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FOOD and HEALTH PERCEPTIONS and PRACTICES of MI'KMAQ CHILDREN and YOUTH in PRINCE EDWARD ISLAND

A Thesis

Submitted to the Faculty of Education

In Partial Fulfillment of the Requirements

for the Degree of

Master of Education

University of Prince Edward Island

ROBERTA LARSEN, RD

Charlottetown, PE

March, 2005

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Dedication

To my husband Peter Larsen, and our boys, Taylor and Jake Larsen.

Thanks guys!

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Food and Health Perceptions and Practices of Mi'kmaq Children and Youth in Prince Edward Island

Objectives: The purpose of this study was to 1) to describe dietary behaviours and 2) to determine the frequency of consumption of common foods in the diets of Aboriginal children and youth living in Mi'kmaq First Nation communities in Prince Edward Island, Canada.

Design: A mixed methods study design was used. Data was collected on nutrition perceptions and practices as part of a larger study of health perceptions and behaviours in Mi'kmaq children and youth aged 0-18 years through interviews with the children and their caregivers. Daily and weekly consumption of foods was assessed using previously validated food frequency questionnaires, the Eating Behavior Survey (EBS) and the Harvard Food Service Food Frequency Questionnaire (HSFFQ).

Participants: 105 Mi'kmaq children and their caregivers living on-reserve in Prince Edward Island

Analysis: Interviews were transcribed verbatim from audiotapes and transcripts were analyzed for common themes. Food use data was analyzed using SAS (version 8) to determine frequency of consumption. Chi square analysis was used to assess differences in food use according to age and gender.

Results: Several common themes emerged from comments from the children and youth, including: food as a determinant of health; family meals; traditional foods; physical activity; and weight. Caregivers identified similar themes, as well as community efforts and

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cost. Very few (2%) of Aboriginal children consumed the recommended minimum of 5 servings of Vegetables and Fruit daily. Approximately 30% of children ate daily french fries, soft drinks, and cookies and cakes. Chi square analysis revealed very few differences among age and sex groups.

Conclusions: While children value nutrition as a key determinant of health, they appear to have difficulty translating these values into practice. The decline in family meals with age and the high frequency of television viewing during meals is a concern since family meals are associated with positive dietary behaviours. Frequent intakes of soft drinks and low intakes of milk, vegetables, and fruit are consistent with past reports in Aboriginal children and youth. Intakes, however, are consistent with recent reports of dietary intakes of non-Aboriginal children in Prince Edward Island, suggesting that nutritional concerns are widespread in children and youth across the province. While the participants mentioned traditional foods during their interviews, they did not report eating them with frequency, which is consistent with reports of declining traditional food use in Aboriginal people across Canada and the United States.

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Preface

Researching and writing a thesis takes a lot of time and effort, and in my case this involved both myself and my family. A friend commented that when one member of the family is going to school, the whole family goes through it with them. I would like to take a moment to introduce myself and how I came to be involved in this work.

I went into this thesis as a mature student, ten years after completing my Bachelor of Science degree in Foods and Nutrition from UPEI. I went on to complete a dietetic internship at the Health Sciences Center in Winnipeg, Manitoba. Since then I have worked as a registered dietitian in various roles across PEI in community and clinical dietetics, as well as working on several research projects in nutrition with colleagues at UPEI. Along the way, I married a farmer, Peter, and we had two boys. Taylor and Jake.

At the time I became involved in this research, I had been doing some work as a dietitian with the health center in Lennox Island, a community that was involved in the Building Healthy Mi'kmaq Communities in Prince Edward Island project. I was working on a research project that was coming to completion at UPEI and considering a master's degree. A colleague was beginning the Building Healthy Mi'kmaq Communities in Prince Edward Island project, and invited me to participate. I was very fortunate to be able to work on the Building Healthy Mi'kmaq Communities in Prince Edward Island project, concentrating on the nutrition components for my thesis.

Being known in Lennox Island also made it easier for me because I was already familiar with the community and I hope made it easier for some of the parents, children,

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and community members to participate in the research because they already knew who I was and from their greetings and comfortable communication seemed to appreciate my presence in the community. Approximately 85% of the families with children between the ages of 0-18 years participated in the project. I continue to work as a dietitian with the health center in Lennox Island.

Being involved with Building Healthy Mi'kmaq Communities in Prince Edward Island project was a bonus which allowed me to work with a group of women researchers who were excellent role models and working mothers who shared their expertise and knowledge to guide me through this research. They provided me with encouragement and many opportunities to grow and gain experience as a researcher.

When I started graduate school my youngest son started grade one. My sons were five and seven years old when we began this journey; they are now eight and ten. Three years in a child's life is a significant amount of time. I often worried about working on a graduate degree when my children were young when a colleague commented on how wonderful it was for children to see their mother completing a thesis because it set such a positive example for them. I had not considered that aspect!

When you are a mother and working full time while writing a thesis you need to be very flexible, organized, and manage your time as best as you can. In my case I also had a very supportive partner who took care of many things while I was attending classes, reading, and writing. Peter also listened to me and asked questions which helped me process my thoughts. I also am lucky to have the support of

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my parents and sisters and brothers who live close by and were able to involve the boys in activities while I had class. My whole family helped me out when needed.

I tried very hard not to miss things that were important to my family while I was working on this thesis, which resulted in the majority of my studying and writing time happening after 9pm when the boys went to bed. Many late nights and cups of tea went into this work. Many nights it would have been easier to go to bed rather than turn on the computer. However, I kept thinking that a little bit of effort would add up in the end. Sometimes just getting started was the hardest step, because once you got into the work you could keep going. Small steps everyday lead to the accomplishment.

I started graduate studies hoping to learn and to understand more about research. I learned more than I could have thought possible about research, leadership, collaboration, and working as part of a multidisciplinary team. I was also able to learn about the Mi'kmaq people and their rich culture and traditions. I become more critically aware of cultural issues, and met many wonderful interesting people who opened my eyes to the hegemony in current society. I find myself decolonizing my thinking and questioning why things seem a certain way. I hope I am also able to pass some of my critical awareness on to my children so they may be more aware of cultural loss and the impact of racism and discrimination issues and take the time to think and question, rather than just accept the way things are. Aboriginal peoples may have been subjected to generations of oppression and pain, but in my experience they have not lost strength and demonstrate resilience and hope for the future and their children.

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Format

I would like to provide a note on the format of this thesis. Mixed methods were used in this research; qualitative data obtained from interviews, and quantitative data obtained from food frequency questionnaires. The thesis begins with some common chapters including the introduction, conceptual framework, and literature review, and ends with a common conclusions chapter. I have written paper-style chapters which capture the qualitative and quantitative work separately. These chapters include all methodology, analysis, results, discussion, and conclusions for each. The qualitative work is presented in one chapter, while the quantitative work is separated into two chapters to reflect two different food frequency questionnaires which had been used with the age groups they had been validated with from previous research. I found it helpful to write each area separately so as to not confuse the mixed methods used in this research. Paper-style chapters also made it easier to write papers for potential publication. One chapter, Chapter 5, Significant Nutritional Concerns in Aboriginal Children are Similar to Those in Non-Aboriginal Children in Prince Edward Island, Canada, has already been accepted for publication in the Journal of the American Dietetic Association. Other papers are being submitted for publication as well.

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Acknowledgments

I must thank first of all my husband, Peter Larsen, and our boys, Taylor and Jake Larsen for everything they have done for me and for being there. I can't thank you guys enough!

I would also like to thank my parents, Bobby and Barb Cudmore; my sisters, Darlene Corke and Patricia Cudmore; my brothers, Andy and Robin Cudmore, and their families for all of the times they have done things with the boys, gone to hockey games, babysat, and helped out while I was working on this thesis.

I'd like to thank my nutrition professors from the University of Prince Edward Island's Department of Family and Nutritional Sciences who encouraged and guided me to do graduate studies.

I'd also like to thank the researchers, research assistants, and community advisory team members of the Building Healthy Mi'kmaq Communities in Prince Edward Island project, particularly Vianne Timmons, principal investigator for the project.

I'd like to thank all of the participants from Lennox Island and Abegweit First Nations who talked with us and allowed us to talk with their children so we could learn more about their health practices and perceptions.

I'd particularly like to thank Dr. Jennifer Taylor and Dr. Fiona O'Donoghue, my thesis advisors for their time spent guiding me, listening to me, reading my writing, and for pushing me further with every step along the way.

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Table of Contents

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List of Tables

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List of Figures

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Chapter 1

Introduction

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Introduction

To the Indian of long ago, health was not just freedom from disease, but a healthy body, mind, and spirit (Lawn, 1985). In her book, *Indian Legends of the Pacific Northwest*, Ella Clark (1953) recounts the story of Coyote, the mythical figure of many western North American Indian tribes.

> After Coyote brought the salmon, He planted the trees, so that when the new people, the Indians should come, they could burn wood and keep themselves warm. He planted huckleberries in the mountains. "People must climb to get the berries," he said. "It will not be good for them to get all food easily. They will become lazy." He planted strawberries and serviceberry bushes. He planted camas, kouse, and other roots so that there would be all kinds of food for the new people. ... [Coyote showed the people how to build cedar canoes and catch fish and] taught the Indians that salmon must always be kept clean. "If you do not keep them clean after you have caught them," Coyote said, "they will be ashamed and not come up the river anymore. And you must never cook any more than you can eat. If you cook three salmon when you are able to eat only half of one, the salmon will be ashamed and will refuse to enter your river." (p. 98)

This legend, passed down from generation to generation, holds many values central to Indian culture. Through legends and stories, such as the story of Coyote, the elders passed on their knowledge and taught people about the relationship between people and nature, the respect that must be shown to animal and plant life, the need for harmony and balance, the wise use of food, the balance between our energy intake and output, the need for variety in the foods eaten, and the importance of cleanliness (Lawn, 1985).

This thesis describes children's and caregivers' perceptions about food and health in a rural First Nations context in Atlantic Canada. In partnership with the Mi'kmaq

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communities and grounded in participatory action research, this project captures the voices of children, youth, and their parents talking about nutrition, eating behaviors, and traditional foods. This research required the negotiation of access into a tightly knit Aboriginal community where maintaining credibility and trust were foundational. The community believed the research could potentially improve the health of children in the Mi'kmaq communities in Prince Edward Island by providing the basis for health interventions.

The Research Project

The research discussed in this thesis focuses on food and health as part of a comprehensive Aboriginal children's health project, *Building Healthy Mi'kmaq Communities in Prince Edward Island* (Timmons et al., 2004), which considers education, physical activity, culture, family life experiences, risk behaviors, hopes and dreams, as well as nutrition. This project is unique because it is the first time that Canadian Mi'kmaq children's voices have been captured discussing many of these issues.

I started working as a dietitian at a monthly diabetic clinic in Lennox Island, Prince Edward Island in January, 2001. Lennox Island is a small Mi'kmaq First Nations community located on Malpeque Bay, on the beautiful north shore of Prince Edward Island. Many of the people in Lennox Island are dealing with Type 2 diabetes. The community health center offered a diabetes clinic in an effort to help people manage their diabetes. I met many people at this clinic, and as they returned each month I got to know them better. We would discuss the issues that were important to them, as we cooked healthy foods in the kitchen of the health center. Having foods to taste attracted people to

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the program and provided a starting point for many conversations about food and health. It was comfortable for people to ask questions and talk about their nutrition concerns while we were cooking or eating. I was on a new journey of nutrition education which seemed to be working and made sense in this community. Simple, practical nutrition messages discussed while cooking and eating healthy foods.

The opportunity arose to become involved in nutrition research with people from this same community. It presented the possibility to continue to work with the community and address their nutrition needs. Many of the people I had worked with at the diabetes clinic had children. Aboriginal children are at very high risk of obesity and developing Type 2 diabetes (CICH, 2000). I believed this opportunity provided me with the chance to gain understanding of nutrition perceptions and eating habits of these children. Potentially, this new knowledge could help improve the health of these children and the aboriginal communities of Prince Edward Island. I was convinced that understanding the reasons why Mi'kmaq children eat certain foods at specific times and in specific places would enable provide the foundation for designing more effective interventions for nutrition education to improve health. I decided to get involved in the research. To my knowledge this is the first research report of this kind for Canadian Aboriginal children. Few studies have looked at the eating habits of children in Canada, especially aboriginal children.

Structure of the Thesis

This thesis is written in a paper style. The introduction, theoretical framework, literature review, and conclusion are common chapters to the thesis as a whole. Chapter 4, "Food and Health Perceptions of Aboriginal Children in Prince Edward Island," describes

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the qualitative aspects of this research and includes the methodology, data analysis, findings, and discussion together as one paper. Chapter 5 and 6 describe the quantitative aspects of the research in two separate papers which also includes the methods, data analysis, results, and discussion. Separate papers were written for the quantitative research because validated tools were used for assessing frequency of foods intake, one for children aged 0-8 years and one for children aged 9-18 years. The Chapter 5 paper, "Significant Nutritional Concerns in Aboriginal Children are Similar to Those in non-Aboriginal Children in Prince Edward Island, Canada," has already been accepted for publication by the *Journal of the American Dietetic Association.*

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Chapter 2

Food and Health Perceptions and Practices of Aboriginal Children in Prince Edward Island

Theoretical Framework

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Food and Health Perceptions and Practices of Aboriginal Children in Prince Edward Island

Theoretical Framework

We share our memories as stories about our lives. Memory is the key to personal and collective identity (Simon, 2000), and therefore, our stories reflect our personal and collective identity. In this thesis children tell their own stories about food and health. Their stories are influenced by their experiences in life, and by stories they have heard from their parents, their families, and members of their communities. From these stories we gain an understanding of where they have come from, where they are now, and where they are headed in the future. Listening to their stories may help us to learn about the children's understanding of nutrition, which, in turn, could enable us to provide effective nutrition interventions for these children and their families.

As Felman and Laub (1992, p. 78) remind us, "*One has to know one's buried truth in order to be able to live one's life.*" We all have stories to tell and there is an imperative need to tell and thus come to know one's story (Felman & Laub, 1992, p. 78). We share the values of a culture through stories and by providing positive models to emulate and negative models to avoid (Polkinghorne, 1988). People carry a narrative of their own lives which enables them to construct who they are and where they are headed. At the cultural level, narratives serve to give cohesion to shared beliefs and to transmit values (Polkinghorne, 1988). Stories do not just happen, they are told (Polkinghorne, 1988). We must be aware of where the story teller is positioned to understand the perspective they give to a story.

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Cultural identity implies people with a shared history and ancestry, reflecting common historical experiences and shared cultural codes which provide a group of people with stable, continuous frames of reference and meaning (Hall, 1994). Cultural identities come from somewhere, they have histories, and offer a way to position ourselves within the narratives of the past (Hall, 1994). Stories are a way of sharing about our culture and passing on our culture to our children.

Simon (2000) suggests we ask ourselves what it might mean to live our lives as if the lives of others truly mattered. This means taking the perspectives and stories of others seriously, which might actually shift our own stories, possibly in ways that may be difficult to accept. Our stories may change through the re-telling of others' stories.

Food is a vital part of our cultural stories, of our heritage and our traditions. Food is one way people identify themselves (Boyle & Morris, 2001). Food is used to bring people together around the world. It is a vital part of celebrations, births, deaths, and weddings. Holidays are celebrated with foods, which we often call traditional foods and family favorites. Birthday cake, Christmas meat pies, and Thanksgiving turkey have all become family favorites that are traditional foods for many people in Prince Edward Island.

We eat to nourish our bodies and our souls. Food can connect us to our memories of our ancestors and our history. It helps us to identify with our culture. Food is one of the ways we know who we are and where we came from.

When I eat warm "Quick Pudding" with raisins I always recall digging potatoes with my family as a child. I would spend the brisk fall afternoon in the sunshine, wearing a

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warm sweater my grannie had knit, picking potatoes from the red soil. My cousins and aunts and uncles would come to help harvest the potatoes. My uncle would be driving the tractor with the digger and my father driving the truck collecting the potatoes. There was always lots of fun mixed in with the work. I would pick potatoes alongside my sister and brothers and cousins. At supper time we would all pile into a truck and go back home to my house, the same house my grandparents had lived in. My aunts and my mother would have prepared a large hot supper. All day you knew there would be a nice supper waiting. The wood stove was on and it would be warm and noisy in the kitchen. Everyone warmed up and washed the red dirt off their hands and from the corners of their eyes. Then we would eat. We always ate in the kitchen around the big table. Roast beef, pork, or chicken, potatoes and vegetables, homemade bread, mustard pickles, and date squares would be on the table. For dessert we often had Quick Pudding. To this day, anytime I have this dessert, with its warm, buttery brown sugar sauce full of raisins under a cake like crust, I can remember picking potatoes. If I ask my cousins if they remembered the pudding we used to have when we were picking potatoes they would know what I meant. Quick pudding is a traditional food for my family. Many people in my community would also be familiar with it. It connects us to who we are and where we came from, farm kids from rural Prince Edward Island. I feel that food has shaped my identity. It is part of my story, which for me is a rich story of a rural childhood where food was readily available and part of our way of life.

Culture influences the foods people eat and can help to identify them with that culture. For instance, meat pie at Christmas is a traditional food that was influenced by the

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French. It is traditional fare for Acadians in Prince Edward Island. Many French and Mi'kmaq people have married over the years, combining cultural influences. Thus many Mi'kmaq families now enjoy meat pie at Christmas.

Mi'kmaq have many traditional foods which they identify with being Mi'kmaq. Some children and adults from this study even called them Mi'kmaq foods. Mi'kmaq foods included foods such as bannock, which was also called lu'sknikn or four cents, (see Appendix E) as well as lobster, oysters, fish, strawberries, blueberries, and qunesewey, or stew. Some Mi'kmaq people have told me about spending summer days going for a swim, picking blueberries, and going fishing. Many have told me how they make their bannock. Others told me how to make their qunesewey, or soup. Pow Wow feasts bring Mi'kmaq people together in the summer with lots of lobster to enjoy as part of the celebrations.

Food helps us to express who we are and where we came from. We know who we are when we eat the foods that our parents and grandparents prepared. This knowledge is passed on to our children when we make these foods for them. We can identify our culture with others who eat the same foods as we do. We feel proud of where we came from and feel that we belong.

Rediscovering traditional foods is part of the decolonizing work for Mi'kmaq people (Smith, 2001). Adopting a healthy lifestyle based on traditional foods and incorporating current nutrition knowledge is one way to recover health for Aboriginal people. In learning traditional ways of hunting fishing, harvesting, and preparing foods, Mi'kmaq people learn traditional ways and can pass these stories of their culture on to their children so their culture may live on. Therefore, food carries the values of a culture

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and is a powerful force in the recovery of cultural identity and pride.

A History of Colonization

Colonization is a process European settlers to North America used which irrevocably changed the traditional culture, traditions, and values of Aboriginal people through trade and the introduction of new foods, technology, and culture into Aboriginal communities (Aboriginal Nutrition Network, 2005). Historical memory is grounded in shared memories formed by the re-telling of past events with remembrance and learning across generations and boundaries of time, space, and identifications (Simon, 2000). Mainstream Canadian history is the story of colonization as told through the eyes of the colonizers, European settlers. This story of history offers one perspective. To hear the same story told by Aboriginal people, through their eyes, involves hearing a different story and another perspective. One story may, in fact, be starkly in contrast with the other. Either story may have shaped history, but the Europeans have written the history books that are used to tell stories of Canada in the past.

The 1996 Royal Commission on Aboriginal People (RCAP) suggested that Canadians are simply unaware of the history of Aboriginal people (RCAP, 1996). George Erasmus, former Co-Chair of RCAP and a former chief of the Assembly of First Nations suggests that the roots of injustice lie in history and that is the key to the regeneration of Aboriginal society and developing better relationships with the rest of Canada (Royal Commission on Aboriginal People, 1996).

Canadians tend to distance themselves from the ongoing conditions of injustice, such as poverty, poor housing, poor health, lack of education, and unemployment, that are

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a part of the daily life of Aboriginal people (Simon, 2000). The mainstream history we know is the story of Canada post-colonization. Aboriginal people have yet to tell their own history through their own oral traditions. They need to reclaim their history to understand what has brought them to the present. We need to listen to their stories and ask ourselves questions; questions about the story of colonization.

Finding the story of our shared history with Aboriginal people is a starting point in decolonization. Listening differently and recognizing our own ignorance can help us reassess the terms on which we are prepared to hear stories that might trouble the social arrangements of our country (Simon, 2000). The assimilation of a common memory tells a partial truth. We need to listen to the stories of the past as told by Aboriginal people and learn about their story, their perspectives.

Before contact with the Europeans, Aboriginal children learned by watching, listening, and imitating (Paul, 1993). When Europeans arrived to settle in North America, they assumed the Aboriginal people were illiterate and uneducated and proceeded to educate them, teaching them to read and write in English and converting them to Christianity (Paul, 1993). Europeans assumed they were superior to the Aboriginal people. Education was a way to assimilate Aboriginal people, to civilize and control them (Paul, 1993). In an attempt to gain control over the land, the Europeans established reservations for Aboriginal people to settle on, controlling them and keeping them in one place, promising to provide them with education and social services from the federal government (Paul, 1993). Residential schools were established, removing Aboriginal children from their homes and families, which further advanced assimilation (Paul, 1993).

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Colonization in Prince Edward Island

In Prince Edward Island the first record of contact with Mi'kmaq people is found in the journal of Jacques Cartier who claimed the land for France in 1534 (McKenna, 1990). For almost 200 years, the island was used as an abundant source of fish and furs to return to Europe. As McKenna (1990) wrote a close relationship developed between the French and the Mi'kmaq in the region known as Acadia. By the 17th century, Mi'kmaq people had adopted Christianity and were very involved in European trade (McKenna, 1990). Throughout the period of French-English conflict, 1613-1763, (McKenna, 1990) over land, trading outposts became colonial settlements and European control over the trading, fishing, and land resources was extended. European control over the land made it difficult for Aboriginal people to practice their traditional hunting activities (McKenna, 1990). During the period of the French regime, 1720-1758, Isle Saint-Jean, the French name for Prince Edward Island, served as an outpost for the fortress of Louisburg. McKenna (1990) indicated that the Mi'kmaq and French formed an alliance against the English to protect what they believed to be their land. After the fall of Louisburg to the English in 1758, the Mi'kmaq refused to surrender (McKenna, 1990). The Crown issued a proclamation in 1763 offering the Mi'kmaq title to the land, however, the agreement was not honored (McKenna, 1990). As cited in McKenna (1990), the British government divided the island into sixty-seven lots and offered them by means of a lottery to absentee landowners in Britain. The Mi'kmaq, however, were left undisturbed on their traditional encampments for a number of years, including Lennox Island (McKenna, 1990). Lennox Island was a safe refuge for the Mi'kmaq, being a favored campsite for centuries; several

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families were established there and survived with hunting, farming, and fishing (McKenna, 1990). In these times, McKenna (1990) wrote that the Mi'kmaq of Prince Edward Island resisted attempts to keep them on reserves, moving from place to place and setting up campsites to sell baskets and handicrafts. They were involved in fishing and migrated seasonally to Maine for potato and blueberry picking (McKenna, 1990). After the confiscation of land in Prince Edward Island they did not lose their pride and independence, despite living in poverty and inhumane conditions (McKenna, 1990).

Colonization

Colonialism involves homogenizing people around a single unified and universal condition, and reorienting the globe around that central power, that of the colonizer, with European assimilation of a heterogenous Other into its own social and discursive practices marked by a systematic process of cultural domination through the imposition of imperial structures of power (Mishra & Hodge, 1994). Fanon (as cited in Mishra & Hodge, 1994, p. 277) suggests that confrontation of civilized and primitive men creates a special situation, the colonial situation. Fanon anticipated that the colonized is either doomed to be a mere reflection of his master or he must fight his master through active struggle (as cited in Mishra & Hodge, 1994, p. 277).

Colonization has had devastating impact on the Aboriginal peoples of Canada and Aboriginal communities continue to suffer the effects of imperialistic policies that have eroded Indigenous knowledge (Battiste, 1998). Colonization involved loss of Aboriginal land when people were moved onto reservations. This led to loss of nomadic lifestyles involving hunting and gathering while following the herds of animals. Loss of this nomadic

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lifestyle also meant losing access to traditional foods and a physically active lifestyle. Colonization and its exploitation of Aboriginal people involved loss of the land, as well as loss of a way of life. More than that, it involved a loss of identity.

Native children were taken from their families and sent to residential schools (Paul, 1993). Here they were not allowed to speak their language or practice their culture (Paul, 1993). Residential schools attempted assimilation into the colonial society through systematic indoctrination of the language, religion, and education of the dominant Western society (Battiste, 2000). Loss of language and culture in the children left Aboriginal people unable to pass on their teaching and traditions through oral history, (Battiste, 2000) depriving many Mi'kmaq people of their language and connection to their culture.

Aboriginal people rely on oral history and storytelling to pass on their knowledge and tell their history. Oral histories are lost if people have lost the language from which it emerged. Aboriginal languages provide a direct and powerful means of understanding tribal knowledge (Battiste, 1998). Language enables us to express the unique order of our existence because it serves as the medium through which we express the world as meaningful. Language is both the product and possession of the community (Polkinghorne). Merleau-Ponty said that meaning is to be found in the words themselves (Polkinghorne, 1988, p. 28).

Without their language, Aboriginal people lost the words to share their knowledge with their children. Loss of their children to residential schools meant a loss of hope for families. People were afraid to practice their culture and many aspects of Aboriginal spirituality were outlawed (Paul, 1993).

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Smith argues that colonization, with its imposition of the colonizer's culture onto the lands and the people which they have settled has also reached into Aboriginal people's minds (Smith, 2001). Colonialism imposed European ways on the colonies. Cognitive imperialism is a form of manipulation used to discredit other knowledge bases and values as it seeks to validate only one source of knowledge, the colonial knowledge (Battiste, 1998). Cognitive imperialism denies many groups of people their language and cultural integrity and maintains only one language, one culture, and one frame of reference, the colonial one (Battiste, 1998). Cultural minorities became disconnected from their own knowledge, voices, and history which fosters a belief that poverty and powerlessness are the result their cultural and racial status and origins, rather than being based on hegemony in our Western culture (Battiste, 1998). Colonization became the history that was written down based on European views and interpretations. This perspective provides negative meanings, feelings, attitudes, and values toward Aboriginal people.

Colonialism affected values and beliefs. Colonialism brought capitalism and focused on individualism (Smith, 2001). Aboriginal people value sharing and looking after each other and did not impart ownership and boundaries on the land (Smith, 2001).

Aboriginal people were intact prior to colonization (Smith, 2001). They did not ask to be discovered; they did not ask to be settled (Smith, 2001). The story of colonization implies that Aboriginal people, who were on this land when the settlers arrived from Europe, required settling when they did not.

Post-colonization is a convenient invention of Western intellectuals which reinforces their power to define the world, assuming that their ways are superior (Smith,

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2001). Academics refer to post-colonization, which implies that colonization is complete. Colonization continues to hurt Aboriginal people. Post-colonization excludes indigenous people and their ways of knowing.

Decolonization

Decolonization theory provides a framework for this research (Smith, 2001). Decolonization theory is informed by critical theory and feminist approaches to research grounded in a cultural context. Decolonization is a discursive practice that offers Aboriginal people the opportunity to reclaim their lifestyle through rediscovering their language and retelling their stories to reclaim their culture and rebuild their future (Smith, 2001).

Smith (2001) proposes that to reclaim their history and lifestyle, indigenous people need to de-colonize history. Decolonization will empower Aboriginal people to tell their own stories and reclaim their language, culture, and sense of hope (Smith, 2001). Aboriginal people want to tell their own stories for their own purposes. Oral history is passed down through families, within the land, within artwork, and in people's names. Oral traditions pass on knowledge. Revisiting history is very important to retell their own story and reclaim their culture. Recapturing pride is a vital part of decolonization. Reclaiming history can be an opportunity for Aboriginal people to recapture power over their own destiny and to reclaim what they have lost (Smith, 2001). Battiste (1998) suggests that understanding will help to rebuild society based on diversity rather than on the ancient quest for singularity and individualism.

In the framework for this research, I suggest decolonization also offers the

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opportunity to reclaim traditional lifestyles and health, offering healthier lifestyles for children and their families. Colonization had tremendous effects on the food habits of Aboriginal people. Their traditional diet was healthy, consisting of foods they hunted, gathered, and fished. Colonization brought trade and introduced Aboriginal people to sugar, flour, and alcohol or "fire water" (McKenna, 1990). Aboriginal people were introduced to the concept of obtaining their food through trade; a practice which has persisted to the present. Today, an abundance of inexpensive, high calorie processed foods is as close as your nearest convenience store. Market foods have replaced traditional foods in the diets of Aboriginal people (Moffatt, 1995; Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wolever et al., 1997) This shift in eating habits and culture has caused the health of Aboriginal people to decline (Moffatt, 1995; Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wolever et al., 1997).

De-Colonizing Research

Research linked to European colonialism is a nasty word for Indigenous people who have bad memories and feelings of mistrust towards Western science (Smith, 2001). The assumption is that Western researchers know all that there is to know about indigenous people based on brief encounters with some people and outsider observations. Indigenous people have their own stories to tell which question the assumptions of Western research and serve to tell an alternative story; the history of Western research through the eyes of the colonized. The entire worldview of Indigenous peoples is based on entirely different values than that of Eurocentric western culture.

In a decolonizing framework, deconstruction takes apart stories, revealing

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underlying texts, silenced voices, and insights into told experiences (Smith, 2001). Oral traditions remain a most important way of developing trust, sharing information, strategies, advice, contacts, and ideas. The telling of these stories and the stories themselves are powerful forms of resistance (Smith, 2001).

Merata Mita (as cited in Smith, 2001, p. 25) once said, "*The ones doing the looking are giving themselves the power to define.*" This statement reaffirms the importance of having community partnership and ownership of research. Research must take place, with Aboriginal communities as full partners.

Outsider research implies looking in at something and doing research from the outside. It involves people who do not belong to the community going in, doing their research and leaving. *Outsider* research observes from a distance with an objective, neutral, and positivistic position (Smith, 2001). *Outsider* research can assume a superior point of view, implying that the researcher is the expert and knows better than those they are researching. *Outsider* researchers may come into a community, identify the problems they see, offer their solutions, and leave. They may not consider the perspective of the people they are researching. They imply that there are problems, as they see them, which may not be problems for the people at all. They offer their solutions and tell people what to do instead of considering that they have their own ideas and solutions.

Insider research has more face validity, requiring a constant need for recursive reflection and critical processes and relationships (Smith, 2001). *Insider* research involves people from the community doing their own research. Insider researchers have more value. They see the community with the people, sharing a common perspective. This

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enhances their understanding. *Insider* research involves sharing with the community and partnering. The community has input into the research and seeks their own solutions.

Research should reflect the voices of Aboriginal peoples. A critical question in research relates to the nature of knowledge transfer. Knowledge collection, methodologies, and representation of findings all involve knowledge transfer from the community to the researchers as a trade. This knowledge transfer about knowledge of people, their culture, their language, and their beliefs must capture the true meaning of the people who originally had the ideas (Smith, 2001). Researchers investigating poor health and education of Aboriginal communities often focus on the community as the sole source of the problem and fail to recognize the wider social, economic, and political contexts in which the community exists (Smith, 2001). The implication is often that experts should come into a community and fix the problem without recognizing the strengths already existing in communities and trusting them to find their own solutions (Smith, 2001).

Researchers need to examine their roles and question their status as an insider or outsider in the research. Research occurs in a set of political and social conditions. Researchers need to examine ethical, cultural, political, and personal issues (Smith, 2001). Researchers in Aboriginal communities bring an historical and critical analysis of the role of research, while the research itself needs to be respectful, ethical, sympathetic, and useful (Smith, 2001). Smith (2001) suggests critical questions to ask of any research involving indigenous people:

- Whose research is it?
- Who owns it?

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- Whose interests does it serve?
- Who will benefit from it?
- Who has designed its questions and framed its scope?
- Who will carry it out?
- Who will write it up?
- How will its results be disseminated?

I hope this research on the food and health perceptions and practices of Aboriginal children and youth in Prince Edward Island offers a fair knowledge transfer for those involved. The Advisory Committee, consisting or people from both Abegweit and Lennox Island First Nations, partnered with researchers from the University of Prince Edward Island owned the research together. The Advisory Committee guided the research throughout the whole process from identifying the issues they wanted to research, developing the questions and research design, identifying and confirming findings, contributing to writing, and sharing and confirming findings with the community. They raised concerns when they believed it was necessary and they helped to interpret the findings. Care was taken to seek guidance and share information throughout the project. The research team hoped to hire Aboriginal research assistants to conduct the research, however, only two Aboriginal researcher assistants were employed, despite promoting the opportunity in both communities.

Once the research was completed, a community forum was held to confirm findings, and provide the community with an opportunity to identify their priorities, and brainstorm for possible solutions. By understanding more about their children's stories, the

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Aboriginal communities could benefit from the research in an effort to improve their children's health. In examining Smith's questions I feel that this research was respectful, ethical, and useful for the communities.

Aboriginal people believe in sharing. To be able to share and to have something worthy of sharing gives dignity to the giver; to accept a gift and reciprocate gives dignity to the receiver (Smith, 2001). This is an underlying message of this work. Community research involves projects started by local people to find solutions to their own problems, seeking to make a difference in their lives or the conditions in which they live. A wide variety of social, educational, health, and artistic initiatives exist in the communities involved in this project which have been built on strengths in the communities.

Healing, decolonization, transformation, and mobilization are the processes which connect, inform, and clarify tensions between the local, regional, and global communities (Smith, 2001). In many projects, including this one, process can be more important than the outcome. The way the research is conducted is more important than the results of the research. Processes must always be respectful. They should enable people to heal, to educate, and should foster self-determination (Smith, 2001). Smith (2001) proposes that research be more culturally appropriate through partnership involving both Aboriginal and non-Aboriginal researchers who work together and shape the research through careful negotiation and open communication. I believe this decolonizing approach is essential and necessary in order to conduct ethical research in Aboriginal communities.

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The Medicine Wheel

Many Aboriginal people share a holistic view of health that can be represented by the Medicine Wheel. The Medicine Wheel is an ancient symbol used by most Aboriginal people, promoting the principles of harmony, interdependence, respect, and balance (Perley, 2001). The Aboriginal Nutrition Network uses this symbol to teach, apply, and communicate knowledge about nutrition and health (ANN, 2005). In the Medicine Wheel model, the Circle of Life is supported by the four directions of health: physical, mental, emotional, and spiritual aspects of health (ANN, 2005). The holistic concept of the teaching and learning exchange expressed in the Medicine Wheel provides one way Mi'kmaq knowledge is passed on and linked to spirituality (Augustine, 1998). It encourages all those who follow the teachings of the Medicine Wheel to respect all of Creation (Perley, 2001). Medicine refers to the teachings of ancestors and includes language, culture, traditions, and ceremonies, as well as the sacred medicines including cedar, tobacco, sweet grass, and sage (Perley, 2001). The wheel refers to the Circle of Life and the many different ways in which all things are connected (Perley, 2001). The Wheel reminds us that we are all brothers and sisters living on the same Mother Earth (Perley, 2001).

The Medicine Wheel creates a holistic foundation for human behavior and interaction, with the belief that good health is a balance between body, mind, emotions, and spirit. It is a symbol of peaceful interactions among all living beings on Mother Earth. The Medicine Wheel teachings are about walking the earth in a peaceful way, helping people to seek healthy minds (East), strong inner spirits (South), inner peace (West), and

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strong healthy bodies (North). The determinants of health: family relationships, education, physical activity, nutrition, risk behaviors, emotions, culture, and hopes for the future can be incorporated as one following the medicine wheel. The medicine wheel is always traveled in a clockwise direction, which is the direction of the sun. Many First Nations people use the Medicine Wheel concept as a reminder of life's journey, to help along the path that one travels. The directions or paths of the Medicine Wheel helps to teach us what must be learned. The goal of life's journey is to be at the center of the Medicine Wheel as much as possible, where we can achieve balance and holistic living (Nova Scotia Dept. of Education, 2003).

The Medicine Wheel can vary among different First Nations. The four components may represent the four directions of the compass: East, South, West, and North. The Wheel may represent the four colors of humanity: Red, Black, Yellow, and White. It may represent the four stages of life: Birth, Youth, Adulthood, Senior Years. The Medicine Wheel can also represent the four elements: Earth, Air, Wind, and Fire. It can represent the four seasons: Spring, Summer, Autumn, and Winter. It also represents the four aspects of human nature: Spiritual, Environmental, Physical, and Mental. Each of the four components includes teachings to help us through life's journey (Nova Scotia Dept. of Education, 2003).

Over time, the Medicine Wheel has evolved into different models that provide a framework for the healing of Aboriginal peoples, communities, and nations (www.spiritualnetwork.net). A common theme in the Medicine Wheel is that life is a circle, and the circle must be completed and not broken. As we grow, we change like the

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seasons, and learn from each stage in the journey. Different kinds of medicine wheel metaphors include the colors of humanity, stages of life, and seasons. The medicine wheel representing the four colors of humanity has White in the North, Yellow in the East, Red in the South, and Black in the West. The medicine wheel representing the stages of life has adult in the North, elders in the East, childhood in the South, and youth in the West. The medicine wheel representing the seasons has winter in the North, spring in the East, summer in the South, and autumn in the West.

Conceptual Model for Nutrition Perceptions and Practices of Aboriginal People in Prince Edward Island

I propose a medicine wheel theoretical framework for this research incorporating the theory of decolonization into the process of change (Figure 1). Based on the medicine wheel and incorporating the theory of decolonization, as well as the determinants of health, the model flows as a circle, following the points of the compass.

To begin the journey of this medicine wheel framework, I begin in the East where most medicine wheel journeys and Aboriginal celebrations begin. The East is where the sun rises, where spring awakens us from the long cold winter which has been endured, and is a time for re-birth, renewal, and revitalization. The resilience of Aboriginal people is celebrated in the East. It is a time for re-telling stories of reclaiming culture and re-learning history. These stories involve the birth of decolonization. From the East, decolonization starts a new journey for Aboriginal people.

The East is also the direction of Spring. It represents Elders and their wisdom. It is

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a place for new beginnings and enlightenment. It is a place where new knowledge can be created or received (Cailliou, 1995, cited in Battiste, 2000). In the East we are conscious of how people have suffered through the winter and look to find new ways to warm, nourish, and heal their fragile spirits (Cailliou, 1995, as cited in Battiste, 2000).

In my framework the **East** represents decolonization. Decolonization offers Aboriginal people the opportunity to reclaim their lifestyle through re-discovering their language, re-telling their stories, re-claiming their culture, rebuilding their future, reclaiming their health, by re-discovering traditional foods and physically active lifestyles. The East represents renewal as it takes place in the Spring. Spring signals that suffering was over. It was a sign that it was time to celebrate culture and traditions.

Before this journey of decolonization begins, we must look at what has brought Aboriginal people to this point in their history. In the South, it is the time for summer and the time of the red people. Summer is when growth is at its fullest. Aboriginal people celebrate their traditions in the summer and they recapture knowledge. Traditional foods were harvested in the summer, when nature provided plenty of fish, berries, nuts, plants. These foods sustained people through the long cold winter to come, just as culture and history can help sustain a people and provide the strength and knowledge to get them through hard times. The **South**, therefore, represents summer and the red people. "It is a time when the sun is the warmest and is the time of fullest growth. The summer resounds with the healthy sounds of people as they convene to honor their teachings, elders, and ancestors in ceremonies and gatherings (Hampton, 1995, p. 28, cited in Battiste, 2000)." It offers the foundation for reclaiming ourselves and our voice (Battiste, 2000, p xxiv).

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Summer represents a time prior to colonization by the Europeans. Aboriginal people lived their traditional lifestyles. The people were healthy. They were physically active, hunting and gathering to collect the traditional foods, such as nuts, berries, rabbits, birds, and fish, which were staples of their traditional diet.

In the West, it is autumn and the color is black, representing the coming of the European colonizers who brought their "Western diet" and the went about settling North America and assimilating people to the Western way of life. The sun sets in the West bringing darkness and an end to the day. An end to the bright sunshine. Autumn is the end of summer, the end of warmth, the end of celebrating. It is also a precursor of Winter, warning of the long cold dark days ahead (Battiste, 2000, p xxiv). The **West** represents the arrival of Europeans in Canada and the period of colonization. As European settlers arrived in Canada, Aboriginal people were introduced to a Western diet with staples such as flour and sugar. Aboriginal people began to lose their traditional lifestyle and were assimilated into the Western lifestyle.

Winter is in the North. The color is white. There is no color but White. It represents the imposition of the White European people who tried to assimilate all people to their culture, so everyone would be the same; all lifestyles the same; all languages the same; all cultures the same. There would be no diversity of colors, allowed. The white culture and English was stressed. The residential schools fostered this agenda. Winter has long cold dark days that people endure, knowing that when the winter is over, spring will come again, bringing warmth and sunshine. Until then though, one must endure the cold and the darkness. During times of endurance, people build strength. This helps them to

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survive. This helps build their resilience. Aboriginal people have suffered a long period of time in the cold of winter, where they have not been free to celebrate their culture. They were sent to reservations and the land was lost. With the loss of the land they lost their way of life. They lost hunting and gathering and their foods. They lost the physical activity of gathering their food. They lost their nomadic way of life with confinement to the space of the reservation. They were not allowed to practice their language, and it was lost. Their children were sent to residential schools to be assimilated into the Western way of life. With the loss of their children, they lost hope. They could not tell their stories to their children, they could not pass on their culture or their traditions or their knowledge to their children. Their children could not speak their language, so could not hear the stories that needed to be told to give them their culture and their history. The history told to them was the history of the White man. They were told that this was the only story. They lost their stories. Aboriginal people suffered and they endured.

The North represents winter, with its long nights of darkness, oppression and cold, when survival is challenged (Battiste, 2000, p. xxiii). The **North** represents the post-colonization period. Post-colonization found Aboriginal people being settled on reservations which limited their ability to follow the herds to hunt and collect their traditional foods. A reliance on Western diet and an inactive lifestyle led to a loss of health. Obesity and chronic diseases, such as diabetes and heart disease became widespread in Aboriginal communities and the incidence is rapidly rising in Aboriginal children (Moffatt, 1995). Many losses occurred for Aboriginal people after colonization. They experienced loss of language, loss of culture, loss of land, loss of traditional foods,

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loss of lifestyle, loss of health, loss of their children, and loss of hope.

To complete the circle there is a return to the South. It is not a return to the past, but a return to health through reclaiming the traditional lifestyle and knowledge from the past to rebuild their future and reclaim their health. It is again a time to celebrate the integration of knowledge of the past and its struggles, incorporating these new learnings with traditional knowledge. This theoretical framework has helped me to understand and ground this research. It locates the research historically and provides the basis for change that is culturally connected.

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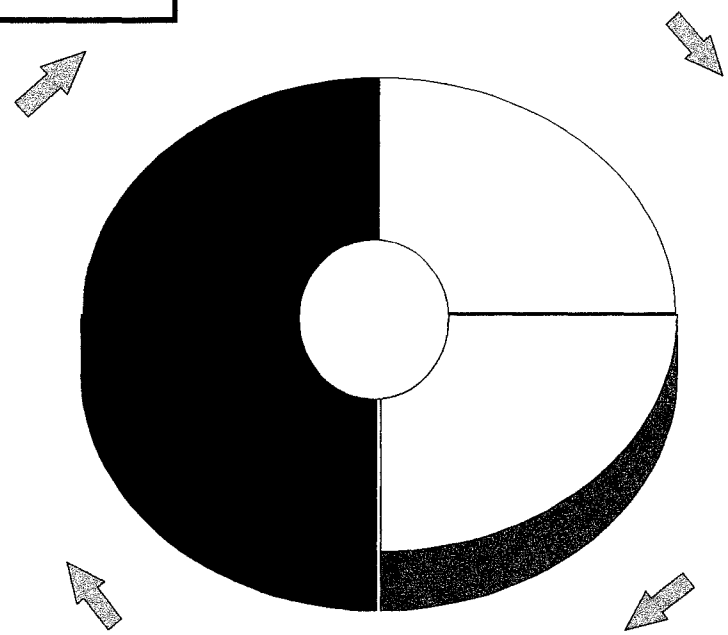
Conceptual Framework

Contact + Colonization

European settlement
Western diet
Trading

Colonization + Loss

Loss of lifestyle
Loss of culture
Loss of health
Loss of dignity
Loss of children
Loss of land
Loss of language
Loss of hope



Pre-contact

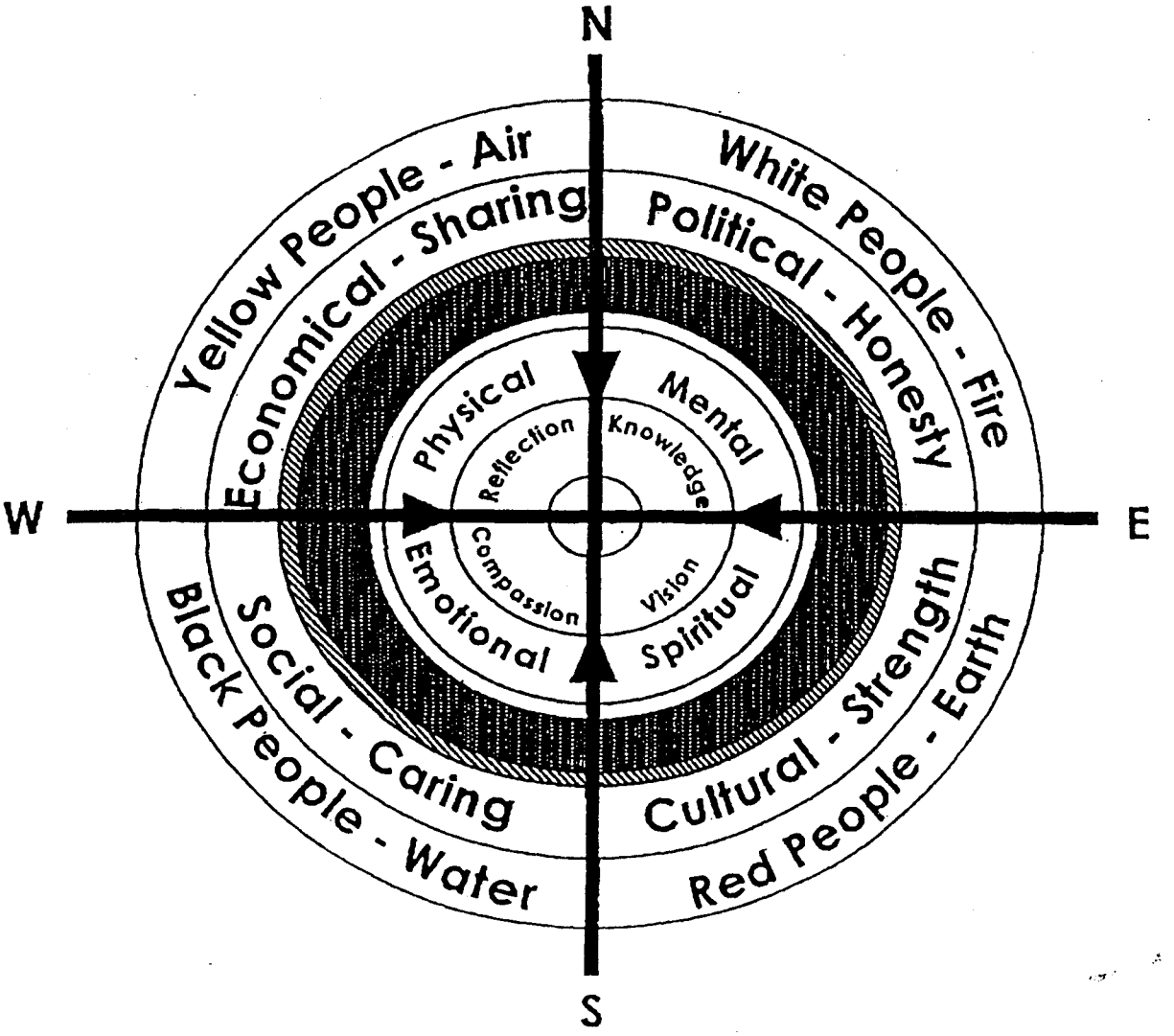
Traditional Lifestyle
Healthy people
Traditional foods
Active lifestyle
Oral teachings

Decolonization

Reclaim health
Rediscover traditions
Renew culture
Recover language
Retell stories
Revitalize people

North/Post-colonization
South/Pre-colonization
West/Colonization
East/Decolonization

Medicine Wheel Teachings



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Chapter 3

Literature Review

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Literature Review

Health Canada has adopted a population health model based on 12 determinants of health: income and social status, social support networks, education and literacy, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture (http://www.phac-aspc.gc.ca/ph-sp/phdd/determinants/index.html). These 12 determinants act not only individually but also together in complex interactions that influence health. Nutrition, as a component of health, is also affected by these determinants to influence health.

Aboriginal people as a population do not experience the same level of health as other Canadians (Health Canada, 2003). They experience inequities in the conditions that determine health, including lower educational levels, fewer employment opportunities, and lower socioeconomic status, all of which impact on their health (Health Canada, 2003).

There is also clear evidence of nutritional concerns among Aboriginal children in Canada, including high sucrose intakes, frequent consumption of fast foods and junk foods, and low vegetable intakes (Bernard et al., 1995; Evers, 1991; Kuhnlein, Soueida, & Receveur, 1995; Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wein, Gee, & Hawrysh, 1993; Wolever, et al., 1997). Such dietary behaviors are thought to play a major role in the development of type 2 diabetes and obesity, both of which are significantly elevated in Aboriginal children in Canada (CICH, 2000; Gahagen et al., 2003; Gittelsohn et al., 1998; Hanley et al., 2000; Harris et al., 1997; Wolever, et al., 1997;

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Young et al., 2000). Type 2 diabetes has emerged as a leading cause of morbidity and mortality in Native American communities throughout North America (Gittelsohn et al., 1998). Dietary changes and reduced activity levels, acting on a susceptible genotype, are thought to be at the root of the high prevalence of type 2 diabetes in Aboriginal people (Gittelsohn et al., 1998). There is increasing recognition that prevention efforts are critical to improve dietary patterns and reduce overweight and other chronic disease risk factors in this population (Broussard et al., 1995; Harvey-Berino et al., 2000).

This literature review focuses on the current data available on nutrition in Aboriginal children in Canada. A preliminary database search was conducted using the terms "nutrition," "native/Indian/Aboriginal," and "food." Medline was the primary database used, however, Agricola, CINAHL, and PsychInfo were also searched and found to have many of the same results. A search of the ERIC database resulted in more consumer documents than journal articles, so was excluded from this preliminary report. A search was also performed using the First Nations Periodical Index, however, the results did not include scholarly references relevant to this particular search.

Most articles highlighted in this report cover the period from 1997- 2004, however, 2 earlier articles were chosen due to their relevance to nutritional status and health perceptions of Natives Canadians. Several key nutrition and health journals were also hand searched for relevant articles from 1997-2004, including: Canadian Journal of Dietetic Practice and Research, Journal of the American Dietetic Association, Journal of Nutrition Education, Canadian Journal of Public Health, Canadian Medical Association Journal, and American Journal of Health Promotion. Primary research articles were

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included, as well as several review articles for reference.

Initially it was intended to do a literature review of the nutritional status of Aboriginal children in Canada and nutrition education strategies employed with this population; however, due to lack of data on Canadian Aboriginal children, I extended my search to include North American Indians and included studies with Aboriginal adults. The impact of loss of a traditional lifestyle with the cultural shift towards a more Western diet and sedentary lifestyle are also explored. An overview of the nutritional status of Aboriginal children is discussed, including the prevalence of obesity and its implications for the health of Aboriginal children. Strategies for nutrition interventions for Aboriginal people are summarized by highlighting some nutrition education and health promotion interventions discussed in the literature.

Loss of Traditional Lifestyle

Traditional aboriginal diets were nutritionally well balanced having evolved over thousands of years. Anthropological research and historical records reveal that North American Indians enjoyed remarkable health prior to contact with the Europeans (Lawn, 1985). Most Native Canadians were highly active and retained much of their traditional diet until early this century (Gittelsohn et al., 1998). A traditional diet consisted of foods that were locally gathered from available natural resources by hunting, fishing, and gathering, resulting in a diet high in protein, moderate in fat, and low in carbohydrate and fiber (Gittelsohn et al., 1998). The traditional diet in Atlantic Canada consisted primarily of wild game, fish, shellfish, organ meats, berries, wild greens, corn, seaweed, roots, and nuts (Lawn, 1985). The arrival of fur traders in the late 1700s introduced European foods

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such as salted meat, flour, oatmeal, sugar, lard, and tea (Gittelsohn et al., 1998).

Naturally there were periods of feast and famine with the food supply varying from season to season and year to year. Moffatt (1995) has speculated that Native Indians have a "thrifty genotype" which has allowed them to biologically adapt when there is a shortage of food by laying down fat as a store of energy to get them through the famine.

Since the 1940s, the increase in permanent settlements, or reservations, has led to a growing dependence on market foods and a decrease in the importance of hunting and fishing (Gittelsohn et al., 1998). The resulting dietary changes have resulted in higher energy intakes, especially of fat, and refined carbohydrate sources, such as soft drinks and snack foods (Gittelsohn, et al., 1998; Moffatt, 1995). The ever abundant supply of high calorie foods may be having a deleterious effect on this genotype, increasing obesity (Moffatt, 1995).

A move from the hunting, gathering lifestyle has lost a source of nutrient dense foods and physical activity spent to collect these food sources. An abundant supply of high fat, high calorie, low nutrient foods and a sedentary lifestyle have led to a significant increase in obesity in the last 1-2 generations. Dietary data from several tribes indicate a low fruit and vegetable intake and high fat intake (White et al., 1997; Johnston et al., 1977; Trifonopoulos et al., 1998; deGonzague, et al., 1999).

The Mi'kmaq in Atlantic Canada lived on a low fat, high protein, low carbohydrate diet rich in vitamins and minerals and fiber obtained from fish, shellfish, seal, game, local berries, wild plants, corn, and seaweed. An analysis of the Mi'kmaq diet in 1977 found a high carbohydrate, low protein, low fiber diet obtained from market foods which were

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mostly potatoes and bread, as well as meats, (including beef, pork, fish, chicken, and bologna) eggs, carrots, turnip, cabbage, onions, occasional apples and oranges, fruit flavored sweetened powdered drinks, lard, butter, and tea with evaporated milk (Johnston et al., 1977). This diet was very similar to that eaten by a comparison group of adult non-Aboriginal women in Shubenacadie, Nova Scotia.

The traditional diets from all tribal groups have been replaced by high fat spreads, fried foods, whole milk, fry bread, sweets, empty calorie snack foods, and sweetened beverages (Trifonolpoulos et al., 1998; deGonzague et al., 1999; Hanley et al., 2000). Traditional foods were reported in the diets of 17.7% of respondents by Trifonopoulos in Mohawk in Kahnawake, Quebec in 1998. Traditional foods were not important sources of energy and only mentioned in 11% of dietary recalls in the Pathways Feasability Study in the US (Lytle et al., 2002).

Nutritional Status of Aboriginal Children in Canada

There is generally a lack of data on the dietary intakes of Native Indians. More research is needed to develop a better understanding of their nutritional habits. Studies indicate excessive energy intakes high enough to promote weight gain with a high percentage of calories being derived from fat, coupled with inadequate intakes of micronutrients and fiber (Moffatt, 1995; Johnston et al., 1977; Trifonopoulos et al., 1998; deGonzague et al., 1999; Lytle et al., 2002). Nutrients that are often low in aboriginal populations include iron, vitamin A, vitamin D, calcium, folate, and zinc (Moffatt, 1995; Johnston et al., 1977; Trifonopoulos et al., 1998; deGonzague et al., 1999; Lytle et al., 2002). Despite energy intakes high enough to promote or sustain weight gain, inadequate

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micronutrient intakes suggest a diet that is not nutritionally balanced (Moffatt, 1995). Micronutrient deficiencies can exist with obesity. Aboriginal people need to adopt healthy eating patterns and incorporate physical activity in their daily lives to reduce obesity.

Obesity in North American Aboriginal People

North American Aboriginal people have a high prevalence of obesity across all ages and gender groups (Trifonopoulos et al., 1998; deGonzague et al., 1999) and obesity has become a major health problem for Aboriginal people in the past two generations. This increase in obesity has also contributed to lifestyle related chronic diseases, including diabetes mellitus, heart disease, some cancers, hypertension, increased gallstones, and adverse pregnancy outcomes (Story et al., 1999). Heart disease was rarely noted in American Indians earlier this century, but has become the leading cause of death in the past decade (Story et al., 1999).

Diabetes was rarely diagnosed in American Indians until the 1930's and is now at epidemic levels, largely due to obesity (Story et al., 1999). Recent estimates indicate that diabetes affects approximately 6% of Aboriginal adults, compared with approximately 2% of all Canadian adults (Hegele, 1999; Young, et al., 1990).

Diabetes, in turn, is a risk factor for heart disease, as well as the leading cause for amputation and end-stage renal disease. The Navajo report over a 40% rate of diabetes in adults over 45 years of age (White et al., 1997). Ojibwe communities in Minnesota and Wisconsin were found to have an obesity rate of 47% (deGonzague, et al., 1999).

It is estimated that half of Type 2 diabetes can be prevented by obesity control (CICH, 2000). A Body Mass Index (BMI) greater than 27 has been used as the criteria to

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define obesity, although some studies differ on this definition. Risk factors for chronic disease are also increased with a higher proportion of fat being carried around the abdomen versus around the hips. It has been thought that increasing rates of obesity in Native Indian populations may be due to loss of traditional lifestyle. Consumption of fewer traditional foods and relying more on high fat, processed foods of the Western diet with a shift from an active lifestyle to one that is more sedentary may also contribute to obesity.

Obesity has most notably increased in young Aboriginal people (deGonzague et al., 1999; Moffatt, 1995; Trifonopoulos et al., 1998;), which is very concerning because obesity in young people predicts obesity in adulthood (Guo et al., 1994). Studies indicate that obesity rates in American Indian children, adolescents, and adults are higher than the US rates for all races combined in the general population, with 34% males, 40% females, and 39% children overweight in the native populations while 24%, males, 25% females, and 15% children in the general US population, (Story et al., 1999). A study of the Navajo in southwest US compared heights and weights of children in 1989 and 1955 and found that for boys height had increased by 6.1 % while weight had increased 28.8%, while for girls height had increased 4.4% while weight had increased 18.7% in all age groups (White, et al., 1997). White (1997) reported a 35-40% rate of obesity in Navajo children and adolescents, with 8% having impaired glucose tolerance or diabetes. Mohawk children living in the Kahnawake territory in Quebec have very high rates of obesity (29.5% for boys and 32.8% for girls), as well as twice the rate of Type 2 diabetes as white American children and 48% prevalence of ischemic heart disease (Trifonopoulos, et al., 1998). James Bay Cree in Quebec have a 38% rate of obesity in children in grades 4, 5, 8,

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and 9. Sandy Lake Oji-Cree in Ontario have a 27.7% rate of obesity for boys and 33.7% for girls (Hanley, et al., 2000). Hanley (2000) found that overweight rates in Sandy Lake Oji-Cree between boys and girls were similar until age thirteen years, then girls had higher BMI's which increased with age. Research suggests that high fat, low carbohydrate diets, limited physical activity, and television watching may play a role in the development of obesity (CICH, 2000). The increasing rates of obesity in children and adolescents and the harmful effects on health make the need for targeting primary prevention of obesity for native children imperative.

Social and economic conditions faced by Aboriginal people could be contributing to their lower health status when compared to non-Aboriginal people in Canada (CPHI, 2004). Educational attainment is lower, fewer people are employed, and average incomes are lower (CPHI, 2004). Aboriginal people are disadvantaged economically with 40% First Nations people living below poverty level compared to 16% of non-Aboriginal people in Canada (CPHI, 2004). This compares to 31% of Native Americans living below poverty level compared with the general US population rate of 13% (Story et al., 1999). People with lower incomes have increased rates of obesity, higher fat intakes, lower fruit and vegetable intakes and higher rates of death from chronic diseases (Story et al., 1999). Nutrition education and health promotion strategies targeted at young Aboriginal children to prevent obesity is needed.

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Interventions

It has already been noted that there is a high rate of obesity in Aboriginal people (CICH, 2000; Hanley, et al., 2000; Story et al., 1999; Trifonopoulos, et al., 1998) which is difficult to treat successfully in adults. Nutrition interventions are needed to develop and evaluate effective strategies for weight loss and prevention of obesity ((CICH, 2000; Hanley, et al., 2000; Trifonopoulos, et al., 1998). Nutrition education and physical activity programs, combined with a coordinated effort to make balanced nutrition choices available and affordable in their communities are needed to prevent obesity.

Children are the ideal target group for nutrition interventions since they are developmentally at a critical stage for learning health information and skills (CICH, 2000). In supportive environments they may develop healthy eating and physical activity practices that become habits they carry into adulthood (CICH, 2000). Children are more receptive to health education programs that emphasize skills training and family involvement (CICH, 2000). Programs must be developed with the involvement of Aboriginal people to be successful in their communities (deGonzague et al., 1999; Moffatt, 1995; Trifonopoulos et al., 1998;). Aboriginal communities with their strong extended family networks, community involvement, traditional heritage and cultural values, and a high value on children are ideally equipped to build behavior change programs. Challenges to success include poverty, limited access to healthy foods, proliferation of fast foods and convenience foods, and limited recreation facilities (CICH, 2000).

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Specific Nutrition Interventions and Studies in Aboriginal Communities

Sandy Lake Oji-Cree

A total of 728 adults (72% of eligible subjects) from the isolated native community of Sandy Lake, Ontario were enrolled in a survey of diabetes and cardiovascular risk factors, called the Sandy Lake Health and Diabetes Project (Hegele, 1999). Sandy Lake is a community of approximately 1600 people, located about the 55th parallel of latitude, accessible for most of the year only by air. Historically, the ancestors of the current residents of Sandy Lake lived a traditional Aboriginal lifestyle; with a nomadic lifestyle of hunting and gathering (Hegele, 1999). Algonquin was the language of the community (Hegele, 1999). This group of Algonquin people were physically active and their diet was high in protein from wild meat and fish with seasonal berries and roots (Hanley et al., 2000). Since the development of the reservation and residential school systems, the lifestyle has changed from being very physically active to being very sedentary. Further, the primary source of food has changed from wildlife, roots, and berries to processed foods (Hegele, 1999). The prevalence rate of type 2 diabetes in Sandy Lake was found to be 26.1% overall, the highest reported in a Canadian population and the third highest reported in the world (Harris et al., 1997). Survey data found that almost 50% of the adults were obese (Gittelsohn et al., 1998). High "junk food" consumption was associated with 2.4 times greater risk for having diabetes (Gittelsohn et al., 1998). A higher consumption of processed foods and fast foods, bread, and butter, as well as a lower consumption of vegetables, breakfast foods, and hot meals were all associated with an increased risk of obesity and diabetes in the Sandy Lake Oji-Cree (Gittelsohn, et al.,

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1998). This suggests the possibility that returning to a more traditional diet and lifestyle may have an impact upon the obesity and diabetes rates in this community (Hegele, 1999).

Height and weight measurements were analyzed for a subsample of 445 children and youth in Sandy Lake aged 2-19 years (Hanley et al., 2000). The overall prevalence of overweight was 27.7% in boys and 33.7% in girls (Hanley et al., 2000). A further subsample of 242 subjects aged 10-19 years were interviewed to obtain data on dietary intake, body image concepts, and television viewing using standardized interview-administered questionnaires, including a food frequency questionnaire and a 24 hour dietary recall (Hanley et al., 2000). The risk for overweight was 2.5 times higher in subjects who watched >5 hours of television/day (Hanley et al., 2000). The risk of overweight decreased substantially as fitness increased (Hanley et al., 2000). Vegetable intake over the previous 3 months appeared to be inversely related to overweight (Hanley et al., 2000).

An intervention strategy to prevent diabetes was started with the younger Sandy Lake Oji-Cree which focused on:1) educating the community about diet and activity using anthropologically appropriate concepts, language, and symbols; 2) identifying non-traditional foods that are associated with a lower risk of diabetes and providing education about finding, purchasing, preparing, and consuming such products; 3) encouraging prudent food choices from the traditional diet; and 4) focusing these efforts towards younger adults and school-aged children (Hegele, 1999). One activity this intervention suggested was home visits for nutrition education, such as teaching community members how to prepare a lower fat, higher fiber form of bannock (Gittelsohn et al., 1998).

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Population health strategies aiming to prevent chronic disease, such as the Sandy Lake project, will take time to determine if their interventions are effective.

Keewatin Inuit

Sandy Lake dietary results were studied along with a comparison group of 516 randomly selected adults from the Keewatin region of the Northwest Territories (now called Kivalia, Nunavut) who participated in a comprehensive health interview and examination (Hegele, 1999). The subjects came from eight communities situated on the western shore of Hudson's Bay, between the 60th and 70th parallels of latitude (Hegele, 1999). These Inuit still adhered to a more traditional lifestyle; were physically active and enjoyed eating traditional foods, including the consumption of Arctic fish at least three times each week (Hegele, 1999). Their average Body Mass Index was 25, while the average Body Mass Index of the people of Sandy Lake was 29 (Hegele, 1999). The prevalence of diabetes was 1% for the Keewatin area, compared to 50% for the Sandy Lake area (Hegele, 1999).

The Inuit may be protected from the deleterious effects of the North American lifestyle simply because they live a more traditional lifestyle being much farther north than the Oji-Cree, limiting their accessibility to highly processed foods, and are thus, more reliant on their traditional diet and increased physical activity patterns, resulting in lower body weight (Hegele, 1999). These findings suggested a return to a traditional lifestyle would be beneficial in decreasing obesity and obesity related health risks.

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Akwesasne Mohawk

The Mohawk community of Akwesasne has a population of approximately 9000 and is located on 6 miles of land along the St. Lawrence River in northern New York state and Ontario and Quebec (Harvey-Berino et al., 1997). Akwesasne started a community intervention project, Tsitewatakari:Tat (Let's Get Healthy) in 1993, aimed at reducing the prevalence of type 2 diabetes among the Mohawk people, and creating an enduring and functioning community coalition whose purpose was to design, initiate, and maintain programs that promote a healthy lifestyle (Harvey-Berino, 1997). Specifically targeted behaviours included increasing physical activity and reducing consumption of dietary fat to decrease excessive weight gain in Mohawk children. The primary target for the school-based intervention was 279 children in the Mohawk School in Akwesasne in grades pre-kindergarten, kindergarten, and grades 1-3 (aged 4-9 years) (Harvey-Berino, 1997).

Baseline data characterizing the children's behaviours, knowledge, and attitudes regarding diet and exercise were collected on 50% of this population (143 children) (Harvey-Berino, 1997). Macronutrient intake was determined from 24 hour dietary recalls of the children, while parents provided information for children younger than 8 years (Harvey-Berino, 1997). Food preferences, nutrition knowledge, and eating behaviours were assessed with a food preference questionnaire (Harvey-Berino, 1997). It was determined that the traditional Mohawk foods, such as game, fish, fry bread, and corn soup were not eaten frequently (Harvey-Berino, 1997). The diets of Akwesasne children exceeded the recommended intake for fat and were much higher in energy than the average intake for US children (Harvey-Berino, 1997). Liking a food was found to be the

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strongest predictor of eating behaviour, while nutrition knowledge had the weakest correlation with food choice suggesting that although nutrition interventions need to include nutrition education, education alone is not enough to change food choice and habits (Harvey-Berino, 1997). Nutrition interventions that focus on repeated exposure to healthful foods, along with parental, peer, and community involvement in modeling healthy eating behaviours are more likely to have an impact on promoting healthy eating behaviours than direct teaching to change nutrition knowledge (Harvey-Berino, 1997). It will be interesting to see the long term health effects of this intervention.

Kahnawake Mohawk

In Kahnawake, a Mohawk territory of 7000 residents near Montreal, Quebec, very high rates of overweight and chronic disease risk factors prompted the development of the Kahnawake Schools Diabetes Prevention Project (Trifonopulos, Kuhnlein, & Receveur, 1998). The prevalence of overweight in Kahnawake Mohawk children aged 5-12 years was 29.5% for boys and 32.8% for girls (Trifonopulos, Kuhnlein, & Receveur, 1998). This intervention was a school based health education program with a community health promotion intervention which began in 1994 (Trifonopulos, Kuhnlein, & Receveur, 1998). Its aim was to promote healthful eating and physical activity among children and adults, with the long range goal of preventing diabetes (Trifonopulos, Kuhnlein, & Receveur, 1998).

Baseline nutrition data was collected through 24 hour recalls on 164 children in grades 4-6, which indicated that sugar (e.g. from sugared cereals, candy, icing, and slush) was the second most frequently mentioned food (Trifonopulos, Kuhnlein, & Receveur,

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1998). Over one quarter (28%) of children reported eating out or having take-out food for 1 or more meals on the recall day, which coincided with a higher sucrose intake on those days, probably because of greater consumption of sweetened beverages (Trifonopulos, Kuhnlein, & Receveur, 1998). White bread was the most important source of energy and carbohydrate (Trifonopulos, Kuhnlein, & Receveur, 1998). Beverages were major sources of energy with 38% of children consuming cola or sweetened beverages (Trifonopulos, Kuhnlein, & Receveur, 1998). Two percent milk was the most important source of protein, while beef was the most important source of meat protein (Trifonopulos, Kuhnlein, & Receveur, 1998). The top 3 sources of fat were french fries, frankfurters (hot dogs, bologna, and pepperoni), and hamburger (Trifonopulos, Kuhnlein, & Receveur, 1998). The most frequently reported vegetable was french fries, followed by canned tomatoes, mashed potatoes, and lettuce, while other vegetables were eaten by less than 10% of the children (Trifonopulos, Kuhnlein, & Receveur, 1998).

Traditional foods, such as corn bread, corn soup, la sauce (ground beef cooked with flour and water), meat pie (pastry filled with ground pork and mashed potatoes) were reported in 29/164 recalls, suggesting limited traditional food use in Mohawk children (Trifonopulos, Kuhnlein, & Receveur, 1998). Several factors that may contribute to the decline in traditional food use among Mohawk people in Kahnawake include: the many years since first contact with European settlers; proximity to a major city; decrease in available time due to employment; land available for growing traditional foods (corn, beans, and squash); and environmental change that has reduced fish and game populations (Trifonopulos, Kuhnlein, & Receveur, 1998). Again, it will be interesting to see the impact

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this intervention has had on the long term health of the population.

Pathways

Pathways is a culturally appropriate obesity prevention study in the United States for 3rd, 4th, and 5th grade American Indian school children that promotes healthy eating and physical activity (Lytle et al., 2002). It was developed in partnership with health professionals, researchers, members of First Nations communities, schools, and families. Focusing on individual, behavioral, and environmental factors, *Pathways* uses social learning theory, and American Indian customs and practices through school curriculum, physical education, family involvement and school foodservice. Pathways aims to enhance children's knowledge of physical activity and nutrition, their health values and their sense of personal control over their choices (Lytle et al., 2002).

Limitations of Studies

Caution must be used in generalizing data from one tribe or location to another. Wide variations may exist due to differing genetic backgrounds, cultural norms, and environments. Aboriginal people living on reservations are often excluded from national population health and nutrition surveys in Canada. Differences exist among Aboriginal people living on and off-reserve.

Another limitation to consider is the method of dietary data collection for children. Some methods obtain children's dietary data from secondary sources, such as parents and caregivers, who may represent biased responses if caregivers try to respond in a way that they feel is right or preferred. There is also a possibility that the caregivers were not with the children throughout the whole day and may also respond on the time that they were

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actually with the children.

Any dietary data collection using recall data or food frequency questionnaires must also consider the limitation of memory. Respondents may have simply forgotten foods they did or did not eat. Children may not have fully understood a question, or may have answered in a way they feel would please the interviewer. Any of these limitations would need to be considered with this information.

Conclusions

Obesity is an alarming health problem for First Nations people. Trends indicate that obesity levels will continue to rise at a fast pace for today's Aboriginal children unless effective intervention strategies are put into place. Health and nutrition education programs that intervene with native children have great potential to reduce the rates of obesity and improve the health of First Nations people.

A lack of knowledge exists regarding the nutritional status of Aboriginal people. There is an urgent need for further research on the health and nutrition of Aboriginal people to gain a better understanding of where they stand now if there is to be effective intervention to reduce their level of obesity and improve their health status in the future. The small body of existing research indicates that there is tremendous disparity in the nutritional status of Aboriginal people in Canada, leading to epidemic levels of obesity, especially for children.

Aboriginal people traditionally consumed a typical diet of fish, wildlife, roots, and berries. Current reports indicate a marked shift away from these traditional foods to a diet of highly processed high fat, high calorie foods with minimal nutritional content. Studies

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suggest that incorporating these traditional foods into the diet would improve the nutritional content of the diets of Aboriginal people.

As previously noted, obesity is a key risk factor for chronic disease. Aboriginal communities would benefit from health intervention programs which encourage healthy eating and physical activity patterns to help reduce the risk of obesity. Since obesity in children predicts obesity in adults, prevention of obesity in children is key. Interventions to promote nutrition and physical activity should be multifaceted to target children in their home, at school, and in the community making it easier for children to make healthy choices throughout their environment.

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Chapter 4

Food and Health Perceptions of Aboriginal Children in Prince Edward Island

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Food and Health Perceptions of Aboriginal Children in Prince Edward Island

Objectives: The purpose of this study was to describe dietary behaviours of Aboriginal children and youth living in Mi'kmaq First Nation communities in Prince Edward Island, Canada.

Design: Data was collected on nutrition perceptions and practices as part of a larger study of health perceptions and behaviours in Mi'kmaq children and youth aged 0-18 years through interviews with the children and their caregivers.

Participants: 105 Mi'kmaq children and caregivers living in Prince Edward Island

Analysis: Interviews were transcribed verbatim from audiotapes and transcripts were analyzed for common themes.

Results: Several common themes emerged from comments from the children and youth, including: food as a determinant of health; family meals; traditional foods; physical activity; and weight. Caregivers identified similar themes, and community efforts and cost.

Conclusions: While children value nutrition as a key determinant of health, they appear to have difficulty translating these values into practice. The decline in family meals with age and the high frequency of television viewing during meals is a concern since family meals are associated with positive dietary behaviours. While the participants mentioned traditional foods during their interviews, they did not report eating them with frequency, which is consistent with reports of declining traditional food use in Aboriginal people across Canada and the United States.

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Food and Health Perceptions of Aboriginal Children in Prince Edward Island

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Objective

Nutritional concerns among Aboriginal children in Canada have been well documented (Kuhnlein et al., 1995; Trifonopolos et al., 1998; Morrison et al. 1995; Evers, 1991). This article describes children's and caregivers' perceptions about food and health in a rural First Nations context in Atlantic Canada. In partnership with the Mi'kmaq communities and grounded in participatory action research, this project captures the voices of children, youth, and their parents talking about nutrition, eating behaviors, and traditional foods. The children's stories should provide insight into their understanding of health and nutrition and lay the groundwork for health promotion interventions. This research required the negotiation of access into a tightly knit Aboriginal community where maintaining credibility and trust were foundational. Community members believed this research has the potential to improve the health of their children in the Mi'kmaq communities in Prince Edward Island by providing the basis for future health interventions (Timmons, et al., 2004).

The Research Project

The research discussed in this article focuses on food and health as part of a comprehensive Aboriginal children's health project, *Building Healthy Mi'kmaq Communities in Prince Edward Island* (Timmons et al., 2004). This research considers education, physical activity, culture, family life experiences, risk behaviors, hopes and dreams, as well as nutrition. The project is unique because it is the first time that Mi'kmaq children in Prince Edward Island have told their stories about health.

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Context and the Community

Prince Edward Island is a province in Atlantic Canada, nestled between the Gulf of St Lawrence and the Northumberland Strait. It is Canada's smallest province with a population of approximately 138,000 people (Statistics Canada, 1999). It offers colorful landscapes with patchwork fields of red tilled soil, lush green pastures, mixed woodlands, and seascapes. Aboriginal people say that *Glooscap*, the 'Creator,' carved this island of red soils and set it aside as a special place which he called *Abegweit*, which means, "cradled on the waves" (McKenna, 1990, p. 40). Mi'kmaq people have lived in this place of natural beauty for centuries. In the past, the Mi'kmaq lived a quiet nomadic life of hunting and gathering their food from the bounty that nature provided. They treated the environment with respect and maintained an outlook of stewardship for the land as opposed to ownership. In the late eighteenth century the British government confiscated all land in Prince Edward Island and established reserves for the Mi'kmaq, thus cutting the people off from their traditional nomadic lifestyle and isolating them from the mainstream of Canadian society (McKenna, 1990).

Prince Edward Island has two Mi'kmaq communities. The Lennox Island First Nation, established as a reservation in 1870, is located in the western part of the province (www.lennoxisland.com). An island comprising 534 hectares, it was geographically separated from the rest of Prince Edward Island until 1973, when a causeway was built connecting it to the rest of the province (www.lennoxisland.com; McKenna, 1990). Before the causeway, Lennox Island was particularly isolated from the rest of the province and was ice-bound for approximately three months each year. It is a picturesque island in

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the blue waters of Malpeque Bay with a view of beautiful sand dunes. Malpeque Bay is particularly rich in lobsters, oysters and mussels. In the past Lennox Island supported small potato and livestock farms for the Mi'kmaq (McKenna, 1990). Berries, especially blueberries, grow abundantly. The island is well-forested and provides hunting grounds for small game and birds. Mi'kmaq people in Lennox Island actively operate a successful fishery, a growing eco-tourism industry, arts and crafts businesses, and other enterprises. The community maintains a strong voice in provincial affairs.

The Abegweit First Nation in Prince Edward Island is spread over three communities in the central part of the province, Scotchfort and Morell Rear, to the east of Charlottetown, the capital city of Prince Edward Island, and Rocky Point, situated west of the city. Morell Rear, which is 83 hectares in size, was established in 1846 (www.abegweitfirstnations.com). It is home to several families, but is primarily forest land. Rocky Point, a small village of three hectares overlooking Charlottetown harbor, was established as a reservation in 1913 (www.abegweitfirstnations.com). Scotchfort, established as a reservation prior to 1867, is 55 hectares overlooking the Hillsborough River (www.abegweitfirstnations.com).

Both Lennox Island and Abegweit First Nation communities rely on the lobster fishery. Both support their own health centers, community recreation centers, churches, and Band offices. Lennox Island also has its own elementary school and cultural center. The population of Lennox Island is approximately 245 people living on reserve (www.lennoxisland.com) with approximately 39 families with children aged 0-18 years. The population of the Abegweit First Nation is approximately 172 people living on-

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reserve (www.abegweitfirstnations.com) with approximately 36 families with children aged 0-18 years. Over 50% of the population of both First Nations Bands live off-reserve, however, this research was conducted only with the on-reserve population (www.lennoxisland.com; www.abegweitfirstnations.com). The children attend the band operated elementary school in Lennox Island to grade six, then attend provincial schools for grades 7-12. Children in Abegweit First Nation attend provincial schools for grades 1-12 (Statistics Canada, 2001).

Language

First Nations and Inuit peoples in Canada may be called "Aboriginal" while the broad term "Indigenous" is now used particularly by writers in New Zealand and Australia to refer to peoples who inhabited lands as first peoples. The term "Aboriginal" will be used in this paper when describing First Nations and Inuit people in Canada. "Mi'kmaq" refers to the groups of First Nations people who live in Atlantic Canada and Maine, including the people who live in the communities in Prince Edward Island described in this research.

Theoretical Context

Linda Tuhiwai Smith's text, *Decolonizing Methodologies*, provides a theoretical framework for this research (2001). Informed by critical theory and feminist approaches to research grounded in a cultural context, Smith argues that mainstream history represents the story of colonization told through the eyes of the colonizers. It offers only one perspective. When Aboriginal people tell stories of colonization, they are quite different. In Smith's decolonizing framework, deconstruction is used to dismantle the mainstream

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story revealing underlying texts, silenced voices, and insights into the experiences of Aboriginal peoples. Smith believes that oral traditions remain a most important way of developing trust, sharing information, strategies, advice, contacts, and ideas. Within many Aboriginal cultures the telling of these stories and the stories themselves provide powerful forms of resistance, and provide space for the re-claiming of history which in turn can help to shape the future. Decolonization, Smith argues, is a discursive practice that offers Indigenous people the opportunity to reclaim and re-build their lives through re-discovering their language, re-telling their stories and re-claiming their culture. This process enables Indigenous peoples to re-claim responsibility for their health and offer their children healthier lifestyles. Smith's theory of de-colonization presents a theoretical perspective from which to re-claim and re-invent traditional lifestyles and health practices, and in the process re-build healthy communities. This framework is used to inform and guide this research.

The intent of the researchers involved in *Building Healthy Mi'kmaq Communities in Prince Edward Island* was to build decolonizing approaches in this research. Interviews were used to recognize oral traditions and encourage storytelling. An Advisory Committee appointed by the Chiefs actively sought input from the community in order to ethically and practically direct the research to the satisfaction of the community. In an open community forum following the completion of the research, the communities provided feedback to confirm and comment on the findings. This research provided the children and their parents with an opportunity to re-tell their own stories about their health.

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The Authors

Awareness of the background of the researchers writing this paper helps to understand the context they bring to the research. All of the authors are White, middle class, working, professional mothers with an interest in children's health and nutrition. Two of the authors, Larsen and Taylor, are registered dietitians, both with experience in community nutrition. Larsen has experience working as a dietitian in one of the Aboriginal communities in this study, while Taylor, an associate nutrition professor, has research experience focusing on community-based nutrition projects with school aged children. Two of the authors are educators, both experienced in working with Aboriginal communities. O'Donoghue is an associate professor of education with extensive experience working in an Inuit context. Timmons, the principal investigator of the project, is a university administrator and education professor with experience researching and working in Aboriginal contexts and focus on inclusion issues.

The Research Team

When the proposal for this study was being developed, partnerships were formed between the University of Prince Edward Island and the aboriginal communities in the province. The Chiefs of Lennox Island and Abegweit bands expressed interest in and support for hearing the voices of the children in their communities speaking about their health. The Chiefs appointed key people from their communities to become members of the Advisory Committee for the research. This partnership was formed before any details of the research were discussed. The Advisory Committee was involved from the first stages of development of the proposal through preparing the interview guides and

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questions, informing the community about the project, and providing feedback with respect to the analysis and findings. The advisory committee included parents, health and education staff, Band staff, and community members.

Two Aboriginal and four non-aboriginal research assistants were hired. When working in the community non-aboriginal researchers were teamed with Aboriginal research assistants whenever possible. Extensive cultural training was provided to the entire research team before the work started and specific workshops on interviewing in Aboriginal contexts were provided to all research assistants. Research assistants were conscious of and informed about differing norms and values in the Mi'kmaq communities and took great care to clarify participants' meanings to avoid misunderstanding and false assumptions (Patton, 2002; Smith, 2001).

Design and Methodology

Sample

The population for this study included all Mi'kmaq children living in the communities of Lennox Island and Abegweit First Nations. All eligible participants were invited to be involved in the research. In total, 105 children and their caregivers participated in interviews. (Table 1 indicates number of participants for each age category). In Lennox Island, the larger community, 85% (33/39) of families with children aged 0-18 years participated in the research.

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Table 1

Age group	Participants
Parents of 0-5 year old children	10
Children aged 6-8 years	18
Children aged 9-12 years	22
Youth aged 13-18 years	27
Parents of 6-18 year old children	28
Total	105

Being There - Building Relationships

Multiple strategies were used to recruit participants for this study. Every family in all of the communities received an individual letter inviting them to participate in the project, as well as an attractive pamphlet describing the project. Posters describing the project were placed around the community. Information was distributed at church services. Members of the advisory committee verbally informed people in the communities about the research.

The most effective way of recruiting participants proved to be through individual contact, by being in the community and getting to know the people. Many opportunities arose to meet people, simply by being present in the community. To get to know the teachers and children, research assistants went to the school and helped the teachers in art classes. Research team members set up a booth at a community health fair, explained the research directly to families and invited them to participate. Research team members

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attended events in the communities, such as "Pow Wow" celebrations and community games. The research project team hosted well attended events, such as strawberry socials and pizza parties in the communities. A weekly homework club was started in one community and drew large numbers of children. By getting to know people, being visible, and talking with them, rapport and trust gradually developed over a period of approximately six months.

A snowball sampling strategy was used and became an effective recruitment approach. Encounters with community members, including meeting at the local store, recreation center, or health clinic would often lead to an interview. An interview with one participant would lead to an introduction to another. Invitations to participate in the research project were offered primarily in face-to-face discussions.

Ethical approvals were granted by the University of Prince Edward Island Research Ethics Board. In keeping with protocols for research with Mi'kmaq, the Mi'kmaq Ethics Watch was contacted with respect to this study. When meeting with potential participants, the research assistant explained the purpose of the research, discussed potential risks and benefits of participation, described the interview process, and discussed issues related to confidentiality and anonymity. Study participants were assured that their participation was voluntary and that they may withdraw from the study at any time. Written consent was obtained from parents and children. The consent forms were written in plain language and were read to all participants.

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Methodology

From the beginning, the Mi'kmaq Chiefs, as well as the community Advisory Committee, clearly stated that the research must be interview based. Negative opinions were expressed about being surveyed in the past. In keeping with oral traditions, Mi'kmaq people said they preferred to share their perspectives in face-to-face interactions. Lytle et al. (1997) support the use of qualitative methods in examining the effect of knowledge on healthy eating, as they allow children to express, in their own words, their interpretation and application of nutrition information. Our experience in this context supports Lytle's suggestion.

The advisory committee identified central concepts based on determinants of health, including: family relationships, education, physical activity, nutrition, risk behaviors, emotions, culture, and hopes for the future. The community were interested in understanding more about these aspects of their children's health. The advisory committee then developed interview guides based on these central concepts for the research assistants to use in discussions with children. Age appropriate interview guides were developed for six to eight year old children, nine to 12 year old children, 13-18 year old children, as well as all parents. Parents were the key informants for zero to five year old children. Descriptions offered by each age group provided a fuller picture of a child's life as they grew up in these communities.

The interview guide was used to ensure that the same basic lines of inquiry were explored with each person interviewed to provide insight into the topic. The interview guide provided a framework to focus the conversation, while providing the interviewer

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with the freedom to probe questions for further detail and adjust the sequence of questions depending on the flow of conversation (Patton, 2002). The questions were piloted with Aboriginal children and parents who were living off-reserve. As the target group was children, interview questions were kept brief and simple (Kvale, 1996).

Parents were first contacted to obtain consent for their children to participate and were invited to participate in an interview themselves. Trained research assistants administered semi-structured interviews in pairs at the location of choice for the participants, which was frequently their home. One research assistant conducted the interview while the other observed and wrote field notes. The interviews were audiotape recorded during a single meeting lasting approximately 30 minutes for younger children and up to 60 minutes for older children. Audiotapes were transcribed and field notes were written. Participants also responded to a food frequency questionnaire. (Taylor et al., 2004).

Data Analysis

Interviews were transcribed verbatim from the audiotapes and analyzed for content and recurrent themes using content and thematic analysis (Patton, 2002; Marshall & Rossman, 1999). One research assistant coded all interview transcripts using qualitative data analysis software to organize the data (QSR N6, 2002). All interview transcripts were also thematically analyzed independently by one of the authors, Larsen, for content and emergent themes. Frequent meetings were held with the two research assistants to carefully compare and discuss themes related to nutrition. Themes, perceptions, and nutrition practices were identified and compared among age and across gender groups. To

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allow for trustworthiness in interpretation, several steps were taken to explicitly outline the qualitative data analysis process to determine common themes from the interview transcripts (Kvale, 1996). These steps were as follows:

- To minimize the risk of subjectivity on the part of the researcher content themes were compared with those obtained from yet another research assistant who worked with the overall research project.
- The results were then reviewed and discussed with two UPEI researchers, O'Donoghue and Taylor, who are co-authors of this paper.
- The results were then reviewed with key informants from the community advisory committee.
- Themes were also presented to the community members for discussion, debate, further explanation and confirmation during an open symposium in which the research findings were presented to the community.

Employing multiple interpreters for the same interviews allowed for a certain control of biased sensitivity in data analysis and interpretation of deeper meanings of the interviews (Kvale, 1996).

Findings

Children were well informed about determinants of health, including nutrition. Several themes emerged from the comments of children and youth aged 6-18 years including: food as a determinant of health, family meals, and traditional foods. Youth aged 13-18 years also spoke about physical activity and weight as factors influencing nutrition. Parent's perceptions of the themes identified with the children were also captured. Parents

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also identified community efforts and cost as factors affecting their children's eating habits.

Food as a Determinant of Health

Children spoke clearly and identified nutrition as a key element in a healthy lifestyle. When asked about what they do to remain healthy, children often identified eating healthy and being active, as well as multiple determinants of health. Nutrition was identified as part of the definition of health by 87% (58/67) of the children and youth.

> *"[Healthy] means you have to eat lots of vegetables and fruit and you have to get exercise." (Male, age 8)*
>
> *"[Healthy means] ... watching what you eat... [I] drink milk. Eat healthier stuff [like] vegetables and stuff like that. Salads." (Male, age 12)*
>
> *"Having good nutrition. Watching what you eat. Exercising." (Female, teen)*
>
> *"Eat right. The right foods. Try to get exercise. Get vitamins. Protein. ... My parents are diabetics, and grandmother, pretty much my whole family is ... [I] eat right, exercise once in a while, don't smoke." (Female, age 15)*

All parents participating in this study identified healthy eating as an important determinant of health.

> *"I find its mostly the way we eat. Like our eating habits. Some of us have really bad ones. ... I think that does a lot of damage [poor eating habits] ... like either gall stones or your high blood pressure. We have a lot of diabetics or people with heart conditions lately."*

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Mi'kmaq children in this study could also identify healthy food choices, but some children incorrectly identified high fat, high salt, high sucrose foods as healthy choices, suggesting that their level of nutrition knowledge is low. Eating "junk foods" was identified as an unhealthy practice by 61% (41/67) of the Mi'kmaq children and youth.

"... eat the right stuff [like] ***cheeseburgers***, ***nuggets***, *and eat vegetables. [Not] candy." (Male, age 6)*

"... eating vegetables, carrots, and ***fries*** *and vegetables, mashed potatoes, and onions. ... I eat carrots." (Female, age 7)*

"Diet? Oh, like, you know, 3-4 meals/day. You know, eat all the right foods. You know, like potatoes, vegetables, ***noodles***, *whatever. Canada's Food Guide ... So you should just eat right. Shouldn't eat a whole lot of junk food. That's not healthy for you but people do it anyway. ... I just drink* ***Gatorade***. *No more pop. I used to drink 1.5 l/day. ... I stopped drinking pop a couple of months ago." (Male, age 17)*

These reported perceptions were consistent with the food use data reported by these same children. Dietary data reported by the same children indicated a number of nutritional concerns, including a high number of children with inadequate intake of fruit and vegetables and milk and milk products. One third of the participants consumed three or more servings of junk food daily. More than one-quarter of the participants reported eating french fries daily (Taylor et al., 2004). Similar nutritional concerns regarding low fruit and vegetable intakes and frequent consumption of higher fat, higher sugar foods, such as french fries and soft drinks have been reported previously in Canadian First

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Nations children and youth (Evers, 1991; Morrison et al., 1995; Trifonopoulos, et al., 1998; Kuhlein et al., 1995; Wein, et al., 1993; Bernard, et al., 1995; Wolever, et al., 1997).

Children may lack the motivation or skills necessary to apply nutrition knowledge (Nestle, 1998). Adolescents have a general understanding of the connection between food choice and health, but knowledge does not consistently influence dietary choices (Keirle, 2000; Croll, 2001). Noble et al. (2001) report that children appear to have a clear concept of what constitutes healthy food, viewing healthiness in terms of the presence or absence of fat or because it contains *stuff that is good for you*, such as vitamins or protein. Motivation is a problem among children and youth because of a perceived lack of susceptibility or urgency pertaining to health issues and a limited ability to see the future and be concerned about it (Bissonnette & Contento, 2001); which may make nutrition a low priority in adolescence (Neumark-Sztainer et al., 1999).

While children indicated nutrition as an important determinant of health, some expressed inconsistencies in their health behaviors.

> *"The way I eat I should be dead. ... [I eat] buckets of grease. Fried chicken, fries and pizza. Chicken, that's the only thing I eat that's healthy. And steak. ... [I like] corn. ... I know I'm healthy, I just don't know why." (Male age 17)*
>
> *"I play sports and stuff, but then I go into town and eat fast food." (Male, age 18)*

Although participants can identify the negative effects of junk foods, such as french fries, potato chips, and soft drinks, they still enjoy eating them. Taste and food preferences are primary determinants of food choice for children and youth (Eertmans, 2001).

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Children tend to choose foods for their taste or because they like them. Liking is the best predictor of human food choice in the absence of economic and availability constraints (Eertmans, 2001). Healthy foods are not often preferred foods for children (Noble, 2001).

Parents also identified eating "junk food" as a concern for their families and their children's health.

> *"They tend to eat more junk food. They like their fries. ... Sometimes we make them right here or sometimes we just buy fries at the store. They're always eating fries. I started to [say to] them that, 'You guys shouldn't be eating too much greasy foods, you know. It's not good for you.'*

Parent modelling of eating habits was identified in this research as a determinant of developing eating habits in children. Parents set the example of eating behaviors and patterns for their families. Children take their cues from their parents and model their behavior. Children will often carry the eating habits they have learned in childhood into adulthood (Cullen et al., 2002).

> *"My Mum [likes junk food]. Sometimes I eat chips with her and pop." (Female, age 7)*
>
> *"When we get our oranges that helps me a lot. ... [I'm healthy] cause I eat apples and oranges and fruit, and [I] exercise. And by not just sitting down and eating chips and doing nothing. ... My dad does that when he gets home." (Female, age 9)*

Families are a prominent component of the social environment where children learn and practice dietary behaviors (Baranowski et al., 1997; Rosenstock, 1988). It is

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important for parents to role model behavior for their children, including healthy eating and regular physical activity (Davison & Birch, 2001). Children will also model the behavior of other children in social settings, such as schools and day care centers (Lytle, 1997). Children do not try the foods their parents dislike, and as Eertmans (2001) found there is a strong association between parent-child food preferences. Parents control the availability and accessability of food and tend to not bring home the foods they dislike themselves, limiting their children's exposure to and availability of the disliked food.

Family Meals

Mi'kmaq children said that they valued eating together as a family: 59% (40/67) of children and youth said that they usually eat meals together as a family. The number of children who eat meals together with their family decreases with age. Two-thirds of six to eight year old children reported that they regularly eat meals together with their families, while less than half of the teens reporting regularly eating meals with their families.

"We all have a good time when we have a family meal together." (Female, age 6)

"We sit down at the table ... [we talk] about how the day went." (Male, age 7)

"[Family meals are about] being together ... cause I love it." (Male, age 7)

"They [family] sit down and enjoy the meal and talk about the day ... [Meat] ham, potatoes, and carrots." (Female, age 10)

"We sit down at the dinner table every night at five. ... I come home for supper, sit at the table and talk about our day." (Male, age 17)

This is a positive finding since family meals are associated with improved dietary quality (Neumark-Sztainer et al., 1999; Gillman et al., 2000). They present an ideal

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opportunity for communication within the family, as well as teaching the children about healthy choices and portion sizes. Family meals allow children to learn and practice dietary behaviors (Baranowski 1997; Rosenstock, 1988) and are the key means by which food related aspects of culture are communicated to children.

Parents identified eating as a family as a determinant of healthy eating habits, which for many families is a priority, although they struggle to make it a reality. Sitting down to have a meal together as a family was reported by 31% (12/38) of parents, while 69% (26/38) reported that their family sometimes sits down and have meals together.

> *"We don't eat together all the time, but we do sometimes along with his Mom and brother and sisters on the weekend. ... We have roast turkey or whatever. I usually ask his mom before the weekend what they want to eat, meatloaf or steak, a roast or chicken. I say, 'We'll cook it and you guys come over.' We don't do it every weekend, just when I feel like cooking. ... [We do] not necessarily [have supper] the same night every week or anything like that. I know that X would like for me to cook supper and he'd come home and we'd have supper together. ... it should happen more. I'm too busy."*
>
> *"[We sit down together for supper and have] boiled dinners, macaroni, and spaghetti, and mashed potatoes and pork chops."*
>
> *"At supper time everybody sits down."*
>
> *"We all sit down and eat together."*
>
> *"I usually try and have one family meal together a day ... and I cook the vegetables and stuff like that. They don't always eat them ... but there is always*

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fruit and stuff."

"My sons and me eat healthy foods ... Sometimes we sit wherever, but on Sundays we sit together."

Some families identified difficulty in finding the time to get together to eat as a family due to the busy lifestyles their families lead.

"I would say, yeah, (we eat out a lot). Maybe on the weekends we'll have a meal."

"At my place, well in the morning, they'd probably have cereal because they're always rushing cause there's so many of us getting ready in the morning. And I don't know what they have at dinnertime, at lunch ... at school. And supper is whatever anybody gets ready. I don't cook. ... As their schedule allows (we eat). Not everybody's home at the same time. The only time we really sit together to eat is when my daughter cooks at her house and then we all go over there, but home, we're never home at the same time."

"I think that when you are working full-time that you tend to cook things that are fast ... But I think that what you do is buy fast foods that are going to be fast to cook when you get home (like pizza) or like the chicken pieces you can get and pop in the oven that are pre-cooked."

Videon and Manning (2003) report that family meals have a highly significant influence on healthy eating in children and youth aged 11-21 years. The presence of at least one parent at the evening meal was associated with better consumption of fruit, vegetables, and dairy products, as well as less breakfast skipping. Boutelle et al., (2003)

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suggest that it is important to communicate that quickly prepared meals can still be nutritious and that mealtimes can be a time for family members to connect with each other.

Some children (12% or 8/67) identified that their families do not regularly eat meals together.

"No way do we eat meals together." (Male, age 6)

"No way! My dad goes in the room. My Mom sits out here and watches TV [for meals]." (Female, age 10)

"Sometimes, once in a blue moon, Gram cooks up a big meal." (Female, age 15)

"Sometimes on the weekends we can sit down." (Female, teen)

"[For family meals] Half the time I'm not here. Half the time she's not here." (Male, teen)

Videon and Manning (2003) have described the absence of family meals as a prevalent risk factor for poor food intake. Gilman et al., (2000) report that eating dinner together as a family has been associated with increased fruit and vegetable consumption, as well as decreased intakes of soft drinks and fried foods for children and youth aged 9-14 years.

Some children (14% or 9/67) indicated they regularly eat in front of the television.

"We just eat in the living room while we watch TV. ... fries and either hot dogs, nuggets, Kraft Dinner, sandwiches, Mr. Noodles." (Male, age 11)

"We sit in the living room and watch TV (for family meals)." (Female, teen)

This finding raises a concern as Coon et al., (2001) reported that children in families where TV viewing is a normal part of meal routines consume more pizza, salty

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snack foods, and soft drinks. Coon et al., (2000) also identified a link between TV watching and minimizing the work of feeding children. Watching TV during mealtime becomes the family's expectation of a normal mealtime, while increased viewing time decreases physical activity (Coon, et al., 2001). A 2.5 fold increase in risk of obesity was associated with watching TV greater than 5 hours daily in aboriginal children in Sandy Lake, Ontario (Hanley, 2000).

Traditional Foods

Many children (73% or 49/67) could often identify traditional Mi'kmaq foods, but indicated they would only eat these foods at special occasions rather than as everyday foods. Lobster, bannock (also called four cents and lu'sknikn), fish, stew, soup, rabbit, deer meat, and moose meat were some traditional foods identified by the children.

"We eat 4 cents sometimes ... once a year. And lobster." (Male, age 8)

"At Panmure Pow Wow we get to have lobster ... [and] lu'sknikn." (Female, age 7)

"Indian tacos ... We have them at the Pow Wow." (Female, age 9)

"Moose meat, fish, eel, ... The last day of the Pow Wow some of my family cooked moose meat. ... It tastes like hamburger." (Female, age 10)

"My Mom makes Indian bread. Dad makes it all the time. [I eat it with] peanut butter and jam ... They do [eat lobster]. I just eat pizza." (Male, teen)

"Mom makes 4 cents. Lu'sknikn sometimes. Usually that's a treat when she does. ... I don't know how to cook." (Female, teen)

"Micmac food, oh yeah. Lu'sknikn, 4 cents, the frying pan bread. Oh yeah, we

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have that at suppertime. [Mom makes it.] She learned it from my grandmother on my Dad's side. ... Lobster. Dad's a lobster fisherman, so we get lots of that to eat at home. ... My cousins in Antigonish ... whenever they shoot a moose they send us some. We have moose burgers." (Male, age 17)

Traditional aboriginal diets were nutritionally well-balanced having evolved over thousands of years. A traditional diet consisted of foods that were available locally gathered from natural resources by hunting, fishing, and gathering. In Prince Edward Island this would have included geese, rabbit, berries (blueberries, cranberries, strawberries) cod, eel, oysters, smelts, and lobster, as well as food from small scale livestock farms in the early 1900's, such as milk, beef, eggs, and poultry (McKenna, 1990).

The high availability and abundance of market foods in the daily diet of Aboriginal people has become widespread across Canada. (Kuhlein & Chan, 2000; Receuver et al., 1997). Several studies have documented the shift toward Westernized dietary patterns and lower amounts of traditional foods in favor of commercially produced market foods (Kuhlein & Chan, 2000; Receuver et al., 1997). There is evidence that the globalization of food habits (Mennell, 2000) has led to a decrease in inter-cultural differences in food practices within society (Krondl & Lau, 1993). It is generally accepted that acculturation can result in the loss of traditional foods and the adoption of a less healthy Western diet which can be associated with increased nutritional risk (Krondl & Lau, 1993). This is consistent with the theoretical framework of this research in which colonization has led to a loss of culture, and loss of traditional foods, with the associated nutritional risk and loss of health.

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Our findings suggest limited use of traditional foods on a regular basis for Mi'kmaq children, except for ceremonial purposes at Pow Wows, community feasts, and family celebrations. This is consistent with similar dietary studies with Aboriginal peoples in Canada and the United States. A limited number of quantitative studies suggest that children consume very little traditional food (Receuver et al., 1997; Kuhlein et al., 1995; Moffatt, 1995; Wolever et al., 1997). The traditional diets from all tribal groups have been replaced by high fat spreads, fried foods, whole milk, sweets, empty calorie snack foods, and sweetened beverages (Trifonopoulos et al., 1998; deGonzague et al., 1999; Hanley et al., 2000). Traditional foods were reported in the diets of 17.7 % of Mohawk respondents in Kahnawake, Quebec (Trifonopoulos, 1998). Traditional foods were not important sources of energy and only mentioned in 11% of dietary recalls in the Pathways Feasability Study in Aboriginal Peoples in the United States (Lytle, 2002).

The Mi'kmaq in Atlantic Canada traditionally had a low fat, high protein, low carbohydrate diet rich in vitamins and minerals and fiber (McKenna, 1990; Johnston, 1977). As previously stated, they ate foods that were hunted, gathered, and grown locally and available by the season, such as fish, shellfish, seal, game, local berries, wild plants, corn, and seaweed (McKenna, 1990; Johnston, 1977). An analysis of the diet of Mi'kmaq women in Shubenacadie, Nova Scotia (Johnston, 1977) found they had a high carbohydrate, low fiber diet, very similar to the diet eaten by a comparison group of Caucasian women. This diet consisted primarily of market foods which were mostly potatoes and bread, as well as meats (e.g., beef, pork, chicken, and bologna), eggs, carrots, turnip, cabbage, onions, occasional apples and oranges, fruit flavored sweetened

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powdered drinks, lard, butter, and tea with evaporated milk (Johnston et al., 1977).

Some children connected traditional foods with their grandmothers.

"We eat bannock sometimes, but my mom doesn't make it." (Male, age 8)

"Lu'sknikn ... Grammy [makes that] and four cents. All my grammies make lu'sknikn. Grammy who lives on Lennox, she always makes four cents and it is the best ... Sometimes I eat moose meat or deer. .. [Lobster] that's my favorite." (Female, age 11)

"I don't even know what its called [four cents], yeah, four cents and something else. ... [We don't make them] not at my house, but my grandparents do. ... Moose meat, that's gross. My dad hunts it for the band." (Female, age 12)

"My great-grandmother [taught me about my culture] ... to make bread, cook, the language. ... [We eat] four cents. [Mom makes it.] ... Moose meat, lobster in the summer." (Female, teen)

"We eat lobster every summer. [four cents] my Nanny used to make it. ... somebody makes it for us now, I don't even know, but yeah, we eat it. ... I can't cook. I can't bake anything. (Female, teen)

Once in a while we'll have Indian bread, but it's not passed down. Sometimes at Pow Wow we'll get that. I like Indian bread and there's this stuff that is potatoes with bacon in it [qunesewey]. But other than that, I don't get a chance to try much traditional food." (Female, age 17)

Grandparents may have more connection with traditional foods and may be an important link in connecting children with traditional ways, such as hunting, gathering, and

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preparing traditional foods. This is consistent with findings from the overall study which found that women, particularly mothers, aunts, and grandmothers play a vital role in the lives of participants as powerful and positive mentors and role models (Timmons et al., 2004). Families are the key means by which food-related aspects of culture are communicated to children (Baranowski et al., 1997; Rosenstock, 1988). Family members, particularly grandmothers (Caruth & Skinner, 2001), have been identified as a common source of nutritional information for parents and an important facilitator for changing food habits (Shepherd et al., 2001). Rozin (1995) has described cultural influences as the most important factor influencing food use.

Parents spoke of traditional foods that they ate as a family or that they had eaten as children themselves. Almost all (95% or 36/38) reported that they ate traditional foods with their families, however, many indicated that they did not eat these foods often.

> *"We have lobster, soup, and Indian bread. Not all the time, but we like to have it. ... Me, yeah [I make it]. I don't know how to make some of it. ... [soup/qunesewey] its just potatoes and either bacon or pork chops in there and onions and lots of salt. I like it but my husband thinks there is no taste in it. He'll have it though. ... I make four cents and fry it on top of the stove."*
>
> *"To make four cents I just put it all together. ... salt, a little bit of sugar, and flour, and baking powder, and water ... You can put molasses or butter on it."*
>
> *"Sometimes we have bannock. ... The only time we ever have moose meat is if my brother comes over and he brings it or if I go to him. [I like it] if somebody else cooks it."*

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"Lu'sknikn every second day. And hash and potatoes, bacon, onions, and salt and pepper [qunesewey]."

"Bread - bannock and ... they love fish. I can't catch enough fish. ... I fly fish. Trout and salmon. ... Moose and a couple of deer meat. ... we get it from friends on the mainland."

Many parents spoke of eating traditional foods as children themselves, often saying they '**used to**' eat them, indicating a loss of culture and tradition.

*"I **used to** make it [four cents], but that was a long time ago ... [We eat] some fish. ... Lobster mainly ... depending on the season. I just made lobster stew the other day."*

*"Lu'sknikn. Its something like pita bread. Its like bread. ... [make it in] the frying pan. ... My dad [makes it] [flour, baking powder, water, oil] ... I **used to** eat mostly rabbit [but don't hunt] no, not anymore. No time."*

*"I don't make it [four cents] but we **used to.** My mother **used to** make it. ... We had lobster last night, lobster stew."*

This is consistent with our theoretical framework of decolonization in which Aboriginal people identify loss, such as loss of traditional foods, loss of culture, and loss of language. In re-telling their stories, including their stories of traditional foods from their childhood memories, Aboriginal people are re-capturing their history, re-connecting their children to their culture, and re-claiming their traditional foods for their children. In re-claiming their culture, Aboriginal people may re-discover their traditionally healthy lifestyles with healthy foods and plenty of physical activity for their children. The

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possibility of supporting this process through decolonizing research that is community owned and driven forms the basis of future initiatives between the Mi'kmaq communities and the team of researchers from the University of Prince Edward Island.

Physical Activity

Sports and physical activity emerged as key determinants in influencing healthy eating in the 13-18 year old age category only. Adolescents involved in physical activity indicated that being involved in sports is a motivator to eat a more healthy diet.

> *"[Physical activity] it's a big factor. I find when I'm playing rugby I perform better in school and I eat more healthy. I don't feel like eating hamburgers and fries and stuff. Whenever you're doing something physical and you're starting to develop muscle or tone, you want to keep that ... I try to eat healthy. ... If I eat pizza and fries, whatever's on special, I feel really gross. But now I go for salad and stuff. It gives you more physical energy. Once in a while I'll treat myself though." (Female, age 17)*
>
> *"Athletic ... Athletic stuff. How they eat ... not all that greasy stuff. ... [I] eat right. I love eating good food. Going to Burger King or McDonalds is yucky. I want an apple or something. And I love orange juice. ... Macaroni, lasagna, crackers ..." (Female, teen)*
>
> *"Keep myself active. Try eating right." (Male, age 18)*

They also saw healthy eating as important to their athletic performance.

> *"I find that people don't feel good about themselves when they aren't involved in anything. I feel that if I have something to look forward to, like I'm part of a*

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team, and therefore, I should do this. I should eat healthy for my team. You don't want to let your team mates down. I want to keep up with things, and in order to do that you have to be healthy and active." (Female, age 17)

"I do [eat right] when I'm training cause I have a certain schedule ... I'm not allowed to eat junk - candy, chips, pop ... a lot of vegetables and fruit." (Female, age 17)

Responses regarding health behaviors suggest that knowledge of healthy practices, such as healthy eating and participating in regular physical activity, are not always enough to ensure that these habits become a part of daily life. Participants involved in sports on a regular basis in this study seem to indicate increased motivation to eat healthy foods. Health interventions need to promote both nutrition and physical activity.

Weight

Weight emerged as a theme once children entered the 13-18 year old age grouping. Some females indicated concern about their weight and their physical appearance, relating weight to their self-esteem or how they felt about themselves. They referred to dieting, using weight loss products, and exercising to lose weight.

"[Healthy means] someone who eats right and watched their weight and stuff." (Female, teen)

"I drink those Slim Fast drinks because I gained weight. I'm trying to get more active. ... I can't eat greasy foods. I've been trying to lose weight. Once in a while I'll eat a poutine. I love bananas." (Female, teen)

"I just want to lose weight in a healthy way, but, you know how long that takes, by

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eating healthy and whatever." (Female, teen)

"When I lost a lot of weight I felt really good about myself... I lost like 10 pounds." (Female, teen)

Changes in the types of foods available and large, inexpensive portion sizes have been identified as contributing to an environment conducive to obesity for children and youth (Hill, 1998). Television viewing and computer use have long been associated with reduced activity levels and weight gain (Hanley et al., 2000). Mass media have been identified as an important factor in the development of weight concerns and dieting behavior, particularly in young women (Field et al., 2001; Brown & Witherspoon, 2002). O'Dea (1999) has described food concerns of school children and youth aged six to 19 years and found that concerns about food and overweight, as well as guilt feelings after eating increased with age and was considerably higher in girls (53%) than boys (11%) aged 14-19 years. Our findings are consistent in that concerns expressed about weight occurred with older youth and more commonly in females.

Some parents expressed concern over their children's weight.

"They don't feel good if its not too healthy. A couple of my children are overweight. I don't think they sleep very well or feel good about themselves."

"He's getting a bit on the chubby side ... He's involved in judo, but he has a hard time because of his weight."

"She's not as active as I would like her to be. She tends to eat a lot of junk food and get a little chunky. I would never tell her to lose weight. She feels good about herself."

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Community Efforts

Some parents mentioned programs in their community, such as nutrition education sessions in the community health center, a healthy day care menu, and breakfast and healthy snack programs for children in school. These programs provide information on healthy eating and increase the availability of healthy foods throughout the school day for children.

> *"There has always been nutritional programs. There is one program that I kind of pushed to get going because of my grandchildren at the daycare, to have a full meal for lunch. I totally encouraged good food for a full meal with all the food groups. .... The coordinator of the daycare [decides the menu]. She gets the information from the Health Center. So, if they are not eating properly at home, at least they get it at daycare."*
>
> *"They do have a lunch program."*

A gradual shift of responsibility away from families to the institution promotes a learned helplessness. People may come to rely on food and meal programs to provide nutritious meals to their children, creating a dependency on the institution. This dependency may mask underlying issues of food insecurity.

Cost

Some parents identified the costs of feeding a family healthy foods as a barrier to healthy eating.

> *"Its important, how you eat. But its if you could afford all this nutritious stuff too. Well, what they are telling you about the food guide, but we do get food vouchers*

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(from the health center) ... fruit and vegetable tickets for apples, plums, bananas, mangoes. ... once a month."

"*Usually if we have nothing else, like everything's completely gone, we get a big bag of flour and cook bread and fried potatoes with gravy ... it will fill them up."*

A recent study of non-Aboriginal women in Prince Edward Island identified cost as a barrier to eating a diet rich in fruit and vegetables (MacLellan et al., 2004). The cost of food becomes the most important consideration in food choice when income is limited (Basiotis et al., 1998). Income restriction often leads to the selection of foods which are high in sugar and fat, because they are among the least expensive sources of dietary energy (Drewnowski, 2003). People with the lowest levels of income also experience inequities in education levels as well, which may impact their nutrition knowledge and their ability to know how to shop for nutritious foods.

Sharing Knowledge

The Advisory Committee was the first link in sharing information with the community. They were very open and honest with their opinions, which proved to be a very valuable sounding board in confirming findings and advising on what would work in their communities. A symposium was held in the spring of 2004 at the Lennox Island Eco-tourism Center to share the findings of the interviews and to confirm these findings with the community. All parent participants in the study were invited to attend, as well as key informants from the communities. The symposium was well attended with 44 participants, including residents of Lennox Island and Abegweit First Nations communities, as well as several Mi'kmaq people from various parts of Atlantic Canada, who discussed issues and

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strategies they are using to improve the health of children and families in their communities. The symposium participants worked in groups to prioritize the findings they felt the community needs to work on and they developed recommendations and strategies for improving the health of their children and their communities in the future. Telling the stories from the research and hearing the stories of the symposium participants was a powerful way of sharing findings with the community.

Findings from this project have also been shared in the research, health, and education communities through presentations at professional conferences, health promotion conferences, and through papers in academic journals (Taylor, et al., 2004). The research project report has also been presented to the Canadian Population Health Initiative (Timmons et al., 2004).

Conclusion

While children appear to value nutrition as a determinant of their health, they appear to have difficulty translating these values into practice, possibly because of nutrition knowledge, and/or low availability of healthy food choices at home. Parents need to model healthy eating and daily physical activity for their children to develop healthy practices as part of daily life. Eating meals together as a family has an important role in modeling healthy eating behaviors for children.

Loss of traditional foods is of great concern because, while children could identify some traditional foods, they did not eat them regularly and seemed disconnected from their cultural relevance. The disconnect with traditional foods and culture reflects an ongoing perpetuation of colonization. Re-discovering traditional foods provides an

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opportunity to re-claim traditional ways and re-connect Mi'kmaq children with their culture, while also adopting a healthy diet based on traditional foods. There is a need for culturally appropriate health promotion programs at the community and family level designed to encourage healthy eating habits and regular physical activity for families.

Recommendations

This research lays the groundwork for developing culturally sensitive health and nutrition education programs in the Mi'kmaq communities in Prince Edward Island. These programs will build upon existing strengths identified in the research and present in the communities. Decolonizing partnerships between researchers, community members, families, educators, and health care professionals are needed to implement health messages that can be reinforced in the home with families, supported by the school, and spread throughout the community helping to make healthier choices acceptable and available. Everyone in the community needs to work together and to support each other in making healthy choices the easier choices. Healthy children and prevention of chronic disease are key priorities identified by the community, both of which are greatly influenced by nutrition and physical activity. Community directed nutrition interventions that may prevent obesity and chronic disease for Aboriginal people in Prince Edward Island are being planned. Family meals, traditional foods, and physical activity will be key factors to consider in any intervention programs that help families in these communities to lead healthier lifestyles. This research has established knowledge that was not previously available. The community is now well positioned to encourage healthy and active lifestyles for families.

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Chapter 5

Significant Nutritional Concerns in Aboriginal Children are Similar to Those in Non-Aboriginal Children in Prince Edward Island, Canada

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Significant Nutritional Concerns in Aboriginal Children are Similar to Those in Non-Aboriginal Children in Prince Edward Island, Canada

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Significant Nutritional Concerns in Aboriginal Children are Similar to Those in Non-Aboriginal Children in Prince Edward Island, Canada

Objectives: to assess dietary behaviours (food use) among aboriginal children living on Mi'kmaq reserves in Prince Edward Island (PEI), Canada

Design: Data was collected as part of a larger study of health perceptions and behaviours in Mikmaq children and youth aged 0-18. Daily and weekly consumption of 27 foods was assessed using a previously validated self administered food frequency questionnaires during an in-home interview.

Subjects/Setting: 55 children living on reserve aged 9-18 years.

Statistical Analysis Performed: Chi square analysis was used to assess differences in food use according to gender and age. The number of servings of Milk Products, Vegetables and Fruit and Other Foods (e.g. potato chips, soft drinks and cookies/cakes) was assessed by adding the responses to the frequency of consumption of foods assessed in each group.

Results: Daily fluid milk consumption was reported by 78% of the children, only 49% consumed 3 or more servings of Milk Products daily (mean= 2.6±1.3 servings). Very few (4%) children consumed the recommended minimum of 5 Vegetables and Fruit daily (mean= 2.8±1.1 servings). Approximately half (48%) of children had Other Foods daily (mean=3.1±2.2servings). There were very few differences in individual food use among age and sex groups.

Applications/Conclusions: The findings are consistent with past reports in aboriginal

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children. However, except for higher consumption of french fries, results are similar to recent surveys of other PEI school children, suggesting a province wide rather than cultural health issue.

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Significant Nutritional Concerns in Aboriginal Children are Similar to Those in Non-Aboriginal Children in Prince Edward Island, Canada

Since the Nutrition Canada survey in the early 1970s (Health and Welfare Canada, 1975), there has been clear evidence of nutritional concerns among Aboriginal children in Canada (Bernard, et al., 1995; Evers, 1991; Kuhnlein, Soueida, & Receveur, 1995; Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wein, Gee, & Hawrysh, 1993; Wolever, et al., 1997). High sucrose intakes, (Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wein, Gee, & Hawrysh, 1993) frequent consumption of fast foods and "junk foods," (Wolever, et al., 1997) and low vegetable intakes (Trifonopoulos, Kuhnlein, & Receveur, 1998; Wein, Gee, & Hawrysh, 1993; Bernard, et al., 1995) have been observed in several Canadian aboriginal communities. In a 1998 study, 28% of Mohawk children in Kahnawake, Quebec reported eating out or having take-out food for one or more meals on the recall day; over one-third consumed cola or sweetened beverages; the most frequently reported vegetable was french fries (Trifonopoulos et al., 1998). Similar unhealthy dietary behaviors have been identified in American Indian and Alaskan Native children (Lytle et al., 2002; Story, et al., 1998).

Such dietary behaviors are thought to play a major role in the development of type 2 diabetes and its major risk factor, obesity, (Wolever, et al.,1997; Gahagan et al., 2003; Gittelsohn, et al., 1998), both of which have been reported to be significantly elevated in Aboriginal children in Canada (Hanley, et al., 2000; Harris, et al., 1997; CICH, 2000; MacMillan, et al., 2003; Young, et al., 2000) and the United States (Story et al., 1999).

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There is increasing recognition that prevention efforts are critical to improve dietary patterns and reduce overweight and other chronic disease risk factors in this population (Broussard et al., 1995; Harvey-Berino, et al., 2000). However, in order to ensure that interventions are relevant and effective (Trifonouplos et al., 1998), it is important to obtain dietary data at the local level. We have recently collected, as part of a larger study (Timmons et al., 2004), dietary behaviour data from Mi'kmaq children, who live in First Nations Communities in PEI.

Purpose

The purpose of the study was 1) to describe dietary behaviours (daily, weekly food use) of Mi'kmaq children (age 9 years and over) living in First Nations communities in PEI according to gender and grade level, and 2) to assess the adequacy of the number of servings of Milk Products and Vegetables and Fruit, as well as the number of servings of Other Foods.

Methods

Data was collected as part of a larger study *Building Healthy Mi'kmaq Communities on Prince Edward Island* (Timmons et al., 2004), which utilized a mixed method design and a participatory approach. Food use was assessed using a food frequency questionnaire (Evers, et al., 2001), qualitative data on health perceptions and determinants were obtained through in depth interviews conducted at the participant's location of choice; these data are reported elsewhere (Critchley et al., 2004). This research project was developed in collaboration with PEI Mi'kmaq communities, with both Chiefs endorsing the research. Mi'kmaq community members were actively involved

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on a research advisory committee for the project, making a significant contribution to protocol development, obtaining the sample, and data interpretation.

Dietary Behaviour Assessment

A short food frequency questionnaire, the Eating Behaviour Survey (Evers, et al., 2001), was used to assess the consumption of 27 individual foods/groups of foods. This instrument has been found to provide a valid estimate of mean intakes most likely to be inadequate in the diets of Canadian school children aged 9-12 years old (e.g. fat, calcium, folate) when compared to 24 hour recall data (Evers, Taylor, & Midgett, 2000) and has been used to estimate the number of servings of Vegetables & Fruit and Milk Products, as well as the frequency of consumption of high fat/high calorie foods. Students were asked to indicate if their frequency of consumption of these foods during the previous seven days was: "at least twice a day", "once a day", "1 to 3 times/week", "4 to 6 times/week" and "never".

Prior to use, this questionnaire was piloted with 5 Mi'kmaq children and their parents who were living off reserve in PEI. Participants indicated that the food list reflected foods commonly consumed; they did not, however, identify any traditional foods that were consumed on a weekly basis. Since the EBS was not validated for children under 9 years of age, a different instrument, the Harvard Service Food Frequency Questionnaire (HSFFQ) (Blum, et al., 1999) was used to assess food use; these data are included in a separate report (chapter 6).

All children completed the questionnaires themselves, with some assistance from trained interviewers for younger children when necessary. Two of the five interviewers

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were Aboriginal. Parents of study participants and participants themselves, provided written consent. The study protocol was approved by the University of Prince Edward Island Ethics Committee.

Sample

The overall study population was all Mi'kmaq children and youth from 0-18 years and their parents from Lennox Island and Abegweit, the only two First Nations communities in Prince Edward Island, Canada. This paper looks at the data collected from the Eating Behavior Survey, which was completed by children aged 9-18 years. Based on the advice of the research advisory committee members, considerable time was spent prior to data collection in ensuring that the community was aware of the project and comfortable with researchers entering their community. Community socials, health fairs, face to face discussions with community elders and other members, and pamphlets were used to ensure that community members were informed of the project and that relationships were based on mutual respect and trust. All families with children between 0-18 years were subsequently sent a plain language invitation to participate in the overall health project. This was followed up with a face to face visit at the participant's home. Interviews were completed with 67 children and 38 parents (105 participants in total). Eating Behavior Survey questionnaires were completed by 55 children aged 9-18 years. The final sample represented the populations of both reserves and consisted of 60% females and 40% males; 64% were from the larger reserve (Lennox Island) and 36% from the smaller reserve (Abegweit).

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Statistical Analysis

We combined the responses "at least twice a day" and "once a day" to form the category "daily." Chi square analysis was used to test for differences in the proportion of children consuming foods daily according to gender and grade. Due to the small numbers of students in some grades, we collapsed grade categories into elementary (Grades 4-6) and intermediate/senior high (Grades 7-12) since past surveys indicate differences in food use between these age groups (Evers, et al., 2001; Harnack, Strang, & Story, 1999; Lino, et al., 2002; Bowman, 2002). The number of daily servings of foods in the Vegetables and Fruit and Milk Products groups of Canada's Food Guide to Healthy Eating (Health and Welfare Canada, 1992) was calculated by adding responses to the frequency of consumption of all foods assessed in each group as follows:

"at least twice a day" = 2, "once a day" = 1, and "4 to 6 times a week" = 0.71 and "1 to 3 times/week=0.28; total servings was then compared to those recommended (Health and Welfare Canada, 1992). The number of children consuming 3 or more servings of Other Foods was determined using a similar approach, but could not be compared to Canada's Food Guide to Healthy Eating since there are no recommended number of servings for this group. Three or more servings of Other Foods were chosen to be able to compare this data with results found in similar studies which used the Eating Behavior Survey with non-Aboriginal school aged children in Prince Edward Island (Evers et al., 2001; Taylor et al., 2003; Taylor et al., 2004). The number of daily servings of Meat and Alternatives and Grain Products groups was not estimated due to the limited number of such foods in the questionnaire. Chi square analysis was also used to assess differences according to gender

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and grade in the proportion of children consuming the recommended number of servings of Milk Products and Vegetables and Fruit and in the proportion of children consuming ≥3 servings of Other Foods. Analysis was performed using SAS (Version 8e, SAS Institute Inc., Cary, North Carolina).

Results

Daily Food Use

The total proportion of children consuming individual foods/food groupings and differences in food use by grade level are shown in Table 1. Daily fluid milk consumption was reported by 71% of the children with few (5 %) children reported having no milk in the past 7 days. Fewer children had yogurt daily (22%); 42% did not consume any yogurt in the past 7 days (not shown). More than half of the surveyed students had fruit or juice at least once a day (58 and 66%, respectively); a low number of students (less than 5%) had no fruit or juice in the past 7 days. Vegetables other than salad was the next most frequently consumed food in this group, with 33% consuming these daily; however, 13% had no vegetables other than salad in the past 7 days and over half (60%) of students did not have any salad in the last 7 days (not shown). Potatoes other than french fries were consumed on a daily basis by 16% of the students.

There were some differences in the daily use of individual food items according to grade level: children in the elementary grades (Grade 4-6) consumed significantly more cold cereal, peanut butter, yogurt and ice cream compared to children in Grades 7 and up (Table 1). There were no significant differences in the daily use of individual food items by gender.

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Comparison to Canada's Food Guide for Healthy Eating

Only one half (49%) of the students reported consuming the recommended minimum of at least 3 servings of Milk Products daily, with an overall average of 2.7 ± 1.3 servings per day (Figure 1). There were no differences between boys and girls in the number consuming an adequate number of servings of Milk Products (Figure 3), nor were there significant differences in the number of students with adequate milk consumption between students in elementary (4-6) and intermediate (7-12) grades (not shown). Only 3.7% of the surveyed students consumed the minimum number of 5 servings of selected Vegetables and Fruit per day, with an average number of 2.8 ± 1.2 servings consumed daily in the past week. There were no significant differences in the number of students with adequate intakes Vegetables and Fruit between elementary and intermediate grades and between boys and girls (Figure 3). However, no children in the elementary grades reported consuming the recommended minimum number of servings from this food grouping. Almost half (48%) of the children had three or more Other Foods daily (mean=3.1±2.2 servings). A greater percentage of students in grades 7 - 9 had at least 3 servings of these foods compared to students in grades 4 - 6. (48% vs. 22%) (Figure 4). There were no differences in the number consuming Other Foods among boys and girls.

Discussion

This is the first study to examine dietary behaviours in Mi'kmaq children and youth in Atlantic Canada. Results indicate a number of nutritional concerns in these aboriginal children, including a high number with inadequate vegetable and fruit and milk intakes. It is a challenge to compare our findings with other studies of Canadian aboriginal children

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due to differences in culture, ages of children and in dietary assessment methods used (Trifonopoulos et al., 1998). Nevertheless, similar nutritional concerns, with low fruits and vegetable intakes and frequent consumption of higher fat, higher sugar foods such as french fries and soft drinks, have been reported previously in Canadian First Nations children and youth (Bernard et al., 1995; Evers, 1991; Kuhnlein, Soueida, Receveur, 1995; Morrison et al., 1995; Trifonopoulos et al., 1998; Wein et al., 1992; Wolever, et al., 1997) and in American Indian and Alaskan Native adolescents (Story et al., 1998). Although there is no available data on dietary intake of Mi'kmaq children in the Atlantic Provinces, a 1977 report found that Mi'kmaq women had adopted a diet similar to Caucasian women in Nova Scotia: participants reported diets high in refined carbohydrates and market foods, including potatoes, bread, meats, eggs, fruit flavoured sweetened powdered drinks, lard, butter and tea with evaporated milk (Johnston et al., 1977).

Several studies have documented the shift toward Westernized dietary patterns and lower amounts of "traditional", or locally harvested cultural foods in favour of commercially produced market foods (Kuhnlein & Chan, 2000; Receuver et al., 1997). The frequency of consumption of traditional foods was not assessed in this study, since children participating in the pilot test did not identify any that they would eat on a weekly basis. One concern is that the pilot study included only children who were not living on reserve who may have a lower consumption levels compared to those living on reserve. However, qualitative interviews indicate that children are able to identify traditional foods such as lobster, moose, berries and lu'sknikn, they do not eat them regularly. This is consistent with evidence that suggests, like adults, aboriginal children consume very little

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traditional foods (CICH, 2000; Kuhnlein et al., 1995; Moffatt, 1995; Receuver et al., 1997; Wolever et al., 1997).

It is important to compare dietary behaviours in aboriginal children with those of other non-aboriginal school children living in the same region, since it provides a regional context and permits the tailoring of interventions. It also helps avoid false conclusions: nutritional concerns identified in aboriginal children may not be unique, but reflective of regional dietary behaviours. To date, there are no Canadian studies that we are aware of which have examined dietary behaviours in Canadian aboriginal children and compared them to non-aboriginal children from the same region using the same methodology. Recent surveys conducted in Prince Edward Island school children have provided us with an opportunity to make such comparisons. Results of surveys of over 4500 school children in Grades 4-9 suggests that there are nutritional concerns among non-aboriginal school children in PEI, including low Vegetables and Fruit and Milk Products consumption, as well as frequent consumption of high fat snacks and soft drinks (Evers et al., 2001; Taylor et al., 2003; Taylor et al., 2004). Milk Products consumption in Mi'kmaq children was similar to non-aboriginal PEI children (Evers et al., 2001; Taylor et al., 2003; Taylor et al., 2004); daily cheese consumption was higher among Mi'kmaq children (36% vs 27%). Although Vegetables and Fruit consumption was low among Mi'kmaq children, with less than 5% of children meeting the minimum recommendation of five servings daily, overall consumption was also low in non-aboriginal PEI children, with less than 10% consuming the minimum 5 Vegetables and Fruit daily. Juice consumption was higher compared to children's intake in other regions in PEI: intake of vegetables other than potatoes and

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potatoes (excepting french fries) was lower compared to children in other regions. The most notable finding was that although daily intake of other foods in the Other Foods category (e.g. chips, candy, soft drinks and cookies/cakes) was similar among school regions. The proportion of Mi'kmaq children and youth reporting daily consumption of french fries was twice as high as in non-aboriginal children (29 versus 13.5%, respectively) (Evers et al., 2001; Taylor et al., 2003; Taylor et al., 2004).

Younger children (Grade 4-6) reported more frequent consumption of nutrient dense foods such as cold cereal, peanut butter and yogurt compared to children in Grade 7 or higher in this study. This is consistent with recently completed dietary surveys in PEI (Evers et a., 2001; Taylor et al., 2003; Taylor et al., 2004) and elsewhere (Bowman, 2002; Harnack et al., 1999; Lino et al., 2002), which have reported less favourable dietary patterns with increasing age in children and youth. This may reflect higher breakfast consumption in the younger group; although observed differences were not statistically significant ($p=0.19$), the proportion not eating breakfast daily was higher in older children (61%) compared to younger (44%). That there were no significant differences in dietary behaviours between girls and boys is in contrast to other surveys in PEI children (Evers et al., 2001; Taylor, 2003; Taylor et al., 2004) and other dietary surveys, where boys have been found to consume more Milk Products compared to girls, who tend to consume more Vegetables and Fruits. This may be an artifact of the small sample size which reduced statistical power.

The small sample size is a limitation of the study. However, it is important to note that a total of 55 children and youth completed this survey, representing over half of the

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population of Mi'kmaq children and youth living on reserve in PEI. We believe this is an indicator of the success of our participatory approach.

Conclusions/Applications

Study results contribute to the limited knowledge base regarding the food use and dietary adequacy of children in First Nations communities in Atlantic Canada. A number of nutritional concerns among Mi'kmaq children were identified, including a high number with inadequate Vegetables and Fruit and Milk Products intakes, and frequent consumption of Other Foods that are high in fat, sugar, and/or salt and low in nutrients. Given the elevated risk for overweight and Type II diabetes in this group, there is a need for culturally appropriate health promotion and nutrition education programs designed to increase the intake of Vegetables and Fruit and Milk Products and lower fat traditional foods, while reducing the high consumption of Other Foods. The finding that, except for french fries, food use data are similar to non-aboriginal PEI children, suggests a province wide problem, rather than one that is unique to the Mi'kmaq First Nations community.

At the conclusion of the project, a workshop was held with Aboriginal community members to discuss the findings and identify future interventions arising from the research. Based on discussions at the workshop, it is anticipated that future interventions will focus on families and aim to improve children's dietary behaviours through such strategies as increasing the frequency of family meals, the availability of fresh produce and improving nutrition knowledge in both children and parents.

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Table 1. Daily Food Consumption During the Previous week by Grade Level

Food/Food Group	Total 55	Grade 4-6 (N=23)	Grade 7-12 (N=31)[a]
Milk	70.9	78.3	67.7
Cheese	36.4	26.1	41.9
Yogurt**	21.8	39.1	9.7
Ice Cream**	14.6	21.7	9.7
Fruit juice	67.3	60.8	74.2
Fruit	58.2	52.2	64.5
Vegetables (other than salad or potatoes)	32.7	30.4	35.5
Potatoes	16.4	17.4	16.1
Salads	10.9	13.0	9.7
Peanut butter*	27.3	39.1	19.4
Beef/Pork/Processed Meats	25.5	26.1	25.8
Chicken	21.8	17.4	25.8
Bread/rolls	80.0	91.3	74.9
Ready-to-eat cereals*	34.6	47.8	25.8
Pasta	20.0	21.7	19.4
French fries	29.1	21.7	35.5
Regular soft drinks	36.4	21.7	48.4
Cookies/cakes	25.5	17.4	32.3

[a] Total n for analysis by grade=54 since grade level was missing for one child #328

*p<0.05 ** p< 0.01

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Figure 3: % Children Consuming the Recommended Servings of Milk Products and Vegetables and Fruits Daily

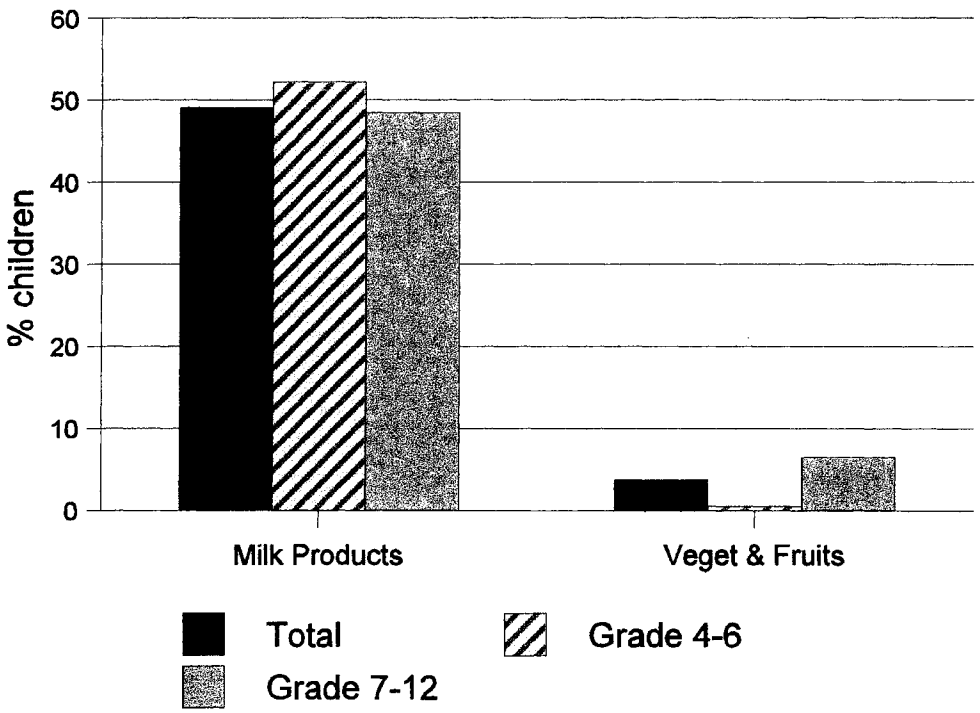

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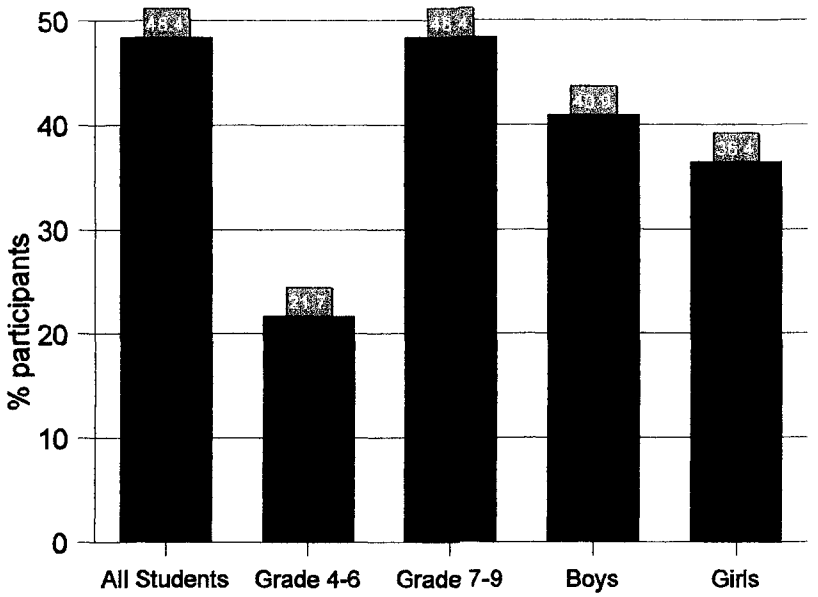
Figure 4. % Children Consuming 3 or more "Snack Foods/Beverages" Daily



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Chapter 6

Nutritional Intakes of Aboriginal Children Aged 0-8 Years Living On-Reserve in Prince Edward Island, Canada

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Nutritional Intakes of Aboriginal Children Aged 0-8 Years Living On-Reserve in Prince Edward Island, Canada

Objectives: The purpose of this study was to determine the frequency of consumption of common foods in the diets of Aboriginal children aged 0-8 years living in Mi'kmaq First Nation communities in Prince Edward Island, Canada.

Design: Daily and weekly consumption of foods was assessed using a validated food frequency questionnaire, the Harvard Service Food Frequency Questionnaire (HSFFQ).

Participants: 14 Mi'kmaq children and their caregivers completed the HSFFQ. Caregivers were the respondents for children aged 0-6 years.

Analysis: Food use data was analyzed to determine frequency of consumption.

Results: Milk, fruit juice, vegetables, and grain products were the most frequently consumed foods. Daily milk consumption was reported by 77% of the children, with 53% consuming 2 or more servings per day. Fruit was consumed at least once a day by approximately 50% of the children. While few of the children (12%) had two or more vegetable servings daily, 59% had at least one serving of vegetables daily. Sixty percent of the children consumed breads daily, while over 50% consumed cereal daily.

Conclusions: These findings suggest that it is unlikely that many children consumed the minimum recommended 5 servings of Vegetables and Fruit daily. Despite the limitations of small sample size, this is one of the first studies in Canada to investigate food use in young Aboriginal children using a validated questionairre. Our findings suggest that there is a need for further investigation regarding food use in Aboriginal children.

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Nutritional Intakes of Aboriginal Children Aged 0-8 years Living On-reserve in Prince Edward Island, Canada

It is well known that Aboriginal children in Canada have significant nutritional concerns (Bernard et al., 1995; Evers, 1991; Kuhnlein, Soueida, & Receveur, 1995; Morrison et al., 1995; Trifonopoulos, Kuhnlein, & Receveur, 1998; Wein, Gee, & Hawrysh, 1993; Wolever et al., 1997). Rates of type 2 diabetes and obesity have been significantly elevated in Aboriginal children in Canada (CICH, 2000; Gahagen, et al., 2003; Gittelsohn, et al., 1998; Hanley, et al., 2000; Wolever et al., 1997). Prevention efforts, such as improving dietary patterns, increasing activity levels, and reducing overweight are critical to reduce chronic disease risk factors in Aboriginal children (Broussard, et al., 1995; Harvey-Berino, et al., 2000). We have recently collected baselines dietary behaviour data from Mi'kmaq children who live in First Nations communities in Prince Edward Island, Canada.

Purpose

The purpose of this study was 1) to describe dietary behaviours of Mi'kmaq children (aged 0-8 years) living in First Nations communities in PEI, and 2) to assess the adequacy of the number of servings of Milk Products and Vegetables and Fruit, as well as the number of servings of Other Foods.

Significance

This is the first study of dietary behaviours of Mi'kmaq children in Atlantic Canada. Very little dietary intake data exists on Canadian children aged 0-8 years, particularly Aboriginal children. There is no data available on the dietary quality of Prince

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Edward Island children in this age group.

Methods

Data were collected as part of a larger study, "Building Healthy Mi'kmaq Communities in Prince Edward Island," (Timmons et al., 2004), which utilized a mixed method design and a participatory approach. Food use was assessed using a food frequency questionnaire (Blum et al., 1999). The Eating Behaviour Survey (Evers et al., 2001) was used to assess food use in children aged 9-18 years. Since the Eating Behaviour Survey used in children 9 years and older was not validated for younger children, a different instrument, the Harvard Service Food Frequency Questionnaire (HSFFQ) was used to assess food use in children age 0-8 years (Blum et al., 1999). The HSFFQ, previously validated for use with aboriginal and non-aboriginal children aged 0-6 years, was used to assess the frequency of consumption of 79 different foods over the past 4 weeks to help identify areas of concern. Surrogate reporting was used, with parents or primary caregivers providing dietary information. This is the first time the HSFFQ has been used with Aboriginal children in Canada.

Parents were the key informants for children aged 0-5 years. Since many parents had several children in the 0-5 years age group, parents reported on the typical intake of one child only. Thus, one food frequency questionnaire could represent the intake of several children from the same family. Children aged 6-8 years responded themselves, with assistance from a trained research assistant when necessary (Blum et al., 1999). Two of the five research assistants were Aboriginal. Parents of study participants and participants themselves provided written consent. The study protocol was approved by the University

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of Prince Edward Island Ethics Committee.

Sample

The study population was all Mi'kmaq children aged 0-18 years and their parents from Lennox Island and Abegweit, the only two First Nations communities in Prince Edward Island. Interviews were completed with 67 children and 38 parents (105 participants in total). The Harvard Service Food Frequency Questionnaire was completed by 14 respondents from the 0-8 year old children.

Data Analysis

Frequency of consumption of common foods on a daily and weekly basis was performed using the Statistical Analysis System (SAS Version 8e, SAS Institute Inc., Cary, North Carolina). Gender and age analysis were not conducted on this age group due to the small sample size.

Results

Daily Food Use

Because of the limited sample size for this age group (n=14), we have reported the total proportion of children consuming foods daily, and have not reported results by age or sex. The foods most likely to be consumed on a daily basis are shown in Figure 1. Milk, fruit juice, vegetables and grain products were the top four foods, with 70% (10/14) or more children consuming these daily.

The proportion of children consuming selected foods assessed by food group are shown in Table 1. We have selected foods which are similar to those assessed in older children using the Eating Behaviour Questionnaire to determine if eating behaviors change as a child gets older.

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Daily fluid milk consumption was reported by 93% (13/14) of the children with 64% (9/14) consuming 2 or more servings per day (not shown). Cheese was the second most commonly consumed Milk Products (57%) (8/14), with approximately 43% (6/14) of children consuming yogurt daily. Although no children had ice cream daily, 50% (7/14) had it on a weekly basis (not shown).

Half (7/14) of the children had fruit juice at least once a day. Fruit was consumed at least once a day by approximately two-thirds (9/14) of the children, with bananas, apples and pears being most commonly mentioned. Ten children (71%) had at least one serving of vegetables other than salad and potatoes; few (2 or 14%) had two servings daily. Potatoes other than french fries were consumed on a daily basis by 21% (3/14) of children.

Bread, rolls and bagels were the most commonly consumed Grain Products, with almost 71% (10/14) of children having these foods at least once a day. Over half of the children (7/14) had hot or cold cereal daily, with the latter being most commonly consumed. Although no children had pasta daily, 11% of children consumed macaroni or spaghetti 2-4 times per week (not shown).

No child consumed candy or chocolate bars daily, but 9 (64%) children had these foods at least once a week. French fries were consumed at least once a week by two thirds (9/14) of the children and daily by 2 children. Fruit drinks, which are high in sugar and lower in nutrients compared to 100% juice, were consumed by 6 children (43%) on a daily basis.

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Discussion/Conclusions

Our findings suggest that there is a need for further investigation regarding food use in young aboriginal children. While it is encouraging to note that the most commonly consumed foods are healthy choices from the four food groups in Canada's Food Guide to Healthy Eating, more detailed examination suggests that the number of servings from some groups, especially Vegetables and Fruit, may fall below recommendations (Health Canada, 1992). These findings suggest that it is unlikely that many children consumed the recommended minimum of 5 servings of Vegetables and Fruit daily.

Examining children's food use patterns across age groups can help identify key points for intervening and therefore prevent the decline in dietary adequacy which has been observed in non-aboriginal children and youth in PEI (Taylor et al., 2001, 2002). Since we had a relatively small number of children under the age of 8 compared to older children who participated in the study, and used two different FFQ, our ability to make comparisons regarding dietary adequacy in the younger children is limited.

It appears that low vegetable and fruit intake may be a common concern between younger and older children. The intake of snack foods and beverages appears to be less frequent in children under the age of 8 compared to older children. The intake of milk products is higher in younger children with 64% having 2 servings a day compared to 45 % of older children. This finding is consistent with the literature which indicates a decline in diet quality with age (Evers et al., 2001; Taylor et al., 2001, 2002).

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Limitations

One limitation of this study is the small sample size. There is a relatively small Aboriginal population in Prince Edward Island. It is crucial to develop relationships with these communities based on mutual respect and trust to partner with the communities for this project. However, its small size also makes it an ideal sample for collecting descriptive, rich data.

Food frequency questionnaires were completed by 30 % of parents of children aged 0-5 years. Although many parents had several children in the 0-8 age group, they only completed one food frequency questionnaire based on one of their children's intake in order to avoid excessive burden on the respondent.

The FFQ data will only estimate the frequency which foods were eaten in the past month. They will not determine adequacy of the diet because portion sizes or number of servings, are not assessed but will offer an overview of usual dietary intake and can identify some nutritional concerns, such as if children are eating vegetables daily, consuming soft drinks daily, or frequency of breakfast consumption (Blum et al., 1999).

Conclusions

Study findings have contributed to the very limited data on dietary behaviors of young Aboriginal children in Canada. Future work will involve estimating nutrient intakes from the FFQ and comparing these to the recommended Dietary Reference Intakes (National Academy of Science, 2003). This will allow us to make more specific conclusions regarding dietary adequacy in this sample of Mi'kmaq children in PEI.

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Figure 5. Foods Most Commonly Consumed On a Daily Basis
(n=14)

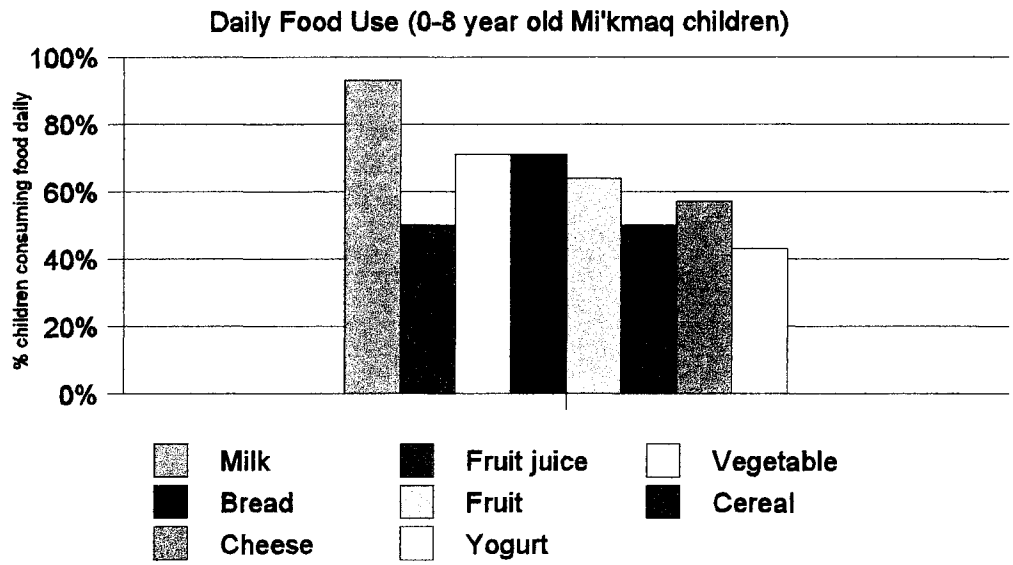

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Table 2. Consumption of Selected Foods During the Previous Month by Food Group Among Children Aged 1-8

Food/Food Group	% (n)
Milk Products	
Milk	93 (13)
Cheese	57 (8)
Yogurt	43 (6)
Ice Cream	0 (0)
Vegetables and Fruit	
Fruit juice	93 (13)
Vegetables (other than salad or potatoes)	71 (10)
Fruit	64 (9)
Potatoes	21 (3)
Salads	0 (0)
Meat and Alternatives	
Beef/Pork/Processed Meats	43 (6)
Eggs	14 (2)
Peanut butter	14 (2)
Chicken	7 (1)
Grain Products	
Bread/rolls/bagels	71 (10)
Ready-to-eat cereals	50 (7)
Hot cereal	14 (2)
Pasta	0 (0)
Snack Foods and Beverages	
Cookies/cakes	29 (4)
French fries	14 (2)
Regular soft drinks	7 (1)
Snacks/chips	7 (1)
Candy	0 (0)

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Chapter 7

Conclusion and Reflections

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Conclusion and Reflections

This research should lay the groundwork for developing effective culturally sensitive health and nutrition education programs in the Mi'kmaq communities in Prince Edward Island. Community based nutrition interventions ideally begin when the community recognizes a need and develops appropriate strategies to address the issues (Boyle & Morris, 2001). When local people participate in the development, implementation, and evaluation of an intervention that has addressed their own priorities there is increased success, leading to further creative, local solution development (Boyle & Morris, 2001). Participatory approaches are more likely to ensure success, allowing transfer of traditional knowledge and skills, incorporated with current nutrition knowledge (Boyle & Morris, 2001; Smith, 2000). Effective interventions involve the whole community - the family, the school, the health center, the businesses, the Band council, with everyone working together to ensure that making the healthy food choices are the easy choice for children.

The loss of traditional foods and knowledge identified in this research is of great concern because, while children could identify some traditional foods, they did not eat them regularly and seemed disconnected from their cultural relevance. Re-discovering traditional foods provides an opportunity to re-claim traditional ways and re-connect Mi'kmaq children with their culture, while also adopting a healthy diet which incorporates more traditional foods.

Incorporating indigenous, local knowledge should be at the heart of any

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intervention, with local people acting as role models and supports for each other. Elders can be involved as advisors, teachers, and storytellers, as they hold the traditional knowledge, including knowledge of traditional foods and lifestyle. Native history relies on oral teachings and storytelling. Nutritional knowledge that is handed down in the community is based on traditional foods which is often passed down in stories that also teach about respect for the environment and living in harmony with nature (Lawn, 1985). There is a need to return to the use of traditional foods while also incorporating current nutrition knowledge so Aboriginal people may make healthy food choices.

The results of this research contribute to the limited knowledge base regarding the food use and dietary adequacy of children in First Nations communities in Atlantic Canada. A number of nutritional concerns among Mi'kmaq children aged eight to 18 years were identified, including a high number with inadequate vegetable, fruit, and milk intakes, and frequent consumption of snack foods/beverages that are high in fat, sugar, and/or salt and low in nutrients. Given the elevated risk for overweight and Type 2 diabetes in this group, there is a need for culturally appropriate health promotion and nutrition education programs designed to increase the intake of vegetables and fruits and milk products and lower fat traditional foods, while reducing the high consumption of Other Foods, especially french fries. The finding that, except for higher consumption of french fries in Mi'kmaq children, food use data are similar to non-Aboriginal PEI children, suggesting a province-wide problem, rather than one that is unique to the Mi'kmaq First Nations community.

Although 87% of the children reported nutrition as a determinant of their health,

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they appear to have difficulty translating these values into practice, exhibiting inadequate intakes of vegetables, fruit and milk. Two-thirds of children identified eating "junk foods" as an unhealthy practice, while many reported high intakes of snack foods that were high in fat, calories, and salt. All parents participating in this research identified healthy eating as an important determinant of health. Parents need to model healthy eating and daily physical activity for their children to develop healthy practices as part of daily life. Eating meals together as a family has an important role in modeling healthy eating behaviors for children. Providing programs to parents will help to change behaviors within families.

Nutrition interventions that focus on repeated exposure to healthful foods, along with parental, peer, and community involvement in modeling healthy eating behaviours are more likely to have an impact on promoting healthy eating behaviours than direct teaching to change nutrition knowledge (Harvey-Berino, 1997). To develop relevant community health promotion and nutrition education interventions and to evaluate their effectiveness, it is important to describe the current diet of a population (Trifonopoulos, Kuhnlein, & Receveur, 1998). Nutrition interventions that focus on specific food items and dietary patterns rather than on nutrients are more effective because they are practical (Trifonopoulos, Kuhnlein, & Receveur, 1998). Any future interventions should incorporate nutrition education messages that focus on healthy foods and active living strategies. Nutrition interventions and health promotion programs should target long term goals.

Aboriginal community members came together to discuss the findings of the research and identify their priorities for future interventions. Community members

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recognized the many strengths they can build upon in their communities, particularly concern for the health of their children. Family focussed interventions to improve children's dietary behaviours through such strategies as increasing the frequency of family meals and improving nutrition knowledge in both children and parents are anticipated to build upon this work.

Healthy people are the foundation of a strong community. Working with families to achieve their optimal health, not just freedom from disease and illness, but a healthy body, mind, and spirit is the key to long term health. Incorporating knowledge of traditional diet and lifestyle from elders, along with current nutrition knowledge will support Mi'kmaq people in reclaiming their health and their culture, which, in turn, will reshape the future of their communities for their children. This is research that should make a difference to the community with a focus on building on existing strengths. The voices of the children tell a story of hope.

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Appendix A

Letters of Support

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Appendix B

Consent Forms

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Appendix C

Interview Guides

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Building Healthy Mi'kmaq Communities
Interview Questions

Ages: 0-5 Years [To be asked to the child's primary care giver]

edited July 16, 2002

Interviewers will introduce themselves, thank the parent/care giver for agreeing to the interview, and review the consent form with them.

Introduction

1. Tell us about your baby (if appropriate) and children, their names and ages and a little bit about each of them.
   [Do they **live with you**? If not, who do they live with?]

Activities

2. Tell me about a **typical day** for **each** of your children.
   [Do they usually **stay home** during the day or go to **day care** (or kindergarten)?
   What are some of their **favorite activities**?
   Do **you** or any other **adults play** with him/her?
   What kinds of things do you do together?
   Does he/she have **other children** to play with? Tell me about this.
   Do you or someone else ever **read to** your children? If so, how often?

Perceptions About Health

3. Who **helps you** to look after your children?

4. When we talk about ***healthy children***, what does that mean to you in regard to your family?

5. Tell me about your **children's health.**
   [Have your children been healthy?]

6. Tell me about the things **you do** to keep your children safe.

7. What are some others things **you would like to do to do** to keep your children safe and healthy?
   [PROBE: Is anything stopping you from doing these things?]

8. What could your community do, to help your family be healthier?

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Nutrition

9. How do you think the food they eat affects your children's health?

10. Tell me about family meals.

11. Does your family eat any foods you consider Mi'kmaq or traditional foods? Tell me about this.

Now I'd like to ask you some specific questions about the foods your children eat. [Administer Food Frequency questionnaire].

Dreams and Fears

12. What are the concerns you have about your children's future?

13. Tell me about the dreams and hopes you have for your children?

Is there anything else that we haven't talked about that you think is important?

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Building Healthy Mi'kmaq Communities
Interview Questions

Ages 6-8 Last edited: July 16, 2002

Introduction (Guide):

Hi _____. Thanks for agreeing to talk to us today. My name is _____and this is _____. [Interviewers should tell the child something about themselves in order to establish a comfortable atmosphere – no credentials.]

Review Consent Form with the child in a friendly and informative manner.

Introduction

1. Is there anything that you would like to know before we get started on the questions?

Opening Questions

Leisure Time etc.
To keep it light and build rapport open with a question about their day such as:

2. How has your day been going?
   [What have you been up to today? How is your summer going? How do you usually spend a day during the summer? How does that change when school starts?

3. Tell us about any exercise you get?
   [Playing outdoors? Sports of any kind? Walking? Road hockey? Biking?
   How often do you get exercise like this? How you think this exercise affects your health?
   Tell me about your hobbies.]

Relationships with Family and Friends

4. **Tell me about the important people in your life.**
   [What about your friends? What kinds of things do you and your friends like to do? What worries do you and your friends have?

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Let's talk about your **family**. Who do you consider as your family? Who do you live with? What is their relationship to you? Mother, father, aunt, uncle, brother, grandparent...
Tell us about the time you spend with your family. Tell me about family meals.
What kinds of activities do you and your family do together? What things do you talk about with your family members?
How are things going between you and your family?
Do you feel that you have a healthy relationship with your family? Is there anything that you'd like to change about your relationship with your family members? If so, what?]

School

We will move on to some questions about school.

5. **Let's talk about school for you.**
How is school going? What grade are you in?
Tell us about a time when you really enjoyed school and felt good about what you accomplished. What helps you to do well in school?
What would help you to do better in school?
Who helps you with your school work?
Tell us about a time when you did not feel good about school.
Do you ever miss school days? What causes you to miss school?
What would you like to change about school?]

6. Does being Mi'kmaq make a difference for you in school?
[Can you tell me more about that?]

7. Do you like to read? What kinds of things do you read? How do you think reading helps us?

8. What would you like to do when you are finished school?

Perceptions About Health

We will first talk about some of the ideas that you have about health.

9. When we talk about *children being healthy* what does that mean to you?
[How healthy do you think you are?]

10. Tell us about the things you do to keep yourself healthy.
[Probes appropriate to response: What about food? What about activities? What about spending time with friends? What stops you from doing these things?]

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11. Tell us about the things you do that may not be so healthy for you. Does this worry you? If so, how?

****Administer *Food Frequency* here if a break from questioning is needed. If not, it can be done at the end of the interview.**

Risk Behaviors

12. **Some adults worry about young people smoking and things like that. What about you and smoking?**

Use the following probes as appropriate:
Have you ever smoked cigarettes? Do you smoke them now?
What are the reasons why you smoke?
How do you think smoking cigarettes might affect your health?
Does anyone in your house smoke? If so, how many people?

Mental Health/ Feelings

13. **Feelings are part of being healthy.**
[What makes you feel **happy**?
Tell me about a time when you were feeling really happy.
What made that time happy?

Tell me about a time when you felt **angry**.
How did you cope with that situation?

What makes you feel **sad or down**?
Tell me a time when you were feeling down. Tell me how you dealt with that situation.

What makes you feel **proud**?
Tell me about a time when you felt really proud. What made you feel that way?]

Questions about culture and heritage – We would like to know more about what your culture means to you.

14. **Tell me who you are - describe yourself to me.**
[What does it mean to be Mi'kmaq?
Do you identify yourself as a Mi'kmaq person? Can you tell us more about that?
Do you speak Mi'kmaq? What have you learned already about your heritage? From

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whom?
Do you ever participate in **traditional Mi'kmaq ceremonies** such as pow wows, sweat lodges, etc.? Tell me about this.
Do you like to learn about your **Mi'kmaq heritage**? Tell us about it. Tell me about things you would like to learn about your culture, language and history.
Do you know of any foods that are considered **Mi'kmaq or traditional foods**?
How often do you eat them?
Can you tell us about a **Mi'kmaq person** that you **admire or look up to?** What **qualities** does that person have?
Do you see **yourself** having any of these qualities?]

15. Is there anything you **worry about or anything you are afraid** will happen when you are grown up?
What things do you **dream of for when you are grown up?**

Is there anything else that we haven't talked about that you think is important?

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Building Healthy Mi'kmaq Communities
Interview Questions

Ages 9 - 12 Last edited: July 16, 2002

Introduction (Guide):

Hi _____. Thanks for agreeing to talk to us today. My name is _____and this is _____. [Interviewers should tell the child something about themselves in order to establish a comfortable atmosphere – no credentials.]

Review Consent Form with the child in a friendly and informative manner.

Introduction

1. Is there anything that you would like to know before we get started on the questions?

Opening Questions

Leisure Time etc.
To keep it light and build rapport open with a question about their day such as:

2. How has your day been going?
   [What have you been up to today? How is your summer going? How do you usually spend a day during the summer? How does that change when school starts?

3. Tell us about any physical exercise you get?
   [Sports of any kind? Walking? Road hockey? Biking?
   How often do you get exercise like this? How you think this exercise affects your health?
   Tell me about your hobbies.]

Relationships with Family and Friends

4. **Tell me about the important people in your life.**
   [What about your friends? What kinds of things do you and your friends like to do? What worries do you and your friends have?

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Let's talk about your **family**. Who do you consider as your family? Who do you live with? What is their relationship to you? Mother, father, aunt, uncle, brother, grandparent...
Tell us about the time you spend with your family. Tell me about family meals.
What kinds of things do you and your family do together? What things do you talk about with your family members?
How are things going between you and your family?
Do you feel that you have a healthy relationship with your family? Is there anything that you'd like to change about your relationship with your family members? If so, what?]

School

We will move on to some questions about school.

5. **Let's talk about school for you.**
How is school going? What grade are you in?
Tell us about a time when you really enjoyed school and felt good about what you accomplished. What helps you to do well in school?
What would help you to do better in school?
Who helps you with your school work?
Tell us about a time when you did not feel good about school.
What helps you to stay in school?
Do you ever miss school days? What causes you to miss school?
What would you like to change about school?]

6. Does being Mi'kmaq make a difference for you in school?
[Can you tell me more about that?]

7. Do you like to **read**? What kinds of things do you read? What do you think are the benefits of reading or how do you think **reading helps** us?

8. Do you see yourself finishing high school? If no, what would prevent you from finishing?
What would you **like to do when you are finished school**?

Perceptions About Health

We will first talk about some of the ideas that you have about health.

9. When we talk about ***people being healthy*, or *children being healthy*** what does that mean to you?
[How healthy do you think you are?]

10. Tell us about the things **you do to keep yourself healthy**.

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[Probes appropriate to response: What about food? What about activities? What about spending time with friends? What stops you from doing these things?]

11. Tell us about the things you do that **may not be so healthy for you.** Does this worry you? If so, how?

****Administer *Food Frequency* here if a break from questioning is needed. If not, it can be done at the end of the interview.**

Risk Behaviors

12. **Smoking, drugs, alcohol, – some adults worry about young people doing these things. What about you and these things?**

[What about **smoking**?
Use the following probes as appropriate:
Have you ever smoked cigarettes? Do you smoke them now?
What are the reasons why you smoke?
How do you think smoking cigarettes might affect your health?
Does anyone in your house smoke? If so, how many people?

What about **drugs**?
Further probes as appropriate:
What do you think about people your age using drugs? Are they a part of your life?
Do your friends use drugs?
How do you think using drugs affects your health?

What about **alcohol**?
Further probes as appropriate:
Is drinking alcohol a part of your life? If yes ... how often do you drink?
Do you drink to get drunk? Can you tell me more about that?
Do your friends drink alcohol?
How do you think using alcohol may affect your health?

Mental Health/ Feelings

13. **Feelings are part of being healthy.**
[What makes you feel **happy**?
Tell me about a time when you were feeling really happy.
What made that time happy?

Tell me about a time when you felt **angry**.

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Mi'kmaq Children and Youth Health Project
Interview Questions

Ages 13 - 18 Last edited: July 15, 2002

Introduction (Guide):

Hi _____. Thanks for agreeing to talk to us today. My name is _____and this is _____. [Interviewers should tell the teen something about themselves in order to establish a comfortable atmosphere – no credentials.]

Review Consent Form with the teen in a friendly and informative manner.

Introduction

1. Is there anything that you would like to know before we get started on the questions?

Opening Questions

Leisure Time etc.
To keep it light and build rapport open with a question about their day such as:

2. How has your day been going?
   [What have you been up to today? How is your summer going? How do you usually spend a day during the summer? How does that change when school starts?

3. Tell us about any physical exercise you get?
   [Sports of any kind? Walking? Road hockey? Biking?
   How often do you get exercise like this? How you think this exercise affects your health?
   Tell me about your hobbies.]

Relationships with Family and Friends

4. **Tell me about the important relationships in your life.**
   [What about your friends? What kinds of things do you and your friends like to do? What worries do you and your friends have?

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Let's talk about your **family**. Who do you consider as your family? Who do you live with? What is their relationship to you? Mother, father, aunt, uncle, brother, grandparent...
Tell us about the time you spend with your family. Tell me about family meals.
What kinds of activities do you and your family do together? What things do you talk about with your family members?
How are things going between you and your family?
Do you feel that you have a healthy relationship with your family? Is there anything that you'd like to change about your relationship with your family members? If so, what?]

School

We will move on to some questions about school.

5. Are you going to school now?
[Ask only if interview takes place outside of the school setting and this fact is not already known]

If Yes, above ...

6. **Let's talk about school for you.**
How is school going? What grade are you in?
Tell us about a time when you really enjoyed school and felt good about what you accomplished. What helps you to do well in school?
What would help you to do better in school?
Tell us about a time when you did not feel good about school.
What helps you to stay in school?
Do you ever miss school days? What causes you to miss school?
What would you like to change about school?]

7. Does being Mi'kmaq make a difference for you in school?
[Can you tell me more about that?]

8. Do you like to read? What kinds of things do you read? What do you think are the benefits of reading?

9. Are you working now? If so, how many hours a week?

10. Do you see yourself finishing high school? If no, what would prevent you from finishing? What would you like to do when you are finished school?

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If no ... they are not in school, then:

6b Can you tell me why you decided not to attend school anymore?

7b Can you think of a time when you really enjoyed school and felt good about what you accomplished? Tell me about it.
Tell me about a time when you did not feel good about school.
What would you like to change about school?
Were you absent for many school days? For what reasons?
Do you want to go back to school?
What would have helped you to stay in school?
What would help you to go back to school?]

8b Did being Mi'kmaq make a difference for you when you were in school? Please tell me more about that?

9b Do you like to read? What kinds of things do you read? What do you think are the benefits of reading?

10b Are you working now? If so, how many hours a week?
If you are working, are you happy with your present job?
Is there another job that you would really like to have in the future?
What would you need to do to achieve this goal?

Perceptions About Health

We will first talk about some of the ideas that you have about health.

11. When we talk about *people being healthy*, what does that mean to you?
[How healthy do you think you are?]

12. Tell us about the things you do to keep yourself healthy.
[Probes appropriate to response: What about food? What about activities? What about spending time with friends? What stops you from doing these things?]

13. Tell us about the things you do that may not be so healthy for you. Does this worry you? If so, how?

****Administer *Food Frequency* here if a break from questioning is needed. If not, it can be done at the end of the interview.**

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Risk Behaviors

14. **Smoking, drugs, alcohol, sex – some adults worry about young people doing these things. What about you and these things?**

[What about **smoking**?
Use the following probes as appropriate:
Have you ever smoked cigarettes? Do you smoke them now?
What are the reasons why you smoke?
How do you think smoking cigarettes might affect your health?
Does anyone in your house smoke? If so, how many people?

What about **drugs**?
Further probes as appropriate:
What do you think about people your age using drugs? Are they a part of your life?
Do your friends use drugs?
How do you think using drugs affects your health?

What about **alcohol**?
Further probes as appropriate:
Is drinking alcohol a part of your life? If yes ... how often do you drink?
Do you drink to get drunk? Can you tell me more about that?
Do your friends drink alcohol?
How do you think using alcohol may affect your health?

What about **sex**?
Further probes as appropriate to answers:
What do you think about people your age having sex?
Is it something you are involved with?
How do you think being sexually active might affect ones health?
What forms of protection do you think are necessary? Do teens you know usually use protection?
What would help teens who are sexually active use protection?
Do you have any concerns or questions related to sex or sexuality that you might like to talk about with someone else?]

Mental Health/ Feelings

15. **Feelings are part of being healthy.**
[What makes you feel **happy**?
Tell me about a time when you were feeling really happy.
What made that time happy?

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Tell me about a time when you felt **angry**.
How did you cope with that situation?

What makes you feel **sad or down**?
Tell me a time when you were feeling down. Tell me how you dealt with that situation.

What makes you feel **proud**?
Tell me about a time when you felt really proud. What made you feel that way?]

Questions about culture and heritage – We would like to know more about what your culture means to you.

16. **Tell me who you are - describe yourself to me.**
[What does it mean to be Mi'kmaq?
Do you identify yourself as a Mi'kmaq person? Can you tell us more about that?
Do you speak Mi'kmaq? What have you learned already about your heritage? From whom?
Do you ever participate in traditional Mi'kmaq ceremonies such as pow wows, sweat lodges, etc.? Tell me about this.
Do you like to learn about your Mi'kmaq heritage? Tell us about it. Tell me about things you would like to learn about your culture, language and history.
Do you know of any foods that are considered Mi'kmaq foods?
[How often do you eat them?]
Can you tell us about a **Mi'kmaq person** that you **admire or look up to?** What **qualities** does that person have?
Do you see yourself having any of these qualities?
Do you consider yourself a role model for younger Mi'kmaq children? If so, in what way?]

17. **What are your worries or concerns about your future? What things do you dream of for your future?**

Is there anything else that we haven't talked about that you think is important?

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Mi'kmaq Children and Youth Health Project

Interview Questions

Parents of Youth and Children Ages 6 -18 years

Last Edited August 22, 2002

Interviewers will introduce themselves, thank the parent for agreeing to the interview, and review the consent form with them.

Introduction

1. Tell us about your children and teenagers, their names and ages and a little bit about each of them.
   [Do they live with you? If not, who do they live with?]

Leisure Time

2. What do your children and teens do in their spare time?
   [Probes including: What do they do for fun? Are you pleased with this use of their time?]

Relationships

3. How do you feel about the friends your children/teens spend time with?
   [PROBE: Do you feel that these relationships are a positive or healthy contribution to your children's lives?]

4. How are things going between you and your teen/children?
   [PROBES: What things about your relationships with each of them are you pleased with? What causes you concern?]

School

5. How is school going for your children and teens?
   [PROBES: What is going well; what is not going so well?]

6. *What does getting an education mean for your children's future plans?* ***[Delete based on response from pilots?]***

How does getting an education fit w your child's future plans?

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Perceptions About Health

7. When we talk about *being healthy*, what does that mean to you in regard to your family?

8. Tell us about the things you do or encourage your children to do to keep them healthy.

9. Tell us about the things they do that may not be so healthy for them.
[PROBE Does this worry you? If so, how?]

10. What are some others things you would like to do or would like your children to do to keep healthy?
[PROBE: Is anything stopping you from doing these things?]

11. What could your community do, to help your children and teens be healthier?

Nutrition

12. How do you think the food they eat affects your family's health?

13. Tell me about family meals.

14. Does your family eat any foods **you consider traditional or Mi'kmaq foods? Tell me about this.**

Risk Behaviours

As appropriate for the ages of the children in the family:

15. Smoking, drugs, alcohol, sex – some adults worry about young people doing these things. Tell me about these things and your children/teens. [Probe as necessary.]

16. Tell me about the things you worry about in regard to your children/teens?

Identity

17. How do you think each of your child/teen would describe himself?
[PROBE: What is important for your children in terms of their identity?]

18. What are the **concerns** you have about your **children's future**?

19. Tell me about the dreams and hopes you have for your children?

Is there anything else that we haven't talked about that you think is important?

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Appendix D

Nutrition Surveys

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Eating Behaviour Survey
Mi'kmaq Children and Youth Health Project

These questions are about the eating habits of children and youth like yourself.

Read each question carefully and be as honest as you can when you answer the questions. The information you give will be kept completely secret and confidential. Your answers will only be seen by researchers at the University of Prince Edward Island. Your teachers, principal, parents, etc. will not see your answers. The survey is anonymous so please do NOT put your name on any of the pages.

For each question please mark your answer by making a dark pencil mark that fills the circle completely. Fill in only one (1) circle for each question unless the instructions tell you to do something different.

Code number _____

1. How often do you have something for breakfast?

- O Every day
- O Some days
- O Rarely
- O Weekends only
- O Never

2. What type of milk do you usually drink?

- O Whole milk
- O 2%
- O 1%
- O Skim milk
- O Don't drink milk

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3. How often have you eaten any of these foods in the last seven days? For each food, please fill in ONE circle.

Food	At least twice a day	once a day	4 to 6 times/week	1 to 3 times/week	0 times/week
Milk (alone or on cereal)	O	O	O	O	O
Cheese	O	O	O	O	O
Yogurt and frozen yogurt	O	O	O	O	O
Eggs	O	O	O	O	O
Ice Cream	O	O	O	O	O
French fries	O	O	O	O	O
Potatoes other than french fries	O	O	O	O	O
Salad	O	O	O	O	O
Vegetables other than salad	O	O	O	O	O
Beans (baked, chickpeas, kidney beans, lentils, tofu)	O	O	O	O	O
Peanut butter	O	O	O	O	O
Fruit	O	O	O	O	O
Fruit Juice	O	O	O	O	O
Bread, bagels, pitas, English muffins, crackers, tortillas	O	O	O	O	O
Rice	O	O	O	O	O
Spaghetti, macaroni, or other pasta	O	O	O	O	O

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Food	At least twice a day	once a day	4 to 6 times/week	1 to 3 times/week	0 times/week
Pizza	O	O	O	O	O
Cheerios, Shreddies Rice Krispies, Corn Flakes, Raisin Bran, Frosted Flakes and other cold cereals	O	O	O	O	O
Oatmeal, Cream of Wheat and other cooked cereals	O	O	O	O	O
Hamburgers, beef, pork, hot dogs, sausages, lunch meats, other meat	O	O	O	O	O
Chicken, turkey, fish	O	O	O	O	O
Cakes, cookies, pie, doughnuts	O	O	O	O	O
Potato chips, tortilla or nacho chips, Cheesies pretzels, other snack foods	O	O	O	O	O
Candy, chocolate bars	O	O	O	O	O
Regular (not diet) soft drinks	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O

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Food	At least twice a day	once a day	4 to 6 times/week	1 to 3 times/week	0 times/week
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O
_____	O	O	O	O	O

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Children's Nutrition Questionnaire

What Have You Been Eating Lately?

"During the past 4 weeks, how often did you eat a serving of each of the foods listed here?"

Mark only one X for each food

Name: _____

ID: _____

Date ___/___/___

DOB: ___/___/___

Age: _____

Respondent: *(please check)*

☐ Mother

☐ Other _____

Example:

	last 4 weeks		each week			each day			
Number of times	0	1–3	1	2–4	5–6	1	2–3	4–5	6+
Milk				X					
Hot chocolate	X								

	last 4 weeks		each week			each day			
Number of times	0	1–3	1	2–4	5–6	1	2–3	4–5	6+
Milk									
Hot chocolate									
Cheese, plain or in sandwiches									
Yogurt									
Ice cream (cones, sandwiches, sundaes)									
Pudding									
	0	1	2	3	4	5	6	7	8

What kind of milk does your child usually drink? (Check one)

1 ☐ breastmilk 3 ☐ whole 5 ☐ 1% 7 ☐ Chocolate Milk

2 ☐ formula 4 ☐ 2% 6 ☐ skim 8 ☐ other _____

	last 4 weeks		each week			each day			
Number of times	0	1–3	1	2–4	5–6	1	2–3	4–5	6+
Orange juice or grapefruit juice									
Other juice									
Fruit drinks (Hi-C, Kool-aid, lemonade, sportsdrink)									
Banana									
Peaches									
Fruit cocktail, mixed fruit									
Orange or grapefruit									
Apple or pear									
Applesauce									
Grapes									
Strawberries									
Melon									
Pineapple									
Raisins or prunes									
	0	1	2	3	4	5	6	7	8

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Continued on next page

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Mark only one X for each food.
How often did you eat a serving of these foods during the past 4 weeks?

	last 4 weeks		each week			each day			
Number of times	0	1-3	1	2-4	5-6	1	2-3	4-5	6+
Corn									
Peas									
Tomatoes, tomato sauce, salsa									
Peppers (green, red or hot)									
Carrots									
Broccoli									
Green beans									
Spinach									
Mixed vegetables									
Squash, orange or winter									
Zucchini, yellow squash									
French fries, fried potatoes, tater tots									
Potatoes (baked, boiled, or mashed)									
Sweet potatoes or yams									
Cabbage, coleslaw or cauliflower									
Lettuce salad									
Salad dressing									
Mayonnaise									
	0	1	2	3	4	5	6	7	8

	last 4 weeks		each week			each day			
Number of times	0	1-3	1	2-4	5-6	1	2-3	4-5	6+
Chips (potato, corn or others)									
Popcorn or pretzels									
Crackers									
Nuts									
Cookies or brownies									
Cake or cupcake									
Pie									
Jello									
Chocolate or candy bar									
Other candy (not chocolate)									
Coffee or tea									
Soda, soft drink, pop (not sugar free)									
Soda, soft drink, pop (sugar free)									
	0	1	2	3	4	5	6	7	8

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	last 4 weeks		each week			each day			
Number of times	0	1-3	1	2-4	5-6	1	2-3	4-5	6+
Beans (baked, chili, or other)									
Rice									
Spaghetti or other pasta									
Pizza									
Tacos, burritos									
Macaroni and cheese									
Hot dogs									
Sausage									
Hamburger (prepared any way)									
Canned tuna									
Fried fish, fish sticks									
Other fish									
Cold cuts (baloney, ham, salami)									
Fried chicken, chicken nuggets									
Other chicken or turkey									
Pork or ham									
Roast beef or steak									
Liver, organ meats									
Peanut butter									
Bread (slice) toast, roll, or pita									
Butter (not margarine)									
Margarine									
	0	1	2	3	4	5	6	7	8

	last 4 weeks		each week			each day			
Number of times	0	1-3	1	2-4	5-6	1	2-3	4-5	6+
Vegetable soup									
Other soup									
Cornbread or tortilla									
Eggs									
Bacon									
Hot cereal, grits									
Cold cereal									
Donut									
Sweet roll or muffin									
Pancake, waffle, or french toast									
English muffin or bagel									
Biscuit									
	0	1	2	3	4	5	6	7	8

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1. What type of bread does your child usually eat:
   ☐ white bread (1) ☐ whole wheat or dark bread (2) ☐ about half and half (3) ☐ DON'T EAT BREAD (4)

2. What type of margarine does your child usually use:
   ☐ stick (1) ☐ tub (2) ☐ squeeze (3) ☐ DON'T USE MARGARINE (4)
   Is this margarine:
   ☐ corn oil (1) ☐ nonfat (2) ☐ other (3)

3. If your child eats cold breakfast cereal, what type:
   ☐ high fiber (eg. All Bran) (1) ☐ unsweetened (eg. Corn Flakes) (2) ☐ sweetened (eg. Cap'n Crunch) (3)

4. Does your child take a multi-vitamin pill (Flintstones, TriViFlor):
   ☐ no (0) ☐ yes (1)
   If yes, how often:
   ☐ Every day (1) ☐ 4–6 times a week (2) ☐ 1–3 times a week (3) ☐ Less than one time a week (4)

5. Does your child take a separate iron pill (not in the multi-vitamin pill above):
   ☐ no (0) ☐ yes (1)

6. Does your child take a separate fluoride supplement (not in the multi-vitamin pill above):
   ☐ no (0) ☐ yes (1)

7. Does your child eat fried food at home:
   ☐ no (0) ☐ yes (1)
   If yes, how often:
   ☐ Every day (1) ☐ 4–6 times a week (2) ☐ 1–3 times a week (3) ☐ Less than one time a week (4)
   If yes, what type of fat do you use to fry at home:
   ☐ butter (1) ☐ margarine (2) ☐ crisco (3) ☐ corn oil (4) ☐ canola oil (5) ☐ olive oil (6) ☐ other vegetable oil (7)

9. Do you bake cookies, cake or pies at home:
   ☐ no (0) ☐ yes (1)
   If yes, how often does your child eat home-baked cookies, cake or pies?
   ☐ Every day (1) ☐ 4–6 times a week (2) ☐ 1–3 times a week (3) ☐ Less than one time a week (4)
   If yes, what type of fat do you use to bake at home:
   ☐ butter (1) ☐ margarine (2) ☐ crisco (3) ☐ corn oil (4) ☐ canola oil (5) ☐ olive oil (6) ☐ other vegetable oil (7)

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Appendix E

Traditional Mi'kmaq Recipes

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Traditional Mi'kmaq Recipes

Some of my friends in Lennox Island have shared these recipes with me.

Stew
1 wild rabbit (or other meat)
4 carrots
pieces of salt pork, cubed
½ cup peas
1 small turnip
1 onion
6 potatoes, cubed

Put the meat in a pot. Add water. Saute onions and salt pork. Add to pot. Boil ½ hour. Add carrots, potatoes, turnips. Boil until vegetables are done. Add peas.

Qunesewey
Bacon or salt pork
8 potatoes
onion
salt

Fry everything until brown. Keep mixing. Add water. Cook until everything is soft.

Lu'sknikn
3 cups flour
3 big heaping tablespoons baking powder
1 teaspoon salt
1 big tablespoon fat (or shortening)
1-2 cups water

Knead in bowl with hand. Put in pan. Bake in hot oven (450) for about a half hour.

Four Cents
Make lu'sknikn but leave out fat. Spread out dough. Cut into squares. Fry in a pan for about 3-4 minutes on each side until its brown.

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