix F). Recruitment of childcare staff was through provision of information sheets (Appendix D) and verbal notification by site directors and the researcher. In order to get a comprehensive organizational perspective, staff from each site were selected based on key positions held in the centre, such as directors and the cook and those with varying levels of experience. All staff underwent the same formal process of consent (Appendix E). Recruitment of parents was through provision of information sheets (Appendix G), a flyer posted at the centres (Appendix H) and verbal notification by site directors and the researcher. All parents underwent the same formal process of consent (Appendix I).

2.1.5 Data Collection

Data were collected through direct observation, key informant interviews, one focus group, documentation of field notes, and obtaining food menus. Using multiple types of data collection methods enhances the richness and rigor of the data. Direct observations, field notes, interview, and focus group data were coded and triangulated to give credibility to the data (4,5). Findings were analyzed separately, together then compared for reliability. Direct observation was carried out for two days between the hours of 08:30-13:30 and 11:30-14:30 at each site. Specific days were determined by childcare facilities; however, each site was observed for the same period of time and the same mealtimes were observed for consistency in data collection. Ideally, site visits

would have been unannounced to enhance rigor and avoid bias; however, this was not possible as both sites requested notification. Observational data and field notes were collected systematically based on a tool modified from Miles and Huberman (6) (Appendix J). The objective of the observations and field notes was to collect data regarding characteristics of the visit, the centre, and organizational procedures. Observational data documented specifics of site visits such as date, time, length of observation, number of staff, number of children, number of volunteers, and number of snacks/meals served. Additionally, observational data and field notes comprised of general attitudes at mealtimes, behaviors regarding adherence to the guidelines by childcare workers, and general observations regarding organizational procedures. Observational data and field notes captured physical characteristics of the center such as: descriptions of classrooms, priming and prompting of any messaging related to nutrition, descriptions of meals/snacks served, whether or not vending machines were present, and proximity of grocery stores in the area. Descriptions of behavioural characteristics at mealtimes were also noted, such as teacher-child interaction, teacher-teacher interaction, child-child interaction, teacher-parent interaction, and parent-child interaction. Finally, structural characteristics of the childcare centres were recorded and collected. Specifically, behavioural and procedural characteristics, such as degree of formalization, degree of centralization, and degree of complexity were noted and procedural manuals related to nutrition and/or health were collected.

A comprehensive review of menus offered at the childcare centres was conducted to determine if meals/snacks met the criteria for food groups as outlined in Alberta's daycare standards and policies (9) (meals must include all four food groups, snacks must include two food groups) and against the Food Rating System of the ANGCY for 'Choose

Most Often', 'Choose Sometimes', and 'Choose Least Often' categories (10). Assessment was based on weekly menu compliance and full menu cycle compliance of each site for food group criteria and menu quality followed by assignment of an overall compliance rating. This overall score was, developed by the researcher, and was based on percentage that was assigned separately for food group criteria and menu quality. Specifically, menus were analyzed to determine the number of food groups per snack/meal to determine if snacks/meals met Government regulations for daycare centres (9). Then, each menu item/food was reviewed separately to be classified within the Food Rating System, i.e., 'Choose Most Often', 'Choose Sometimes', or 'Choose Least Often' categories. The total number of food items was counted for each morning snack, noon meal, and afternoon snack and compared against the AGNCY to assess how many food items met the criteria for the 'Choose Most Often' category. The total number of 'Choose Most Often' foods was divided by the total number of food items for morning snacks, noon meals, and afternoon snacks to get a percentage for adherence to the guidelines. This was done for each week of the complete menu cycle at each centre, i.e., a total of five weeks for Case 1 and two weeks for Case 2. Percentages were assigned separately for each snack and mealtime, for all snacks and mealtimes weekly, and then an overall percentage rating was assigned to reflect the complete menu cycle of each centre. Percentage rating was adjusted to reflect the weekly allowance of 4 food choices from the 'Choose Sometimes' and 'Choose Least Often' categories (Appendix K). To score 100%, centres had to meet 4/4 food groups per meal and 2/2 food groups per snack and fall within the criteria set for the 'Choose Most Often' category as outlined in the ANGCY (10).

Key informant and focus group interviews were semi-structured consisting of open-ended questions and probes to fully explore topics. Three separate interview guides were developed to tailor questions specifically to childcare staff (Appendix B), cooks (Appendix L), and parents (Appendix M). Interview participants included five key informants from each centre: directors, junior and senior staff members, and the cook. Interview questions addressed organizational structure and operating procedures, processes and strategies used in adoption and implementation of the guidelines, and perception of and attitudes toward content, adoption, and usability of the guidelines. The length of the face-to-face interviews ranged from 30-65 minutes and they were conducted to the point of theoretical saturation of the themes identified. Focus group participants included two key informants from Case 1: parents of children attending the centre. The study aim was to hold two focus groups consisting of six-eight participants from each centre; however, despite recruitment efforts this was not successful. Focus group questions addressed: awareness of the guidelines; organizational processes, strategies, and policies of the centre; involvement in decision-making within the centre; and reach of the guidelines. Focus group duration was approximately 15 minutes as questions were structured to accommodate a larger group and allow time for discussions and exploration of topics to take place. Due to the lack of participants discussions did not unfold as anticipated; the focus group resulted in an interview format with some discussion between participants.

2.1.6 Data Analysis

Interviews and focus groups were digitally recorded, transcribed and coded. Notes were taken by the investigator during the interviews and focus group to

document non-verbal cues such as body language and gestures. Non-verbal cues were included in transcript data and were used to aid interpretation. Documenting non-verbal cues aids in analysis by putting words into context and adding deeper meaning to the data (11,12). Interview and focus group recordings were transcribed immediately post-interviews to document information as accurately as possible. Interview and focus group transcripts were validated by an external researcher who reviewed the digital recordings and compared them against the transcripts to ensure accuracy and to avoid misrepresentation. Discrepancies between digital recordings and transcripts were not found. Due to the fact that all interview and focus group data were digitally recorded and transcripts were reviewed for accuracy by an external researcher, transcripts were not verified by participants. Direct observations, field notes, interview, and focus group data were coded and triangulated to give credibility to findings (4,5). Data were reviewed and analyzed separately, together, then compared for reliability. Triangulation supports findings by showing agreement and highlighting divergent views between independent measures increasing the reliability of the evidence (6,13).

NVivo software (version 9; QSR International, Doncaster, Victoria, Australia) was used to organize and manage the qualitative data. Data were organized by site, emerging themes, and conceptual ordering. Content was analyzed using both inductive and deductive coding strategies. First, responses were reviewed line-by-line to get a good sense of the data and to identify emerging themes inductively then responses were organized with the corresponding questions to generate themes deductively. This approach is useful as it allows for an in-depth comprehensive analysis of the data by identifying recurring themes and allowing for an interpretation of the underlying meaning of the text (14). Procedures and methods were corroborated and verified by

senior research team members. Data were coded by one researcher; however, interview and focus group data were analyzed by a second external qualitative researcher (a graduate student with extensive experience in qualitative research) for coder reliability and validity of interpretations. All transcripts were analyzed, first, by the primary researcher and then were reviewed independently by the external researcher. Overall agreement was found among reviewers. Both the researcher and external reviewer concluded similar themes and agreed with findings. Minor discrepancies were discussed and analyzed further until agreement among reviewers was reached. In the event of disagreement of findings between reviewers, further clarification from participants would have been requested and/or data would not have been included in the reporting of findings. Funding for this study has been provided by the Canadian Institutes of Health Research (CIHR) and ethical approval has been obtained from the Research Ethics Board of the Faculties of Physical Education and Recreation, Agricultural, Life and Environmental Sciences and Native Studies at the University of Alberta (Pro00009577)(Appendix N).

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Chapter 3: Perceptions of the Characteristics of the Alberta Nutrition Guidelines for Children and Youth by Childcare Providers May Influence Early Adoption of Nutrition Guidelines in Childcare Centres

3.1 Introduction

Nutritional policies and guidelines for children and youth are an emerging movement in Canada. As rates of use for childcare continue to rise coincident with increasing rates of obesity and chronic health disease in early childhood, nutrition guidelines for children are important to ensure young children establish healthy eating habits. Few nutrition guidelines exist across Canada and little is reported on the attributes of guidelines and the effect these characteristics may have on early adoption, particularly in the childcare setting. Alberta is one of the first provinces in Canada to develop nutrition guidelines for children and youth (1,2), making it critical to evaluate the attributes and relative use and ease of adoption of these guidelines into daycare settings.

In June 2008, the Government of Alberta released the Alberta Nutrition Guidelines for Children and Youth (ANGCY) (3). The guidelines were developed as a resource for Albertans to translate nutrition recommendations into practical food choices intended to promote the overall health for children and youth (3). This initiative was led by Alberta Health and Wellness, in partnership with the Ministries of Children's Services, Education, Tourism, Parks and Recreation, Municipal Affairs and Alberta Agriculture and is one of the first initiatives to bring together several interprovincial sectors. Dissemination of this educational resource for Albertans to promote healthy eating behaviours within healthy environments was limited to passive dissemination strategies consisting of 3300 hard copies of the guidelines distributed to childcare facilities via

mail, including an electronic format accessible to public on the Government of Alberta Website (3). Updates of this resource are limited to Web-based access (4) and printed materials are no longer distributed.

The guidelines are intended to provide practical examples of nutrition recommendations for healthy eating, such as serving size, food group categories, sample menus, and how to meet food portion recommendations based on a Food Rating System of 'Choose Most Often', 'Choose Sometimes', and 'Choose Least Often' categories. These categories are defined by nutritional value specifying allowable limits of fat, cholesterol, sodium, fiber, sugar, protein, vitamins and minerals, and artificial sweeteners. Additionally, the guidelines offer recommendations about how to "create meal environments that support healthy eating" such as using child-sized utensils, how much time to allow for meals/snacks, how to introduce new foods, and role modeling by caregivers of healthy eating to name a few (3). However, given that these guidelines are novel and little has been done to evaluate nutrition guideline uptake in the childcare setting (5), it is imperative to assess the guidelines in terms of their perceived attributes by childcare providers to assess the implications for practice.

In Canada, rates of use for childcare outside the home have been consistently increasing. In 2002-2003, about 54% of Canadian children six months to five years of age were in some type of non-parental childcare (6). This is a significant increase from 42% in 1994-1995. Children from almost all backgrounds, regardless of socioeconomic status are accessing these services (6). Canada witnessed the biggest increase in daycare centre usage where the rate rose from 20% to 28% over the eight year period from 1994-1995 to 2002-2003. 'Other' types of care, which includes nursery school or preschool, before or after school programs, or other unspecified non-parental care,

accounted for 5% are remained relatively stable (6). Children whose main care arrangement was a daycare centre spent more time there per week (31 hours), on average, than did children in any other kind of non-parental care arrangement (6). Children aged six months to five are spending approximately six hours per day in childcare representing approximately one-half to two-thirds of meals/snacks that are to be provided for by childcare facilities. Therefore, it is important to ensure that children have access to healthy and nutritious food choices in the childcare setting. In light of that, the goal of the guidelines is "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" (3).

Definitions of guidelines and policies vary in the literature and they are often overlapped and used interchangeably. Here, we define guidelines as recommendations or voluntary courses of action and policies required or mandatory courses of action (7). The ANGCY are optional nutrition guidelines for healthy eating; they are not mandatory protocols. Rates of and factors influencing adoption of policies versus guidelines differs and can result in varied implications. For example, rates of adoption for mandatory policies tend to be higher (8); however, one study has shown that providing incentives such as increasing eligibility for accreditation of childcare centres can influence uptake and compliance of voluntary nutrition interventions (9). Literature regarding adoption of nutrition guidelines and nutrition policies has been focused on outcome and impact evaluation and has placed little effort on process and formative evaluation, particularly in the childcare setting (5,10). Therefore, we examined how the characteristics of the ANGCY were perceived by childcare providers and how this may have influenced adoption of the guidelines using a Diffusion of Innovations (DoI) theoretic framework.

DoI is an appropriate choice among organizational behaviour change theories because it is a framework for understanding the process of adoption by explaining how, why and at what rate innovations are adopted among members of a social system (11). DoI considers what is unique about the innovation but it also takes into account features of the setting within which adoption occurs. Uptake, or adoption, of an innovation can vary greatly between users and between different settings due to factors such as the relative characteristics of innovations as perceived by individuals or, rather, as perceived by the users of the innovation. DoI theory identifies five perceived attributes of innovations that affect the rate of adoption: *relative advantage* (to what is currently in use), *compatibility* (with existing knowledge, beliefs, and practices), *complexity* (level of difficulty), *trialability* (ease of experimentation), and *observability* (visibility of results) (11). DoI theory predicts that any, if not all, of these perceived attributes influence the way in which individuals perceive these characteristics affecting uptake of the innovation and how it is implemented into practice. For example, innovations that are perceived as having greater relative advantage, compatibility, trialability and observability and low complexity are expected to be adopted more rapidly than others that have attributes that are perceived negatively (11). These factors have been identified by several studies as aspects of the innovation that may impact adoption. It is not known which factors have an influence on the adoption of the guidelines or which attributes play a more significant role on the extent to which these are implemented. The objective of this study was to explore childcare providers' perceptions and attitudes toward the characteristics of the ANGCY and the potential effect this may have had on early adoption of guideline recommendations within the childcare setting.

3.2 Methods

3.2.1 Study Design

Due to gaps in the literature regarding adoption of nutrition guidelines in childcare settings, an exploratory case methodology was used to gain an in-depth understanding of the processes involved in adoption of specific innovations, such as nutrition guidelines (12). A multiple case study design was used to explore two exemplary cases and an intrinsic case analysis was undertaken to gain a deeper understanding of the case (13) and to investigate whether the case represents an unusual or unique situation (14). A multiple case design refers to the use of more than one individual case study in various settings (12). Early adopters of the guidelines were selected as exemplary cases to gain an understanding of the uniqueness or differences across the settings and understand the specifics of how and why some centres were able to adopt the guidelines while others were not.

Key constructs from the DoI framework (11) were used to develop an interview protocol based on the perceived attributes of the guidelines (relative advantage, compatibility, complexity, trialability, and observability) by childcare providers. Analysis of the nutrition guidelines entailed reviewing guideline content, layout, organization, presentation, format, and comprehensiveness to dissemination to understand whether characteristics of the guidelines affect the adoption process.

3.2.2 Sampling

Two urban childcare centres in Alberta, Canada, identified as "early adopters" were assessed to examine the characteristics of the ANGCY (a description of the cases can be found in chapter 4, Table 1, p. 91). "Early adopters" were defined as

"implementation strategies initiated within one year of receiving the guidelines" (i.e., before December 2009). Purposeful sampling of cases was based on adopter characteristics identified from the initial telephone surveys conducted in Phase 1. Inclusion criteria for case selection included: 1) centres made changes to the nutritional quality of foods offered as a result of the ANGCY, 2) changes had been implemented for a period of six months or greater, 3) centres granted consent and interest for further contact, and 4) centres had to be located in urban areas. However, to identify exemplary cases, additional selection criteria were included: 5) all meals/snacks had to be provided by the centre (to reduce external barriers to implementation), and 6) degree of implementation as identified from responder comments was assessed. For example, sites with the greatest degree of implementation, i.e., sites that most closely followed the guidelines, were considered exemplary sites by the research team.

3.2.3 Access and Recruitment

Recruitment was based from a purposive sample that gave approval for further contact during Phase 1. Selected sites (n=4) were contacted and informal meetings were held with directors to ensure sites met the selection criteria. The number of cases to be studied was determined by the research team. Selection of cases began by contacting the most exemplary cases first. The first two cases that were contacted agreed to participate in the study. Following confirmation of case selection (n=2), a formal consent process was undertaken with site directors. Recruitment of childcare staff was through provision of information sheets and verbal notification by site directors and the researcher. Staff was selected based on key positions held in the centre, such as directors and the cook and those with varying levels of experience to get

a comprehensive organizational perspective. All staff underwent the same formal process of consent.

3.2.4 Data Collection

Data were collected through direct observation, key informant interviews, and documentation of field notes. Using multiple types of data collection methods enhances the richness and rigor of the data; direct observations, field notes and interview data were coded and triangulated to give credibility to findings (12,13). Direct observation data, field notes, and interview data were analyzed separately, together then compared for reliability. Direct observation was carried out for two days between the hours of 08:30-13:30 and 11:30-14:30 at each site. Times were selected to observe mealtimes and general operating procedures. Specific days were determined by childcare facilities; however, each site was observed for the same period of time and the same mealtimes were observed for consistency between sites. Ideally, site visits would have been unannounced to enhance rigor and avoid bias; however, this was not possible as both sites requested notification. Observational data were collected systematically based on a tool modified from Miles and Huberman (14) (Appendix J). Additionally, field notes were taken during site visits. Field notes comprised of general attitudes at mealtimes, behaviours regarding adherence to the guidelines by childcare providers, and general observations regarding organizational procedures.

Five key informants were interviewed from each centre including: directors, junior and senior staff members, and the cook. Key informant interviews were semi-structured consisting of open-ended questions to fully explore topics. Interview questions addressed organizational structure and operating procedures, processes and

strategies used in adoption and implementation of the guidelines, and perception of and attitudes toward content, adoption, and usability of the guidelines. The length of the face-to-face interviews ranged from 30-65 minutes, and additional interviews were conducted as needed to reach the point of theoretical saturation of the themes identified.

3.2.5 Data Analysis

Interviews were digitally recorded, transcribed verbatim and coded. Notes were taken by the interviewer during the interviews to document non-verbal cues such as body language and gestures. Documenting non-verbal cues aids in analysis by putting words into context and adding deeper meaning to the data (15,16). Interviews and field notes were transcribed immediately post-interviews to document information as accurately as possible. Interview transcripts were validated by an external researcher who reviewed the digital recordings against the transcripts to ensure accuracy and to avoid misrepresentation. Direct observations, field notes and interview data were coded and triangulated to give credibility to findings (12,13). Data were reviewed and analyzed separately, together, then compared for reliability. Triangulation supports findings by showing agreement between independent measures as well as bringing to light any divergent findings increasing the reliability of the evidence (14).

NVivo software (version 9; QSR International, Doncaster, Victoria, Australia) was used to organize the qualitative data. Data were organized by site, emerging themes, and conceptual ordering. Content was analyzed using both inductive and deductive coding strategies. First, responses were reviewed line-by-line to get a good sense of the data and to identify emerging themes inductively then responses were organized with

the corresponding questions to generate themes deductively. This approach is useful as it allows for an in-depth comprehensive analysis of the data by identifying recurring themes and allowing for an interpretation of the underlying meaning of the text (17). Procedures and methods were corroborated and verified by senior research team members. Data were coded by one researcher; however, all interview data were analyzed by a second external qualitative researcher for coder reliability and validity of interpretations. This study received ethics approval from the Research Ethics Board of the Faculties of Physical Education and Recreation, Agricultural, Life and Environmental Sciences and Native Studies at the University of Alberta.

3.3 Results

Perceived attributes of an innovation, as defined by DoI theory, help to explain their rate of adoption, namely relative advantage, compatibility, complexity, trialability, and observability (11). These characteristics were used as a framework to guide the organization of the results and are summarized in Table 1 (p. 67).

3.3.1 Relative Advantage

Rogers' defines relative advantage as the degree to which an innovation is perceived as better than the idea it supersedes (11). In other words, users must perceive the innovation, or attributes of the innovation, as better than what is currently in use. Awareness, design, and tangibility were the main advantages of the ANGCY reported by childcare staff from both facilities. **Increased awareness** of nutritional requirements in childhood was a key advantage of the guidelines reported by users. Staff members reported using the guidelines as a reference source to stay up-to-date

with current nutrition recommendations and to identify healthy versus unhealthy food choices. Portion sizes and number of servings were identified as the main reasons for referencing the guidelines by every staff member interviewed. As one staff member expressed, "It's good for us because we have to know how much we have to give to a three year old kid and a four year old kid, five year, and, ah, for toddler, for babies. Those lines help us. Otherwise we don't know how much, ah, they have to eat." Other features of the guidelines commonly used by staff members included information on sugar content of foods, variety, menu ideas, and menu planning. Additionally, implementation strategies were also identified by staff members as features of the guidelines that helped to inform their practice. For example, "…it's helped staff be more aware of, umm, their modeling and how they introduce nutrition." The guidelines increased awareness by helping to inform staff members of specific nutrition requirements and about how to implement the recommendations into practice.

Awareness was also influenced as a result of visibility of the guidelines. Having the guidelines as a physical resource made them visible to childcare providers. Visibility of the nutrition guideline binder in the work area served as a prompt to use the resource materials cuing behaviour change and increasing awareness. Seeing the guidelines, the binder, whether on the shelf or posted in classrooms, acted as a prompt like signage or messaging that prompted discussions and personal reflection. "Having the guideline, ah, provides, ah, that conversation to take place. Because, well, did you see what was in the guideline and, ah, was that helpful or have you used this. And, so, that starts that conversation which then gets you thinking about what you are doing and how you're doing it." "It's helped staff be more aware…mainly because here's this new big binder that came out, so then they're talking about that, being reflective about it

and then we're having discussions in staff meetings…" Having the guidelines in a format that is visible to users acts as a prompt for initiating discussions and reflecting on current practices, thus, again, promoting awareness.

Design of the ANGCY was a second key relative advantage. The most important features of the guidelines were that they were "comprehensive", "complete", and "convenient". Staff repeatedly described the guidelines as being comprehensive and having more detail than other similar regulatory documents; they cover not only nutrition recommendations but also put them in context of child development and explain how to implement the recommendations. Additionally, "having all of that information all in one place" made it convenient for staff members to find what they were looking for. Staff members also repeatedly mentioned that other key benefits of the guidelines were that they have a "logical format" and a "practical layout" and that they are clear, easy to understand, and explicative. As one respondent put it, "I think the strength is, is it's all encompassing, that it's, umm, clearly divided…it seems to be a natural content following so that staff can find what they need quickly. So you're not overwhelmed by a two-inch thick wad of paper….you can navigate through very easily and when you do find what you want it's very clear. I find that's a valuable resource because it's usable." One respondent did, however, express that the guidelines should provide more information about food allergies; that food allergies should be covered in more detail with respect to symptoms, causes, and management. Design proved to be a very important construct of the guidelines because it had a direct impact on the utility of the guidelines for users, thus influencing continued use.

Interestingly, another key relative advantage of the guidelines was having the guidelines as a **tangible resource** resulting in accessibility. Having the guidelines as a

binder in paper format made them visible as already discussed but also easily accessible and portable resulting in a relative advantage: convenience, because the format fit the setting. Staff from each centre were able to access the information they needed quickly and easily with little interruption to what they were doing. Due to the frequency of use and accessibility of the binder format, one of the centres posted pages from the binder in each of the rooms to make the guidelines even more accessible and convenient: "Whenever the kids want something, they, ah, need breakfast, lunch and snack, we go through this." Posting the guidelines in plain view enhanced teaching practices by enabling childcare providers to review the guidelines with children and parents as questions and/or concerns would arise. The medium by which the guidelines were communicated made them appropriate for the intended context, the childcare setting; tangibility affected visibility, accessibility and convenience of the guidelines resulting in a relative advantage because they enhanced teaching practices and were compatible with practice.

3.3.2 Compatibility

Compatibility refers to the degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs; the higher the compatibility the more likely adoption will occur (11). Overall, the guidelines were reported to be highly compatible with knowledge and belief systems and current practices of childcare staff resulting in a positive perception of the guidelines. Staff members interviewed from both sites all reported agreement with the content and purpose of the guidelines. When asked, "Do you believe in and agree with the content of the guidelines?" responses ranged from, "Definitely I will agree." and "Yes. Yes. Yes."

to “I feel that it’s, it’s good to promote healthy eating and healthy choices for the kids. Umm, because it starts early, like, and that’s part of the Early Childhood, umm, Educator that I’ve learned is part of the job description…” These responses indicate that childcare staff perceives the overall goal and purpose of the guidelines to be compatible with the common goal of an Early Childhood Educator which is healthy child development.

A second factor related to compatibility is that the guidelines were in agreement with existing nutritional practices. Both sites reported that adopting the guidelines was an easy transition because it was not a major change for them and the guidelines were an “affirmation” and “confirmation” of current nutritional practices. No drastic changes occurred at either site. When asked about what changes were made after adopting the guidelines common responses included, “Nothing really drastically because we were, as I say, we were, umm, going towards that direction anyway” and “…we sort of incorporated that before, already, so it wasn’t a big change for us to do.” Participants found the guidelines “very comparable” to what they were already trying to achieve in their practice and as a result felt very “comfortable” and “confident” to try recommendations from the guidelines. In other words, the guidelines helped to inform what these sites were already trying to do.

Additionally, childcare staff found the format of the guidelines compatible with other childcare regulatory documents, “…the nutrition guidelines has, ah, more detail but they’re very same, similar, they fit into the same topics” [in reference to a Childcare Practice Standard regulatory guideline (18)]. Respondents stated that the guidelines informed them of new information but it was shared in a familiar format and an appropriate context making them easy to understand and apply to practice. Overall, childcare staff found the guidelines to be highly compatible with existing knowledge and

beliefs, current nutritional practices, and modes of information delivery.

3.3.3 Complexity

Complexity is the degree to which an innovation is perceived as difficult to use; the lower the complexity the higher the likelihood of adoption (11). Readability, comprehension, translation, interpretation, comprehensiveness, and applicability to the setting are factors that encompass and effect complexity. The guidelines were perceived as having a low level of complexity by all childcare staff that were interviewed (N=10). Childcare staff found the guidelines easy to read and understand, clearly written, easy to translate and apply, comprehensive, and in a format that is both familiar and applicable to childcare practice standards. Important to note, English was the second language for six of the ten participants.

When asked about the readability of the guidelines childcare staff described the guidelines as "clear, clear, clear" and said that they are written "very much in plain English…I even think not even a grade eight reading level." Staff members went on to say that they did not find the guidelines challenging; in fact, they found them "very helpful." Translating the guidelines and putting them into practice was also described as effortless. Childcare staff reported that translation, or interpretation of menu ideas, recipes, portion and food serving guides, and implementation strategies was not necessary and applying the guidelines to practice was straightforward and uncomplicated. One staff member reported, "I think it's very easy to, you know, you know, follow the guidelines, what's in the binder." Other staff members said "…it explains everything it tells you". When directly asked to describe implementing recommendations from the guidelines staff reported that it was very easy "and easy to

explain to others, to the other staff members, too". The low level of complexity increased comprehension and made it simple for staff members to follow the guidelines as well as share knowledge among one another.

Childcare staff also pointed out that the comprehensiveness of the guidelines and the clear, systematic format lowered the level of complexity because it helps to support the whole picture: "So you're trying to cover not only, umm, what foods should be done but how to develop a menu, how to develop, ah, appropriate portions for appropriate age groups and, ah, a little bit of child development so that they understand that children of this age will prefer and should be able to, you know, so they know when children are eating with their fingers that's perfectly acceptable to eat with fingers…Ah, you know, and just, ah, that kind of information all in one place…" The guidelines put nutrition recommendations into perspective by relating them to child development and clearly explaining how to implement the recommendations in a compatible context thus increasing comprehension and decreasing interpreter fallacy.

3.3.4 Trialability and Observability

Trialability refers to how easily an innovation can be tried and observability refers to how easily results are visible; the higher the trialability and observability the greater the likelihood of adoption (11). The guidelines were found to have high trialability and high observability. Although an increased emphasis in programming focus on healthier menu options, the guidelines helped to inform the centres of how to achieve that goal without any major changes because they were already following these. For these centres, the most common uses of the guidelines were for portion sizes, number of servings, sugar content of foods, variety/menu ideas, and menu planning.

The guidelines also helped with implementation strategies for supporting healthy environments. Such strategies included posting weekly menus, role modeling of healthy eating behaviors by caregivers, how to introduce nutrition, serving foods in appropriate amounts, using child-sized utensils/plates/cups, allowing adequate time for children to eat, etc. (19).

Recommendations from the guidelines were reported as having high trialability because they were simple to try and had a low commitment. The attitude among centres was, "…it wasn't a big change for us to do" and "…what's new and different, what haven't we tried and let's see how we can try that." Trying a new menu idea, a new recipe, was simple because it did not require a lot of time or planning, complete recipes were provided, so it was a matter of substituting regular meat for lean meat or white bread for whole grain. The most notable changes were an increase in fruits and vegetables, changing from regular meat to lean meat and from white bread to whole grain/wheat. Other changes included serving more yogurt, serving foods with a lower sugar content, purchasing child-sized utensils, improving variety to the menu, and increasing the menu rotation cycle. Change was easily observed because caregivers were able to directly observe how responsive children were to these changes. For example, one centre tried to incorporate more vegetables into mixed meals such as soups and casseroles but found that children were spending their time trying to pick out the vegetables and as a result eating less. After a few weeks the centre decided to only serve vegetables on the side so children could try them separately thereby not affecting the amount of food children were eating at meal times. If children did not like changes it was simple for the centres to either make additional changes or go back to what they

were doing previously. Recommendations from the guidelines were described as very easy to try and to implement but also very easy to observe change.

Table 1. Perceived Characteristics of the ANGCY by Childcare Providers

Perceived Characteristics	Main Themes	Uses and/or Benefits
↑ Relative Advantage	• Increased awareness of: - Nutritional requirements - Implementation strategies	• Portion sizes • Number of servings • Staying up-to-date with nutrition recommendations • Identification of healthy vs. unhealthy foods • Nutrient specifications • Menu planning, menu ideas, adding variety to menus • Reflection of practice behaviour
	• Guideline design - Comprehensive - Complete - Convenient - Logical format - Practical layout - Functional	• Clear • Easy to understand • Explicative • Practical • Usable
	• Tangibility - Convenient - Appropriate to context - Awareness	• Accessible • Portable • Visible • Reflection of practice behaviour
↑ Compatibility	• Compatible with: - Knowledge - Belief systems - Current nutrition and childcare practices - Learning styles - Context	• Agreement with content and purpose of guidelines • Confirmation of current nutritional practices • Positive perception of guidelines increased willingness to try recommendations • Lower complexity
↓ Complexity	• Clearly written • Straight forward • Uncomplicated • Explicative • Comprehensive • Familiar format • Applicable to childcare setting	• Easy to read and understand • Easy to comprehend • No translation or interpretation required • Easy to apply to practice • Easy to share knowledge among staff members

↑ Trialability	• Simple to try • Low commitment • Limited investment in time and planning	• Healthier menu options - Increase in fruit and vegetables - Leaner meats - Whole grain/wheat breads - Serving more yogurt - Lower sugar content of foods • Improved menu variety • Created a more supportive meal environment
↑ Observability	• Direct and immediate response to change was visible	• Informative • Increased trialability

3.4 Discussion

There is a lack of empirical evidence regarding evaluation of nutrition guidelines in childcare settings. Health disciplines such as the continuing medical and nursing education have historically examined attributes of clinical guidelines and the effect on adoption (20), but there are few examples in the field of nutrition and dietetics, particularly in the childcare setting. The ANGCY were developed with limited formative evaluation making this one of the first opportunities to carry out an extensive qualitative study of the evaluation of end-users perceptions of the characteristics of the guidelines. DoI is a framework for understanding the uptake of innovations; therefore, using this theory helps to organize and frame the evaluation using a systematic approach (11). Understanding how childcare providers perceive the guidelines in terms of their attributes (characteristics) is the first step in identifying the needs of childcare providers with respect to guideline adoption and is valuable for future modification of the guidelines as well as for identifying potential educational strategies that need to be used in dissemination. According to DoI theory, the more positively an innovation is perceived, the higher the likelihood of adoption (11).

Overall, the ANGCY were perceived positively by childcare staff. The guidelines were perceived to have high relative advantage, high compatibility, low complexity, high trialability, and high observability. Relative advantage was perceived as high due to awareness, design, and tangibility. Increased awareness directly affected childcare practice by informing childcare providers of nutritional requirements and implementation strategies; a key relative advantage. The guidelines were a resource staff could rely on to inform their practice; they were perceived as a trusted information source because they were accurate, comprehensive, and compatible with knowledge, beliefs, and practices. Information source and attributes of an innovation have been found to affect perceived credibility by users (21,22). Perceived credibility of information has been found to affect uptake behaviour, i.e., source competency and trustworthiness are significant determinants of attitudes and behavioral intentions to engage in recommended actions (23,22). The guidelines also prompted reflection of knowledge and practice behaviour provoking discussions and information sharing among childcare staff; providing information acted to identify areas for improvement.

Design and tangibility were also perceived as relative advantages because information was presented in a practical, acceptable, usable format. Staff expressed appreciation that the guidelines were put into context of child development and followed a similar format to other childcare regulatory documents. Childcare staff found the guidelines to be comprehensive, practical and logical resulting in increased acceptance and lower complexity of the guidelines. These features facilitated the translation of guideline content because they were in a familiar format and a context suitable for the audience emphasizing that knowledge translation by users is an important aspect in the adoption process. All of these factors worked together to

increase the perception of relative advantage which other research has identified as the most influential factor in the adoption decision (24). For this study, relative advantage was found to influence uptake behaviour; however, the degree to which relative advantage influenced the decision to adopt the guidelines is unclear as the goal of this study was to explore perceptions of the attributes not compare degree of influence of the different attributes.

Tangibility of the guidelines proved to be another advantage because, again, it was compatible with the childcare context. Providing the guidelines as a physical resource (a binder) met the needs of childcare staff because the high accessibility of the guidelines enhanced teaching practices. The childcare environment is very demanding requiring the ability to problem solve and translate complex information into easy to understand information for both the child and caregiver. Therefore, high accessibility and ease of translation of any information/guideline provided to childcare facilities is very important and influences frequency of use. It is also an advantage during meetings when computers and projector screens may not be available or for impromptu discussions as they can be easily accessed. Context is an important consideration because it helps to determine whether or not an innovation will be suited to the prospective user. A meta-analysis of diffusion of innovations in service organizations found that context is a strong predictor of the success or failure of a dissemination initiative (25). An updated online version of the guidelines was released in 2010 (4), interestingly, none of the childcare staff interviewed were aware. This emphasized the notion that despite the advent of the age of information technology, printed materials that are accessible is an appropriate choice in this context. Moreover, during the Phase 1 interviews, lack of time was reported as a determinant for non-adopters.

Disseminating the guidelines in a format that does not meet the needs of the user will lower the likelihood of adoption. It is important to make innovations convenient and compatible for prospective users; this will increase the positive perception of the innovation by increasing perception of compatibility and trialability thereby reducing barriers to adoption and increasing the likelihood of continued adoption and institutionalization.

Compatibility is very important for reducing barriers and increasing willingness to try an innovation. The innovation must fit with its intended audience or it will not be adopted as rapidly, if at all (11). The guidelines were perceived positively because they were found to be compatible with existing knowledge, beliefs and practices of childcare providers. As participants reported, they agreed with the content of the guidelines and that providing healthy nutritious foods for children is important. Research has shown that new knowledge must be accepted before it will be utilized (20); therefore, agreement with the content of the guidelines is an important determinant for uptake behaviour. Further, participants reported they were already moving in the direction of serving healthier foods such as incorporating more fruits and vegetables so it wasn't a big change for them. Compatibility increases an organization's absorptive capacity making it more receptive to assimilate innovations (25). Compatibility and absorptive capacity were further increased because the guidelines are in accordance with provincial licensing standards so most staff had at least some background knowledge of nutrition guidelines for children; innovations that require minimal skills/knowledge acquirement have a better chance of adoption (25). The guidelines were compatible with current knowledge, beliefs and practices leading to increased trust in the resource.

Compatibility increases the likelihood of adoption; an idea that is incompatible with current practices may still be adopted but typically at a much slower rate (11,25).

Format and context are also important when considering compatibility because an innovation must be in-line with practice needs and information sharing styles. The common, compatible format of the guidelines increased acceptance for childcare providers by adding familiarity and lowering the level of complexity. Familiarity related to the format but also to the comprehensiveness of the guidelines which established context. Recommendations were presented in the context of healthy child development lending to the overall goal of childcare organizations. Putting recommendations in perspective for the user increases compatibility with practice. Staff liked that the guidelines were presented in a format that was compatible with their needs but, also, with the way in which they were used to receiving information. It was noted that the guidelines are a very large resource so presenting them in a perspective that is appropriate to practice and in a usable format is important because it saves time for the user when a resource is functional and practical thereby adding value to the innovation. This is in agreement with findings regarding uptake of technological innovations in the medical sector which report quality of information as indicated by relevance, usefulness of format, and satisfaction of information provided positively affect uptake (24). Additionally, context increases compatibility with existing knowledge and beliefs, again increasing the positive perception of the guidelines thus increasing willingness to adopt them.

A low complexity level increases trialability and functionality affecting usability which may play a role in whether or not an innovation is adopted. Complexity level has a multitude of effects. It affects readability, comprehension, translation, and

application. These are important determinants of adoption because as Rogers states, innovations that are difficult to understand require the user to develop new skills and knowledge which can be a barrier to adoption (11). Complexity level also influences perception of the function and practicality of the innovation. Innovations perceived as difficult to understand and/or use decrease compliance with practice guidelines (26) and lower the inclination for adoption (24). However, as the results demonstrated, childcare staff found the guidelines to have a low complexity level, described as easy to read and understand and not requiring interpretation, meaning recommendations could be applied easily and directly resulting in an increased likelihood of trying recommendations from the guidelines. By Rogers's definition this would indicate a higher inclination for adoption (11); however, other research has shown that technical factors affecting complexity and ease-of-use of an innovation must be perceived positively to be adopted but will not be adopted simply due to a low complexity level (24). This indicates that low complexity is important in the adoption decision but it is not a determining factor.

Trialability is also affected by how easily something can be to try, i.e., the relative ease of trying something new, the level of commitment required to try something new (time, cost, skills/knowledge development, etc.), and the ease of discontinuing use. Recommendations were described as simple to try, requiring a low commitment, and simple to discontinue application. For example, modifying a recipe to use lean ground beef instead of regular ground beef is simple to try, does not require a large commitment, and it is very easy to return to the original recipe if it is not accepted. Purchasing child-sized utensils has a similar trialability factor: simple, low commitment,

and easy to discontinue use. Innovations which can be experimented on a limited basis are adopted and implemented more easily (25,26).

Finally, observability of change is said to affect adoption of an innovation: if change is easily observed and measured then it is more likely that an innovation will be adopted (11). Logically, the sooner results are observed, the sooner a decision can be made as to whether or not to continue use or adopt the innovation. In this case, the guidelines had high observability because, again, recommendations were observable and measurable. It was simple for childcare providers to directly observe children's responses to recommendations, such as trying a new recipe, food, utensil, etc. Similarly, because most of the implementation recommendations were suggestions for practice, thus directly impacting teaching approaches, childcare providers could measure the response from children but also the effect it had on them. Again, recommendations from the guidelines were easy to observe the effects of change but also easy to try increasing the likelihood of adoption (11,25).

There tends to be an overlap between the characteristics making it difficult to clearly define specific influences of user perception. For example, besides awareness, design and tangibility, high compatibility, low complexity, high trialability, and high observability were all advantages of the guidelines. High compatibility, low complexity, and high observability increased trialability in addition to ease of use and low commitment of recommendations. Interestingly, the characteristics had cumulative effects; as one characteristic was appreciated it affected another. The characteristics complemented one another resulting in an overall positive perception. However, this is not always the case. For instance, an innovation could be easy to try but not offer any advantages in which case it most likely would not be adopted (24). Or, an innovation

could offer many advantages but be too complex to use. That is why DoI theory postulates that innovations tend to be adopted more rapidly when all of these conditions are met (11). That is not to say that an innovation could not be adopted if not all of these conditions were satisfied but as a general rule, the more characteristics that are perceived positively the greater the chance and rate of adoption. However, although scarce, the literature has shown that some factors such as relative advantage may play a greater role in understanding uptake behaviour. One advantage of qualitative research is that is allows for a broad look at the existing question under investigation offering a rich understanding, in this case, of childcare workers' perception and ultimately adoption of the guidelines. Early adopters perceived the ANGCY to have a high relative advantage to what they were currently doing, were highly compatible with existing knowledge, beliefs, and practices, had an all-around low level of complexity, were easy to try, and easy to observe change. These attributes of the guidelines, as perceived by childcare providers, are all successful components of increasing the likelihood of adoption. However, organizational characteristics such as networking, leadership, teamwork, trust, and role modeling also effect organizational behaviour and uptake of nutrition guidelines and should also be considered when examining uptake of an innovation (19).

3.4.1 Limitations

Evaluating nutrition guidelines in childcare organizations is an emerging area of research; as a result, it has several limitations. Findings were limited by the type of study, sample size and population subset. Evaluation of the characteristics of the guidelines was part of an exploratory study looking at adoption of the guidelines by

early adopters in urban populations. To study early adopters, only exemplary cases were examined. Examining only early adopters was a parameter used to explore the uniqueness of each case. Purposefully selecting only exemplary cases provides an opportunity to learn from information rich sources highlighting unusual or extreme conditions; lessons may be learned about what works and how from cases such as these. Limiting the study by geographical region was an attempt to understand what is unique about centres in urban areas which may differ from centres in rural areas. Due to the scope and nature of this study, case study method was used which does not require a large sample size as the objective of case study research is not to compare and generalize findings but, rather, to explore, in depth, the uniqueness of each case. As an exploratory methodology, case study helps to identify areas for future directions; however, it is not possible to generalize findings. Another limitation is that not all users completely reviewed the guidelines due to lack of time or new employment. Phase 1 data also identified time as a determinant for non-adopters. Probing this further can build on these findings and potentially result in recommendations for improvement such as tailoring the guidelines to the specific sector, i.e., childcare, schools, or recreational centres which would reduce the size of the document by two-thirds, possibly lowering apprehension by prospective users. Finally, the perceptions of childcare providers that took part in this study may not be characteristic of other centres as these were exemplary cases; further exploring this topic to include a more diverse sample may reveal characteristics unique to early adopter organizations. Exploring childcare provider's perceptions of the attributes of the guidelines is the first step in the evaluation framework for the ANGCY informing policy makers and health professionals

of factors to consider in the modification of the guidelines.

3.4.2 Implications for Research and Practice

Knowledge translation is crucial in the relationship between knowledge creation (the guidelines) and action (adoption and implementation). Evaluation is a key step in the Knowledge Translation framework conceptualizing the cycle of evaluating, modifying, and monitoring dissemination and uptake of innovations such as nutrition guidelines (27). Future research should tailor evaluations specific to the characteristics of the guidelines and investigate a larger sample size that includes non-adopters and centres in rural areas. Making updates available only in Web-based form may not be practical as providing childcare centres with printed materials proved to be a great relative advantage by promoting awareness and enhancing usability of the guidelines. Reformatting the guidelines to contain only information relevant to each sector (i.e., childcare, schools, and recreational centres) may lower apprehension and increase the number of childcare providers that review the guidelines. As well, tailoring the guidelines may lower costs associated with the reproduction of the guidelines. Active dissemination of the guidelines that includes professional development, such as workshops, may increase the number of adopters by increasing the number of childcare representatives who review the guidelines acting as both an incentive and learning opportunity. Additionally, studies have shown that nutritional policies are an effective method for increasing the nutritional quality of foods served in childcare centres (10) suggesting that perhaps the next step is to move from guidelines to policies making them mandatory in childcare settings. Finally, looking at variables that influence organizational behaviour such as organizational factors (i.e., structural characteristics,

leadership, and environment) is important in understanding the multiple factors that affect uptake behaviour. As childhood obesity is an increasing threat to children and society, it is imperative that nutrition guidelines are adopted and implemented in childcare organizations that target the early stages of life when eating preferences and habits are formed.

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Chapter 4: Adoption and Implementation of the Alberta Nutrition Guidelines for Children and Youth in Childcare Organizations

4.1 Introduction

In Canada, institutional nutrition policies for children and youth are emerging as an approach to ensure children have access to healthy and nutritious food choices. With increasing use of childcare, nutrition guidelines for children are important as early childhood is the time when children establish good eating habits. Although there is sufficient evidence to support that early nutrition affects long-term health, there is a gap in the literature regarding the uptake of nutritional policies and guidelines in the childcare setting and how organizational behaviour and processes influence guideline uptake. As Alberta is one of the first provinces in Canada to develop nutrition guidelines for children and youth (1,2), it is critical to evaluate organizational behaviour to give insight into the processes within the childcare environment that may influence adoption and implementation of nutrition guidelines.

In Canada, rates of use for childcare outside the home have been consistently increasing. In 2002-2003, about 54% of Canadian children six months to five years of age were in some type of non-parental childcare (3). This is a significant increase from 42% in 1994-1995. Children from almost all backgrounds, regardless of geographic location, household income, family structure, parental employment status, or parental place of birth are accessing these services (3). Canada witnessed the biggest increase in daycare centre usage where the rate rose from 20% in 1994-1995 to 28% in 2002-2003, while 'other' types of care, which includes nursery school or preschool, before or after school programs, or other unspecified non-parental care, accounted for 5% and

remained relatively stable (3). Children whose main care arrangement was a daycare centre spent more time there per week (31 hours), on average, than did children in any other kind of non-parental care arrangement (3). Children aged six months to five years are, on average, spending six hours per day in childcare with food intake in these centres comprising one-half to two-thirds of daily total intake (3). Given that this represents a significant proportion of dietary intake, it is imperative that nutrition guidelines support the ability of childcare centres to provide nutritious food choices to children.

In June 2008, the Alberta Government released the Alberta Nutrition Guidelines for Children and Youth (ANGCY) (4). The guidelines are intended to provide practical examples of nutrition recommendations such as serving size, food group categories, sample menus, and how to meet food portion recommendations based on a Food Rating System of 'Choose Most Often', 'Choose Sometimes', and 'Choose Least Often' categories. These categories are defined by nutritional value specifying allowable limits of fat, cholesterol, sodium, fiber, sugar, protein, vitamins and minerals, and artificial sweeteners. Additionally, the guidelines offer recommendations about how to "create meal environments that support healthy eating" such as using child-sized utensils, how much time to allow for meals/snacks, how to introduce new foods, and role modeling by caregivers of healthy eating to name a few (4). Printed versions of the guidelines were distributed to childcare facilities via mail, including an electronic format accessible to the public on the Government of Alberta Website (5).

Little is known about how organizational processes and characteristics influence uptake of guidelines in childcare settings. The organizational behaviour literature shows

there is a relationship between organizational factors and uptake behaviour (6); however, research is scarce regarding the influence of such organizational factors as structural characteristics, leadership, and environment (7). Although previous studies have highlighted the influence of contextual factors on the process of diffusion in organizations, it is often overlooked (8,9). With little published information examining the childcare setting and even less regarding adoption and implementation of nutritional guidelines, it is important to understand which organizational factors influence these processes for the adoption of nutritional guidelines in childcare settings. Understanding the processes used by early adopter organizations is important as this information may assist other childcare facilities by informing them of processes that may be applicable to their practice and may potentially be informed by the organizational development literature.

Theories such as Organizational Development Theory (OD) (10) are often used for understanding organizational behaviour. Although OD takes a human relations perspective by acknowledging the interrelated connection between climate, culture, and capacity to improving organizational effectiveness, the goal is to increase output and improve productivity. Another theory frequently used for understanding organizational behaviour is the Diffusion of Innovations theory (DoI) (11). This model provides a framework for examining the factors that may influence adoption and maintenance of new practices in society, such as health policies, by describing elements of the diffusion process through the examination of organizational constructs (11). DoI attempts to understand and explain how and why innovations diffuse across populations and tries to identify the strategies and processes by which adoption of innovations occur by examining structural characteristics, such as centralization (the

degree to which authority in an organization is concentrated to only a few individuals), formalization (the degree to which an organization emphasizes following rules and procedures), and complexity (the degree of specialization of job roles), and organizational innovativeness (e.g. leadership, networking) of organizations (11). Given the gaps in the literature, the objective of this research was to examine the organizational characteristics of childcare centres using DoI as a framework to guide the development of the evaluation and analysis. Understanding the processes used by early adopter organizations is important as this information may assist other childcare facilities by informing them of processes that may be applicable to their practice.

4.2 Methods

4.2.1 Study Design

Due to gaps in the literature regarding uptake of innovations in childcare settings, an exploratory case methodology was used to try to build a theoretical basis for understanding this process. DoI served as a framework to guide the development of the evaluation and analysis of the research by highlighting key aspects of organizational characteristics important in the uptake of innovations. A multiple case study design was used to explore two exemplary cases and an intrinsic case analysis was undertaken with each case. A multiple case design refers to the use of more than one individual case study in various settings and is often used as an exploratory approach to gaining an in-depth understanding of the processes involved in specific innovations (12). Exemplary cases represented by early adopters were selected to gain an understanding of what is unique or different about them to try to understand how and why some centres were able to adopt the guidelines while others were not. Intrinsic case study is undertaken

when a deeper understanding of the case is required (13) and when the focus of the study is on the case itself because the case represents an unusual or unique situation (14). Analysis of concepts spanned from organizational structure, implementation strategies, and organizational processes of the centres.

4.2.2 Sampling

Two urban childcare centres in Alberta, Canada, identified as "early adopters" were assessed to examine the characteristics of the ANGCY. "Early adopters" were defined as "implementation strategies initiated within one year of receiving the guidelines" (i.e., before December 2009). Cases were selected purposefully based on adopter characteristics identified from the initial telephone surveys conducted in Phase 1. Inclusion criteria for case selection included: 1) centres had made changes to the nutritional quality of foods offered as a result of the ANGCY, 2) changes had been implemented for a period of six months or greater, 3) centres granted consent and interest for further contact during the initial telephone surveys, and 4) centres had to be located in urban areas. However, in trying to understand the unique features of early adopter centres, further selection criteria was defined to identify exemplary cases. Additional inclusion criteria included: 5) all meals/snacks had to be provided by the centre (to reduce external barriers to implementation), and 6) degree of implementation as identified from responder comments was assessed. For example, sites with the greatest degree of implementation, i.e., sites that most closely followed the guidelines, were considered exemplary sites.

4.2.3 Access and Recruitment

Recruitment of childcare centres was based only from a purposive sample which was derived from centres that gave approval for further contact during Phase 1. Number of cases was determined by the research team. Four selected sites were contacted and informal meetings were held with directors to ensure sites met the selection criteria. Recruitment started by first contacting the most exemplary sites of the four potential sites. The first two cases that were contacted agreed to participate in the study. Following confirmation of case selection of two cases, a formal consent process was undertaken with site directors. Childcare staff and parents were recruited through dissemination of information sheets and verbal notification by site directors and the researcher. Staff from the two centres were selected based on their key positions held in the centre, such as directors and the cook and those with varying levels of experience to get a comprehensive organizational perspective. All staff and parents underwent the same formal process of consent.

4.2.4 Data Collection

Data were collected through direct observation, key informant interviews, one focus group, documentation of field notes, and obtaining food menus. Using multiple types of data collection methods enhances the richness and rigor of the data; direct observations, field notes, interview, and focus group data were coded and triangulated to give credibility to findings (12,13). Direct observation data, field notes, interview and focus group data were analyzed separately, together, and were then compared for reliability. Direct observation was carried out for two days between the hours of 08:30-

13:30 and 11:30-14:30 at each site. Specific days for site visits were determined by childcare facilities; however, for consistency in data collection, each site was observed for the same period of time and at the same mealtimes. Ideally, site visits would have been unannounced to enhance rigor and avoid bias; however, this was not possible as both sites requested notification. Observational data were collected systematically based on a tool modified from Miles and Huberman (14) (Appendix J). Additionally, field notes and food menus were taken at each organization. Field notes comprised of general attitudes at mealtimes, behaviours regarding adherence to the guidelines by childcare workers, and general observations regarding organizational procedures.

Assessment of food menus consisted of a review of menu cycles offered at the childcare centres to determine if meals/snacks met the criteria for food groups as outlined in Alberta's daycare standards and policies (15) (meals must include all four food groups, snacks must include two food groups) and against the Food Rating System of the ANGCY for 'Choose Most Often', 'Choose Sometimes', and 'Choose Least Often' categories. Weekly menu compliance and full menu cycle compliance of each site for food group criteria, menu quality, and an overall compliance rating based on percentage was assigned separately for food group criteria and menu quality (Appendix O).

Key informant and focus group interviews were semi-structured consisting of open-ended questions and probes to fully explore topics. Interview participants included five key informants from each centre: directors, junior and senior staff members, and the cook. Interview questions addressed organizational structure and operating procedures, processes and strategies used in adoption and implementation of the guidelines, and perception of and attitudes toward content, adoption, and usability of the guidelines.

The length of the face-to-face interviews ranged from 30-65 minutes, and were conducted to the point of theoretical saturation of themes. Focus group participants included only two parents from Case 1, despite concerted recruitment efforts. Focus group questions addressed: awareness of the guidelines; organizational processes, strategies, and policies of the centre; involvement in decision-making within the centre; and reach of the guidelines. Focus group duration was approximately 15 minutes as questions were structured to accommodate a larger group and allow time for discussions and exploration of topics to take place.

4.2.5 Data Analysis

Interviews and focus groups were digitally recorded, transcribed verbatim and coded. Notes were taken by the interviewer during the interviews and focus group to document non-verbal cues such as body language and gestures. Non-verbal cues were included in transcript data and were used to aid interpretation. Documenting non-verbal cues aids in analysis by putting words into context and adding deeper meaning to the data (16,17). Interview and focus group recordings and field notes were transcribed immediately post-sessions to document information as accurately as possible. Transcripts were validated by an external researcher who reviewed the digital recordings against the transcripts to ensure accuracy and to avoid misrepresentation. Discrepancies between digital recordings and transcripts were not found. All interview and focus group data were digitally recorded and transcripts were reviewed for accuracy by an external researcher; for that reason, transcripts were not verified by participants. Direct observations, field notes, and interview and focus group data were coded and triangulated to give credibility to findings (12,13). Data were reviewed and analyzed

separately, together, and then compared for reliability. Triangulation supports findings by showing agreement and highlighting divergent views between independent measures increasing the reliability of the evidence (14,18).

NVivo software (version 9; QSR International, Doncaster, Victoria, Australia) was used to organize and manage the qualitative data. Data were organized by site, emerging themes, and conceptual ordering. Content was analyzed using both inductive and deductive coding strategies. First, responses were reviewed line-by-line to get a good sense of the data and to identify emerging themes inductively then responses were organized with corresponding questions to generate themes deductively. This approach is useful as it allows for an in-depth comprehensive analysis of the data by identifying recurring themes and allowing for an interpretation of the underlying meaning of the text (19). Procedures and methods were corroborated and verified by senior research team members. Data were coded by one researcher; however, coding categories were discussed with the research team prior to analysis. All interview and focus group data were analyzed by a second external qualitative researcher for coder reliability and validity of interpretations. Overall agreement in themes, categorization, and interpretation was found among reviewers; minor discrepancies were discussed and analyzed further until agreement among reviewers was reached. This study received ethics approval from the Research Ethics Board of the Faculties of Physical Education and Recreation, Agricultural, Life and Environmental Sciences and Native Studies at the University of Alberta.

4.3 Results

The main themes that surfaced from all of the sources of data collected are summarized in tables 1-4 and figures 1-2. The following results describe the organizational processes and strategies of the centres highlighting similarities and differences between centres followed by a list of factors found to influence uptake of the ANGCY.

4.3.1 Childcare Demographics and Organizational Characteristics

Characteristics of the two childcare cases studied are found in Table 1. Both daycares are located in a metropolitan area with just under 1.2 million residents (20). The daycare centres shared similar characteristics: both were established between 1986-1991, accredited, and comparable in size. While the differences between the two centres included: organizational type, organizational structure, having a specialized cook, and minimum level of formal training of staff.

Table 1. Description of daycare centres.

	Case 1	**Case 2**
Date of Establishment	1986	1991
Organizational Type	Non-profit daycare	For-profit daycare
Organizational Structure	Top-down/horizontal	Top-down
Accredited	Yes	Yes
Location	Urban	Urban
Proximity to Grocery Store	Not within walking distance	Not within walking distance
Vending Machines	No	No

Number of Children	Licensed: 47	Licensed: 60
Avg. Child to Staff Ratio	Observed: 5:1	Observed: 5:1
Age Range of Children	19 mo. - 6 yrs.	3 mo. - 6 yrs.
Number of Staff	12	11
Number of Volunteers	1 per day	1 periodically
Cook	Yes	No (Director is the cook)
Kitchen	Yes	Yes
Level of Formal Training of Staff	Min. 2yr diploma in Early Childhood Education	Min. Level 1 Childcare Assistant Course (50 hours)
Requirements for Professional Development	1/year	1/year

***Description of Case 1*.** Case 1 is a non-profit daycare with a low degree of centralization and high degree of formalization and complexity. Case 1 is comprised of a Board of Directors made up of community members and parents; an Executive Director; staff which consists of Early Childhood Educators, Special Needs Instructors, a specialized cook, and administrative support; and volunteers which are primarily parents and students. In Case 1, authority is retained by the Board of Directors for major decision making; however, decision making is inclusive of all members involved. This is also seen in day-to-day operations where although the Executive Director does retain authority, staff and parents are strongly encouraged to be actively involved in the decision making process. When asked about decision-making within the organization all staff interviewed responded in the same way, "The director but the issues are addressed by the staff." A response by one of the newer staff members was, "…a little bit of both [*meaning the staff and the director*] but mostly as a staff." Parents responded in a similar manner stating, "…they strongly encourage you to attend" [*referring to board*

meetings] and "they try to make it easy for people to attend." Staff and parents feel included in the decision-making process and perceive that their input is valued which is very important for morale and fostering a positive organizational culture.

***Description of Case* 2.** Case 2 is a for-profit daycare with a high degree of centralization and low degree of formalization and complexity. Case 2 is comprised of the Director, Assistant Director, staff which consists of Early Childhood Educators, and parent volunteers. In Case 2, authority and decision making is retained by the director. The director seeks input from staff for minor issues, such as children's acceptance of menu items, and staff feel they can freely approach the director with concerns/ideas/etc.; however, decisions are executed using a top-down approach. Low degree of formalization and complexity were observed in the multi-tasking and sharing of roles, common in for-profit daycare centres (21). In Case 2, the owner is the director, administrator, and cook for the centre; the assistant director shares administrative and cooking duties with the director and acts as an Early Childhood Educator. The obligation of the director and assistant director to fulfill several roles was observed to limit the amount of time spent on tasks. For example, lack of time may have played a role in menu quality and menu planning. Case 2 offers a two week menu rotation versus the five week menu rotation of Case 1. Overall, both cases were comparable with respect to meeting the specified number of food groups per snacks/meals (i.e., 2/2 and 4/4 respectively) and adherence to the ANGCY for the Choose Most Often, Choose Sometimes and Choose Least Often categories. However, Case 1 was observed to provide fresher foods and a greater variety of food choices was noted based on a review of the menus offered at each centre. Table 2 shows the results of the first week for each

centre's menu cycle. A complete analysis of the menu cycles can be found in Appendix O.

Table 2. Menu analysis of cases.

Case 1 Menu Analysis				
Week 1	**Total # of food items**	**Total # of days that met food groups per snack/meal**	**Total # of CMO**	**Adherence for CMO category**
Morning Snack	15	5/5	14	93.3%
Noon Meal	22	3/5*	21	95.4%
Afternoon Snack	15	4/5	11	73.3%
				87.3%
				96.0%**
Case 2 Menu Analysis				
Week 1	**Total # of food items**	**Total # of days that met food groups per snack/meal**	**Total # of CMO**	**Adherence**
Morning Snack	10	5/5	9	90.0%
Noon Meal	15	4/5	9	60.0%
Afternoon Snack	10	4/5	7	70.0%
				73.3%
				83.3%**

*** All noon meals that did not meet 4/4 for food group categories were lacking a grain due to traditional meat and potato dishes, e.g. roast beef served with potato, vegetables, and milk.**
**** Adjusted for weekly allowance of 4 food choices from CS/CLO categories**

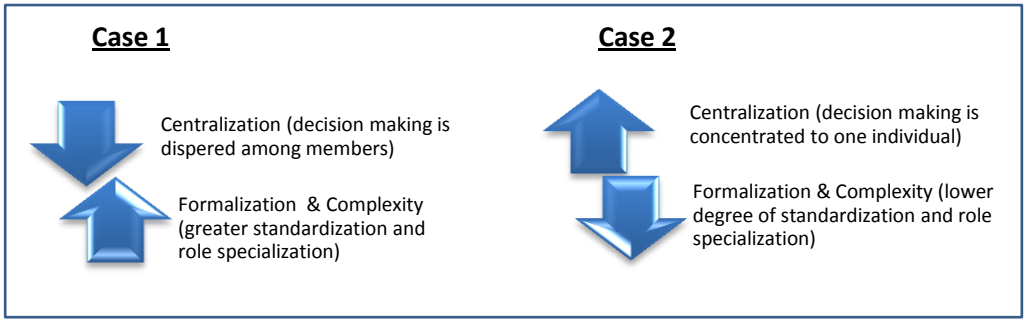
*** Refer to Appendix 0 for complete menu cycle analysis of Case 1 and Case 2

CMO: Choose Most Often **CS:** Choose Sometimes **CLO:** Choose Least Often

4.3.2 Organizational Structure

Differences in organizational structure between centres highlight the uniqueness of each case. More specifically, organizational type, degree of centralization, formalization and complexity, and minimum level of formal training of staff differed between centres (Figure 1). In Case 1, authority is dispersed among many members (low centralization) of the organization and there is greater standardization and specialization of roles (high formalization and complexity); characteristic of non-profit organizations (21). Decentralization is seen through the way in which authority is dispersed and decision making occurs, inclusive of all levels. High complexity and formalization is evidenced by the employment of auxiliary staff such as a cook and secretary which influences the standardization of job roles as well as the time and commitment spent on tasks. In Case 2, authority and decision-making is centralized to one member (high centralization), the director, and there is lower standardization and specialization of roles (low formalization and complexity). This is evidenced by the lack of auxiliary staff resulting in greater multi-tasking of roles by staff members limiting the amount of time and attention spent on tasks. Level of formal training of staff differed between centres; higher minimum levels of training and education of staff from Case 1 may be a characteristic of the organizational structure of the centre, i.e., higher complexity and formalization and/or a result of greater accountability such as to the Board of Directors. Interestingly, though, although differences in organizational type, structure, and levels of training and education differed between centres, both cases were early adopter organizations. These factors have been found to influence quality of care in daycare centres (21); however, they may not be determining factors in the decision to adopt nutrition guidelines.

Figure 1. Comparison of organizational structure between Cases.



4.3.3 Implementation Strategies

Implementation strategies used by the two daycares are found in Table 2. Differences were found between all implementation strategies: role modeling, incorporating foods and food activities into the curriculum, enforcement of nutrition policies, degree of priming and prompting throughout the centres, and inclusion of parents. Staff from Case 1 practiced role modeling of eating behaviour with children, while staff from Case 2 did not practice role modeling of eating behaviour. Case 1 staff and children ate together during snack and meal times eating foods from the same menu while staff from Case 2 supervised children during snack and meal times and ate at separate times in the staff room. Case 1 strictly enforced their nutrition policy having zero tolerance for junk food in the centre whereas Case 2 mildly enforced their nutrition policy of no junk food in the centre, occasionally allowing children to eat junk food. In Case 2, children would be asked to put junk food in a bin where they could pick it up at the end of the day but on occasion, such as for special events like field trips, children were allowed to eat it. Parents would then be reminded or asked not to send junk food again if/when caregivers saw them. Case 1 incorporates healthy food choices into the curriculum through field trips, activities, and educational material (Table 2). Field trips

include grocery store tours, pumpkin patch tours, and visiting the Farmer's market. Story time includes fresh vegetables when possible: for example, when "Stone Soup" is read to the children they are asked to participate by bringing in a vegetable from home. The story is read incorporating the vegetables the children brought in and then the cook in the centre makes a soup using those vegetables that everyone later shares together. Educational materials include fruit and vegetable alphabets bordering the classrooms and counting exercises using foods such as pumpkin seeds. Conversely, Case 2 on occasion bakes with children and has a taste testing of fruits or vegetables about once a year. Priming and prompting of the ANGCY and the daycares' nutrition policies are clearly displayed in both centres. However, Case 1 also displays seasonal food arrangements such as Thanksgiving displays and educational material throughout the classrooms. Finally, Case 1 includes parents in decision-making, activities, and provides material to parents where applicable through monthly newsletters such as reminding parents not to bring junk food for events, providing Web-links and healthy recipes, and brochures are available at the centre for parents. Case 2 does not include parents in decision-making or provide materials for them. Again, both centres were found to be early adopters suggesting that implementation strategies may not be a key factor in the decision to adopt nutrition guidelines but may influence barriers to implementation with children.

Table 3. Implementation strategies for the implementation of the ANGCY.

	Case 1	Case 2
Role Modeling	• **Yes:** Eat with children and eat same foods • Staff can eat own food in staff room but not in front of children	• **No:** Staff supervise children during mealtimes • Staff can eat own food in staff room but not in front of children
Nutrition Policy	• **Posted** • **Strictly enforced** (junk food not allowed on site – made explicitly clear and upfront to parents) • Parents discouraged from sending food for their children • Junk very limited at special events	• **Posted** • **Mildly enforced** (children are asked to put junk food in a bin where they can pick it up on their way out but on occasion are allowed to eat it – remind and ask parents not to send junk food if they see them) • Parents are not discouraged from sending food for their children • Junk not limited at special events
Incorporating Nutrition into Curriculum	• **Yes:** Field trips, activities, & educational materials • Grocery store tours • Farm and garden tours (ex. pumpkin patch tour) • Go to Farmer's market • Story time (Stone Soup using veg. brought from home) • Nutrition alphabet bordering walls • Counting exercises using pumpkin seeds	• **Very limited** • On occasion bake with children • Taste testing 1-2 times per year
Priming /	**Yes:** Clearly displayed throughout	**Yes: But limited**

Prompting	centre • Guidelines are easily accessible to staff and parents (available in main office) • Menus posted • Pictures of events/activities posted throughout centre • Food arrangements on display to coincide with season/holiday/event (ex. Thanksgiving) • Nutrition alphabet bordering classrooms	• Guidelines are easily accessible to staff and parents (post guidelines in classrooms) • Menus posted • Post pictures of events but events very limited
Parental Involvement	**Yes** • Parents are encouraged to have a voice in major decision-making for the centre • Material available for parents	**No** • Parents are not included in decision-making within the centre • No material available for parents pertaining to nutrition

4.3.4 Organizational Processes

Table 3 presents the results of the factors identified to influence adoption and implementation of the ANGCY. A comprehensive analysis of both cases indicates that strong leadership was a key determinant influencing organizational behaviour within the centres. In both cases, active engagement of professional and community networks by directors resulted in awareness of the guidelines as well as providing an opportunity to seek out information relevant to childcare practice. Factors that emerged from the data indicating strong and effective leadership for both cases were: acting as a health champion; role recognition; being accountable, approachable and supportive; providing

regular feedback; and acting as knowledge brokers for staff (information seeking and sharing). Strong leadership acted to shape the organizational culture of the centres where teamwork, information sharing, collaboration, a supportive environment, and a perception by staff of being valued in the organization resulted in a positive organizational culture. Organizational culture is reported to be a product of leadership and a determinant in adoption and implementation of innovations (7). Motivation and attitude of leaders is reported as the strongest predictor of adoption of innovations in organizations; attitude of leaders not only affects the decision to adopt an innovation but also is instrumental in creating and maintaining the culture within an organization which affects implementation (7). The findings from this study suggest that the organizational processes used in the centres, a by-product of strong leadership, had the greatest influence on adoption and implementation of the ANGCY.

Table 4. Factors influencing adoption and implementation of ANGCY.

Process	Outcome
Leadership • Health Champion • Role Recognition • Accountability • Approachable • Supportive • Feedback • Information Sharing	• Staff feel there is a leader in the centre and feel they have someone to turn to for direction/guidance when problems/issues arise • Staff trust leadership to make the best decisions for the centre and provide them with informed solutions best for all involved • Staff feel comfortable to approach directors with problems/issues as they arise • Staff feel supported by directors both in practice and in raising issues/ideas • Regular feedback provided to staff both formally (performance evaluations annually) and informally (conversations/discussions) as issues arise • Information sharing both formally (staff meetings) and informally (passing conversation/discussions or informal meetings as issues arise)
Networking • Information Seeking/Sharing	• Active networking of local, provincial, national networks where members meet to hold discussions, share knowledge/information, and generate new ideas/solutions • Creates awareness • Acts as a support to the organization
Organizational Culture • Teamwork • Information Sharing • Collaboration • Supportive Environment • Value	• All staff members work together to achieve best practice • Staff share knowledge, ideas, and collaborate with one another • Staff trust and feel supported by one another • Staff feel highly valued in the organization • High social capital

4.4 Discussion

With little published evidence regarding uptake of nutrition guidelines, particularly in childcare settings, it is important to examine the organizational characteristics that affect uptake behaviour. DoI is a useful framework for examining uptake behaviour by assessing organizational characteristics that may influence adoption and implementation of innovations such as nutrition guidelines. Identifying the organizational characteristics that facilitated the early adoption of the ANGCY in childcare centres may serve as a model for other similar centres trying to adopt and implement new policies, particularly nutrition focused guidelines. Differences in organizational structure and implementation strategies between centres were found while organizational processes of the centres were similar. Both centres were found to be early adopters of the ANGCY suggesting that organizational processes may have played a more influential role in the uptake of the ANGCY. The following is a discussion of the influence of these factors on the uptake behaviour of the ANGCY in childcare settings.

Differences between centres were found in organizational structure (Table 1), mainly in degree of centralization, formalization, and complexity, and level of training and education of staff. Case 1 (non-profit daycare) operated with a lower degree of centralization and higher degree of formalization and complexity, and Case 1 staff had higher levels of education as compared to Case 2 (for-profit daycare). Greater decentralization in Case 1 resulted in greater consultation at all levels of the organization for both parents and staff members. Inclusion of parents and experts as with a Board of Directors can influence operating procedures of organizations by

offering a wider breadth of knowledge and support to the overall functioning of an organization (21). Greater formalization and complexity of policies, procedures, and job roles in non-profit centres was reflected in, and a consequence of, the greater specification of roles for directors and staff members. These findings are consistent with other literature reporting differences in organizational structure between non-profit and for-profit daycares across Canada. Non-profit centres are found to be more formalized, more complex and less centralized than for-profit centres affecting employment of auxiliary staff, time spent on tasks, involvement of parents in decision making, and clearly articulated policies and procedures resulting in higher quality of care (21). Differences in organizational structure also may have affected differences observed in menu quality (e.g., freshness of foods and variety of menus) between the two centres; greater role specialization may affect factors such as amount of time and planning spent on tasks. The extent of influence of differences in level of formal training of staff on implementation behaviour is difficult to conclude at this point; however, the literature does show a positive correlation between nutrition knowledge and behaviour at mealtimes of childcare providers (22) suggesting that level of training can impact implementation behaviour. Organizational structure is important in the functioning of organizations but may have more relevance when looking at similar organizational types. In this case, both centres were found to be early adopters of the guidelines suggesting that organizational structure may not be a key determinant in adoption decisions but may influence implementation strategies.

Differences in implementation strategies were found between centres. Implementation strategies found to influence implementation and adherence to the guidelines were role modeling, enforcement of nutrition policies, incorporating foods

into the curriculum, priming and prompting, and inclusion of parents. The literature has consistently shown that role modeling affects young children's eating behaviour and that children are more likely to try and accept new foods and/or foods that have previously been rejected when exposed to positive role modeling (22-25). Lack of role modeling may be a consequence of lower levels of education of childcare staff as was noted in Case 2. Additionally, it is widely accepted that social and physical environments support healthy eating (26,27) emphasizing the need to enforce nutrition policies, incorporate nutrition into the curriculum, and promote awareness of healthy nutrition practices through the use of priming and prompting. Enforcement of nutrition policies affects the environment and influences food choices made by children. Nutrition policies in schools have been found to positively impact students' eating habits by limiting the availability of unhealthy foods sold in schools (28). Incorporating nutrition into the curriculum and promoting awareness of healthy eating behaviours takes a multifaceted approach, thus increasing the likelihood of the uptake of nutritional guidelines (29-31). Case 1 reported no barriers to adherence to the guidelines while Case 2 reported children's picky eating as a barrier to eating vegetables. To what degree each of the factors discussed and level of education of childcare providers plays a role in the implementation and adherence to the guidelines is unclear at this point but does demonstrate that the multi-faceted approach used by Case 1 may be an important predictor in influencing the development of healthy eating habits for children. It is likely that children's reluctance to eat and try vegetables in Case 2 was influenced by the absence of these factors, as well highlights an area that should be probed further to understand the impact these variables have on the development of healthy nutrition

behaviour for children and implementation strategies in the uptake of nutrition guidelines within childcare settings.

Organizational processes found to influence organizational behaviour were networking, leadership and organizational culture. Awareness created through active networking by directors increased the likelihood of adoption. Directors from both centres regularly engaged professional networks. Conversely, staff members did not participate in networks and most were unaware of their existence. For directors, networking was found to serve as a professional forum where they could share ideas, expertise, and information; hold discussions relating to new information and/or concerns; and support one another in achieving common goals. As one director describes, "We meet and we share information so if we have issues about maybe how much we are budgeting for our food, where we are going to be buying our food, the kinds of menus we're developing…that kind of discussion goes on." Networking also provided opportunities for inter-professional knowledge sharing and collaboration. It was through networking forums that discussions were first held regarding food availability in childcare organizations then childcare providers, government representatives and health care professionals such as dieticians came together to share knowledge and generate strategies that could help alleviate the discrepancy of food availability between centres. It was through this collaborative exchange process that both directors were first made aware of the ANGCY. This is consistent with health care literature that shows that diffusion is radically affected by inter-professional relationships (32). Networking created awareness of the guidelines increasing the likelihood of adoption.

A positive relationship between leadership and organizational culture was found within both centres (Figure 2). Leadership by directors was found to positively influence the organizational culture of the centres affecting uptake of the ANGCY. Directors displayed effective leadership in the overall functioning of the centres. Notable characteristics of directors were that they were sincere, accountable, supportive, provided feedback, approachable, and they had a strong understanding of their positions as leaders. Leadership is a key determinant of organizational behaviour change (13). The most important reason for adopting the guidelines was because directors and staff were committed to healthy child development and they understand that proper nutrition is a part of achieving that goal. This led to their secondary role as health champions. Health champions have been found to be an important determinant in the adoption of nutrition guidelines in schools (33). However, acting as a health champion was not seen as a separate role but as part of the organizational mission: healthy child development. Additionally, directors were accountable and approachable which set the tone of the centre: a positive organizational culture. Strong leaders lead by example and encourage and support desired practices subsequently fostering the culture of the organization (34).

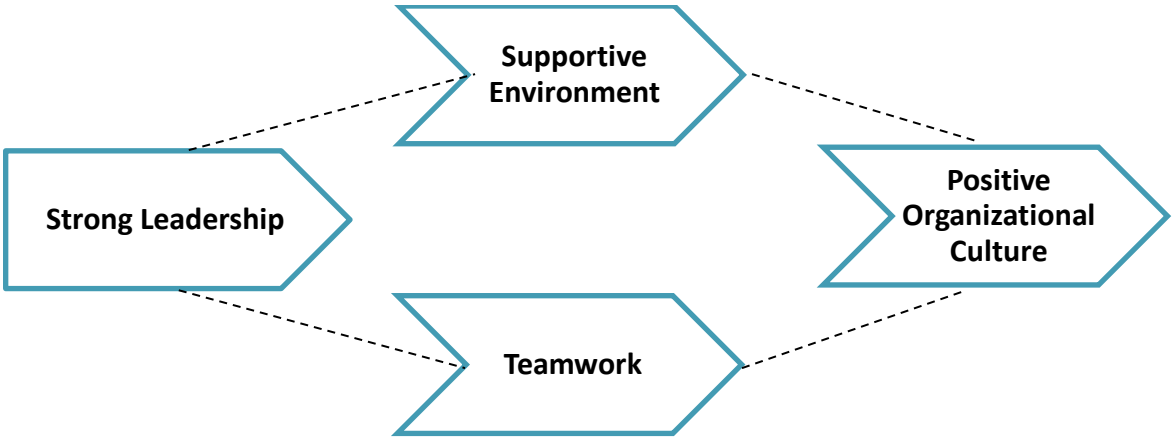
In both centres, members were highly collaborative and supportive of one another. Every task was seen as a collective task not individual. Even in Case 1 where roles had greater specialization (complexity), perception among members was that they were working toward a common goal and that each member was knowledgeable in their position. Members trusted one another and felt valued and appreciated, fostering an environment where teamwork, support, and collaboration were the norm. Staff from both centres commonly responded to questions with statements including “we” and

"team." When asked where they look for information or support, staff commonly reported that they would ask one another and especially directors for answers/solutions. Staff regarded directors as knowledge brokers for the centres. Directors were the ones that would seek out new information and then share it with staff formally using a systematic approach where new information, such as recommendations from the ANGCY, would be presented incrementally in staff meetings and informally through discussions as issues would arise. Staff appreciated having someone whom they viewed as a trusted information source helping them find solutions. As well, this left more time for childcare providers to focus on their primary duties. Teamwork helped centres implement the guidelines and may have been a factor for early adoption because a positive organizational culture was already embedded. An overview of school nutrition policies in Canada highlights support and communication as key factors to successful implementation (35). Additionally, directors were approachable and provided staff with regular feedback. Feedback was both formal and informal as issues, concerns, or new information came about. Regular and timely feedback is important as it increases the chances of successful implementation (36). There is a strong body of evidence in the business literature that suggests a positive organizational culture is the key to producing returns (34) but it is the attitude and motivation of leaders that creates and maintains the culture of the organization (7). "Leaders set the tone of an organization, they more than anyone else establish and maintain its values and norms through their own actions" (34). This was noted in both centres; directors set the tone of the organization and led by example. For these two centres, early adoption and implementation of the ANGCY was influenced by networking

and the organizational culture, both of which were a result of leadership qualities (Figure 2).

Differences were found between centres with respect to organizational structure and implementation strategies while similarities were noted in organizational processes. As both centres were found to be early adopter organizations, the findings from this study indicate that organizational processes may be a stronger predictor of uptake behaviour of nutrition guidelines whereas organizational structure and implementation strategies may be more important when considering acceptance of and adherence to guidelines by children. As this was an exploratory study, direct conclusions at this time cannot be made; however, future research should explore further the relationship between organizational processes and organizational behaviour change as this may influence uptake of nutritional guidelines within childcare settings.

Figure 2. Relationship between leadership and organizational culture.



4.4.1 Limitations

Evaluating the uptake of nutrition policies and guidelines in childcare organizations is a novel area of research; as a result, it is not well represented in the literature and, therefore, has several limitations. Findings were limited by the type of study and sample size. Evaluation of the uptake of the guidelines was part of an exploratory study looking at adoption of the guidelines by early adopters in urban populations. Only exemplary cases were selected to examine early adopters. Examining only early adopters was a parameter used to explore the uniqueness of each case. Purposefully selecting only exemplary cases provides an opportunity to learn from information rich sources highlighting unusual or extreme conditions; lessons may be learned about what works and how from cases such as these. Limiting the study by geographical region was an attempt to understand what is unique about centres in urban areas which may differ from centres in rural areas. Due to the scope and nature of this study, case study method was used which does not require a large sample size as the objective of case study research is not to generalize findings but, rather, to explore, in depth, the uniqueness of each case. Additionally, the target set for focus group participants was not met limiting the perspective of this study. As an exploratory methodology, case study helps to identify areas for future directions; however, it is not possible to generalize findings. Another limitation is that themes/findings emerge from qualitative data requiring further study. For example, although similarities were noted between centres regarding organizational processes, it is difficult to assess the impact of these findings as this was not the main objective of the study. It has, however, highlighted an important aspect in uptake behaviour and probing this further can build on these findings and potentially result in an organizational model for other daycare

centres.

4.4.2 Implications for Research and Practice

Future research should tailor evaluations specific to structural characteristics, implementation strategies, and organizational processes of childcare organizations to gain a better understanding of the impact of these factors on uptake behavior of nutritional guidelines. Additionally, investigating a larger sample size that includes non-adopters and rural centres will provide a better description of the organizational characteristics of childcare organizations. Understanding the factors that impact behaviour change in childcare settings is important as it may identify key organizational processes and implementation strategies unique to childcare organizations. This is important as it may inform other childcare centres of how to implement such policies increasing uptake of nutrition guidelines. As childhood obesity is becoming an increasing threat to children and society, it is imperative that nutrition policies are adopted and implemented in childcare organizations that target the early stages of life when eating preferences and habits are formed.

4.5 References

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Chapter 5: General Discussion and Conclusions

5.1 Summary

There is a gap in the literature regarding the uptake of nutrition guidelines, and even less is known about how these variables influence organizational behaviour, particularly in the childcare setting. In an effort to address this gap, this thesis examined the early adoption of the Alberta Nutrition Guidelines for Children and Youth in daycare settings using DoI (1) as the theoretical framework guiding the overall study design and evaluation. DoI is a useful framework for examining uptake behaviour because the aim of the theory is to identify predictable patterns of program adoption by explaining how, why and at what rate innovations are adopted by identifying the processes and strategies by which innovations occur. DoI is an organizing framework that uses an ecological approach that considers individual, structural, and organizational characteristics, as well as the characteristics of the innovation (1).

Childcare provider perceptions of the characteristics of the guidelines were examined as part of a formative evaluation to assess the utility and functionality of the ANGCY. Additionally, organizational behaviour change was examined to identify the processes and strategies used by early adopters of the guidelines in the daycare setting as part of a process evaluation to understand how these factors influenced early adoption and implementation of the guidelines. Formative and process evaluations contribute to the improvement of existing nutrition resources and to the understanding of the factors that influence uptake behaviour in childcare settings. It is important to understand the organizational factors that may influence adoption and implementation behaviour to get a better understanding of both facilitators and barriers of uptake

behaviour. Answers to these process questions will inform our understanding of how and why interventions work in this specific setting. As well, findings from this study will contribute to the overall evaluation of the ANGCY targeting childcare organizations and to ongoing studies examining these factors in other settings, such as schools and recreational facilities.

5.2 Principle Findings of this Thesis

Diffusion of Innovations theory was used to help organize and frame the evaluation of the guidelines using a systematic approach (1). Results from childcare provider perceptions of the characteristics of the guidelines were framed following this approach. Given the paucity of research available in the literature, this approach of examining provider perceptions of the attributes of guidelines was novel as most studies involving nutrition interventions in childcare settings have typically only assessed outcome measures of the effect of facilitators and barriers to uptake of guidelines and implementation of guidelines on the nutritional status of children. Insight into childcare provider perceptions of the guidelines is valuable to understand what works, what doesn't, and how improvements can be made from the user's perspective in order to tailor appropriate and functional resources specific to this setting.

Overall, the ANGCY were perceived positively by childcare providers. The guidelines were found to have many advantages, were highly compatible with current nutritional practices, had a low level of complexity, were easy to try, and changes were easily observed; all of which are successful components of increasing the likelihood of adoption of an innovation (1). The guidelines were found to be user-friendly because

they were easy to understand, useful and functional for childcare staff. Recommendations outlined in the guidelines were perceived by childcare providers as simple to try and easy to observe change increasing the likelihood of adoption. Interestingly though, a key finding from this evaluation was the advantage of *tangibility* of the guidelines; more specifically, childcare providers found the guidelines to be practical and were delivered in an acceptable format. Having the guidelines in a paper-based format contributed to increased awareness as reported by childcare staff because having a printed copy on the shelf made them visible to childcare providers acting as a prompt for cues to action that may serve to promote and support recommendations from the guidelines. In addition, the presence of the guidelines within the daycare facilities may have contributed to increased frequency of use and accessibility and practitioners' tacit knowledge and reflection of nutrition practices. In both Cases, although childcare providers did have access to computers, computers were not located in the classrooms where childcare providers spend the majority of their time supervising and instructing children, making it important for printed copies of the guidelines to be routinely available to daycare staff. When possible, childcare providers would use computers during their breaks or after work but typically would not leave children to access a computer. This is an important factor that may influence the frequency of use of the guidelines as waiting until later to access the guidelines by staff may likely have resulted in a lower frequency of use limiting the ability to learn about the guidelines. Further, Case 2 was observed to use pages directly from the guideline binder rather than using the computer screen to display nutrition information as a teaching tool for children and parents; having children gather around a computer or asking parents to view a screen may not be ideal in childcare settings, particularly in this dynamic setting

where supervision and safety of children are imperative. Although the concept of a Web-based nutrition guideline may be useful for disseminating and updating the guidelines, this platform may not necessarily lend itself to increased accessibility of the guidelines in the childcare setting. Also, printing the guidelines from the office setting rather than receiving a printed version that is disseminated through the office of the Alberta government may not be as feasible as presumed. The value of publishing Web-based materials in this ecologically minded society has merit, however, moving away from print materials may not always be appropriate for the childcare context as Web-based resources are not as accessible for childcare providers who are typically in the classrooms and do not have frequent access to computers.

Evaluating the organizational constructs of childcare organizations is important to understand the unique features of childcare centres in order to determine factors that influence organizational behaviour change within these settings. Essential critical functions of an organization can contribute to organizational change and depending on the functions may increase the likelihood of change. Evaluation of the childcare centres' organizational constructs in this study included: demographic and organizational characteristics, implementation strategies, organizational structure, and organizational processes. In-depth case study analysis was useful for identifying subtleties between the organizations. More specifically, differences between centres were found with respect to implementation strategies, level of formal education of staff, and organizational structure, while similarities were found in organizational processes. Since both centres studied were early adopter organizations, findings from this study may indicate that organizational processes may be a stronger influencing factor of uptake behaviour of nutrition guidelines in daycare centres. Organizational processes regulate

the flows of activity of an organization establishing patterns and norms of functioning, i.e., organizational culture. In contrast, implementation strategies and organizational structure may be more important when considering adherence to guidelines by childcare providers and acceptance of recommendations by children. Organizational processes lay the foundation for behaviour within an organization, while implementation strategies and organizational structure outline the specific steps and functions of an organization for implementing initiatives.

Implementation strategies that were used within each case were not found to impact the decision to adopt the guidelines for childcare centres, but these may influence barriers to implementation of nutrition recommendations for children. A key finding of this research was the perceived difference in terms of barriers to implementation of guideline content with children between the two cases. Case 1 reported no barriers to implementation, while Case 2 reported having difficulties encouraging children to eat a wider variety of foods as per current guideline recommendations (e.g., vegetable consumption was an issue). The underlying reasons for these differences are not fully understood since parental barriers within their home food environments were not specifically examined. Given that this was an exploratory study and detail regarding contextual information outside of the daycare centres is lacking, it is difficult to precisely identify which factors were most influential whether or not this was solely due to differences in parental influences of household consumption patterns or due to differences in implementation strategies utilized within the centres. However, it is likely that some differences in implementation strategies, such as the lack of role modeling of eating behaviour by childcare staff did influence this in Case 2.

The major differences between centres included: role modeling of eating behaviour by daycare staff, enforcement of nutrition policies within the daycare centres, incorporation of foods into the curriculum, priming and prompting of nutritional messaging, and inclusion of parents in reinforcing these policies (Table 1). Case 1 diligently practiced all of the implementation strategies noted above, which may have likely contributed to the lack of barriers experienced. In contrast, Case 2 did not practice role modeling of eating behaviour with children; staff from Case 2 supervised children during snack and meal times but did not eat the same foods as children or at the same times. Case 2 only mildly enforced their nutrition policy; children would be asked to put junk food in a bin where they could pick it up at the end of the day but on occasion were allowed to eat it and parents would be reminded or asked not to send junk food again if/when caregivers saw them. Foods were only on occasion incorporated into the curriculum, priming and prompting was minimal, and decisions and practices of the centre were not inclusive of parents.

Role modeling of healthy eating behaviour is strongly emphasized in the literature to support healthy eating practices among preschool aged children (2-5). Lower levels of formal education of childcare staff in Case 2 may have contributed to the lack of enforcing factors such as role modeling. The literature shows a positive correlation between nutrition knowledge and behaviour at mealtimes of childcare workers suggesting that differences found between centres regarding level of formal education of staff likely had an influence on behaviour at mealtimes by children (2). For example, the implementation strategies practiced by Case 1 likely contributed to the absence of barriers experienced. A multi-faceted approach to implementing nutrition policies in schools is supported by the literature showing that nutrition education,

school curriculum, community recreation opportunities, priming and prompting of healthy messaging throughout the school, and sharing information with parents through newsletters are important aspects of a multi-faceted health framework to improving child health status (6-9). There are many parallels with the findings from this study and those that were reported in the school health literature. Other studies and a sister study, Downs et al. (10), reported an increased likelihood of adoption of the nutrition guidelines when multi-faceted approaches were used in schools. However, to what degree these factors may have influenced uptake and to what extent this can be applied to the childcare setting is still unknown and worthy of further exploration.

Additionally, some of the barriers to implementation, such as lower acceptance of foods by children as experienced by Case 2 may also have been a consequence of menu quality. Case 2 reported children's picky eating as a barrier to eating vegetables. Despite the fact that both centres did meet the requirements for number of food groups per snack/meal (i.e., 2/2 and 4/4, respectively) and adherence to the ANGCY for the Choose Most Often, Choose Sometimes and Choose Least Often categories, Case 1 was observed to provide fresher foods and a greater variety of menu choices (Appendix O). Greater variety was evidenced by the five week menu rotation of Case 1 versus the two week menu rotation of Case 2. As well, Case 1 provided fresher options such as fresh fruits and vegetables as opposed to frozen or canned fruits and vegetables often served in Case 2. Offering a wider variety of menu options and fresher choices may make foods more appealing to children increasing their willingness to try and eat vegetables in addition to taste testing and increased frequency of exposure to fruits and vegetables. As well, higher menu quality will likely complement implementation strategies increasing the likelihood of acceptance of nutrition recommendations for children.

Organizational structure is important for the functioning of organizations. Rogers' states that organizational structure is obtained through predetermined goals, prescribed roles, authority structure, rules and regulations, and informal practices or, in other words, degree of centralization, formalization, and complexity (1). These structural characteristics of organizations determine how an organization operates. Case 1 operated with a low degree of centralization and high degree of formalization and complexity. In contrast, Case 2 operated with a high degree of centralization and low degree of formalization and complexity (Table 1). Differences in quality of care in daycare centres have been found with respect to organizational structure; typically, childcare centres operating with a low degree of centralization and high degree of formalization and complexity have been found to provide higher quality of care than centres operating with a high degree of centralization and low degree of formalization and complexity (11). Decentralization is a key component of organizational structure because it allows for greater consultation at all levels integrating knowledge from multiple sources. For example, Case 1 had a wider breadth of key stakeholders to benefit from as a result of having a Board of Directors which also may have influenced the practices of the centre. The Board of Directors in Case 1 was made up of parents and community members who governed the practices of the centre. Board members offered expertise in a wide array of fields and were readily accessible making their contribution an asset to the centre. Higher formalization and complexity within organizations allows for greater specialization and specification of job roles. Lack of specialization and specification may help to explain the greater multitasking of roles in Case 2 resulting in less time and planning for each individual task, such as with menu planning. Case 1, on the other hand, had greater formalization and complexity in job

roles allowing for greater time and support to achieve goals. However, as both centres were early adopter organizations, differences in organizational structure were not attributed to the decision to adopt the guidelines but may influence implementation strategies in childcare centres as the specification and complexity of job roles, policies, and procedures of organizations determines the overall functioning of an organization.

Organizational processes were found to consistently pose as one of the factors that influenced uptake behaviour of the ANGCY in the two daycare centres studied. Careful examination of organizational processes may help to explain the underlying reasons for why behaviour occurs. For example, implementation strategies describe actions to be taken when implementing nutrition guidelines but it is the organizational processes that explain the factors that enable those strategies. Although differences were found between centres with respect to implementation strategies and organizational structure, the organizational processes of the centres were found to be similar (Table 2) indicating that organizational processes are important factors that influence uptake behaviour.

Directors from both centres displayed characteristics of strong leadership effectively fostering a positive organizational culture. Leadership and organizational culture are supported in the literature to influence and support organizational behaviour (12,13). Key findings from this study show that strong leadership, teamwork, and a supportive environment facilitated implementation of the ANGCY in the two childcare centres studied. Awareness of the guidelines and motivation to support healthy child development by leaders lead to the decision to adopt the guidelines and leading by example and fostering a culture of trust, teamwork, and support resulted in

implementation. The leaders in these two centres, the directors, used a sincere approach because they strongly believed in the guidelines from a healthy child development perspective. Both directors displayed strong organizational (managerial) skills to support their staff and the functioning of the centres. Together, these two aspects resulted in strong effective leadership that was the key determinant of both adoption and implementation of the ANGCY. As well, the organizational culture was already in place in both daycares, the mark of a high performing organization. The culture was responsive and primed ready to adopt the guidelines making implementation a relatively simple task, thus, increasing the likelihood of adoption.

Results from this study suggest that organizational processes and strong leadership may play a more significant role in the **uptake of** nutrition guidelines whereas implementation strategies and organizational structure may be more important **for implementation and adherence** to guidelines. Childcare centres have unique organizational constructs and to date they have been underrepresented in the literature. Since childhood is the time when eating habits and preferences begin to form, it is imperative to build on the findings from this study to understand how to implement healthy eating guidelines in an effort to offset childhood obesity and promote healthy child development.

Table 1. Comparison of organizational structure and implementation strategies between centres.

	Organizational Structure	Implementation Strategies	Outcomes
Case 1	• Decentralized • High formalization • High complexity	• Role modeling of eating behaviour • Enforcement of nutrition policies • Incorporation of foods into curriculum • Priming and prompting of nutritional messaging • Parental involvement	No barriers
Case 2	• High centralization • Low formalization • Low complexity	• Lack of role modeling of eating behaviour • Mild enforcement of nutrition policies • Lack of incorporation of foods into curriculum • Lack of priming and prompting of nutritional messaging • Lack of parental involvement	Barriers to eating vegetables

Table 2. Organizational processes of childcare centres.

Organizational Processes of Case 1 and Case 2		
Leadership • Health Champion • Role Recognition • Accountability • Approachable • Supportive • Feedback • Information Sharing	Organizational Culture • Teamwork • Information Sharing • Collaboration • Supportive Environment • Value	Networking • Information Seeking/Sharing

5.3 Strengths and Limitations

Evaluating the uptake of nutrition guidelines in childcare organizations is a new area of research; as a result, it is not well represented in the literature. Findings from this study were limited by the type of study and sample size and, therefore, may lack

generalizability. However, as an exploratory case study, this is an appropriate target for conducting in-depth case analyses. Evaluation of the uptake of the guidelines was part of an exploratory study looking at adoption of the guidelines by early adopters in urban populations. Examining only early adopters was a parameter to explore exemplary cases for probing the uniqueness of each case. Only exemplary cases were selected to examine early adopters. Purposefully selecting only exemplary cases provides an opportunity to learn from information rich sources highlighting unusual or extreme conditions; lessons may be learned about what works and how from cases such as these. This type of inquiry is important to understand the factors that facilitate behaviour change rather than only addressing the barriers in a resistant environment. Limiting the study by geographical region, urban areas, was a parameter to minimize differences between centres. Findings from this study may not be generalizable to childcare centres in rural areas or non-adopters; however, this was not the goal of this study. Due to the scope and nature of this study, case study method was used which does not require a large sample size as the objective of case study research is not to compare and generalize findings but, rather, to explore, in depth, the uniqueness of each case. Qualitative research allows for a broad look at the existing question under investigation offering a rich understanding, in this case, of childcare providers' perceptions of the guidelines and the factors influencing organizational behaviour, in other words, adoption of the guidelines in childcare centres. As an exploratory methodology, case study helps to identify areas for future directions; however, it is not possible to generalize findings.

The target set for the number of focus group participants was not met and may have limited the perspective of this part of the study. The study aim was to hold two

focus groups consisting of six-eight participants from each centre; however, despite recruitment efforts only two parents from Case 1 participated. While feedback from parents was interesting and informative it may not be generalizable as they come from a highly educated group who have some pre-existing knowledge of nutrition. Gaining the perspective of parents would have enriched the data by providing a wider breadth and understanding of the factors influencing organizational behaviour change. Parents' perspective was sought after to provide insight regarding the processes and strategies used by the centres, such as communication with parents, degree of involvement of parents, barriers and/or facilitators experienced by parents with respect to adhering to the guidelines, parents' perception and attitude towards implementation of the guidelines, and reach of the guidelines. In addition to enriching the perspective of this study, increasing the number of focus group participants would enhance triangulation by adding to the reliability of findings, verifying and possibly adding to the data collected from key informant interviews.

Another limitation was that not all childcare providers completely reviewed the guidelines due to new employment or lack of time. Newer staff members from both centres had not completely reviewed the guidelines and/or were unaware of the general practices of the centre prior to adopting the guidelines. New employment affected responses to some of the questions asked in the interviews, such as questions relating to the organizational and nutritional practices of the centre before the adoption of the guidelines, who first made the decision to adopt the guidelines and why, the first phases of the adoption process, strengths and/or weaknesses of the guidelines, and specific opinions about recommendations. Interestingly though, this also enriched the data by informing our understanding of the organizational processes of the centres and

institutionalization of aspects of the guidelines. Newer staff members from both centres reported being unsure as to the reasons behind some of the nutritional practices of the centre reporting that they were informed by the director or other staff members of information regarding recommendations in the guidelines and that "…that's just how we do things around here." This also brought to light the advantage of information sharing practices of directors. For example, as knowledge brokers, directors were the ones to seek out new information and then share that information incrementally with staff using both formal approaches, i.e., systematically through staff meetings and informally through discussions as issues would arise. This was found to be useful because it gave childcare providers the opportunity to focus on childcare rather than on information seeking which may take away from their primary duties or add more hours to their day. This demonstrates that information sharing is common practice within the centres and that organizational culture is an important aspect in adoption and implementation behaviour. As staff turnover are variables likely to influence the day to day operations of a childcare centre, these differences were important to note and the data that emerged from these interviews demonstrates the benefits, applicability and the ability to study these factors in depth.

Lack of time to review the guidelines was not deemed to be a significant barrier to uptake for these cases. All staff members had at minimum either quickly reviewed the entirety of the guidelines relating to childcare or reviewed well the areas that were important for them, such as portion sizes, number of servings, and healthy versus unhealthy choices to name a few. Members who had not completely reviewed the guidelines did, however, mention that it was a really big binder and felt apprehensive about reviewing all of the recommendations. Again, knowledge sharing and teamwork

helped to inform members of aspects of the guidelines they were unfamiliar with pointing, once more, to the importance of organizational culture; however, lack of time is worthy of mentioning as Phase 1 findings identified lack of time as a determinant for non-adopters. Probing further lack of time as a barrier to adoption can build on these findings and can potentially result in an organizational model for childcare centres. Also, recommendations for improvement such as tailoring the guidelines to the specific sector, namely, childcare centres, schools, or recreational centres which would reduce the size of the document by two-thirds, may possibly lower apprehension of prospective users and increase uptake of the guidelines in childcare centres.

Another limitation is that themes/findings emerge from qualitative data requiring further study. For example, although similarities were noted between centres regarding organizational processes, it is difficult to assess the impact of these findings as this was not the main objective of the study. Similarly, differences in organizational structure and implementation strategies were noted between centres; however, as this was an exploratory study it is difficult to conclude to what degree these factors influenced the behaviour of childcare providers, children, and possibly parents and which of these features may be unique to the type of organizational structure, i.e., non-profit or for-profit childcare centres. Probing these areas further can build on these findings and potentially result in an organizational model for daycare centres. Finally, the perceptions of childcare providers who took part in this study may not be characteristic of other centres as these were exemplary cases which may have implications as to the generalizability of these findings. The goal of this qualitative study was to explore childcare provider's perceptions of the guidelines and examine the organizational processes and strategies unique to early adopters. Exploring these

factors in depth is a strength of qualitative research that helps to build on existing knowledge and/or lead to unanticipated directions. The findings from this study will inform the literature regarding uptake of nutrition guidelines in childcare settings and serve as a starting point for future studies.

5.4 Implications for Future Research, Practice and Policy

This Master's thesis will contribute to the overall evaluation of the ANGCY in childcare centres, schools and recreational centres. As well, this research will contribute to the lack of literature regarding organizational characteristics of childcare organizations and the factors influencing organizational behaviour change in these settings. Knowledge translation is crucial in the relationship between knowledge creation (the guidelines) and action (adoption and implementation). Evaluation is a key step in the Knowledge Translation framework conceptualizing the cycle of evaluating, modifying, and monitoring dissemination and uptake of innovations such as nutrition guidelines (14). Future research should tailor formative evaluations specific to the characteristics of the guidelines, and process evaluations examining the structural characteristics, implementation strategies, and organizational processes of childcare organizations to gain a better understanding of the degree of influence these factors have on uptake behavior of nutritional guidelines. Additionally, investigating a larger sample size will offer a greater perspective of childcare provider perceptions and provide a better understanding of the organizational characteristics of childcare organizations.

Updates to the guidelines available only in Web-based form may not be practical as providing childcare centres with hard copies of the guidelines proved to be a great relative advantage by promoting awareness and enhancing usability of the guidelines. Reformatting the guidelines to contain only information relevant to each sector may lower apprehension and increase the number of childcare providers that review the guidelines, as well it may lower costs associated with the reproduction of the guidelines. Actively disseminating the guidelines as part of a workshop may also increase the number of adopters by increasing the number of childcare representatives who review the guidelines as well as provide a professional development opportunity for childcare providers acting as both an incentive and learning opportunity, particularly for those with lower levels of education. Workshops should be multi-faceted incorporating nutritional as well as organizational elements, such as a review of recommendations with a clear description of their meaning and intention; menu planning, budgeting, and cooking skills development; implementation strategies; and leadership and managerial skills development for directors/leaders. Workshops such as these would provide an opportunity for multiple sectors to come together as well as give childcare providers the opportunity to ask questions and develop contacts that may not otherwise arise. Further, actively promoting the guidelines through a workshop forum would increase awareness and possibly increase uptake. Finally, previous studies have shown that nutritional policies are an effective method for increasing the nutritional quality of foods served in childcare centres (15) suggesting that perhaps the next step is to move from guidelines to policies making them mandatory in childcare settings. As childhood obesity is becoming an increasing threat to children and society, it is imperative that

nutrition guidelines are adopted and implemented in childcare organizations that target the early stages of life when eating preferences and habits are formed.

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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/director 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

   b) 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 – Childcare Staff

Interview Guide – Childcare Staff

1. How long have you been working here?
    a. What exactly do you do?
2. I want to hear about your experience implementing the guidelines.
    a. How did you first hear about the guidelines?
    b. Are any social or professional networks available to you, i.e., health nurse, dietician, etc.?
        i. Yes, are you involved in any of those networks?
        ii. Yes, can you please describe them for me? How they help you?
        iii. Yes, did those contacts play a role in adopting or implementing the guidelines?
        iv. No, would you like to have access to social networks?
3. Who first made the decision to adopt the guidelines?
    a. How did you feel about that, i.e., adopting/implementing the guidelines?
    b. Do you believe in and agree with the content in the guidelines?
    c. What are your responsibilities with respect to the guidelines?
    d. Who makes those decisions?
4. I want to hear more about what you think about the guidelines.
    a. How did the recommendations from the guidelines compare with what you were already doing? Better, worse, the same?
    b. How do they fit in with what you were currently doing? With the curriculum?
    c. Can you tell me about your experience like translating the guidelines and putting them into practice?
    d. Did you find any advantages or strengths of the guidelines?
    e. Did you encounter any disadvantages or weaknesses with the

guidelines?

5. I want to hear more about your experience working with the guidelines.
    a. What were the first things you did upon hearing about the guidelines?
    b. Besides social contacts, were any other resources available to help with implementing the guidelines?
        i. Budget, volunteers, nutrition training, etc.?
    c. Was this a team effort? Was everybody involved?
    d. Was there anything you found helpful?
    e. Was there anything you found challenging?
6. Are any resources available for the parents?
    a. Are those easily accessible?
7. Have you noticed any changes since putting the guidelines into practice?
    a. Have the guidelines affected mealtimes in any way? How?
    b. Have the guidelines affected grocery shopping in any way? How?
    c. Has your behavior changed as a result of working with the guidelines? How?
        i. Eating, shopping, role modeling, etc.?
    d. Has the children's behavior changed in any way? How?
        ii. Eating, requests, likes/dislikes?
    e. Has the parent's behavior changed in any way?
        iii. How?
8. Does your centre have any systems in place to provide you with regular feedback, i.e., meetings, performance evaluations, etc.?
9. Is there anything we haven't covered that you feel is important to share with me?

Administrators/Directors ONLY

10. What are the structural characteristics of your centre?
    a. How many children attend this centre?
    b. How many staff members and volunteers do you have on a daily basis?
    c. How are decisions made within the centre?
        iv. Do they come from you, from the staff, or both?
        v. And, how are they carried out?
    d. What is the level of formal training of the staff (childcare workers and cooks)?
        vi. Are there any requirements or opportunities for professional knowledge?
11. Have there been any challenges with adherence to the guidelines by the staff or the parents?
    a. How did you handle that?
    b. Do you have a process in place or would this be handled on a case-by – case basis?
12. Is any information provided to parents about their child's health?
    a. Is this done routinely?
13. Does your centre have any systems in place to provide staff with regular feedback, i.e., meetings, performance evaluations, etc.?
14. Is there anything we haven't covered that you feel is important to share with me?

Appendix C - Letter of Introduction for Childcare Centre Recruitment

Letter of Introduction for Childcare Centre Recruitment

Telephone conversation…

Hello, my name is [redacted] and I am calling from the University of Alberta in follow-up to the telephone survey regarding the Alberta Nutrition Guidelines for Children and Youth that you completed with us last summer/early fall.

We recently sent you a letter notifying you that would be calling and to introduce our study to you. Have you received that letter?

This will only take a minute, is this a good time for you or would you like me to phone you back?

Well, after we reviewed the results from the telephone surveys we identified your facility as an exemplary site that we would like to learn more from. Basically, we are trying to figure out why some sites, such as yours, were able to adopt and implement the guidelines while others were not. We want to understand how you were able to implement the guidelines and what challenges you may have faced along the way. This would entail conducting interviews with you, your staff, and some of the parents of the children at your facility. Of course, we would work around your schedule and try to make it as convenient as possible for you.

If it is all right with you, I would love to come down and meet with you so I can introduce myself to you and explain the study to you in more detail, like the time commitment we are anticipating and how we would be conducting our interviews. I will also give you an information sheet with all of the study details so you are aware of exactly what we are doing, how we will be doing it and why.

I don't expect any commitment from you right now, but would it be okay to come down and meet you? I can be available any time that is convenient for you.

Appendix D – Information Letter - Childcare Facilities

Information Letter-Childcare Facilities

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

Investigators:

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

Dr. Diana Mager, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7687
Email: mager@ualberta.ca

Dr. Anna Farmer, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-2693
Email: anna.farmer@ales.ualberta.ca

Hara Nikolopoulos, Graduate Student
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7950
Email: hara@ualberta.ca

This research study has been approved by Faculties of Physical Education and Recreation (PER), Agricultural Life & Environmental Sciences (ALES) and Native Studies (NS) Research Ethics Board at the University of Alberta.

Why is the study being done? In June 2008, the Government of Alberta released the Alberta Nutrition Guidelines for Children and Youth for childcare facilities, schools and recreation centres. The guidelines help to ensure that children and youth have access to healthy food choices wherever they go. This study is being done to evaluate the implementation of the Alberta Nutrition Guidelines for Children and Youth. The information that you tell the researchers will be used to help inform nutrition strategies in Alberta.

What do we want to know? We want to know **1)** how you implemented the guidelines and **2)** what the short-term impact of implementing the guidelines has been at your childcare facility.

What do I have to do? We want to interview you for about 45 minutes. We will ask you questions about the processes involved in your facility's implementation of the nutrition guidelines. If you give us permission, we will audio-tape the interview. Additionaly, we would like to conduct focus groups with parents of some of the children attending the facility to assess what impact the guidelines have had on them. Focus groups will be approximately 45 minutes in length.

We will also make direct observations of the food environment, as agreed upon by your facility. For example, we may look at the food that is being served and the menus for your facility.

Who will be interviewed? We will interview key informants at the childcare facility and parents of some of the children attending the facility.

What are the benefits? The results from this research study will help us to learn more about how to encourage children and youth to eat healthfully. We will use the information from this study to inform future nutrition initiatives and best practices throughout the province.

Are there any risks? Interview questions will be directed at the organization rather than the individual, therefore there is minimal risk associated with your participation. However, you can choose to skip any questions that make you uncomfortable.

Is it Confidential? All of the information that you provide will be held **strictly confidential**. You and your childcare facility's name will NOT be personally identified in any publications or presentations from this study. All data will be stored electronically (on memory sticks) and kept in locked offices in the Human Nutrition Research Unit at the University of Alberta. Only the research staff will have access to the interview responses. The data will be kept for 5 years post-publication, after which it will be destroyed.

Can I withdraw from the study? Your participation is voluntary. You are free to refuse to answer any question(s) and you can withdraw from the study at any time. If you wish to withdraw from the study, please tell one of the researchers. Your information will be removed from the study upon your request. There is no penalty for not participating, or for withdrawing.

Who is funding this project? This research is funded by the Canadian Institutes of Health Research.

Who can I contact? If you have any questions or concerns, please contact Hara Nikolopoulos (Research Coordinator) at (780) 492-7950, Dr. Anna Farmer (Co-Investigator) at (780) 492-2693, or Dr. Diana Mager (Co-Investigator) at (780) 492-7687.

If you have concerns about this study, you may also contact Dr. Wendy Rodgers, Chair of the PER/ALES/NS Research Ethics Board, at (780) 492-8126. Dr. Rodgers has no direct involvement with this project.

Sincerely,

Hara Nikolopoulos, MSc Candidate Anna Farmer, PhD, MHP, RD Diana Mager, PhD, RD

Appendix E – Consent form – Childcare Facilities - Interviews

CONSENT FORM-Childcare Facilities

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

Investigators:

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

Dr. Diana Mager, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7687
Email: mager@ualberta.ca

Dr. Anna Farmer, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-2693
Email: anna.farmer@ales.ualberta.ca

Hara Nikolopoulos, Graduate Student
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7950
Email: hara@ualberta.ca

Purpose: The purpose of this project is to describe how your childcare facility 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 childcare facility 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 492-2615.

Participant Name: _____

Participant Signature: _____

Date: _____

Appendix F – Consent Form - Childcare Facilities – Direct Observation

CONSENT FORM-OBSERVATIONS OF CHILDCARE FACILITY

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

Investigators:

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

Dr. Diana Mager, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7687
Email: mager@ualberta.ca

Dr. Anna Farmer, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-2693
Email: anna.farmer@ales.ualberta.ca

Hara Nikolopoulos, Graduate Student
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7950
Email: hara@ualberta.ca

Purpose: The purpose of this project is to describe how your childcare facility is implementing the Alberta Nutrition Guidelines for Children and Youth. We also want to know about the short term impact of implementing the guidelines. We would like your consent to make observations about how your facility is using the guidelines (i.e., foods that are being served, menus, etc.).

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 having researchers conduct observations at your facility?
YES NO

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

Participant Name: _____

Participant Signature: _____

Date: _____

Appendix G – Information Letter – Parent Focus Groups

Information Letter-Childcare Facilities

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

Investigators:

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

Dr. Diana Mager, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7687
Email: mager@ualberta.ca

Dr. Anna Farmer, Assistant Professor
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Phone: (780) 492-2693
Email: anna.farmer@ales.ualberta.ca

Hara Nikolopoulos, Graduate Student
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7950
Email: hara@ualberta.ca

This research study has been approved by Faculties of Physical Education and Recreation (PER), Agricultural Life & Environmental Sciences (ALES) and Native Studies (NS) Research Ethics Board at the University of Alberta.

Why is the study being done? In June 2008, the Government of Alberta released the Alberta Nutrition Guidelines for Children and Youth for childcare facilities, schools and recreation centres. The guidelines help to ensure that children and youth have access to healthy food choices wherever they go. **This study is being done to evaluate the implementation of the Alberta Nutrition Guidelines for Children and Youth.** The information that you tell the researchers will be used to help inform nutrition strategies in Alberta.

What do we want to know? We want to know **1)** how the guidelines were implemented, **2)** what the short-term impact of implementing the guidelines has been at your childcare facility and **3)** what, if any, impact implementation of the guidelines has had on you.

What do I have to do? We have already interviewed staff members at your childcare centre about the processes involved in the implementation of the nutrition guidelines, **now we would like to conduct focus groups with you, the parents, to get your thoughts and opinions about the guidelines and to assess what, if any, impact the guidelines have had on you.** Focus group interviews will be audio-taped and will be approximately 45-60 minutes in length. Participation is for one focus group with approximately 4-5 people in the focus group. The interviewer will ask questions and the

participants will share their views in an open discussion based format. Focus groups will be held in a private location at the University of Alberta. All costs associated with participation such as child care and parking will be covered or participants will be reimbursed for any costs incurred by them for their participation in the study.

Who will be interviewed? We will interview approximately 4-5 parents of the children attending the childcare facility.

What are the benefits? The results from this research study will help us to learn more about how to encourage children and youth to eat healthfully. We will use the information from this study to inform future nutrition initiatives and best practices throughout the province.

Are there any risks? Interview questions will be directed at the organization rather than the individual, therefore there is minimal risk associated with your participation. However, you can choose to skip any questions that make you uncomfortable.

Is it Confidential? All of the information that you provide will be held **strictly confidential**. You and your childcare facility's name will **NOT** be personally identified in any publications or presentations from this study. All data will be stored electronically (on memory sticks) and kept in locked offices in the Human Nutrition Research Unit at the University of Alberta. Only the research staff will have access to the interview responses. The data will be kept for 5 years post-publication, after which it will be destroyed.

Can I withdraw from the study? Your participation is voluntary. You are free to refuse to answer any question(s) and you can withdraw from the study at any time. If you wish to withdraw from the study, please tell one of the researchers. Your information will be removed from the study upon your request. There is no penalty for not participating, or for withdrawing.

Who is funding this project? This research is funded by the Canadian Institutes of Health Research.

Who can I contact? If you have any questions or concerns, please contact Hara Nikolopoulos (Research Coordinator) at (780) 492-8837, Dr. Anna Farmer (Co-Investigator) at (780) 492-2693, or Dr. Diana Mager (Co-Investigator) at (780) 492-7687.

If you have concerns about this study, you may also contact the Research Ethics Office at 492-2615.

Sincerely,

Hara Nikolopoulos, MSc Candidate Anna Farmer, PhD, MHP, RD Diana Mager, PhD, RD

Appendix H – Parent Recruitment Flyer

Parents

We want to hear from you!

Have you heard about the Alberta Nutrition Guidelines for Children and Youth? If so, we would love to hear what you think about them and how they may have affected you.

We would love to hear what you're thinking!

Please call Hara Nikolopoulos, University of Alberta, at **780-492-8837** for more details and find an information sheet below.

Dr. Diana Mager PhD, RD 780-492-7687

Dr. Anna Farmer PhD, MPH, RD 780-492-2693

Appendix I – Consent Form – Parent Focus Groups

CONSENT FORM-Childcare Facilities-Parents

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

Investigators:

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

Dr. Diana Mager, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7687
Email: mager@ualberta.ca

Dr. Anna Farmer, Assistant Professor
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-2693
Email: anna.farmer@ales.ualberta.ca

Hara Nikolopoulos, Graduate Student
Department of Agriculture, Food and Nutritional Science
Phone: (780) 492-7950
Email: hara@ualberta.ca

Purpose: The purpose of this project is to describe how your childcare facility 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 as part of a focus group?
YES NO

Do you understand that people at the childcare facility 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 492-2615.

Participant Name: _____

Participant Signature: _____

Date: _____

Appendix J – Direct Observation Template

Direct Observation Template

Observer: Visit no.: Date: Time: to:

Childcare Centre: Time of write-up:

No. of childcare workers: No. of children: No. of parent volunteers:

No. of meals served: No. of snacks served:

Description of room:

Priming/prompting/clear messaging:

Teacher-child interaction:

Teacher-teacher interaction:

Teacher-parent interaction:

Parent-child interaction:

Child-child interaction:

Description of meals:

Description of snacks:

Description of mealtime behavior (caregivers and children):

Proximity to grocery store:

Vending machines: Yes No

Structural characteristics of organization:

- If possible, review procedural manuals.
- Degree of centralization, i.e., how is authority distributed among members of the organization?
- What is the level of knowledge/expertise/formal training of the staff?
- What is the degree of formalization within the organization?
- What resources are available to the organization?

Notes:

Observations:	Comments:

Appendix K – Menu Analysis Template

Week 1	**Total # of food items**	**Total # of days that met food groups per snack/meal**	**Total # of CMO**	**Adherence % = Total # of CMO/Total # of food items**
Morning Snack		_/5		%
Noon Meal		_/5		%
Afternoon Snack		_/5		%
Overall		_/15		**%**
				%**
Week 2				
Morning Snack		_/5		%
Noon Meal		_/5		%
Afternoon Snack		_/5		%
		_/15		**%**
				%**
Complete Menu Cycle Compliance		**Overall %**		**Overall %**
				Overall %**

**** Adjusted for weekly allowance of 4 food choices from CS/CLO categories**

Appendix L – Interview Guide - Cooks

Interview Guide – Cooks

1. How long have you been working here?
    a. What exactly do you do?
    b. Do you enjoy your job?
2. I want to hear about your experience implementing the guidelines.
    a. How did you first hear about the guidelines?
    b. What was the extent of your training prior to adopting the guidelines?
        i. Has that changed since the decision to adopt the guidelines?
    c. Are any social or professional networks available to you, i.e., health nurse, dietician, etc.?
        i. Yes, are you involved in any of those networks?
        ii. Yes, can you please describe them for me? How they help you?
        iii. Yes, did those contacts play a role in adopting or implementing the guidelines?
        iv. No, would you like to have access to social networks?
3. Who first made the decision to adopt the guidelines?
    a. How did you feel about that, i.e., adopting/implementing the guidelines?
    b. Do you believe in and agree with the content in the guidelines?
    c. What are your responsibilities with respect to the guidelines?
    d. Who makes those decisions?
4. I want to hear more about what you think about the guidelines.
    a. How did the recommendations from the guidelines compare with what you were already doing? Better, worse, the same?
    b. How do they fit in with the foods you were already serving?
    c. What was your experience like translating the guidelines?

d. What was your experience like putting them into practice?

e. Did you notice any changes after implementing the guidelines? Can you please describe those changes for me?

i. In eating behavior or the eating environment?

ii. Food wasted?

iii. Likes/dislikes?

iv. Requests?

5. I want to hear more about your experience working with the guidelines.

a. What were the first things you did upon hearing about the guidelines?

b. Besides social contacts, were any other resources available to help with implementing the guidelines?

i. Budget, volunteers, etc.?

ii. Nutrition training?

c. Was this a team effort? Was everybody involved?

d. Was there anything you found helpful?

e. Was there anything you found challenging?

6. Have you noticed any changes since putting the guidelines into practice?

a. Have the guidelines affected mealtimes in any way? How?

b. Have the guidelines affected grocery shopping in any way? How?

c. Has your behavior changed as a result of working with the guidelines? How?

i. Eating, shopping, etc.?

d. Has the children's behavior changed in any way? How?

i. Eating, requests, likes/dislikes?

e. Has the parent's behavior changed in any way?

i. How?

7. Is there anything we haven't covered that you feel is important to share with me?

Appendix M - Interview Guide – Parent Focus Groups

Interview Guide – Parents

1. Have you heard about the Alberta Nutrition Guidelines for Children and Youth?
2. Yes, how did you hear about the guidelines?
3. Yes, what have you heard about them?
4. Has _____ childcare centre informed you about the guidelines in any way?
    a. Please describe for me in what ways and how.
    b. Has the centre made any recommendations or requests for you or other parents?
5. I want to know about your level of involvement with respect to the guidelines?
    a. Were you at all involved with the adoption or implementation of the guidelines?
    b. How do you feel about that?
    c. Does the centre include you in decision making? How?
    d. How do you feel about that?
    e. Have you found anything helpful about how the centre has implemented the guidelines?
    f. Have you found anything challenging about how the centre has implemented the guidelines?
6. Can you tell me about how the guidelines have affected you?
    a. Knowledge or awareness?
    b. Motivation or confidence?
7. Has your behavior at home changed in any way since the implementation of the guidelines?
    a. Meal times?
    b. Grocery shopping?
    c. Cooking?

8. Has your child's eating behavior changed in any way since the implementation of the guidelines?
    a. Likes/dislikes?
    b. Requests?
    c. Changes in eating habits?
9. What is your overall opinion about the guidelines?
    a. What level of priority do you place on the guidelines?
    b. Has your opinion about the guidelines changed since the time they were first introduced in the centre? How?
10. Is there anything we haven't covered that you feel is important to share with me?

Appendix N – Ethics Approval and Re-approval

Notification of Ethics 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 O – Menu Analysis of Cases

Case 1 Menu Analysis				
Week 1	**Total # of food items**	**Total # of days that met food groups per snack/meal**	**Total # of CMO**	**Adherence for CMO category**
Morning Snack	15	5/5	14	93.3%
Noon Meal	22	3/5*****	21	95.4%
Afternoon Snack	15	4/5	11	73.3%
				87.3%
				96.0%**
Week 2				
Morning Snack	17	5/5	15	88.2%
Noon Meal	22	4/5*****	20	90.9%
Afternoon Snack	15	3/5	9	60.0%
				79.7%
				87.6%**
Week 3				
Morning Snack	15	5/5	15	100%
Noon Meal	23	4/5*****	22	95.7%
Afternoon Snack	18	4/5	14	77.8%
				91.2%
				98.4%**
Week 4				

Morning Snack	17	5/5	15	88.2%
Noon Meal	19	4/5	16	84.2%
Afternoon Snack	16	3/5	10	62.5%
				78.3%
				86.0%**
Week 5				
Morning Snack	15	5/5	12	80.0%
Noon Meal	19	4/5	17	89.5%
Afternoon Snack	16	5/5	12	75.0%
		63/75		**81.5%**
				89.7%**
		Overall 84.0%		**Overall 83.6%**
				Overall 91.5%**
Case 2 Menu Analysis				
Week 1	**Total # of food items**	**Total # of days that met food groups per snack/meal**	**Total # of CMO**	**Adherence**
Morning Snack	10	5/5	9	90.0%
Noon Meal	15	4/5	9	60.0%
Afternoon Snack	10	4/5	7	70.0%
				73.3%
				83.3%**

Week 2				
Morning Snack	10	5/5	9	90.0%
Noon Meal	13	4/5	8	61.5%
Afternoon Snack	10	4/5	8	80.0%
		26/30		**77.2%**
				88.2%**
		Overall 86.7%		**Overall 75.2%**
				Overall 85.8%**
*** All noon meals that did not meet 4/4 for food group categories were lacking a grain due to traditional meat and potato dishes, e.g. roast beef served with potato, vegetables, and milk.** **** Adjusted for weekly allowance of 4 food choices from CS/CLO categories**				
CMO: Choose Most Often CS: Choose Sometimes CLO: Choose Least Often				