Prenatal Dietary Reflections Among Two Generations in a Southern First Nations Community

By

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A Thesis
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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirements of the degree

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I dedicate this thesis to the memory of

Dr. Jean Steckle

for all you have done to honour, educate

and inspire those around you.

You will be greatly missed.

Abstract

The gradual decline in traditional food usage and knowledge has dramatically affected food consumption patterns for Aboriginal peoples across Canada. As the Royal Commission on Aboriginal Peoples has identified, particularly in regions where industrial development has taken place, the decreased use of country foods has resulted in an increased consumption of nutritionally inferior foods. The consequences of these dietary changes have resulted in nutritional deficiencies and have contributed to the increased incidence of chronic diseases such as type 2 diabetes. The purpose of this study was to investigate and describe changes in access to traditional foods and women's beliefs surrounding food during pregnancy in Peguis First Nation. Specific objectives included the exploration of cultural idea systems related to maternal diet; the importance of traditional food consumption during pregnancy; changes in access to traditional foods; local food security as well as the extent to which diabetes is a concern to women in the community. A sample of 12 young mothers and 12 grandmothers was selected for the study, using theoretical sampling in order to include women with varied experiences. Semi-structured and unstructured interviews were tape-recorded with each participant until saturation of project themes was reached. Familial cultural teachings associated with maternal diet and behaviour patterns were found to be of decreasing influence to young mothers. Grandmothers described a former lifestyle of hard work and self-sufficiency. Mothers reported a prenatal lifestyle with lower activity levels. Traditional foods such as wild meats are still a significant part of the diet for both generations. The increased use of convenience foods and limited food preparation knowledge expressed by current mothers

were associated with higher rates of maternal obesity, nutritional insufficiencies and higher birth weights. Social assistance payments for families are insufficient to purchase a Nutritious Food Basket locally. Influences on maternal diet are multi-dimensional and reflect the cultural, social, and historical environments in which they are based. The increased awareness and incorporation of cultural teachings as well as participation from extended family members and elders into prenatal programming in Peguis may help support Aboriginal health authorities in finding ways to improve the health of women and children.

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Chapter One

Introduction

For Indigenous[1] peoples worldwide, rapid dietary change is threatening the use of traditional foods and the knowledge required for traditional food system maintenance. Consequences of this loss of knowledge and access are recognized not only culturally, but have partially resulted in the onset of a variety of chronic diseases that include compromised nutritional status within their etiology, such as type 2 diabetes (Kuhnlein, 1996). A number of studies have documented the negative health consequences for many Aboriginal populations in Canada resulting from these gradual changes in traditional dietary patterns. (Schaefer and Steckle, 1978; Health Canada, 1994; Canada, 1997). The Royal Commission on Aboriginal Peoples (RCAP) reported on the importance of country food usage as not only a method of cultural expression, but as a source of better nutrition than store-bought foods. As one health policy advisor from British Columbia stated:

> *Not only is* [the use of country foods] *an important part of cultural expression, but it can be a helpful kind of diet. In particular, for example, the person with diabetes.* [sic] *Use of wild game and use of fish, both of which are lower in fat than the beef or pork that you buy in the store, is a much better choice for people with diabetes.* (Canada, 1997; p.192-3)

1.1 Study Objectives

The research project undertaken for this thesis focuses on investigating traditional

[1] While there are subtle differences between the usage of the terms "Indigenous", "Aboriginal" and "First Nation", they have been used interchangeably in this thesis in instances where they are justified by the context.

food patterns and beliefs surrounding food during pregnancy in Peguis First Nation, located in southern Manitoba. Since very little formal literature exists on the subject, qualitative research methods were chosen in order to explore cultural knowledge and beliefs surrounding Aboriginal maternal diets. As Morse and Field contend, qualitative research is conducted when previously little is known on a certain topic. Its emphasis is on the construction of new theory as opposed to the testing of previously established theory or concrete phenomena which have already been examined to the point that they can be measured, as is the case in most quantitative research (Morse and Field, 1995). In-depth qualitative interviews were conducted with young mothers as well as grandmothers to examine traditional knowledge related to maternal diet, as well as food usage, availability and how these factors have changed between the generations. Semi-structured as well as unstructured interviews were conducted. In addition, three nutritious food baskets were priced locally to compare with food costs in the closest urban center. Both types of data were used to explore: cultural idea systems related to maternal diet; the importance of traditional food consumption during pregnancy; changes in access to traditional foods; local food security, as well as the extent to which diabetes is a concern to women in the community.

1.2 Rationale

Traditional Native foods, or country foods are defined for the purpose of this investigation as "species of plant and animal foods which have been harvested, prepared and eaten by Indigenous or Native people"(Kuhnlein, 1983). In many regions of the

world the use of locally available cultural foods has declined dramatically. A complex set of social, economic, cultural and environmental circumstances has led to the gradual replacement of indigenous foods with marketed products. These purchased foods, while providing energy and variety, are often composed of simple carbohydrates, and are therefore not as nutritionally dense as locally harvested foods. Market or store-bought foods are also often cost-prohibitive and directly threaten local food security. A variety of recent Canadian research clearly documents the compromised nutritional circumstances that exist in many Aboriginal populations (Kuhnlein, 1984; Sevenheusen and Bogert-O'Brien, 1987; Campbell et al., 1992). Nutritional challenges are most common among those in poor economic circumstances or those living in isolated communities. Settlement close to urban settings, however, has ultimately led to the decreased availability of wild foods for Aboriginal peoples due to environmental transformation and the related impacts of large-scale industrial development. The RCAP has also suggested that as the non-Aboriginal labour force has immigrated to northern Native communities, increases in the demand for and availability of store-bought foods are often a direct result (Canada, 1997). The traditional Canadian Native American diet has thus transformed in many locations from one low in carbohydrates and dietary fiber, moderate fat and high protein content, to a much inferior diet high in refined carbohydrates and saturated fat (Gittelsohn et al., 1996).

Very little literature exists that documents the use of traditional foods by Canadian Aboriginal peoples, particularly in southern communities. To date, research on dietary change has been carried out with only a small number of Aboriginal groups in

Canada. For example, the frequency of 70 traditional food species of the Nuxalk of British Columbia has been compiled and published (Kuhnlein, 1984; Kuhnlein and Turner, 1991). More recently, Harriet Kuhnlein and colleagues studied the Sahtú Dene/Métis of the Western Canadian Arctic, (Kuhnlein, 1996) and the Baffin Island Inuit (Kuhnlein, 1991). Eleanor Wein has also reviewed the use of country foods by the Wood Buffalo Cree and Chipewyan peoples of Northern Alberta. Patterns of traditional food usage by the James Bay Cree of Northern Québec have been investigated in a historical context (Burkes and Farkas, 1978). Although each of these studies provides a glimpse into more recent traditional food patterns and systems, each has employed almost exclusively quantitative measures of data collection, such as food recalls and food frequency questionnaires. Therefore, research outcomes relate more to the relative clinical sufficiency or insufficiency of recent dietary intake. None of the studies investigated cultural knowledge or beliefs surrounding food usage.

In Manitoba, very little information exists on either traditional food systems or current food habits among Aboriginal communities. The contemporary food supplies of three communities impacted by the Churchill River Diversion project: Nelson House, South Indian Lake and God's River were investigated by Campbell et al. (1992) due to concern about local food systems being disrupted by hydroelectric development. Again the researchers used quantitative data collection measures in evaluating the nutritional adequacy of current dietary patterns. The *Manitoba First Nations Regional Health Survey* conducted in 1997, reported that although a large proportion of those interviewed indicated at least a portion of their diet came from wild foods, only 18% indicated that

they consumed wild food at least once a week. These findings warrant further investigation since 79% of the population surveyed did not experience difficulties obtaining food from the land (Northern Health Research Unit, 1998).

For Aboriginal communities across Canada, food security is an identified problem. According to the *Aboriginal People's Survey*, close to 50 percent of respondents over 15 years of age reported that food availability was a serious issue (Statistics Canada, 1993). The *Manitoba First Nations Regional Health Survey* also reported almost half (46%) of those interviewed indicated that running out of money for food was a household problem (NHRU, 1998). Few studies, however, currently exist that examine local food security or access issues in detail within Aboriginal communities.

The way in which people conceptualize food and its relationship to health and illness can reflect dominant societal values, particularly during times of transition such as pregnancy (Murcott, 1983). There is very little documented, however, concerning the cultural importance and availability of traditional foods during pregnancy or indigenous dietary beliefs surrounding the prenatal period. Few studies have been published that describe the maternal diets of North American Aboriginal women. Although the *Nutrition Canada Survey* carried out between 1970 and 1972 provides some evidence of nutritional deprivation for pregnant Aboriginal women, a low response rate made the findings less than conclusive (Canada, 1975; Moffatt, 1989). Food restrictions and specific prescriptions related to the overall well being of the fetus, however, were noted in a study that looked at past and present child care patterns among the Chippewa of the Great Lakes (Hildebrand, 1970). Despite a number of stringent food and conduct taboos

surrounding pregnant women, the author found the traditional Chippewa diet to be nutritionally complete. A Canadian paper that described childbearing practices of the Salish First Nation in coastal British Columbia also gave a few examples of traditional teachings during pregnancy (Clarke, 1990). Most of the traditional teachings in this setting recounted the similar restriction of certain foods during pregnancy. Though the author commented that childbearing teachings related to diet and nutrition were the most numerous and frequently mentioned by the women interviewed, a comprehensive account of this material was not included in the published paper.

A more complete examination of literature relevant to this study is provided in Chapters Two and Three of this thesis. Chapter Two begins by presenting a conceptual framework for the various factors that may influence maternal dietary patterns in this cultural setting. Subsistence patterns of Algonkian-speaking peoples are also examined briefly in historical context. The unique history of Peguis First Nation is also described, particularly with reference to food acquisition methods. Dietary change and its impact on nutritional status in Canadian Aboriginal populations is presented in Chapter Three, with sections on the influences of food security and maternal dietary behaviours included.

Research design and methodology employed for this investigation is outlined in Chapter Four. The chapter also includes information on project implementation as well as a more detailed description of the study participants. Presentation of the results begins in Chapter Five. The first of the four results chapters describes the various cultural and behavioural patterns of influence prenatally to both age groups. Traditional food consumption patterns are described in Chapter Six, as well as the availability of

traditional foods and their frequency of use. Availability and patterns influencing access to food in general are included in Chapter Seven. The costing of select food items locally are also presented along with Winnipeg prices. Chapter Eight focuses on how the topic of diabetes was discussed among the participants, particularly as it relates to the health of mother and child. The last chapter summarizes these results and discusses their potential impact as well as implications for maternal health care and prenatal programming in Peguis.

Chapter Two

Cultural Context and Historical Background

2.1 Conceptual Framework

As Richard Barnes has asserted, "in no area of biology is the relationship with the social sciences more inclusive, or more critical, than in the nutritional sciences" (Barnes, 1968). The study of human nutrition is a biocultural issue, combining knowledge of required nutrients and their occurrence in foods with all of the social, cultural, economic and ecological factors that are related to food practices (Sanjur, 1982).

The evolution of traditional dietary patterns within a population group has always depended primarily on the ecology of the area, particularly the availability of local food resources (Kuhnlein, 1983). Distribution and use of these resources are generally guided by cultural and religious precepts, along with the integration of other social and economic forces within a community. Therefore this study has adapted a multi-factorial theoretical framework from Jerome et al. (1980) in order to better investigate and understand how Aboriginal women relate to and are affected by their food system and environment.

The framework depicted in Figure 2.1 utilizes an ecological approach to human nutrition and integrates biological, psychological, social, cultural and economic factors which may potentially relate to a woman's requirements for nutrients during pregnancy. Cultural idea systems surrounding what pregnant women eat and their influence on the centre of the model are the focus for this investigation. Although the study will principally examine traditional knowledge surrounding maternal diet and how it has

changed over time, the model as a whole will is of value in helping to determine how these various components work together in influencing dietary patterns.

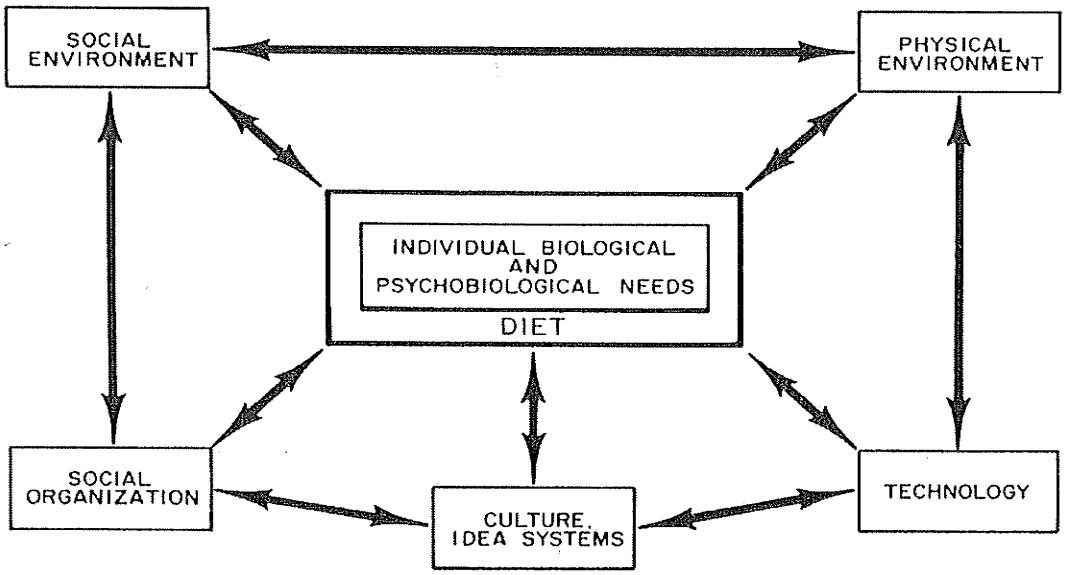


Figure 2.1: Cultural Constructs of Dietary Change - An Ecological Model

This review of the literature will highlight topics illustrative of these various components and will be presented in two chapters. The following chapter falls into sections representative of this holistic framework in order to provide cultural as well as important historical context for the study. History is of significant influence on Aboriginal peoples in Canada, and therefore addresses several factors within the conceptual framework used. Accordingly, Chapter Two will discuss subsistence patterns unique to the population of interest, providing historical background relevant to both the social and physical environments that have shaped dietary patterns for Algonkian-speaking peoples in Canada. A review of the scientific literature published on nutritional status, reflective of dietary change in Canadian Aboriginal populations, will follow in Chapter Three. It includes additional sections on food security issues relevant to

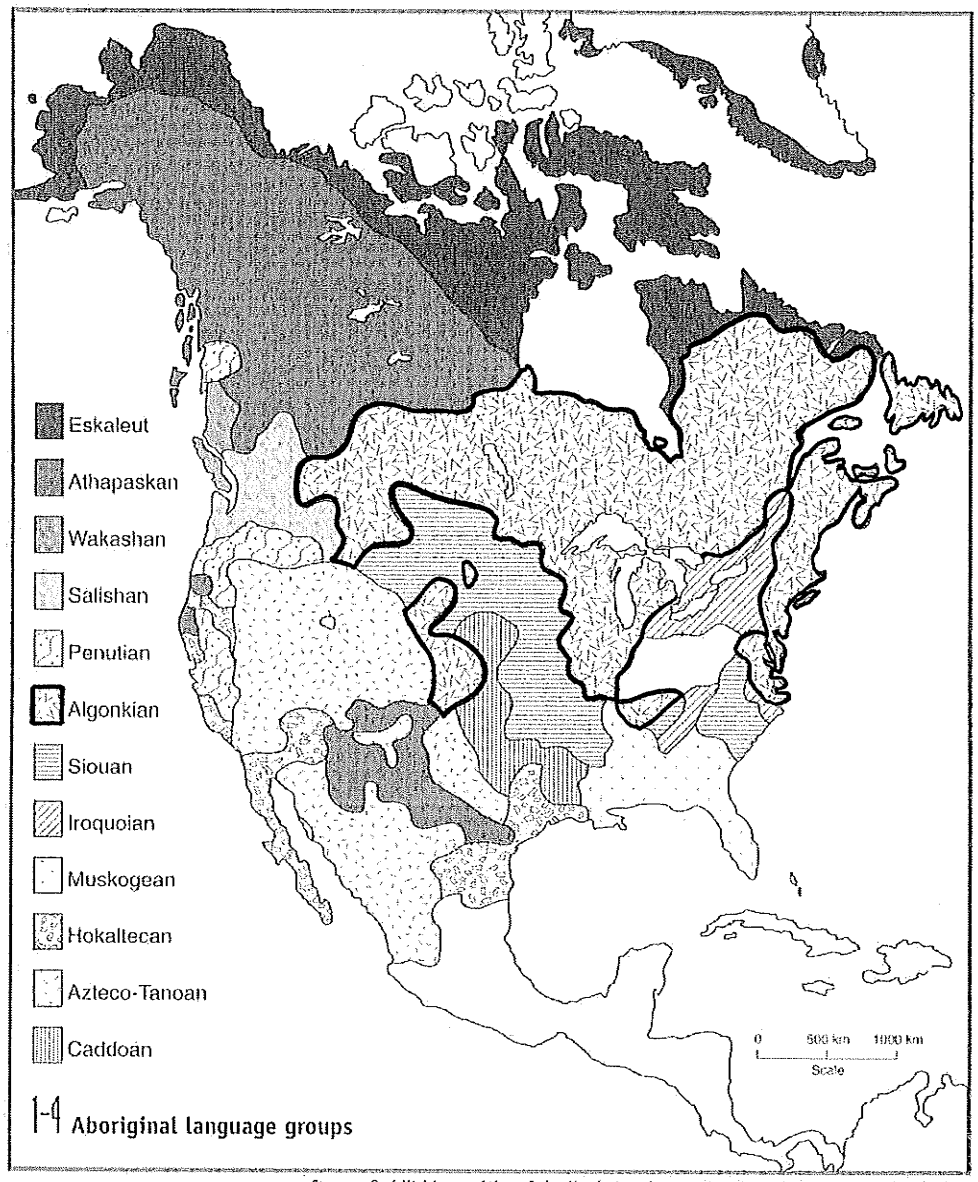
Aboriginal populations, as well as a cross-cultural review of dietary behaviours influencing nutritional intake and maternal health during pregnancy in order to provide context to this investigation, particularly given the lack of research available on maternal diets in Aboriginal populations.

2.2 Dietary Change in Historical Context

Algonkian-speaking peoples traditionally occupied an area of Canada physiographically dominated by the Canadian Shield. As Figure 2.2 illustrates, the entire subarctic region, however, includes areas such as the Hudson Bay lowlands and the East Main lowlands that lie to either side of the shield. Three major vegetation regions are found in the subarctic. They range from north to south and include the tundra or barrens to the north, the mixed boreal forest cover combined with barrens, and the full closed boreal forest in the most southerly regions. The barren grounds were most often seasonally exploited while the boreal forest regions were traditionally occupied on a year-round basis.

For these northern Algonkian-speaking peoples, the principal form of sustenance in the traditional economy has been large game animals. The climate and physiography of the subarctic were best suited to a semi-nomadic existence of hunting and gathering prior to the 1500s. Beginning with the arrival of Europeans at this time, however, and the onset of the Fur Trade, a growing dependence on smaller game for trade directly resulted in altered seasonal cycles and subsistence patterns.

Overall, the entire subarctic region shares similar physiographic, climatic and biological environments. Cultural adaptation patterns, therefore, have evolved towards a



Source: Carl Waldman, *Atlas of the North American Indian* (New York: Facts on File, 1985).

(Dickason, 1997; p.15)

Figure 2.2: North American Aboriginal Language Families

basic uniformity in major aspects of technical and social culture, including subsistence patterns (Helm, 1981). Regional cultural variations that did occur were mainly due to distinctive combinations of possible environmental components. For instance, the natural variation in the population and combinations of floral and faunal species inhabiting

coastal barren regions were ecologically unique compared to those suited to the boreal forest. Most of the Canadian Shield region occupied by the northern Algonkians consists of low, rolling hills interspersed with a large number of lakes, ponds, rivers, streams and muskeg. Of significant cultural consequence are the distribution and size of these water bodies, since areas rimmed with large bodies of water provide excellent fishing and a more plentiful supply of wild plant foods.

Therefore, although socially and culturally the northern Algonkian-speaking peoples may be characterized as being quite similar, each local group would have adjusted its own lifestyle and subsistence patterns to suit its unique environmental conditions.

2.2.1 Annual Cycle and Traditional Subsistence Patterns

For the northern Algonkian, part of adapting to the subarctic environmental and severe climatic conditions involved the adoption of a very pronounced seasonal cycle. The long and extreme winters in the north limited activities considerably, and maximum exertion was required for survival. Variations in weather conditions also affected animal population cycles throughout the year, and thus hunting and gathering techniques needed to be modified accordingly (Rogers, 1973). An example of a traditional yearly cycle is illustrated in Figure 2.3.

Throughout the subarctic shield there was a basic similarity in year-round activities and travel necessary for survival. In winter, residents established small camps once the land and lakes were frozen in areas where game was plentiful. Camp locations could change periodically over the course of the winter and groups would seek out less exploited hunting areas. During this season large game such as moose and caribou were

of primary importance since deep snow impeded the animals' movement, making them easier to capture. Periods of starvation and hunger, however, were not uncommon during the winter months as reserves dwindled and game became more difficult to secure.

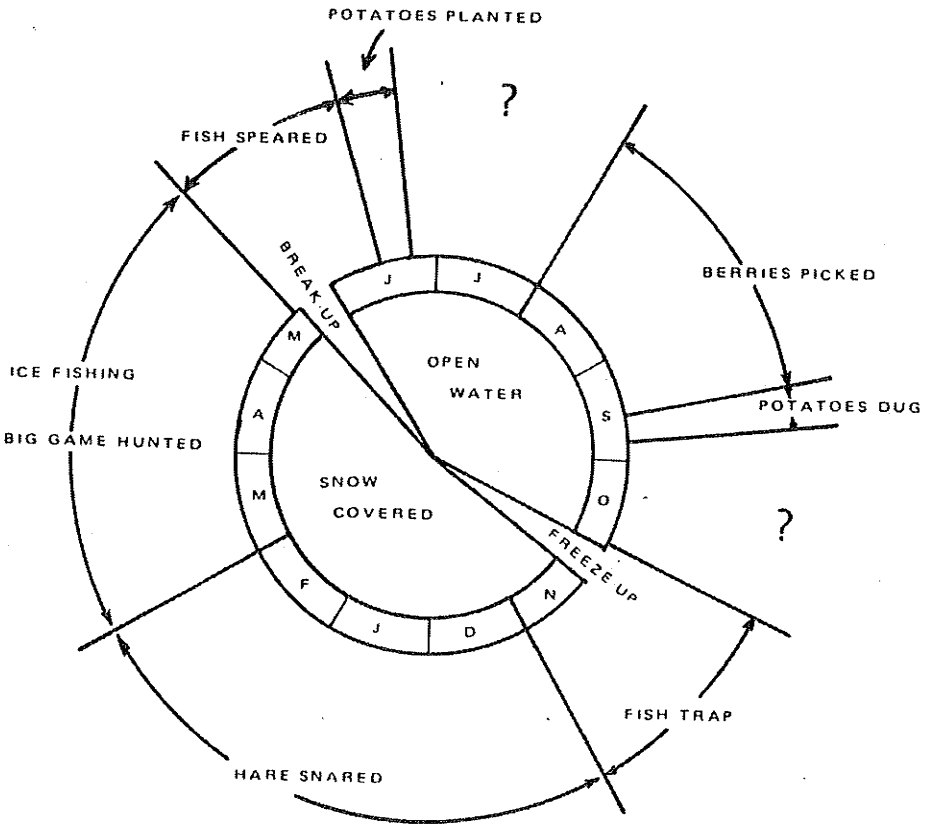


Fig. 8. Yearly Cycle of Subsistence Activities.

(Rogers, 1963)

Figure 2.3: Yearly cycle of subsistence activities

As soon as the ice began to break up on the lakes and the subsequent flooding of the land dissipated, hunting groups began to move back to summer campsites. The migration of waterfowl, such as ducks and geese was of primary significance to subsistence pursuits during this interval. Great quantities were often procured. Fish also

gradually became much more active as the lakes and streams warmed and they were netted easily on the open water.

Large groups of people would gather at summer campsites every year along the shores of lakes and rivers. It was primarily a social time and life was much more sedentary. Fishing and gathering of plant foods became very important. As fall approached, however, people gradually left the shores in their smaller hunting groups in order to seek food stores and firewood to help sustain them during the long, cold winter. Those remaining in the boreal forest moved to streams to catch, smoke and dry whitefish for the winter.

2.2.2 Cultural Impact Eras

The physiography and harsh climate of the subarctic discouraged armed coercion or the forcible removal of Indigenous peoples from their lands in the cause of agricultural conquest. However, once fur was identified as an important source of revenue, the history of European, and later Euro-Canadian relations closely followed the fur trade (Helm & Leacock, 1971).

In boreal Canada, the history of Native-European relations spans five centuries. Beginning in the 1500's in the St. Lawrence River Valley and later following the northern sea passage into Hudson Bay late into the 17th century, the fur-hungry Europeans made their initial contacts with the northern Algonkians. Overall, conditions of life and culture altered slowly over the course of the previous centuries but over the long-term have had an enormous impact on current food systems in Aboriginal communities across Canada.

The year 1670 marked the royal charter of the Hudson's Bay Company and the establishment of five major coastal forts on Hudson Bay by 1685. European contact with

the coastal James Bay Cree was thus early and intense. By the late 1600's Coastal Cree had developed a dependence on a regular supply of imported goods including foodstuffs such as flour and lard (Bishop, 1972). In contrast to the coastal Cree, however, those Ojibwa that had gradually moved further inland remained relatively independent of the traders until the late 1700's. Even though these Ojibwa were also beginning to depend on trade goods, compared to the coastal peoples they had a more reliable food supply of moose, caribou, beaver and fish. Moose and caribou continued to hold primary importance for food in addition to clothing and shelter. As long as large game was present, hunting took precedence over trapping (Laughlin & Brady, 1978).

Increasing competition from traders based out of Montréal forced the Hudson's Bay Company to establish forts inland by the turn of the century. This competition also often resulted in trading incentives for Native trappers, as Europeans offered goods such as brandy and rum to gain the most beaver. Inter-tribal hostilities increased during this period with divisions of the Montagnais and Cree caught up in conflict with the Iroquois and Dakota. Epidemics of European-derived diseases such as tuberculosis, measles and smallpox swept through many of the interior groups and resulted in hunger and starvation as the hunters were rendered unable to secure game (Helm & Leacock, 1971). In addition, as early as 1805, beaver and large game animals began to grow scarce after a period of uncontrolled slaughter. By 1821 these deficiencies became widespread throughout the north, and for the next three decades the Cree and Ojibwa were forced to rely mainly on substitutes for beaver, such as martin or muskrat, to supply their trade wants. Other small game, such as the snowshoe hare, and a variety of fish became important to offset the growing threat of starvation (Laughlin & Brady, 1978). Both the

inland Cree and a number of Ojibwa groups, such as the Saulteaux, began to shift westward in the early 1800's mainly due to the depletion of game and furs further east, but also because of inter-tribal conflicts and disease (Bishop, 1972).

Survival during this era thus became a dangerous balance between the food quest and fur trapping. Although both were essential, the ever-looming presence of hunger often made it necessary to search for sources of food over furs. For the northern Ojibwa, more so than for the coastal Cree, who could depend on large quantities of seasonal waterfowl, subsistence on small game reduced the mobility that had previously been a part of the lifestyle of large game hunting (Laughlin & Brady, 1978). As Charles Mackenzie, Hudson's Bay Company Manager in Lac Seul suggested in 1827:

> *Fish and rabbits became the chief and only food of the natives which binds them to certain spots where they are found in greater abundance.....*[they] *have destroyed all the furred animals within a wide range of these places. Were there large animals to enable the Indians to live and rove in the forests as formerly no doubt they* [would] *collect a number of small furs such as martins, cats and otters in the season when these are of most value but the miserable state of the Country not admits of this.....they cannot live where these animals abound.* (Laughlin & Brady, 1978; p. 219)

The arrival of the Jesuits in the 1630's, saw attempts at conversion of those indigenous to the St. Lawrence river valley combined with attempts to transform them into a more settled agriculturally-based society, similar to the Iroquois and Huron to the south (Helm & Leacock, 1971). Active missionization, however, did not reach the northern Cree or Ojibwa until the 1800's. Missionaries in the north began encouraging Natives to cultivate summer potato gardens, often providing or donating the seed potatoes as early as the mid-1800's. Church missions were also known to give out relief in the form of supplementary foods such as dried beans, peas and milk to families in need (Honigmann, 1961).

Daily rations of fish and potatoes were also given out to those Natives starving and taking refuge at the trading post (Bishop, 1974). As of 1865 it became possible at many posts to exchange pelts for small quantities of store foods. By the late 1870s the quantity of store foods obtained by those Natives frequenting the trading posts (coastal Cree and northern Ojibwa primarily) was increasing, but there was still little variety in the items that were traded or purchased. With the gradual building and final completion of the Canadian National Railway towards the end of the century, the improved supply route helped the HBC to keep a better supply of stock on hand. The new route also provided easier access to their new competitors from the south. With this increased supply, easier exchange and gradually decreasing prices of commodities, by the late 19th century northern groups relied, at least in part, on store bought foods such as : flour, oatmeal, suet/lard, sugar and tea (Bishop, 1972).

Soon after Confederation, the new Government of Canada signed the first of several treaties with Aboriginal peoples of northern Ontario, Manitoba, Saskatchewan and Alberta as well as the Northwest Territories. Reserves were also established at the time of first treaty payments, thereby relinquishing Native land rights to the federal government. Although the fur trade continued to dominate the lives of many northern Algonkians, major economic changes occurred towards the end of the 19th century that made subsistence more secure. Of primary importance was the re-appearance of both the caribou and moose in the boreal forest regions (Bishop, 1974). Store foods also became more readily available and starvation became increasingly rare by the end of the century. The food quest, however, continued to take up a considerable amount of time and energy.

The return of numerous large animals during this period altered subsistence

pursuits somewhat, but smaller game and fish continued to play an important part in the diet. Many more agricultural efforts were observed throughout northern Ontario by the turn of the century, but the crops were almost exclusively potatoes. The northern Ojibwa in particular remained primarily hunters who continued to spend winters away from the store (Bishop, 1972).

Following the end of the Second World War, cultural change resulting from the interaction between Native and Euro-Canadian society was occurring even more rapidly. As early as the 1940's, Native trappers were able to charter airplanes to transport them to their trapping territories. Regular medical services existed in the majority of communities, resulting in population increases through a reduction in infant mortality, and schools were opened on many reserves. New sources of income from commercial fishing, mining and tourism supplemented earnings from trapping. Government allowances such as pensions, family payments, treaty payments and welfare also added to an increasingly cash-based economy (Driben, n.d.). Population growth near former posts and villages began in the north in the 1960's as more families lived semi-permanently in government-built "Indian Affairs" houses (Bishop, 1972).

All of these changes encouraged sedentary town living for the majority of Native populations living in reserve communities with a substantial decrease in the use of wild foods, and in the cultivation of local gardens (Bishop, 1972). In particular, plant foods such as berries lost their importance as dietary requirements. Wild fruit and plants instead seemed to be viewed as more important to traditional medicinal practices. Wild rice was often collected, however, the majority was sold commercially. Smaller game animals, such as the hare were also not as significant to the diet during this period, and more time

was spent in the village during the winter months.

The most important and sought-after Native foods in the 1950's and 60's remained the moose and beaver, particularly for the northern Ojibwa (Rogers, 1962). Waterfowl, ducks and geese continued to exist in abundance during migratory seasons and were important to the coastal Cree. Fish also continued to serve as a staple in the diets of the northern Algonkians, especially during the summer and early fall. Commercial fishing, however, was becoming an important means of cash income. The largest proportion of food during this period was purchased from the store. Flour, sugar, potatoes, lard, rolled oats, bologna, candy and bread were common staples in the diet. Tea, and bannock were also prepared regularly while candy and soda pop were regular treats for most when making a trip to the store (Bishop, 1974). This increasingly strong need for imported food was inadvertently expressed by an older Cree man:

> *I don't think store food alone can keep the people healthy. It doesn't give them enough strength like country food. This time, March 25, 1948, there's nothing to kill and I have to get food from the store. Canned meat, if one uses it, doesn't leave one strong. That's how it is with me. The old people who use bannock very much are not done well by it. It doesn't leave them strong. The best thing for me is a little meat* [-] *fresh meat, bannock and tea every day. Of course not just tea, but also milk and sugar* [sic]. (Honigmann, 1948; p. 100)

2.3 Research Environment

As with many Aboriginal communities across Canada, the history and circumstances of current environmental, political, social and economic states are closely tied to the period of colonialism that preceded them. In examining cultural change in this context, it is important to briefly chronicle some of the past events that have shaped and influenced this First Nations community.

Many of the present Peguis band members refer to themselves as Saulteaux people, linguistically and culturally part of the Algonkian-speaking peoples. Historically, the term 'Saulteaux' has been used interchangeably with 'Ojibwa', particularly when referring to the Aboriginal people settled in the area surrounding Lake Winnipeg (Czuboka, 1960). The current site of Peguis is not only geographically distant, but ecologically much different than the central Ontario region their ancestors are thought to have originated from. This group of people is thought to have migrated from the southeastern shores of Lake Superior, near the city of Sault St. Marie Ontario, towards the end of the eighteenth century. As one historian described, "in the 1780s they had come out of the bush country north of Lake Superior and east of Lake Winnipeg. Like many other *Anishinabek* ("The People" in Saulteaux) bands, they had migrated west, in search of large game for subsistence and fur-bearing animals for trade."(Van Der Goes Ladd, 1986; p. 23)

Once in Manitoba, the band settled south of Lake Winnipeg along the banks of the Red River, near Netley Creek. The environment was well suited to Chief Peguis' band because of the many lakes, channels and muskeg that existed at the mouth of the Red River. Another group of people were also living in the area, having migrated there from Michigan. This band of Ottawas were already involved in agriculture and taught Peguis' group about planting corn, potatoes and the *Midéwewin* (the Grand Medicine Society). As Van Der Goes Ladd wrote:

> *The Ottawas realized that the rich levee soil near the banks of Netley Creek and the extra warmth provided by Netley Marsh and nearby Lake Winnipeg favoured the growing of corn. In 1805 they obtained seed corn from Alexander Henry of the North West Company's post at Pembina and began to plant gardens. Since the fishing was also excellent, the encampment began to resemble the farming and*

> *fishing villages of the Ottawa on Lake Michigan and the Ojibwa near Sault Ste. Marie. By 1808, taught by an old Ottawa named Sha-gwaw-koo-sink, Peguis and some of his band had taken to the ways of their ancestors. They had began to plant corn and potatoes and adopt a village lifestyle.* (Van Der Goes Ladd, 1986; p.49-50)

Cree farmers are also thought to have settled in the same region prior to the arrival of Peguis' band of Saulteaux, having migrated from northern communities such as Norway House and York Factory. The Cree welcomed the Saulteaux, but the newcomers soon achieved and maintained a position of dominance, particularly in their early land negotiations with European settlers (Czuboka, 1960). In 1817 a large parcel of land was conceded to these Selkirk settlers, which failed to give due rights to the original occupants of the land, the Assiniboine and Cree Nations. Tracts of land were, however, set aside for both the Cree and Saulteaux peoples, along the Red River. During this period, buffalo hunting still occurred at least twice a year, supplemented by the river's ample amounts of fish. Although Peguis' band depended on fur traders for trade goods such as firearms and ammunition, they continued an economic autonomy during this period and satisfied their basic needs through hunting, fishing, wild rice gathering and horticulture (Van Der Goes Ladd, 1986).

Coinciding with the arrival of the first Church of England missionary, John West in 1820 and the merging of the Hudson's Bay and North West Companies in 1821, conditions in the colony became more desperate. During the winter of 1823, Peguis' group was reported to be starving. The group of winter hunters had reduced itself to the family unit. Furs and trade goods became individual property. Therefore, these changing societal conditions, combined with game shortages resulted in hunters having to increase their subsistence as well as their fur-gathering activities. Food as well as clothing

materials needed to be purchased from the traders since they were no longer available in sufficient quantity from the land (Van Der Goes Ladd, 1986).

By the 1830s the British Colonial Office had already begun to put forward a policy of assimilation that encouraged Aboriginal people to become settled in permanent villages and be educated in the English language, Christianity, as well as agricultural methods (Cohen, 1994). The Anglican Church Missionary Society was very involved during this period with the Aboriginal people in the area and set up a number of agricultural, pastoral communities (see map of the Red River Colony in Figure 2.4). At the request of the Anglican missionary William Cockran, Peguis became 'Chief' of such an Indian Settlement at Cook's Creek. The community, later to become known as St. Peter's Parish, included a school, mission houses, a church and grist mill. By 1835 Peguis himself owned a cabin, ox, cow, pig, a plow, two canoes and two acres of land (Van Der Goes Ladd, 1986). A Canadian professor visiting the area during the 1850s wrote:

> *The farm attached to the Indian mission is cultivated with more than ordinary care, not being intended to serve as a model for the Christian Indians settled in the vicinity, but also to provide them with seed and potatoes in the event of their own stock failing....asparagus [was] growing luxuriantly, beet, cabbages, broccoli, shallots, and indeed most culinary vegetables. In the farmyard were ducks, fowls, turkeys, pigs, sheep, with some excellent milking cows.* (Czuboka, 1960; p.90)

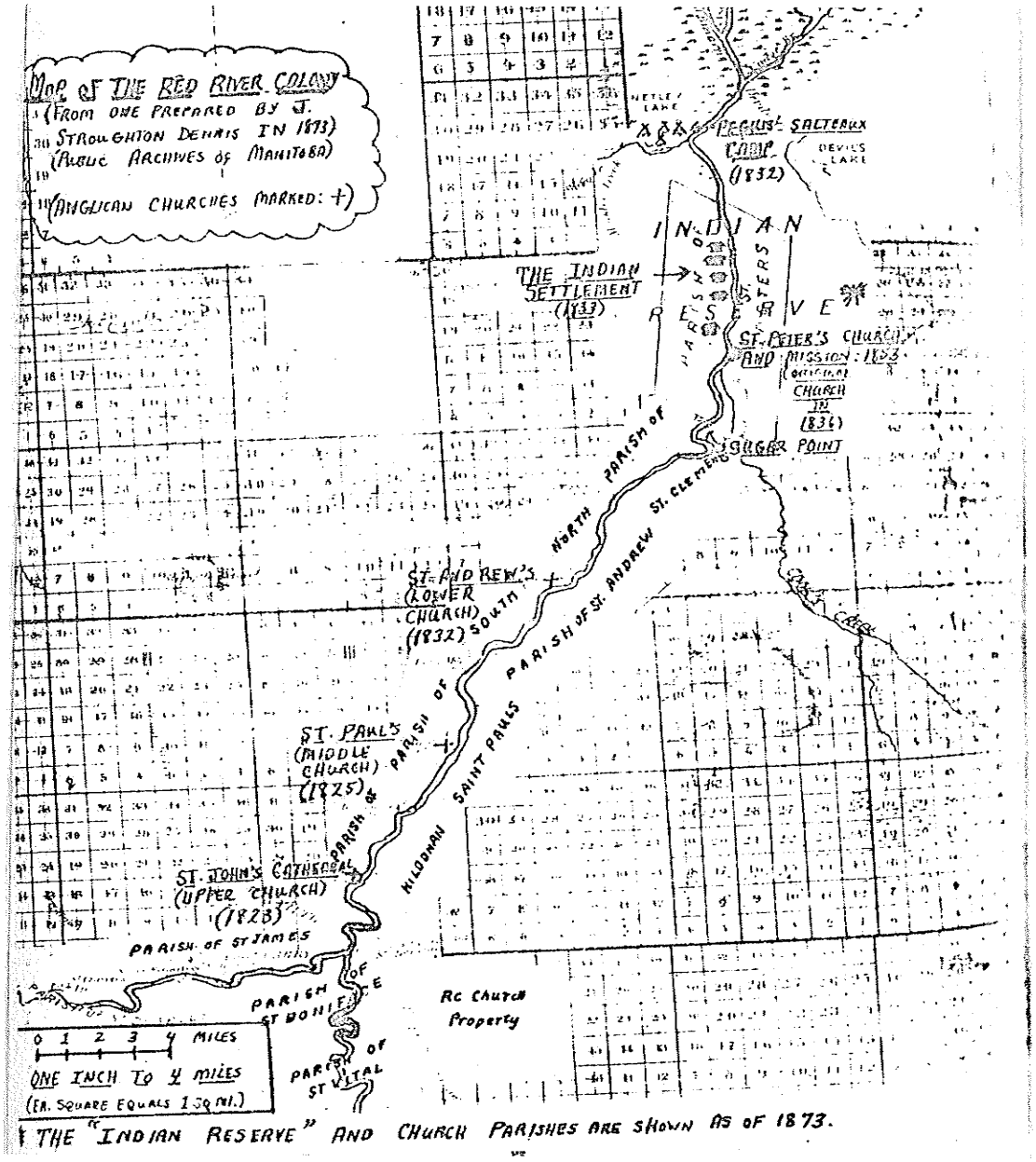
Following the death of Chief Peguis in 1864, however, drought, grasshoppers, epidemics and alcoholism left the missionary station struggling for survival. When Manitoba entered into Confederation in July 1870, the Canadian government began the conclusion of land settlements with various Aboriginal groups in the province. Treaty Number One, signed in 1871, set aside the predominantly Aboriginal settlement of St. Peter's as the original reserve site for the Saulteaux. In 1876, however, the allocated land

was formally divided in two with the Saulteaux occupying the northern half and the Crees the southern portion. European settlers continued to take over land, and more and more Aboriginal groups began a shift away from agricultural practices to hunting and fishing. The reserve locations, however, were located on prime agricultural land, and in 1907, pressure from various politicians and investors resulted in the illegal 'surrender' of the Saulteaux lands to the Canadian government (Tyler et al., 1983).

In 1909, Band members began their journey to the new reserve location chosen for them in the Interlake region of Manitoba (see map Appendix A-1). The new reserve was far more isolated and forested. It was, however, chosen by representatives from the community because of the potential for farming in the area and the abundance of fish in the local river as well as its proximity to Lake Winnipeg. Although the task of clearing land and beginning over was difficult, many families eventually began to work at small-scale farming once again (Thompson, 1973).

The new community of Peguis Number 1B, the site of this study, is the largest reserve in Manitoba, with a total land base of over 30,000 hectares. It is located south of Lake Winnipeg, approximately 145 kilometres directly north of the city of Winnipeg. According to the most recent federal population profiles, the on-reserve population was 3,077 with an off-reserve population of 4,259 as of January 2003 (DIAND, 2003). The community is accessible by all-weather roads and still depends on an economic base of agriculture as well as commercial businesses. According to the 1996 Census, the unemployment rate in Peguis was 18.2 percent with 675 persons employed in the labour force. The majority of those employed in Peguis were working in service industries (93.2%), with another 3.4 percent respectively working in manufacturing/construction

and agriculture (Canada, 1996).



(Czuboka, 1960; p.104)

Figure 2.4: Map of the Red River Settlement - 1873

The economic, social, cultural, ecological and historical background of Peguis First Nation, as well as the overall impacts of colonialism on Algonkian-speaking peoples have been described as being of potentially enormous influence on the dietary and

lifestyle patterns of women in the community today. In order to further illustrate additional factors associated with dietary change in this context, a review of the literature and describing nutritional status and other elements of influence in Canadian Aboriginal communities will be presented in Chapter Three.

Chapter Three

Dietary Change As Reflected By Nutritional Status and Food Consumption Patterns

For Aboriginal populations in Canada, cultural change has been influencing food patterns and hence nutritional status for centuries. As has been outlined, beginning with the introduction of European foods such as flour, oatmeal, lard and sugar, Aboriginal diets began to change dramatically. It was not until the 1940s, however, that scientific journals began to document these changes. Early studies in northern Manitoba and Québec, for example, provided evidence of the signs and symptoms of many vitamin and mineral deficiencies among the Oji-Cree and the James Bay Cree (Moore et al., 1946; Vivian et al., 1948). Further research into the nutritional status of Canada's First Nations populations has appeared sporadically and from widely scattered locations (Wein, 1986). The following section will synthesize as well as comment on the various studies, particularly in relation to the *Nutrition Canada National Survey* conducted in the early 1970s. A review of findings focused more specifically on the nutritional status of pregnant Aboriginal women will also be presented, in addition to other potential influences on food consumption patterns, such as food security and culturally influenced maternal dietary behaviours.

3.1 History of Dietary Change

Pre-contact diets of Aboriginal peoples in Canada appear to have provided energy and nutrient intakes "adequate in all respects" (Sinclair, 1953; p. 79). Prior to the arrival

of Europeans, food patterns were depended upon the subsistence resources available in each ecological zone. If traditional foods were available in enough quantity, nutritional health was good, as the majority of First Nations groups relied upon a variety of mammals, birds and fish along with wild plant foods such as berries, roots and wild greens to sustain them. In contrast to a nomadic northern diet, traditional diets further to the south tended to be higher in carbohydrate, due to the cultivation of a variety of agricultural grain crops, such as corn, by the Iroquois nations. The diets of the majority of northern as well as coastal peoples tended to be higher in protein, with meat from a number of sources as the staple. Wild meats and fish were also comparatively low in fat compared to meat from domestic animals. The content of unsaturated fat is seven times higher, for example, in caribou meat than in beef (Schaefer & Steckle, 1980).

Although essential nutrients appear to have been readily available, the intense seasonal variations described in the previous section may have produced "feast or famine" circumstances accompanied by periods of inadequate caloric (as well as nutrient) intakes for many Aboriginal communities (Moore et al., 1969). Nutrient intakes, for example, were assessed in four Dogrib communities in the Northwest Territories during the month of June as well as for a typical winter day. In contrast to the summer diets, the overall fat intake was lower during the leaner winter months (Szathmary et al., 1987).

Even though the intakes of these various foods may have varied with the seasons, a variety of evidence suggests that the traditional diets of Canada's First Nations peoples provided a higher density of certain nutrients than the store-bought foods used to replace them. For instance, Wein and colleague's study of First Nations peoples living in a remote area of northern Alberta noted the important contribution of traditional or

"country foods" to the overall nutrient intake of the population (Wein et al., 1991). Mean nutrient intakes met Canadian recommended levels for all groups except calcium. Such findings are in very sharp contrast to the *Nutrition Canada Survey for First Nations* as well as for a number of other communities without the same reliance on traditional foods.

Early reports on the changing patterns of traditional food focus on the lack of adequate food supplies, particularly in more remote First Nations communities (Berkes & Farkas, 1978). More recent reports, however, direct concern towards the consequences of introducing highly processed store-bought foods. Many such foods, in addition to being cost-prohibitive, have contributed to a reduction in the use of traditional foods. Such dietary as well as lifestyle shifts have had far-reaching implications for the overall health of many Aboriginal communities in Canada. The transition from ecologically based subsistence patterns to imported foods has led to many nutritionally related health problems (Wein, 1986). Dental caries and obesity are the most observable, in addition to decreased breastfeeding rates (Schaefer & Steckle, 1980).

Native children seem to be the most susceptible to decaying teeth, while the elderly are often the only living testimony to the healthy teeth and gums that were much more common traditionally. Bottle-feeding has gradually displaced breastfeeding as the most prevalent method of infant feeding. The *National Database on Breastfeeding* reported that at the age of three months, 42% of infants were still being breast-fed with breastfeeding rates tending to be higher in northern communities than in the south. Solid foods were also being introduced at an earlier age in the southern communities than is recommended by current guidelines (Canada, 1988). This trend is in contrast to traditional Aboriginal custom that encouraged breastfeeding for the benefit of both

mother and infant. The protection against infectious disease that breast milk provides was documented in northern Manitoba among Native infants. (Ellestad-Sayed et al., 1979) As Schaefer and Steckle (1980; p.6) expressed so well, the "beneficial effects of breastfeeding are not limited to the provision of all essential nutrients in ideal composition, perfect cleanliness and digestibility but most important, human milk contains very important immune bodies against specific and non-specific infectious agents." In addition, recent research supports the assumption that breastfeeding also reduces the risk of Aboriginal children developing type 2 diabetes and thus should be promoted as a potential intervention to control the onset of this potentially chronic disease (Young et al., 2002).

Obesity formerly was virtually unheard of in Aboriginal society. Excess caloric intake in the forms of carbohydrates and fats in addition to the reduction of energy expenditure resulting from a more sedentary lifestyle, have contributed to a major increase in the number of overweight Native people. Obesity has become a major health problem for Aboriginal populations and is also associated with the increased incidence of diabetes and heart disease (Canada, 1994). Studies have also shown an increase in gallbladder disease associated with overnutrition. In particular, Johnston et al. (1977) observed that Micmac women consuming a high carbohydrate, low protein and low fibre diet had a much greater risk of developing gallstones and gallbladder disease than white women.

Specific nutrient deficiencies have also been associated with dietary change. Wien stated that anemia has become more prevalent as imported high carbohydrate foods have displaced substantial proportions of wild meat (Wein, 1986). She goes on to explain that

not only do high carbohydrate foods contain much less iron, they also provide it in a non-heme form that is not as easily absorbed. Native people living in remote areas are even more at risk of malabsorption of non-heme iron due to an increased prevalence of vitamin C deficiency. Vitamin C as well as vitamin A are found in the large quantities of wild greens traditionally consumed by groups such as the James Bay Cree, as is illustrated in Table 3.1.

Table 3.1: Comparison of Commonly Eaten Domestic Vegetables and Fruits with Edible Greens*

	per 100 grams				
Garden Vegetables	**Vit. A (I.U)**	**Ascorbic Acid (mg)**	**Wild Vegetables**	**Vit. A (I.U)**	**Ascorbic Acid (mg)**
Cabbage	130	51	Bistort	800-14,000	158
Celery	240	9	Dandelion	18,708	30-66
Spinach	8,100	51	Fireweed	18,708	220
Green Peppers	420	128	Lyme Grass		43
Peas (raw)	640	27	Mountain Sorrel	8,900	40
Carrots (raw)	11,000	8	Rose Root	4,106	68
Beets (boiled)	20	6	Lambs Quarter	11,600	80
Potato (boiled)	trace	16	Scurvy Grass	4,546	111
Tomato (raw)	900	23	Sea Purslane	5,753	42.5
Orange	200	50	Willow Leaves	18,300	190
Apple	90	4	Violet Leaves	8,258	210
			Cloud Berries	210-235	158-475

* From a report on the Waswanipi Cree by C.S. Farkas& H. Feit (Schaefer & Steckle, 1980)

3.2 Assessment of Nutritional Status

The most extensive investigation to-date on the nutritional status of Aboriginal populations in Canada was conducted between 1970 and 1972 by the Federal Government as part of the *Nutrition Canada Survey* (Canada, 1973). First Nations members of 29 bands, a sample of approximately 1,800 participants, contributed to the "Indian" portion of the survey. Some controversy exists, however, as to how well First

Nations populations were represented in the study since the response rate was only 30%. With such small numbers, it was difficult to accurately generalize and make comparisons between the northern and southern populations. The overall results were also rendered less conclusive with nutritional problems possibly being underestimated (Moffatt, 1989). Regardless, the survey still marks the most comprehensive analysis to-date, and it is therefore appropriate to serve as a basis of comparison with more recent investigations.

The nutritional problems primarily identified by Nutrition Canada were iron, calcium and vitamin D deficiencies. Although median intakes for iron were similar to the national pattern, hemoglobin levels were lower among First Nations teenage boys and women compared to the overall national values. Each Native group, especially young infants and children, also had below normal transferrin saturation levels. Almost half of the Native women (41.4%) and 16.5% of men had insufficient calcium intakes. In fact, the intakes of calcium for every group were lower than the national average. Median values representing vitamin D intakes also fell consistently below the overall Canadian sample. Children under five had intakes in the marginal range while older children, adolescents and pregnant women were below the level of adequacy.

The national survey also identified the growing problem of obesity and rising serum cholesterol levels. Ponderal index values of <12.5 were reported for both adult males and particularly for adult females. Serum cholesterol levels, although generally lower than for the general Canadian population, were high in elderly men. Proportionately more First Nations women than men had elevated levels.

3.2.1 Dietary Intake

Overall, the findings of the *Nutrition Canada Survey* mirrored the results of a

number of earlier dietary studies. Two separate studies that took place in coastal and interior British Columbia had reported the low intakes of calcium (Dong & Feeny, 1968; Lee et al., 1971). Diet histories and three-day dietary records revealed Kwakiutl school children had significantly lower calcium intakes than their non-Native peers. Lee and colleagues also reported low calcium intakes, with children and adolescent females being particularly at risk. Both studies attributed these findings to low milk and milk product consumption patterns responsible for these findings. Levels of vitamin A were also noted to be low in both studies. Vitamin C intakes were also low among the Kwakiutl children surveyed. Iron deficiency was a concern for the interior community of Anaham, particularly among women.

Since 1972, little nutrition research has been conducted in Canadian Aboriginal communities (Moffatt, 1989). Investigations into dietary intake, however, report many of the same findings of the national survey. In Shubenacadie, Nova Scotia, one study compared nutrient intakes and meal patterns between Micmac and Caucasian women (Johnston et al., 1977). Diets of Native women had a higher carbohydrate, lower protein and fibre content. Although Native women also had a lower energy intake than non-Native, 52.2% of Micmac were classified as obese compared to 40% of Caucasian women. Over one-third of the Native women also had low intakes of calcium, iron, vitamin A, riboflavin, thiamin and niacin.

Dietary intake studies conducted in the province of Manitoba showed similar findings, with the addition of vitamin D deficiency. Two surveys conducted in the Island Lake area of Northern Manitoba found vitamin D to be particularly lacking in the diets of children, infants and pregnant or lactating women (Ellestad-Sayed et al., 1981; Lebrun et

al., 1993). Based on the 24-hour recalls collected over three seasons, three-quarters of the preschool children living at Cross Lake and Garden Hill had low vitamin D intakes. More than half of the children consumed less than the recommended level of iron and also had low intakes of thiamin, pyridoxine, folate and calcium. Lebrun and co-investigators concluded that lack of formula or milk after weaning and low levels of vitamin D supplementation for the breast-fed infants and their mothers have resulted in below normal range serum 25-hydroxyvitamin D levels for 43% of infants and 76% of mothers. During the late 1980s and early 1990s, further research was conducted in northern Manitoba. In 1981, 24-hour recalls were administered to women and school-age children (Sevenhuysen & Bogert-O'Brien, 1987). The researchers found many of the children deficient in calcium, vitamin A, iron, vitamin C and thiamin intakes. A significant proportion of women surveyed were considered deficient of the same nutrients with the exception of thiamin. In three northern Manitoba Cree communities affected by the Churchill River Diversion project, 24-hour recalls were conducted during the fall and winter by Campbell and colleagues (1994). The nutrients of primary concern for a population of adult males and females between the ages of 16-74 years were calcium, iron, vitamin A, vitamin C and folate. Elderly men and women tended to be most at risk for inadequate calcium and vitamin A levels, while more young women (16-45 years) had inadequate iron intakes.

Eleanor Wien has been the primary investigator of nutrient intakes for Aboriginal populations in Northern Alberta and the Yukon (Wein et al., 1991; Wein et al., 1992; Wein, 1995). Repeated 24-hour recalls were obtained from three age groups of Aboriginal and Métis residents of Wood Buffalo National Park. Upon analysis, calcium

intake was of primary concern with 59% having deficient intakes. The study found low Vitamin A and folate levels in middle-aged and older adults. Vitamin C and D intakes were also inadequate for men and iron for women as was dietary fibre for all groups. Four 24-hour recalls were also administered to Native school children and their mothers in two northern Alberta communities. One group of children was participating in a school lunch program that regularly included dairy products on its menu. Children benefitting from the school lunch program therefore consumed significantly more calcium, vitamins A and D than their peers. In the Yukon, nutrient intakes of Aboriginal men and women from four distinctly remote versus urban communities were studied. Many adults were found to be at risk of inadequate intakes of folate, calcium, vitamins A, D, C and zinc. Men were potentially at greater risk in addition to the elderly. Nutrients associated with lean meat were found to the greatest degree in the remote communities, while urban diets reflected an increased consumption of fruit, vegetables and dairy products.

3.2.2 Clinical and Anthropometric Measures

The first nutritional "survey" undertaken in Manitoba was almost exclusively clinical in nature, although Hudson's Bay Company records were also examined for "food purchased during the year 1941 by several hundred Indians in the area studied" (Moore et al., 1946; p.228). Although the authors acknowledged that they were not able to identify a "single classic deficiency disease" (p.231), physical abnormalities of the conjuctivae, ocular limbic blood vessels as well as the tongue and gums were observed in almost all participants examined. The authors therefore postulated these tissue changes were due to vitamin A, riboflavin, vitamin C and niacin deficiencies. During the same period, Corrigan (1946) did, however, document a clinical case of scurvy in one of the

same communities investigated. A similar study was conducted with the James Bay Cree population in 1947 (Vivian et al., 1948). Researchers compiled records of foods obtained from the stores and mission as well as an estimate of foods taken from the land. Anthropometric measurements were taken along with a physical examination. Overall, researchers found nutrient intakes to be adequate with the exception of calcium and vitamin C. Anthropometric results revealed a large proportion of children and young women were underweight. Clinical observations included lesions in the area of the mouth suggestive to the authors of riboflavin deficiency. Thickening of the conjunctivae and pterygia was also common and associated with a lack of vitamin A. In addition, examinations revealed small goitres in 5.3% of those examined, primarily in young women. Far-advanced nutritional disease, with the exception of obesity was, in contrast, rarely observed in Aboriginal communities participating in the *Nutrition Canada Survey* (Canada, 1975).

A number of purely anthropometric studies appeared during the late 1960s and 70s. One investigation examined the heights and weights of "Indian" and "Eskimo" school children on James Bay and Hudson Bay and compared them with the results for Mohawk Natives living on the Tyendinaga Reserve in Southeastern Ontario (Partington et al., 1969). Mohawk children were found to be the tallest and heaviest next to the James Bay Cree, with Inuit children being the smallest for both weight and height. Anthropometric measurements and physical examinations were also conducted in British Columbia and the Yukon (Birkbeck et al., 1971; Lee & Birkbeck, 1977). On two reserves in coastal and interior B.C., physical signs associated with nutritional deficiency were infrequently observed. The statures of children and adults measured on both reserves

were found, however, to be "less than would be expected from North American Caucasian standards" (Birkbeck et al., 1971; p. 413). Triceps skinfold thicknesses indicated that female obesity was prevalent, particularly among the Anaham women from inland B.C. Similar examinations and measurements were carried out among Athapaskan Natives in two locations in the Yukon as well as at six reserves in northern British Columbia. Again, few physical signs were found to indicate nutritional deficiencies. Among the three populations, there were also no marked differences in anthropometric parameters measured. Adult stature was again shorter compared to non-Native standards, but all were similar in height to other British Columbia Native populations studied. The mean skinfold thickness of Yukon women was found to be greater than that of the men, but the overall values did not reach as high as those found previously in Anaham, British Columbia.

Nutrition Canada completed an Anthropometry Report in 1980 to follow up from the previous national survey (Canada, 1980). The report compiled weight and various stature measures as well as ratios for First Nations and Inuit groups. In most cases the values were compared to each other and the overall national data. Height differences between the Aboriginal participants and national data for males and females were found to be negligible. Frequency distributions for weight, however, revealed distinct patterns for male and female Natives. Aboriginal men were significantly lighter than the Canadian group until the age of 40. A substantial weight gain of more than 6 kg then followed, with a dramatic decline past the age of 70. The comparative mean curves show that particularly following the age of 25, First Nations women tended to be heavier than American, Canadian and Inuit groups. Mean difference in weight recorded between First

Nations and Inuit women was found to be 13 kg.

3.2.3 Biochemical Analysis

The earliest studies that included measurement of biochemical parameters of nutritional status focused on First Nations populations in western Canada. In 1951, hemoglobin levels were measured and compared by sex and age for five First Nations communities located in northern Manitoba (Millar, 1952). Although fairly adequate hemoglobin levels were found for both men and women following the age of seven, a large proportion of children from the ages of six months to two years were labeled as anemic. Prolonged milk feeding and a delay in the addition of solid food to children's diets were identified as the prime factors in the low hemoglobin levels among children under two. Poor iron status in Aboriginal communities in Saskatchewan, British Columbia and the Yukon has also been documented by a number of authors (Best et al. 1959 &1961; Desai & Lee, 1971 & 1974). The lowest hemoglobin levels in two northern Saskatchewan communities were found in children between 11 and 24 months of age when compared to controls in Regina. Serum vitamin A and ascorbic acid levels were also found to be low (Best, 1959). Hemoglobin, hematocrit, plasma iron and transferrin saturation were used to identify low iron status among Aboriginal communities at Ahousat and Anaham, British Columbia. Plasma vitamin A, ascorbic acid and carotene values for both populations were, however, satisfactory. Levels of plasma cholesterol in those 13 years of age and up on both reserves were elevated for a large number of residents (Desai & Lee, 1971). In the Yukon, transferrin saturation values were lower than acceptable for the majority of children in the two communities surveyed. Hemoglobin and hematocrit levels for women and children were in the "normal" ranges.

Close to half of the male participants in the community of Upper Liard, however, had low levels of both hemoglobin and hematocrit. For 60% of the participants, plasma vitamin C values were below normal. More than half of the total population surveyed at Upper Liard and 75% of the children in the other community of Ross River had low plasma vitamin E levels (Desai & Lee, 1974).

Following the *Nutrition Canada Survey*, a number of other studies were published that utilized biochemical parameters to evaluate the nutritional status of a number of Aboriginal populations. Iron status was the focus of a national study that utilized serum ferritin to determine body iron stores (Valberg et al., 1979). Iron deficiency anemia was found in only 3% to 4% of the participants assessed. From an analysis of serum ferritin values, however, iron stores were found to be significantly reduced in children, adolescents and young women. The prevalence of anemia in Aboriginal children was also investigated in northwestern Ontario (Whalen et al., 1997). Children from 6 to 24 months of age were found to be at greatest risk of anemia with prevalences ranging from 52% to 80%. This however was not a representative survey of children since only those already in acute care were sampled, rather than from the larger population. The results may therefore overestimate the problem.

Vitamin D nutritional status was investigated biochemically among preschool children in northern Manitoba (Dilling et al., 1978; Haworth & Dilling, 1986). Serum alkaline phosphatase (ALP) activity was used as a method of screening in the communities of Garden Hill and Cross Lake. Twice the percentage of children at Garden Hill had raised ALP levels, particularly in children over 9 months of age. Three cases of rickets were also found at Garden Hill (Dilling et al., 1978). From 1972 until 1984, 48

cases of vitamin-D-deficient rickets were documented at Winnipeg Children's Hospital (Haworth & Dilling, 1986). Smith (1999) also reported 20 cases of clinical rickets in the Island Lake region of northern Manitoba.

The nutritional status of James Bay Cree men and women in three communities in northern Québec were also assessed biochemically (Hoffer et al., 1981). No significant difference was observed among the three communities. The results were similar to the *Nutrition Canada Survey* with the exception of even lower serum concentrations of ascorbic acid and vitamin A. More recently, between 1989 and 1991, plasma vitamin A and retinol-binding protein were assessed in newborns and their mothers in northern Alberta with Native and non-Native participants (Basu et al., 1994). More than one-third of full-term newborns had inadequate plasma vitamin A concentrations at only 50-60% of the values found in their mothers at delivery.

Still, however, the most comprehensive biochemical analysis of nutritional indicators to-date was carried out in the early 1970s by Nutrition Canada. Many of the problems identified in the *Nutrition Canada Survey* have also been confirmed by much smaller scale studies conducted over the past two and a half decades. Specific nutritional deficiencies among select Aboriginal groups have also been identified, most notably calcium, iron, and vitamins A, D, and C for Aboriginal women. Obesity has also been shown to be of concern. Wein (1986), however, contends that even though these nutritional concerns have been identified, there remain few detailed reports of nutritional status. Those studies that are available are from widely scattered segments of Aboriginal populations and the majority of investigations have also taken place in the north. The nutritional status of pregnant women, for example, has been significantly overlooked.

Nutrition Canada data pointed to low energy intakes for pregnant women, as well as inadequate levels of vitamins A, C, D and calcium, iron and folacin. Since the *Nutrition Canada Survey*, only five published papers have attempted to evaluate the nutritional adequacy of maternal diets in Aboriginal communities across Canada. Results similar to those reported on by Nutrition Canada were revealed. Vitamin D was of concern prenatally for Aboriginal women in the Northwest Territories (Waiters et al., 1998) and northern Manitoba (Lebrun et al., 1993; Haworth & Dilling, 1986; Smith, 1999). Insufficient dietary intakes of calcium and iron were uncovered in the Northwest Territories (Godel et al., 1992;Waiters et al., 1998). Lawn and colleagues (1998) also reported low levels of folacin, calcium and vitamin A among pregnant Inuit women, particularly those on social assistance who were described as being most "nutritionally vulnerable" (p. 198).

For many of these dietary studies, daily food consumption of individuals is the most popular method employed. Results of such analyses are not always directly comparable. Studies which employ a combination of methods which more accurately allow the assessment of food intake of groups of individuals are far more valuable (Wein, 1994). Qualitative analysis, in addition, provides a much more detailed and descriptive examination of nutritional adequacy, particularly as it relates to dietary behaviours as well as factors influencing food selection and purchasing patterns.

3.3 Food Security

Nutritional status and health are often closely associated or dependent on a number of socioeconomic factors, such as income, which influences food purchasing

patterns and hence household food security. The nutritional well-being of population groups such as females, lone parent families and Aboriginal people have been identified as being particularly at risk of food insecurity (FAO, 1997). At the International Conference on Nutrition, jointly sponsored by the World Health Organization (WHO) and FAO (the Food and Agriculture Organization) in 1992, Canada participated in the endorsement of a *World Declaration on Nutrition* and a *Global Plan of Action for Nutrition*. The *World Declaration on Nutrition* affirms that "access to nutritionally adequate and safe food is a right of each individual." (Health and Welfare Canada, 1996; p. 25) The FAO-sponsored World Food Summit held in November 1996 provided an opportunity for Canada to reinforce a commitment towards addressing global hunger; including the recognition that an adequate domestic food supply does not guarantee nor ensure appropriate food distribution, particularly to vulnerable populations. As Agriculture Canada documents contend, despite the generally high level of healthy food supplies in Canada, disparities nonetheless exist (1996a; 1996b; 1996c).

Food security refers to the state in which all people, at all times, have access to safe, nutritious, and personally acceptable food in a manner that maintains human dignity (Canadian Dietetic Association, 1991). It applies to situations of actual food shortage, in addition to the fear of being unable to provide or acquire foods that are acceptable to individuals based on physiological as well as psycho-social needs (Campbell, 1997). This definition recognizes poverty as a major cause of food insecurity and that the eradication of poverty is an essential measure in improving access to food at all levels and by a variety of populations.

Table 3.2: Distribution of Food Banks in Canada, 1981-95

	1981	1984	1988	1991	1994	1995
Newfoundland			1	17	24	20
Prince Edward Island			2	3	5	5
Nova Scotia		2	8	27	32	31
New Brunswick		2	27	40	40	44
Québec		2	5	11	8	8
Ontario		4	19	88	175	174
Manitoba		1	1	4	14	14
Saskatchewan		5	5	11	19	19
Alberta	1	12	16	40	63	61
British Columbia		47	42	51	73	76
NWT					2	2
Yukon					2	2
CANADA	1	75	126	292	457	456

(Riches, 1997)

Hunger, or food insecurity, has become a serious issue in Canadian society. The existence of inequalities in the Canadian food distribution system became dramatically apparent with the opening of a food bank in Edmonton, Alberta during 1981. By 1985, 94 similar institutions providing emergency food assistance to Canadians had emerged across the nation. In fact, heading into the late 1990s, food banks outnumber McDonald's franchises in Canada by a ratio of three to one as is illustrated in Table 3.2.

Food banks, however, do not alleviate food insecurity, nor can they guarantee nutritional adequacy. Food security requires that a reliable food distribution system must not only exist, but everyone must also have access to it. As has been stated, Aboriginal persons across Canada have also identified food security as being a problem in their communities. According to the Aboriginal People's Survey, almost half of all respondents over 15 years of age reported that food availability was a problem at least once or twice a month (Statistics Canada, 1993). Lawn and Langner (1994a & 1994b) also reported that 31% of Aboriginal women in Fort Severn, Ontario and 68% in Pond

Inlet, N.W.T. were concerned that there was not enough food in their households during the previous month. Most of the formal study on the cost and availability of food in Aboriginal communities, however, has taken place in northern communities without year-round road access. Food access for Aboriginal peoples living in urban settings has also been investigated in Canada. Even though the present investigation took place in a more southern community with road access, studies that have described food security issues in northern Manitoba as well as for Aboriginal persons living in Winnipeg will be presented briefly to provide a basis of understanding for the current study.

3.3.1 Northern Food Supply

Especially in northern regions of Canada, high food costs and reduced access to traditional or "country" foods threaten food access and availability primarily for Aboriginal communities. Although the federal government routinely monitors food prices in southern urban centres in order to establish a Consumer Price Index for Food, they have not done so with prices in the north (Campbell, 1997). In northern Manitoba, however, food prices were compiled by the Manitoba Bureau of Statistics (MBS) in eight First Nations communities. The Awasis Agency (AA) has priced foods in 19 communities north of 53° latitude in order to assess appropriate rates for foster care compensation. Campbell (1997) also compiled food prices in select northern Native communities as part of a larger study. These combined results are presented for comparison as a percentage of Winnipeg food prices in Table 3.3 below.

Although it is difficult to compare these price lists directly due to their various sources, it is important to note that MBS prices in 1994 were 54-76% higher than in Winnipeg. Food costs compiled by the Awasis Agency in 1993 averaged 59% higher.

Food prices tended to be the highest overall in communities without access to all-weather roads.

Table 3.3: Food Prices in Northern Manitoba Compared to Winnipeg Prices

Community	Manitoba Bureau of Statistics (1994)	Campbell (1997)	Awasis Agency (1993)
Thompson	14	–	11
The Pas	17	–	–
Norway House	21	–	27
Grand Rapids	21	13	–
Cross Lake	22	–	30
Split Lake	–	–	39
Nelson House	–	–	42
South Indian Lake	35	–	–
York Landing	–	–	51
Ilford	–	37	54
Brochet	–	64	67
God's Lake Narrows	67	–	67
Little Grand Rapids	–	55	–
Berens River	54	–	–
St. Theresa	–	56	68
God's River	–	–	70
Oxford House	–	60	71
Shamattawa	–	76	75
Wasagamack	–	69	76
Island Lake	76	–	–
Tadoule Lake	–	79	80
Garden Hill	–	67	84
Red Sucker Lake	–	71	87
Lac Brochet	–	79	88

(Adapted from Campbell, 1997)

The accessibility of country foods is also an important factor in assessing food security in northern as well as southern communities. As Bob Epstein from the Grand Council of Crees has stated: "Neither the FAO document nor Canada's Country Paper address the world's non-arable lands and their importance to the food security of

indigenous peoples" (Agriculture Canada, 1996b; p.6). He goes on to emphasize that a rising dependency on expensive southern food supplies for indigenous northern peoples is drastically limiting the use of traditional foods from the land. Environmental destruction and the contamination of these country foods have greatly limited their use in a number of northern communities. The effect of hydroelectric development on the food supply in northern Manitoba, for example, has been investigated. Although hunting, trapping and fishing were considered important activities in the communities studied, between 45 to 62% of those surveyed indicated that they had changed their food habits. Reasons cited were that fewer fish and wild meat were available. There was also concern over mercury levels in fish. An increased reliance on foods purchased from local stores was also indicated by Campbell and colleagues (1997).

3.3.2 Urban Circumstances

Low incomes, inadequate social assistance and high rates of unemployment on reserve as well as in many Canadian metropolitan centres also contribute to food access issues for First Nations, Inuit and Métis peoples (Campbell, 1997; Sinclaire, 1997). The *Aboriginal Health Survey* (Statistics Canada, 1991) indicates that for Aboriginal adults age 15 and over across Canada, 54.2% receive less than $10,000 yearly total income. Close to 30 % of those surveyed reported receiving social assistance of some kind. In urban areas such as Winnipeg, 31% depend on social assistance, while half of the population reporting Aboriginal identity claim an employment income of less than $10,000 per year. Average estimated yearly incomes in inner city Winnipeg have therefore not changed much since those reported in 1979 by the Institute of Urban Studies at the University of Winnipeg (Clatworthy, 1980).

Results from a study that investigated barriers to food procurement for Aboriginal women in an urban setting stressed that when comparing low-income with Aboriginal populations, the history, culture and adaptation of Native people must be considered (Sinclaire, 1997). The developments of Aboriginal adaptation in a Canadian urban context must therefore be understood at the historical as well as political and economic levels. Many of the unique barriers to food procurement faced by Aboriginal people in an urban context were incorporated into a theoretical model (see Appendix A-2). The diagram reveals many circumstances unique to Aboriginal women in an urban setting which may also be applied to women living in a southern First Nations community, such as Peguis. As Sinclaire describes, barriers related to financial insecurity are experienced by many Aboriginal women living in Winnipeg. A unique "obligation system" often imbedded in Aboriginal culture is often an issue. In addition to difficulties related to inadequate transportation or childcare, visiting relatives may expect to be fed while staying in the city no matter the household's economic constraints. Food supplies purchased for the month would quickly be depleted, forcing urban Aboriginal families to resort to food banks, borrowed money, or the pawning of durable goods in order to survive. In extreme circumstances, families would secretly move to a new location without notifying family members or refuse to install phone service in an attempt to reduce communication with relatives who might be traveling to the city (Sinclaire, 1997).

3.4 Food Health Beliefs

Sinclaire's use of qualitative methods provided detailed descriptions of Aboriginal women's beliefs and perceptions on factors affecting household food security.

A few other authors have also examined Aboriginal people's food preferences and thoughts linked to nutrition and health. Wein and colleagues, for example, examined food preferences and their potential nutritional implications for Aboriginal populations in northern Alberta. An initial study of men and women, representing three generations, was conducted to ascertain and compare food preferences between age groups (Wein et al., 1989). Traditional foods, such as wild meat, fish and wild berries were reported as having the highest value for health and were also generally the best liked. Young people, however, tended to be more skeptical than their elders of the health value of traditional foods but were more aware of the limited nutritional value of store-bought snack foods. A second study focused on health perceptions among school children and their mothers (Wein et al., 1993). These study participants, however, did not show as strong a preference for traditional foods compared to marketed items. A combination of foods such as milk, apples, orange juice, bannock and moose meat were considered of highest health value among both children and mothers. Both age groups also indicated foods such as potato chips and soft drinks were of low health or nutritional value.

A series of qualitative investigations also examined Aboriginal groups' perceptions of health and illness, mainly in association with the rising incidence of type 2 diabetes in many communities. Lang was one of the first to describe food beliefs and dietary preferences collected from a Sioux community in North Dakota (Lang, 1985). Modern foods, such as "canned and store bought foods" (p.254) were described as being "unhealthful" by the community members, compared to more traditional foods that hold much higher cultural esteem or status. As Lang describes, "traditional foods and medicinal plants and wild game represent purity, healthfulness and strength-symbols of a

pre-reservation (and pre-European) life and culture." (Lang, 1989; p.310)

In a First Nations community in southern Manitoba, Garro encountered similar perceptions surrounding the role of food in health (Garro, 1995). Each participant in her study generally attributed the onset of type 2 diabetes to certain types of food. Too much sugar, alcohol, fat and being overweight, for example, many felt could result in diabetes. Store bought foods, such as processed, "junk", or canned foods were described as being particularly unhealthy. Individuals also discussed the gradual change in eating habits since the introduction of these unhealthy contemporary foods, which were generally perceived as being of an inferior quality compared to wild foods. Sickness, such as diabetes, was not associated with diets long ago that mainly consisted of culturally familiar foods such as wild vegetables, fruits and meats.

3.5 Maternal Dietary Behaviours

Food is always defined culturally, in that often powerful cultural elements shape food selection throughout the life-cycle. Various prescriptions and proscriptions, for example, may be directly related to the circumstances of individuals with regard to what they are, or are not to eat (Murcott, 1983). Altered bodily states such as pregnancy are associated with unique dietary patterns. Changes in appetite and perceptions of food, are intimately connected with the bodily experiences of pregnancy. Various cultural groups also exhibit practices and customs related to their unique belief systems surrounding nutrition and health. The sum of these attitudes, beliefs, customs and taboos affecting the diet of a given group is what is defined as food ideology (Fieldhouse, 1986). It is also simply described as what people think of as food, including how a particular food may

affect their health as well as certain foods that are suitable for different demographic groups. In any society, food belief systems are influenced by a complex set of cohesively held group attitudes and values. These systems may also be closely associated with ideas of illness, health, age as well as physiological states such as pregnancy (Sanjur, 1982). Since very little formal literature was discovered that discusses the maternal dietary practices of Aboriginal women in North American, a cross-cultural review of relevant publications will be presented.

3.5.1 Psychological Aspects and Preferences

Food consumption during pregnancy, in addition to being influenced by physiological needs as well as social needs and pressures, may also be connected to emotional needs and sensations. Patterns of eating behaviours can adapt to relieve anxiety or tension in addition to providing security and comfort (Fieldhouse, 1986). Foods often acquire particular associations, which greatly determine their categorization as pleasant or unpleasant. These judgements or perceptions regarding food acceptability or non-acceptability are often quite pronounced throughout a woman's pregnancy.

3.5.1.1 Aversions

A food aversion implies more than simple unacceptability or avoidance. The term aversion suggests an active distaste for a certain food or foods (Fieldhouse, 1986). In the psychological literature the majority of persons learn food aversions through the unpleasant physical experience of an illness, particularly if gastrointestinal in nature (Garb & Stunkard, 1974). Nausea commonly experienced during the first trimester of pregnancy is one of the reasons cited by women for the rejection of certain foods. A number of investigations into the dietary preferences of pregnant women began during

the 1950s. In the United Kingdom the responses from a B.B.C. program on pregnancy were compiled. Overwhelmingly aversions cited by the majority of women included tea, coffee and smoking (Harries & Hughes, 1958). Aversions compiled during the 1970s and 1980s in England, Scotland and Wales also included tea and coffee, in addition to alcohol, meat, fish, poultry, eggs, vegetables, spicy and fried foods (Dickens & Trethowan, 1971; Stewart et al., 1988; Murcott, 1988).

Findings in the United States were similar for the majority of Caucasian women participants of several research studies. Again, meat products, eggs, caffeinated beverages and fried foods were indicated as those foods most avoided during pregnancy (Hook, 1978; Schwab & Axelson, 1984; Tierson et al., 1985). White adolescent females from Tennessee who were between the ages of 11 to 17, however, reported an aversion to pizza in addition to the foods previously itemized (Pope et al., 1992). The effect of cultural choices on food selection during pregnancy was also investigated among Black, Cambodian, Hispanic and White women in California. A significant number of African-American women reported aversions to pickles during pregnancy (60%), while smaller proportions of Hispanic and Cambodian women claimed aversions to chili peppers and pigs' feet, respectively. Black as well as white women more commonly cited unfamiliar foods such as fermented fish as aversions, Cambodian and Hispanic groups customarily avoided peanut butter (Coronios-Vargas et al., 1992).

Three other distinct cultural groups were investigated for food aversions during pregnancy. In Italy, unpleasant foods mentioned were white wine, cakes and desserts, fish, fried foods, coffee and meat (Alberti Fidanza et al., 1986). Women in Saudi Arabia also reported the avoidance of caffeinated beverages and meat (Al-Kanhal & Bani, 1994),

while pregnant Jamaican women changed their preferences for chicken as well as starchy staples such as rice, dumplings and sweet potatoes (Landman & Hall, 1983). A complete listing and comparison of aversions may be found in Table 3.4.

Table 3.4: Summary of Aversions Cited

Study Origins	Food Aversions
United Kingdom ▪(Harries & Hughes, 1958) ▪(Dickens & Trethowan, 1971) ▪(Stewart et al., 1988) ▪(Murcott, 1988)	Tea, Coffee, Alcohol, Meat, Eggs, Vegetables, Spicy and Fried foods
United States ▪(Hook, 1978) ▪(Schwab & Axelson, 1984) ▪(Tierson et al., 1985) ▪(Pope et al., 1992) ▪(Coronios-Vargas et al., 1992)	Tea, Coffee, Meat, Eggs, Spicy and Fried foods, Pizza, Pickles, Peanut Butter
Italy ▪(Alberti Fidanza et al., 1986)	Coffee, White Wine, Meat, Fish, Fried foods, Desserts
Saudi Arabia ▪(Al-Kanhal & Bani, 1994)	Tea, Coffee, Meat
Jamaica ▪(Landman & Hall, 1983)	Chicken, Rice, Sweet Potatoes

3.5.1.2 Cravings

As food dislikes may develop into aversions during pregnancy, in some circumstances food preferences may transform into intense longings or cravings. One study comparing the dietary habits of African-American women found that 67.3% of the women reporting cravings for certain foods were pregnant. The investigators also determined that a greater number of foods were craved during pregnancy than during "times when the woman's health was normal" (Edwards et al., 1954; p. 978). Statistical

evaluation of cravings reported for the pregnant women revealed that significantly greater quantities of fruits, cereals, meats, vegetables, desserts and beverages were consumed. Similar results were noted for a number of other American studies conducted from the late 1970s to the early 1990s. Ernest B. Hook (1978) found women in New York State craving fruit, candy, chocolates and ice cream. A total of 70% of women surveyed in Maryland also reported experiencing cravings during pregnancy. The most common were dairy products, fruit, sweets as well as high protein and high sodium foods (Schwab & Axelson, 1984).

Dr. Hook co-investigated another study in Albany, which came to very similar conclusions. Again, sweets such as ice cream, chocolate and cookies as well as fruit were the most commonly reported cravings (Tierson et al., 1985). More recently, young pregnant adolescents were surveyed during their third trimester. Most young women (86%) reported to at least one food craving some time during their pregnancy. Similar to many of the other American studies, the most frequently reported cravings were for sweets, especially chocolate; fruit and fruit juices; high-protein main dishes, including pizza as well as the more stereotypical ice cream and pickles (Pope et al., 1992). Very distinct cross-cultural cravings were cited by the Black, Cambodian, Caucasian and Hispanic women interviewed by Coronios-Vargas and colleagues (1992). For example, although most fruits were accepted during pregnancy for all groups, Cambodians significantly craved tropical fruits that were more reflective of their cultural heritage. Cambodians and Hispanics generally craved more spicy and salty foods than the other two groups of women. African-Americans were reported to crave more traditional

American foods such as peanut butter, hot dogs and chicken in addition to sweets and fats such as butter. The majority of the Hispanic, Black as well as White participants had regular cravings for milk throughout their pregnancy while Cambodians (68%) tended to crave tofu, which is a more culturally familiar food.

Table 3.5: Summary of Cravings Reported

Study Origins	Food Cravings
United States ▪(Edwards et al., 1954) ▪(Hook, 1978) ▪(Schwab & Axelson, 1984) ▪(Tierson et al., 1985) ▪(Pope et al., 1992)	Fruits, Cereals, Meat, Vegetables, Candy, Chocolate, Ice Cream, Dairy Products, Pizza, Pickles, Peanut Butter, Milk, Tofu
United Kingdom ▪(Harries & Hughes, 1958) ▪(Dickens & Trethowan, 1971) ▪(Stewart et al., 1988) ▪(Murcott, 1988)	Fruits, Cereals, Raw Vegetables, Sweets
Saudi Arabia ▪(Al-Kanhal & Bani, 1994)	Salty and Sour foods
Italy ▪(Alberti Fidanza et al., 1986)	Fruits, Pasta
Jamaica ▪ (Landman & Hall, 1983)	Fruits, Vegetables, Milk, Water or Ice

The United Kingdom reported findings similar to the more culturally homogeneous studies from the United States with minor variation. Cravings for a wide variety of fruits were described by pregnant women from all across the U.K. Again sweets were also mentioned, in addition to pickled foods, raw vegetables and dry cereal products (Harries & Hughes, 1958). Cravings for primarily fruit and sweets were also reported in a number of other British studies (Dickens & Trethowan, 1971; Stewart et al.,

1988; Murcott, 1983).

Variations in cravings described by pregnant women in the Middle East, the Mediterranean and Caribbean, however, are more distinctive as is illustrated in Table 3.5 above. Saudi Arabian mothers surveyed generally craved salty and sour foods (Al-Kanhal & Bani, 1994). During all three trimesters Italian women tended to crave fruit, in addition to pasta (Alberti Fidanza et al., 1986). Dietary cravings reported by Jamaican women during pregnancy were milk and milk drinks, greens, okra, water or ice as well as fruit and fruit juices, especially of the citrus variety (Landman & Hall, 1983).

3.5.1.3 Pica

Pica, as well as the term geophagy, are used to describe the compulsive eating of essentially non-nutritive substances such as dirt, clay or washing soda. Most commonly, pica is seen in the form of unusual cravings during pregnancy although it is not exclusively restricted to pregnancy. A number of sources suggest that its origin lies in the African slave trade; the practice was transplanted to the United States and the Caribbean where cultural substitutes for clay were found (Fieldhouse, 1986; Hunter, 1973). The practice, however, has been reported in the literature in various parts of the world. During the 1950s in Britain, for example, almost as many women reported craving non-food substances as those citing aversions to food during pregnancy. The most commonly indicated substances were coal, soap, disinfectant and toothpaste (Harries & Hughes, 1958). Saudi Arabian women also reported cravings for clay, plaster, paper and ice, although those responses constitute only 8.8% of the pregnant women surveyed (Al-Kanhal et al., 1994). A study from Jamaica, however, reported 41% of pregnant women

interviewed indulged in the practice of pica. Most commonly, these women reported consuming large quantities of ice, which is a form of pica known as pagophagia. Other items mentioned included earth, soap, cloth, charcoal, nutmeg, coffee grounds, paraffin and scouring powder (Landman & Hall, 1983).

Similar observances were reported in literature from the United States. Pagophagia, for example, was confirmed for each of the respondents who described pica practices during pregnancy. Only eight percent of the sample population of largely white women from Maryland, however, described such compulsions over the course of pregnancy (Schwab & Axelson, 1984). Similar cravings were divulged among white adolescent females in Tennessee, but respondents only reported the consumption of ice (Pope et al., 1992). Two other studies including Caucasian, American Indian, Latin American, African-American and Asian women found quite divergent practices. Clay and ice were consumed primarily by African-American women during pregnancy, while Asian and white women claimed to crave laundry starch. Asian women, however, consumed more plaster than the other cultural groups. (Cornoios-Vargas et al., 1992) Mexican-American women frequently spoke of *jarritos*, or small unfired clay jars that were made exclusively for the purpose of consumption (Snow & Johnson, 1978). An older study involving African-American women in Alabama revealed large intakes of non-food substances during pregnancy. A high percentage of women reported consuming red and white clay, cornstarch, flour and baking soda. As much as a one pound box of starch may have been consumed in one day, and as many as 50% of women practiced clay-eating. The study also explored reasons behind these cravings. Many women stated

that in addition to simply satisfying a craving, these substances helped to relieve nausea, or that their mother or grandmother had encouraged the consumption. A belief that the unborn child would be marked if such substances weren't consumed was also confirmed by a number of women interviewed as well as by local midwives (Edwards et al., 1954). A similar study in Georgia reported 55% of women surveyed ingested clay, starch or a combination of the two sometime during pregnancy (O'Rourke et al., 1967).

3.5.2 Traditional Folklore

Food in a large number of societies is often "endowed with magical properties, and beliefs in their efficacy are firmly held" (Fieldhouse, 1986; p.166). The rationalization for such beliefs may have faded significantly over time; yet, in the form of conventional wisdom, such folklore continues to be passed on to younger generations, often in the form of prescriptions for or proscriptions against certain foods.

3.5.2.1 Prohibitions and Taboos

A belief structure that is fundamental to many traditional as well as modern societies is the attribution of a soul or spirit to all things living. Animism is the term used for this type of belief structure, which is also associated with the worship of powerful supernatural spirits that may be animate or inanimate. Food therefore may be loaded with certain powers, which affect its suitability for consumption by particular individuals, during different times of the lifecycle (Blix, 1969).

A wide variety of food taboos as well as general cultural prohibitions are placed upon pregnant women in a number of societies. Those most evident in the literature are common to Southeast Asia, Oceania and Africa. One of the most prominent proscriptions

for women throughout Southeast Asia, including parts of India, is the restriction of food intake during pregnancy in order to avoid a large baby and hence difficult delivery (Nag, 1994; Manderson & Matthews, 1981; Stewart & Whiteford, 1987). In India, for example, these ideas or beliefs are reinforced through the concept of *baby space*. The preference for a small baby is believed to ensure the fetus adequate space for movement and proper development. For this reason, in addition to the general restriction of large quantities of food, women must also avoid the consumption of gaseous (*vayu*) foods such as sweet potato, jackfruit and certain pulses (Nichter & Nichter, 1983). Women in Peru also reported feeling ashamed of a large newborn since it was perceived as being "offensively ugly" (Wellin, 1955; p.893).

In other areas of Southeast Asia and Oceania a wide variety of taboos exists for the consumption of specific foods for women during their pregnancy. For the *orang asli* (original people) of West Malaysia and their counterparts from Australia, many of the food prohibitions during pregnancy are species of select animals. The flesh of animals believed to have strong spirits is thought to be the cause of *sawan* (convulsions) if eaten by susceptible persons such as pregnant women or children. Even if the husband of a pregnant woman consumes certain meat that is taboo, the fetus and eventually the child will develop *sawan* (Bolton, 1972). For the Arnhem Land Aborigines, large game animals with sacred associations such as crocodiles, emu, bush turkey and turtles are often taboo for pregnant women (Manderson, 1986).

The restriction of certain fish for consumption during pregnancy is common throughout Southeast Asia, but particularly in Bangladesh and Indonesia. Women in

Bangladesh are cautioned that if they eat certain fish, characteristic features of the fish will produce ill effects on the mother and fetus. For example, *mirka* fish must be avoided since the name of the fish is the same in Bengali for epilepsy. Consumption of the fish is therefore believed to cause fainting spells in the pregnant woman (Khare & Rao, 1986). On the island of Java, a number of studies cited by Hull (cf Manderson, 1986) identify fish, particularly fresh water fish, as a taboo item for consumption during pregnancy. The avoidance is based on the fear of worms, diarrhea, respiratory symptoms, skin disease and eye troubles developing in the infant. Other prohibitions cited are pineapple, *salak* fruit, bean sprouts and sugarcane.

A study of food taboos in East Africa examined a number of tribal prohibitions particularly related to pregnant women. Similar to previous examples, the chief foods forbidden (in this case for all women) were eggs, birds, mutton, pork and to a lesser extent, goat's meat. In addition, pregnant women could not drink milk for fear of too much vernix covering the child, or consume foods such as parched maize, which makes such a crunching noise in the mother's mouth that it might make the unborn child cry. Pepper was also believed to adversely affect the baby's eyes, and honey could cause hemorrhaging (Trant, 1954). In Nigeria pregnant women encounter a number of food taboos. For example, snails were not to be eaten in order to prevent excess salivation in the infant at birth. Porcupine was believed to cause delay in labour, while pounded sweet potatoes were thought to affect the brain of the fetus (Ogbeide, 1974). Pumpkin leaf might cause scratching of the newborn's skin, while snakes if consumed could cause abortion or cause the child to look like the snake (Ojofeitimi & Tanimowo, 1980). Mango

was associated with nausea and gastrointestinal problems including worms (Ojofeitimi & Babafemi, 1982). The most recent study of nutrition beliefs among Nigerian women reported that certain meats, such as rabbit and monkey were forbidden on sociocultural and religious grounds. Varieties of sweet potatoes were also taboo because they went against the family/ fertility rites of the Shao ethnic group (Ebomoyi, 1988).

3.5.2.2 Magic and Superstition

It is difficult to distinguish a number of the dietary proscriptions from prescriptions related to practices based on sympathetic magic or superstition. The complexity of these beliefs and doctrines are often intimately related to the overall power and symbolism of certain foods in a number of cultural settings. Magical properties of food items tend to be associated, however, with somehow "marking" the fetus or affecting the baby's appearance at birth. In southern India, for example, the appearance of vernix on newborn babies is taken as a sign that the mother did not eat the appropriate foods during pregnancy. Specific foods such as beaten rice and jackfruit are often associated with the infant's somewhat waxy appearance. In order to prevent the formation of vernix, during the second trimester women are encouraged to regularly consume a handful of rice chaff with a spoonful of hot oil mixed with water. Wealthier women who frequently consume clarified butter or *ghee* during pregnancy reportedly do not have babies with vernix since *ghee* also cleanses the baby's skin (Nichter & Nichter, 1983). Vietnamese women also consume certain magical foods throughout their pregnancy. Manderson and Matthews (1981) reported women consuming a combination of sugar cane, orange, lemon and ripe papaya in order to make the baby's lungs strong.

Green coconut, lemon, sugar cane, pineapple, soft drinks, soy milk, cow's milk and beer were also reported to make the child's skin soft, clear and white. Soy and cow's milk were believed to whiten the skin by imitative magic, while the green coconut, lemon and pineapple, often used to blanch meat, were thought to "blanch" the fetus in a similar manner. Women in Jamaica also reported consuming a variety of items to change the appearance of the fetus. Cerussee, magnesia, bitters, milk and oranges were said to make the baby's skin clear, clean and fair. Certain types of tea, such as ginger and thyme as well as okra and raw egg were believed to ease delivery (Landman & Hall, 1983). The same study also mentioned that during pregnancy if a certain craving was not satisfied and a woman scratched her body while she thought of that particular food, the baby would be born with a birthmark resembling the shape of the food she was craving.

In the United States, a number of studies reported food beliefs that shaped the physical as well as the physiological nature of the child. A group of pregnant women in Michigan expressed the belief that an unborn child could be born with birthmarks or other characteristics dependant upon the consumption of certain foods during pregnancy. For example, if a mother ate a large quantity of cherries or strawberries during her pregnancy, the baby might be born with red spots on its skin. Unsatisfied cravings were also to blame for certain features. One woman explained that if a pregnant woman craved chicken and did not get it to eat, she would have a baby born with "chicken skin", or looking like a chicken. Another study reported similar findings in the American midwest. Eating a large amount of chicken or eggs during pregnancy could result in the child becoming an early riser. Pickles were to blame if a child developed a sour disposition

and oranges were associated with the onset of allergies in the infant (Kruger & Maetzold, 1983).

The only study located that documented prenatal eating patterns among First Nations women, took place in community located in the Great Lakes Region of the United States. A number of other superstitions were reported in this study of maternal and child care among members of a Chippewa Nation. It was described, for example, that if a pregnant woman ate either the tail or head of any vertebrate animal, the head of the unborn child would become large and his or her extremities weak. Eating the entrails of animals or fish was thought to cause the cord to wind dangerously around the baby. Since seagull eggs are marked with freckles, a mother would not consume these if she wanted the child's skin to be clear. In addition, porcupine meat reportedly would cause the baby to have a stuffy nose as well as to be clumsy, clubfooted or pigeon-toed (Hildebrand, 1970).

In summary, many influences, cultural and otherwise, have been described in the scientific literature that have direct bearing on the nutritional well-being and health of Aboriginal families. An increasing dependance on less nutritionally-dense marketed foods and a more sedentary lifestyle have resulted in rising rates of obesity, type 2 diabetes and nutrient insufficiencies. Food insecurity is an issue for many northern as well as urban Aboriginal communities. First Nations peoples have discussed and described their perceptions of these changes and are concerned for their individual health as well as their futures. Dietary behaviours in pregnancy are changeable and influenced by a variety of factors which are not well understood. Not enough information has yet

been documented in order to explain and document the potential impacts of these many variables, particularly as they may influence the nutritional status and health of First Nations women and their children.

Chapter Four

The Research Process

4.1 Research Design and Methods

Qualitative research design provides a means of generating information and exploring problems about which relatively little is previously known (Morse and Field, 1995). Pope and Mays (2000) have suggested that unlike quantitative methodologies, qualitative research is more concerned with meanings that people attach to their perceptions of the social world. It also seeks to determine how people make sense of their surroundings or circumstances. Qualitative investigations therefore endeavour to understand social or cultural phenomena through the interpretation of individual behaviours or experiences. There is very little documentation of North American Aboriginal women's beliefs and cultural idea systems related to diet during pregnancy; therefore, qualitative research methodology was proposed for this study, through the use of semi-structured and unstructured interviews with a small number of key informants.

Methodology associated with grounded theory was employed for this study. Grounded theory as a method of qualitative inquiry examines individual meanings and generates explanatory theories related to the topic area. Strauss and Corbin (1993) have stated that grounded theory is viewed as a general methodology for developing theory that is grounded in data systematically gathered and analyzed. Theory evolves during the research process through the interaction between data collection and analysis. Grounded theory also permits the use of theoretical sampling in order to select participants or key

informants based on their knowledge of the topic area and the needs of the theory as it develops (Glaser and Strauss, 1967). The use of comparative analysis in the generation of theory may also be applied through the use of grounded theory methods. This constant comparison of themes in data analysis was helpful in providing a systematic approach to better understand changing dietary patterns and food beliefs in this research setting.

4.1.1 Instrumentation

The primary method of data collection employed for this investigation was in-depth semi-structured interviews with a sample of mothers and grandmothers. Unstructured interviews were also conducted with select participants, based on the outcome of the initial interview, in order to allow participants the opportunity to clarify initial responses or for the investigator to gain further information to better define concepts as they emerged. Quantitative data was also collected. Several close-ended, as well as open-ended questions were asked of each woman at the beginning and end of the semi-structured interview to obtain background information. In addition, a Nutritious Food Basket was priced within Peguis, as well as at two nearby supermarkets, to compare local food availability and pricing with data collected in Winnipeg during the same two-week period by the Home Economics Division of Manitoba Agriculture and Food.

4.1.1.1 Background Information

Each interview began with standard background questions in order to obtain demographic information (see Appendix B-1). To help describe the sample, these seventeen questions were framed around the semi-structured interview guide and were posed both at the beginning and following the initial semi-structured interview. The researcher perceived the initial introductory questions to be less delicate and thus helpful

in establishing rapport. The interview structure also allowed the investigator to formally elicit data to describe the characteristics of the group. Initial questions collected information on the participant's age, connection to her community, family size, prenatal care, ethnicity, religion and daily routines. More typically delicate or sensitive questions relating to the level of education attained, occupation, as well as specific questions related to income were posed at the end of the semi-structured interview.

4.1.1.2 Semi-Structured Interviews

An interview guide was prepared to guide the researcher in conducting the semi-structured interviews (see Appendix B-2). Sixteen open-ended questions covered: beliefs about diet during pregnancy; understanding of health outcomes related to maternal nutrition; changes in food consumption patterns during pregnancy; access to traditional foods; attitudes on the importance of the consumption of traditional foods during pregnancy, as well as general food selection and availability.

Flexibility was however required in applying each of these open-ended questions to the research setting since the goal was for interactions with each participant to be dynamic and open to change, a common characteristic of qualitative research (Patton, 1990). The interviewer therefore took the opportunity to adapt or change the wording or order of questions to suit a particular individual or situation, as is advocated by Achterberg (1988) among others. Additional questions were also asked of the participants to further illustrate and explain their responses. A semi-structured interview technique was preferred to a closed list of questions for the study since it allowed for freer expression on the part of the respondents and for clarification of concepts that arose, perhaps unfamiliar to the interviewer. The format also permitted further exploration in

the form of subsequent unstructured interviews with select participants.

4.1.1.3 Unstructured Interviews

Based on their responses from the initial interviews, seven women were asked to participate in an additional unstructured interview. Four mothers and three grandmothers were chosen because they raised issues that the investigator felt needed clarification or elaboration. Of these seven, when contacted by telephone, one grandmother declined to participate in an additional interview.

As new concepts and themes for further exploration began to develop during the semi-structured interviews, select topics became the focus of the unstructured conversations which did not follow any preconceived format. The investigator approached these secondary interviews with a list of issues to be discussed, but structured questions as part of a formalized interview guide were not prepared in advance. For the grandmothers, interview topics ranged from: food avoidances during pregnancy; dietary factors associated with diabetes onset; baby size; generational lifestyle differences; symptoms associated with an undiagnosed diabetic pregnancy; traditional medicines prescribed during pregnancy, as well as the overall impact of diet on the health of mother and child.

Mothers were asked to provide more detail about the following topic areas: the importance of wild meat consumption during pregnancy; effects of environmental contaminants on maternal health; origins of cravings; impact of food on health; origins of maternal dietary taboos; baby size; solutions for food insecurity as well as examples of local food insecurity.

4.1.1.4 Food Basket Pricing

A Nutritious Food Basket is a food pricing tool that measures the cost of healthy eating based on current nutrition recommendations.[1] Nutritious food baskets have been used in Canadian health and social service contexts for over 50 years to assess the cost of an adequate diet. Agriculture and Agri-Food Canada became involved in food costing in 1974 and developed a number of food baskets which provided benchmark costs for feeding several age and gender groups in various Canadian cities. *Nutrition for Health: An Agenda for Action* was prepared by a Joint Steering Committee established by Health Canada in order to create a national nutrition plan reflective of Canada's endorsement of the *World Declaration on Nutrition* established by FAO in 1992. The committee developed strategic directions and key actions which are included in the final document. In support of nutritionally vulnerable populations with low socio-economic status, for example, the committee proposed monitoring the cost of a nutritious food basket (Canada, 1996). The Agriculture Canada Nutritious Food Basket was first introduced in 1980. After a series of revisions, an updated Nutritious Food Basket for Canadian families of average income and a new Thrifty Nutritious Food Basket (TNFB), targeted at lower income groups, were developed in 1989. This Nutritious Food Basket is a fixed basket of 64 foods selected from those priced for the Consumer Price Index and acts as a benchmark for determining the weekly cost of feeding a nutritious diet to various age/sex groups of average income. It also assists in monitoring changes in these costs over time in 18 major Canadian cities. Since the Nutritious Food Basket is based on the spending

1 Current nutrition recommendations as defined by the *Nutrition Recommendations* (1990) and *Canada's Food Guide to Healthy Eating* (1992)

patterns of average families, it was not seen to be an adequate measure of the cost of feeding Canadians on lower incomes. The TNFB therefore was developed in order to provide a more restricted list of 43 basic foods. These foods were established by the Consumer Price Index as being more economical sources of nutrients (Robbins & Robichon-Hunt, 1989). Samples of the weekly costs for a family of four across Canada in 1989 are included in Appendix C-2.

A similar concept was used to develop a Thrifty Nutritious Food Basket for Northern Communities. This Northern Food Basket (NFB) was first created in 1990 as part of a report prepared for the Department of Indian Affairs and Northern Development on the impact of changes proposed to the Air Stage Subsidy Program. The 46-item basket was modeled after the Thrifty Nutritious Food Basket (TNFB). It was also designed to meet the 1990 Recommended Nutrient Intakes for Canadians (RNI) to monitor the cost of a nutritious diet in the north. There was some criticism in the literature, however, that although the NFB reflected typical food consumption patterns in the north, it did not reflect regional differences in diet (Campbell, 1997). Wein (1994) also suggested that, "the Northern Food Basket does not reflect actual food consumption patterns of Yukon aboriginal people, and that, if it is to be used for determining social service allowances for nutrition education or for determining replacement costs of traditional foods, it could be substantially improved." (p.312) A sample of weekly food costs for various northern communities is included in Appendix C-3.

In 1995 a Revised Nutritious Food Basket (RNFB) was developed, based on dietary surveys of Inuit and First Nations women. Due to criticisms with regard to regional variation in diets, three distinct Regional Inuit Food Baskets (RIFBs) were

subsequently developed for Labrador, the Eastern Arctic and Northern Québec. The RNFB and the RIFBs contain approximately twice as much meat, poultry and fish as the Northern Food Basket, in addition to country foods. More meaningful price comparisons may therefore be made among northern communities since northern food consumption patterns are more accurately reflected. In addition, the RNFB may be calculated for southern centres in order to compare costs of the same foods in a variety of communities and to examine factors responsible for these cost differences.

In 1995 Agriculture and Agri-Food Canada discontinued their food basket work, and Health Canada stepped in to create a revised national standard. This national food basket then served as a template for the Ontario Nutritious Food Basket which is now the current protocol employed by Manitoba Agriculture and Food in preparing their yearly *Budget Guides.* The *Budget Guides* serve as a reference manual, providing guidelines for establishing cost of living standards in Manitoba (Ontario Ministry of Health, 1998; Manitoba Agriculture and Food, 2001).

Although a number of food basket protocols were investigated for use in this study, (Campbell, 1997; Lawn & Hill, 1998), the Ontario protocol was decided upon because it allowed direct comparison of local food pricing data with Winnipeg prices obtained during the same two week period by Manitoba Agriculture and Food. In addition to the food basket listing of 66 foods, supplementary foods were priced for comparison among local supermarkets only. They included: evaporated milk, skim milk powder, cheese spread, cottage cheese, beef liver, bacon, bologna, canned luncheon meat, canned stew, lard and fruit drink crystals. These extra foods were selected based on their popularity and past use in food baskets containing more culturally familiar foods for

Aboriginal populations (Campbell, 1997;Lawn, 1993; Lawn & Hill, 1998).

4.2 Population and Sample

When investigating the traditional uses of food, Kuhnlein (1989) has suggested that generational differences in taste appreciation and the availability of foods in the local environment are important influences and must be taken into consideration. A generational sample of participants was therefore selected for the study, using theoretical sampling to interview women of differing ages, backgrounds, experiences and beliefs. A sample of 26 women, including two pilot interviews, was selected from the total number of female long-term residents of the reserve community. Half of the women were of child-bearing age and will be referred to as mothers. The second group of women was all recognized as grandmothers in the community. All of the women must have given birth to at least one child and be members of the band. The women selected to participate as grandmother and mother were not members of the same family. Therefore, 26 key informants were chosen in order to provide an adequate amount of data to most accurately describe the women's experiences, to the point of saturation, as well as to include those participants who could best inform the research (Morse & Field, 1995).

Non-random sample selection began with the assistance of a community health nurse and peer support worker from the local Health Center. Both were asked to provide a list of women's names in each age category who might have an interest in the research topic area and be available during the data collection period. Before the researcher gained access to any names or contact information, Health Center staff distributed a letter of introduction to the potential participants which provided details about the research

objectives as well as the study topic area. All of these women were also advised in the letter that they could contact local health staff to request their name not be given to the researcher. In total, 48 letters were distributed. Neither the researcher nor Health Centre was contacted subsequently with inquiries or refusals. A copy of the letter of introduction is included in Appendix D.

From the list of 26 grandmothers' names generated by Health Centre staff, the researcher contacted 20 by phone. From the initial sample of 20 women, three declined to be interviewed. One cited reasons related to the self-perceived inadequacy of her diet when pregnant. The other two stated they were not interested in participating in a research study of any kind. Another three grandmothers agreed to be interviewed, but two did not arrive at the pre-arranged location and did not return subsequent phone-calls or attempts by the researcher to re-contact them. The third woman was interested in participating but unfortunately did not meet the criteria of having given birth to at least one child. In total, fourteen grandmothers were interviewed including one pilot interview as well as one interview that was lost due to tape recorder malfunction. After repeated attempts to re-interview that grandmother, another participant was chosen to take her place. The final six names on the list of potential participants were not available during the interviewing period.

Health Centre staff provided the names and contact information for 22 mothers. Of those contacted by phone, only one woman declined to be interviewed; she did not give a reason as to why she was not interested in participating. Three additional women said that they were interested in being interviewed, but were unable to meet, although they were contacted by the researcher a number of times. Fourteen mothers were

interviewed for the study. Again, however, due to tape recorder malfunction, two of the interviews were lost. Although both women agreed to be re-interviewed, one participant was overwhelmed with the needs of a newborn and another participant was chosen to take her place. From the initial contact list, only four mothers were unavailable during the data collection period.

Table 4.1: Sample Selection Process

Stage of Inclusion	Mothers	Grandmothers	Total (N)
Sampling Frame[1]	22	26	48
Contact Not Released	0	0	0
Exclusions	0	1	1
Refusals	1	3	4
Final Sample	14[2]	14[3]	28
Response Rate(%)	95.5	88.5	92.0

[1] Consisted of women's names generated by staff at the Health Centre
[2] Includes 1 pilot interview as well as the 1 substituted interview and 1 re-interview
[3] Includes 1 pilot interview as well as 1 substituted interview

Therefore the overall sample size for the investigation was 28 with fourteen grandmothers and fourteen mothers participating. The fourteen interviews conducted with the grandmothers included one pilot interview, in addition to the replacement of one participant's interview which did not record properly. Fourteen mothers participated. Again, the sample included both the pilot and the replacement of one participant due to a damaged interview recording. One mother was also interviewed twice since the initial interview did not record properly. Four mothers and two grandmothers were also asked to participate in secondary unstructured interviews until saturation of themes was achieved.

4.2.1 Describing the Sample

The fourteen grandmothers participating in the study ranged in age from 59 to 87 years, with a median age of 71.4. Almost 43 percent had never lived away from the reserve community, although close to 29 percent had spent some time working in other locations when they were younger. Mothers ranged in age from 18 years to 36 years of age, with a median age of 26.8. All of these young women had lived away from the community in order to work or go to school at one time or another. Over 64 percent of them had originated from other communities. Seven women came from non-Aboriginal communities and two from other reserves.

Table 4.2: Demographic Characteristics of Participants

Characteristic	Mothers	Grandmothers
Age		
Median	26.8	71.4
Range	18-36	59-87
Education Level (# of women)		
Elementary School	1	11
Some High School	7	2
Completed High School	2	2
Post-Secondary*	4	0
Family Size (# of children)		
Median	3	8
Range	1-7	3-13

* Post-secondary education levels include college and university attendance

Data was also collected which measured the varied socio-economic status of the women and their partners. As is illustrated in Table 4.2, the majority of grandmothers continued school up to Grade 7 or finished Grades 7-9 (eleven women in total). Slightly fewer (36%) of their partners achieved the same level. Two grandmothers completed

Grades 10-12; another two women completed high school.

The mother's formal education ranged from seven percent reaching Grade 7 or less to 21 percent having taken some college or university courses. The majority (50%) of mothers completed Grades 10-12. Two women completed high school, while one reported completing a college level program. None of their partners had completed high school. Their education levels primarily (93%) fell between grades 10- 12 with one spouse having completed elementary school.

In terms of family size, grandmothers gave birth to more children compared to the younger group of mothers. The number of pregnancies ranged from 3 to 13 for the older women; however, the median number of babies born was eight. Most (64%)of the grandmothers visited a doctor frequently for prenatal care during their child-bearing years. Only one woman talked about seeing a midwife during her pregnancies. Two grandmothers did not receive any prenatal care prior to their deliveries. Another two women were visited by a public health nurse throughout their pregnancies. One grandmother talked about a possible diabetic pregnancy that was not formally diagnosed at that time.

The number of pregnancies reported by the group of mothers ranged from one to seven with a median of three births for each woman. Four of the women were in fact pregnant during the time of the interview. The other 10 women participating had all recently given birth, one woman to twins. All of the mothers interviewed stated that they made regular monthly visits to a local hospital physician during their pregnancies. A large proportion of these women, 43 percent of them, had attended prenatal classes at the local Health Centre. When asked about gestational diabetes, three of the women

experienced high blood glucose levels during their pregnancies, but only one mother recalled being diagnosed with a diabetic pregnancy.

Most of the grandmothers reported that they, as well as their spouses, were retired from wage earning. Two grandmothers stated that they were engaged in some form of employment, with only one spouse still currently wage-earning. The grandmothers also reported that 64 percent of their husbands or spouses had passed away, leaving 28 percent presently retired from paid employment or farming. Correspondingly, the levels of income reported by these women were low compared with Canadian Census statistics for Peguis (Statistics Canada, 1996). Three older women reported an income of less than $5,000 a year. The highest percentage of grandmothers (28%) stated their income as being between $10,000 to 14,999 dollars per year. One grandmother made more than $30,000 annually.

Most of the fourteen mothers interviewed (57%) stated that they were full-time homemakers. One woman was currently employed, while three others were in the process of completing high school in addition to taking care of their children. Many mothers spent their days alone in the home while 64 percent of their partners were engaged in full-time employment. At the time the interviews were being conducted, three of the men were reported to be unemployed. One partner was working as a full-time homemaker. Accordingly, annual income levels for the young women and their families were generally higher than those associated with the older age group, ranging from one family reporting an income of between $5-9,999 to one other taking home $40-45,999. The majority of young families (42 percent) had yearly incomes that ranged from $15,000 and 24,999 dollars. Alarmingly, however, still another 14 percent made less than $5,000

annually in this age group. The 1996 Census reported an average total income in Peguis to be $11,323 annually (Statistics Canada, 1996).

4.3 Implementation

Prior to making the first visit to the research community, the researcher contacted the Chief and Band Council in writing to seek approval for the research study (Appendix E-1). Application was also made to the Research Ethics Board at the University of Manitoba and to the Assembly of Manitoba Chief's Health Information and Research (HIR) Committee for approval (Appendices E-2 & E-3). Meetings also took place with *Anishinaabe Mino-Ayaawin* (AMA) and Health Centre staff in the community to obtain input and feed-back as to the research goals and objectives as well as any additional requirements necessary to carry out the study (see Table 4-3 for complete time-line). The background questions and semi-structured interview guide were also formally reviewed by local health authorities, in addition to AMA, before the researcher conducted two initial pilot interviews with women in both age categories in order to ensure the use of appropriate local terminology, as well as to make sure that the questions were easily understood.

Beginning in May 2001, once approval was received from Chief and Council as well as the Research Ethics Board at the University of Manitoba, a letter of introduction was sent to all potential participants, and pilot interviews were subsequently conducted with one mother and one grandmother. Both of these women were selected by the local community health nurses. The young woman chosen to be interviewed for the pilot worked as an administrative assistant at the Health Centre and was interviewed in the

boardroom of her workplace. For the other pilot, a well-respected elder in the community was nominated. She chose to be interviewed in her home.

Following the transcription of the pilot interviews and some minor changes to the wording of the interview guide, the researcher telephoned all prospective participants identified and previously contacted by local health staff to answer any questions they had regarding the introductory letter they had received outlining the study, as well as to seek their participation and arrange an appointment.

Table 4.3: Study Time-Line

Activities	Dates Achieved
• Letter sent to Peguis Chief and Council	November 17, 2000
• Meetings with Peguis Health Centre staff	Feb. 1 & 22, 2001
• Presentation to Peguis Health Centre Board	March 19, 2001
• Approval from the Health Research Ethics Board, The University of Manitoba	March 20, 2001
• Permission from Chief and Council, Peguis	April 23, 2001
• Meeting with AMA	May 7, 2001
• Notification of HIR Committee, Assembly of Manitoba Chiefs	April 30, 2001
• Letter of introduction sent to potential participants	May 2, 2001
• Pilot interviews conducted	May 11, 2001
• Semi-structured interviews conducted	June 26-Oct. 10, 2001
• Unstructured interviews conducted	Sept. 25-Oct. 3, 2001
• Nutritious Food Basket priced	October 3-12, 2001

4.3.1 Interviews

Semi-structured interviews were conducted simultaneously with the grandmothers and mothers, beginning in June and continuing until all 35 interviews were completed in October 2001. Each of these interviews began with providing the women with a participant information and consent form to sign (see Appendix F). Once their consent was given, background information was requested, followed by the semi-structured interview guide as well as some final questions regarding socio-economic status (entire interview guide found in Appendix B). Grandmothers averaged 62 minutes for the semi-structured interview, while the mothers' interviews lasted 51 minutes on average. The majority of grandmothers requested that the interview take place in their home (57%). Four grandmothers chose to be interviewed at the Health Centre. More of the mothers preferred to be away from distractions at home and were interviewed at the Health Centre. Eight mothers were interviewed in one of the offices or the boardroom at the Health Centre, while six were visited at home. Two grandmothers were interviewed at their workplaces. One was interviewed while on a break at a local restaurant and the other while volunteering locally.

All of the interviews were tape-recorded and transcribed word-for-word as soon as possible after the interview was completed. The investigator also took extensive field notes during and directly after the interviews. Following the completion and review of the initial interviews and field notes, more focused unstructured interviews took place with key informants. Seven women were asked if they were willing to participate in a secondary interview and only one chose not to be interviewed again citing time

constraints. Two grandmothers and four mothers were therefore interviewed for a second time. Four of these interviews took place in the women's homes. One mother chose to be interviewed again at the Health Centre while one grandmother was interviewed in the researcher's car outside her home, where she thought it would be warmer than in her kitchen on a cool October morning.

4.3.2 Nutritious Food Basket

Since Manitoba Agriculture and Food has traditionally conducted the food costing component of the cost of living survey in early October, food pricing data for the local community was collected during the same time period for comparison purposes. An in-store costing form developed by the Ontario Ministry of Health (see Appendix C-1) was used for all three stores in order to price 66 foods, beginning during the first and completed in the second week in October. Prior to the price collection, the investigator contacted and spoke to the managers of all three stores in person in order to outline the purpose of the study and to answer any questions or concerns they might have, particularly pertaining to the sharing and possible publication of the results. Prices were written directly onto separate costing forms and subsequently entered directly into a spreadsheet, using Microsoft EXCEL.

Pricing data was collected during the same two-week period for three stores in Winnipeg by the Home Economics Division of Manitoba Agriculture and Food. In order to obtain this data before it was published, the investigator contacted the Manager of the Home Economics division by letter to formally request access to this raw pricing data for research purposes. After a detailed phone discussion concerning the purpose and

objectives in using the aggregate data, the Manager agreed to forward the data with the conditions that the names of the stores participating in the price collection be kept confidential and that she receive a copy of the food costing results for her files.

4.4 Analysis

The recorded interviews, including the pilots, were transcribed and analyzed continually during the collection period beginning in June 2001 and ending in January 2002. Each interview was transcribed word-for-word using WORDPERFECT 9 software and reviewed for descriptive themes as soon as possible before proceeding to a second interview with the same participant. Themes and categories that emerged from the interviews and fields notes were initially coded manually for further analysis. NUD*IST 4.0 software was used to organize, browse, search, code, categorize and interpret the interview text.

The constant comparative method of data analysis associated with grounded theory was employed to assist in pattern identification. Events were compared with events and other categories in order to identify relationships (Morse and Field, 1995). As subsequent interviews were conducted and coded, categories became more descriptive and relationships and outliers more apparent. Typical events as well as behaviours and perceptions at this point were summarized. Data is considered saturated when the categories are understandable to the investigator and no new data or themes may be discerned (Morse and Field, 1995). Core variables that emerged from the comparative analysis thus become the basis for generating theory to explain the phenomena revealed

(Glaser and Strauss, 1967).

The food pricing data collected by the investigator was compared between the three retail locations in and with the Winnipeg data provided by Manitoba Agriculture and Food (see Appendices G-1 & G-2). Staple food prices from the three local store locations were directly compared to average prices for Winnipeg. Food category totals were also contrasted, comparing the community's store prices with other local stores in addition to Winnipeg prices. Individual foods described by the participants during their interviews were also analyzed relative to food availability, particularly in relation to food security issues expressed by the participants. Microsoft EXCEL was used to average and compare prices as well as to prepare graphical representations of the data.

4.5 Ethical Considerations

In March 2001 the Health Research Ethics Board at the University of Manitoba approved the research proposal. A letter of permission signed by Peguis' Band Councilor responsible for health care was also received in April (see Appendices H-1& H-2). Copies of these documents, prefaced by a cover letter were sent to the Health Information and Research (HIR) Committee with the Assembly of Manitoba Chiefs primarily to advise them that the community had given their formal approval for the research to begin (Appendix H-3).

The investigator also sought community participation in the research project in the form of establishing both formal and informal committees with health authorities and interested community members. The *Royal Commission on Aboriginal Peoples* (1993)

has recommended that consultation at various stages of the research process must be sought from people affected by the results. A written research agreement should also be negotiated with community leaders in order to promote mutual understanding and equality between the researcher and community (Scott and Receveur, 1995). Therefore, a series of meetings took place between the investigator and local as well as regional health officials. To begin with, the investigator met a number of times with one of the community health nurses in Peguis. This individual was instrumental in assisting with subsequent more formal meetings with other health center staff and interested community members. The researcher was given the opportunity to present at the Health Center to those community members who were interested in learning more about the study. Unfortunately, although a number of health staff expressed initial interest as to the outcomes of the study and gave input on the interview guide, not enough interest was generated to establish a formal committee responsible for reviewing and evaluating the research project as it progressed. As a result of the meeting, however, a peer health worker in charge of prenatal health programming became involved in the project, the interviewing process and assisted with sample selection and general orientation.

The opportunity also arose for the researcher to present the research proposal to AMA, a regional health organization representing seven First Nations communities in Manitoba. The meeting was helpful in providing the researcher with a better understanding of health programs within the community as well as opening up dialogue in order to ensure that the AMA Research Committee is kept informed of the research process. At the study's completion, a formal presentation of the results will take place

both within Peguis and with regional health authorities. All local officials, Health Centre staff, the participants and their families will be invited to a community presentation to take place at the Health Centre. Through these more formal presentations, potentially less structured dialogue may continue among community members as well as those responsible for health policy and programming in Peguis.

During the series of initial meetings, study protocols in place to ensure confidentiality of the participants were explained. The investigator also announced her intention to report research findings back to the local community. All were advised that participation was voluntary for each woman invited to join in the study. The study's objectives and a written consent form were presented for each participant to sign prior to each interview. Each of the women was told she was not required to participate in the study, and she had the right to refuse to answer any of the questions posed to her. She could also discontinue her participation in the study at any time. Although the interviews were tape-recorded, following their transcription, all cassettes were to be erased. All data was kept in a secure place accessible only to the researcher throughout the data collection period and upon completion of the study, all interview recordings would be destroyed. Tapes, fieldnotes and transcripts used coded identifiers only. Interviews also took place in a private setting to further assure the participants of their anonymity. Any publications resulting from the investigation were to include only anonymous quotations and any details in the quotations would be altered if necessary to protect confidentiality. The managers of the stores participating in the food basket pricing were also told that coded identifiers would be used with all of the pricing data in order to maintain confidentiality

as well as to limit price wars.

4.6 Study Strengths and Limitations

First of all, it must be stated that the study could not have proceeded so well and so efficiently without the assistance of staff members at the local Health Centre. A community health nurse was the original contact in an attempt by the researcher to select an appropriate and interested community for the study. She was instrumental in providing the researcher with the tools and knowledge necessary to follow the appropriate path and to gain formal approval from the Chief and Band Councillors. In addition, she assisted greatly in providing an introduction to the community as well as to a number of important staff contacts at the Health Centre. Working together with the researcher, these women assisted in providing on-going feed-back as well as the unexpected opportunity to use desk space and a phone at the Health Centre. This association with the Health Centre and prenatal program staff was extremely important in establishing trust and possibly assisted in securing interviews with a number of women who may otherwise have been hesitant about talking to someone from outside the community.

While the interviewing process was certainly facilitated by Health Center staff involvement, sample selection may have been somewhat biased as a result. The fact that the researcher was often working out of the Health Centre may have pressured some of the participants into feeling that they must participate in the study when they may otherwise not have been interested. In addition, the non-random listing of potential informants provided by Health Centre staff may have also been biased. Nursing staff may

have selected women in both age categories based on familiarity or friendship. According to a number of the mothers asked to participate, for example, a few had attended prenatal activities at the Health Centre in the past and were therefore known to nursing and peer support staff. Although perhaps this sort of sample selection could perhaps lead to a sample of women simply interested in the research topic, the list of participants generated may have also been biased towards including a larger than average proportion of women that are well informed about their health, particularly their prenatal health and nutrition.

Notwithstanding the assistance the researcher received from local health professionals, making contact with the participants was also frequently challenging. A large proportion of the women did not have telephones. Street addresses were non-existent in the community, and houses tended to be located a long distance from the center of the reserve. Therefore participation was also based on how easy it was for the researcher to make initial contact with the women. A number of mothers were also very busy at home with young children, and this often made for somewhat distracted interviews or resulted in interviews not taking place at all, simply because the mother preferred to be interviewed in a calmer environment and was not able to get away.

Once contact was established, the interviewing process was enjoyable. Due to the fact, however, that the researcher was raised in a community far different from the one in which the interviews took place, there may have been some discomfort or unfamiliarity on the part of the participants. This possible lack of cultural awareness on the part of the investigator or suspicion as well as possible unease of the women interviewed may also have influenced the sample selection as well as the content of the interviews. Although

every effort was made by the investigator to interview the women in an environment where they felt most comfortable in, the nuances of culture may have biased or influenced the interview data collected.

Qualitative research methodology is also associated with various limitations, such as a lack of generalizability as well as with issues of reliability and validity. In addition, as Morse and Field (1995) have described, "in qualitative research, the amount and quality of the data and the depth of the analysis depend on the ability of the researcher."(p.141) Unlike quantitative or survey methods, findings from qualitative investigations may not be generalized to a wider population. Therefore, the results from this investigation may only describe the experiences of the women interviewed. To ensure the reliability of the data and the validity of the results, participants and other members of the community should be consulted in order to present the most accurate and credible outcomes.

Chapter Five

Cultural Idea Systems Related to Maternal Diet

G004: Well, I worked hard. I never stayed in bed until ten o'clock. I ate all the food that was before me, that was off the land. I never knew anything about junk food then. Never had no fried foods. Always was boiled or baked. That's how I grew up.

M006: I stay away from foods that are no good for me like more. I found that out. Cut down on my salt and sugar intake. 'Cause I, before I was pregnant, my husband was getting after me for drinking too much Pepsi.

Knowledge about beliefs and behaviours surrounding pregnancy are important in describing women's unique maternal cultural perspectives. Ethnographic investigations which describe cultural knowledge may therefore assist in developing appropriate and perhaps more effective prenatal programming (Bushnell, 1981). The current investigation began with five open-ended questions framed around the subject of maternal eating patterns (see the Interview Guide, Appendix B). During the semi-structured interviews, all of the women were asked how they changed their eating patterns during past pregnancies, particularly in relation to foods they were newly interested in eating as well as foods they were no longer interested in. Each woman provided examples of foods that were unavailable or prohibited during pregnancy. In addition, they named specific foods that they felt had an influence on fetal health. Supplementary probing questions were then employed to elicit explanations for the responses. These topics were then further developed during four of the six unstructured secondary interviews.

5.1 Dietary Prescriptions and Proscriptions

Both mothers and grandmothers described maternal dietary practices that

reflected societal, cultural as well as familial teachings. Eating patterns were often altered during pregnancy based on advice received from female family members, friends, as well as health care professionals and para-professionals. These teachings were expressed in the form of suggestions, recommendations or advice relating to foods and practices that were taboo or culturally unacceptable.

5.1.1 Maternal Dietary Advice

The majority of advice that the grandmothers had for young mothers today was centered around their fear for the health of mother and child. Throughout the interviews, both mothers and grandmothers talked about food quality in terms of what foods they felt were of most benefit to the health of mother and child. All of the women mentioned fruits and vegetables as well as milk as providing the most health benefits. Mothers had the most to say, however, about the advantages of consuming milk or milk products. During the semi-structured interviews, when women were asked to give examples of anything special that they would eat for the health of their baby while pregnant, all but one mother mentioned milk. Even women who were lactose intolerant pre-pregnancy seemed to enjoy milk while carrying their children. M005 said that, "*when I was pregnant for some reason it...*[didn't bother me] *at all. Like I just love it now. I didn't have to take lactade at all.*" If milk was not enjoyable to some mothers, they felt they should be drinking it. As M002 commented, "*I forced myself to drink milk.*" All of the mothers describing their increased milk intake seemed to feel that it was necessary. M007 and M011 talked directly about the health benefits of consuming milk while pregnant. M007 stated that, "*just like they told me, like they gave me those pamphlets...like it affects the brain, her bones....like milk and I drink a lot of that too.*" M011 also explained that she drank milk

because she, "*heard it was good for the baby, and for the baby's bones and that, eh? Well, for my bones too.*"

Six grandmothers talked about the benefits of milk consumption during pregnancy when asked what foods they felt were of benefit to the baby they were carrying. More commonly, however, they talked about the health advantages of fresh fruit and vegetables. G003, for example, described her grandmother's advice to "*eat a lot of fruit and vegetables*" during her pregnancies. Nine other grandmothers had similar advice. G012's mother told her that all she had to live off when she was pregnant was "*garden stuff*" which she also described as being, "*the best foods for ya*". Similarly, G013 talked throughout her interview about the benefits of having a garden and access to fresh vegetables:

> *G013: I always like vegetables. Even my girls are having children I always had a garden, you know, and offer them all these things to cook. I tell 'em cook them. They're healthy for you and your baby'll be okay. Some of them stayed with me when they were pregnant, so what I ate out of the gardens and that I would make them eat.*

Grandmothers also had advice on the preparation of foods. Five older women felt that boiling or roasting fresh foods was of more nutritional benefit than using oil to fry foods. G007, for example explained that, "*I think that's why there's so many sick....not cooking and boiling stuff you know. Too much fried.*" G003 and G008 also spoke similarly:

> *G003: I think it makes a difference what a person, how they eat and that when they're pregnant...Like, a lot of greasy foods, I don't think that they should do that - eat a lot of greasy foods. It tastes good mind you, but boil, bake or...do something else. But you know it's fast to do fast foods.*
>
> *G008B: I think that yeah, just what goes into you goes into the baby too and I think it's best to be careful. To think of the baby first before you think of your own*

taste buds and just have the things that are nutritional. Even though it's faster, you know, to fry something up than it is to take time to boil it or roast it or do it in more healthful, nutritional ways. Especially when you have a lot of little children around you, they're hungry too and waiting for something to be served to them and it's just so easy to get the old frying pan out.

More advice in the form of dietary opinions and lifestyle recommendations were shared from women in both age categories. Grandmothers generally recalled pregnancy as a "normal" event that did not hinder their rigorous work schedules, nor did it necessarily require medical intervention. When asked what they recalled most about previous pregnancies, for example, G003 and G013 replied:

G003: I guess getting bigger and bigger every day! [laughs] Not really. I had really easy pregnants. I would never sit there very much. With morning sickness or anything like that or when I had, started to have my labour, got into labour, I wasn't all that long

G013: Eating good foods. Feeding them good anyway. Yeah, I always ate good and I worked hard. I worked with all my children. I picked potatoes and picked carrots, onions. We worked on farms. We dug seneca root. We never laid around. We'd get up early in the morning and do our work and everything because the elders said you're not supposed to sleep long. You get up and work. Move around!

The only comments that these grandmothers made regarding sickness focused on the period of childbirth instead of the pregnancy itself. For example, when asked the same question regarding her memories of past pregnancies, G006 responded that she remembered "*being sick*" the most in reference to her labours. Once she had expressed that, she went on to echo many of the other grandmothers: *"the other parts I didn't mind, being, you know, when you're carrying. I worked right till the end. Never laid around or sat around, you know."* She continued, however, to compare her generation's experience with the younger women in the community: "*you see some of the young girls now. They gotta sleep, they gotta rest, you know and we didn't then. We did all our own housework.*

Nobody came in and did any work for us I mean." G001 also had similar reflections when asked about her many pregnancies:

> *G001: Well, to me there was really nothing to it because I was always busy. I didn't sleep long and I worked all the time. I worked till the bitter end. Not like today when these young women are pregnant they go around moaning the blues. We didn't have time to moan the blues, we had too much to do.*

All but one grandmother talked about their work ethic when they were carrying their babies as well as their concern for how lifestyle changes were adversely influencing the health of the younger generation. G003, during her second interview, had a lot to say on the topic, particularly related to the size of the baby as well as activity levels that were promoted by her grandmother:

> *G003B: She really wanted me to be active because I find that if you were active enough and not laze around, your baby never did really get so big. Today they have babies ten pounds and even more. I never had a baby like that. And I can't remember, you know, I used to walk a lot and never exercised, but walking and doing all the housework and stuff. I guess that was pretty good, yeah. So that kind of kept the weight of the baby down.*

Another grandmother, G008, also described receiving similar advice from her grandmother. She told her, "*make sure you get out of bed in the morning. Don't just lay there. Like put your feet on the floor and stand up as soon as you wake up.*" G008 also explained her grandmother's reasons for this during both interviews:

> *G008: It prevented, it helped the baby stay well in the womb. She felt it could, it did a lot of prevention with her. Women that did....they were tired all the time, they laid around a lot. Their babies were not so healthy as the people that were active.*
>
> *G008B: I think a lot of it goes through the blood and if you 're active, more oxygen going into your blood more, more oxygen will get to the baby. Keep the baby healthy.*

Three grandmothers had similar advice that they directed at young mothers in the

community. During her second interview, G003 was asked what she would tell women in the community:

> *G003: I'd tell them not to, you know, not lie around and let the baby get bigger and bigger. I think the baby grows more when you're resting too much and you lie around too much, not do anything, you know. I'd tell them to be active and eat good foods, the right kinds of foods and have rest too, you know.*

Throughout her interview, G013 had more advice to give on the subject:

> *G013: You know, I was telling these girls, a lot of young girls, I said you should, in the mornings, I said get up! I said, and do some work. Do things. Never mind if you're pregnant. That's why you got such big babies is you sleep too long. You're not up doing anything.*

5.1.2 Dietary Proscriptions

Ten grandmothers and eleven mothers spoke about specific foods or dietary practices they were taught to avoid while carrying their children. Although not as many women overall spoke about these discouraged practices compared to any cravings or aversions they may have experienced, there was a similar variety of food categories. Mothers, for example, discussed fourteen different substances or practices they were encouraged to avoid during their pregnancies. The most frequently cited included: Pepsi, fried food, vegetables, meat, alcohol, sweets, tea, salt, lard and the practice of smoking. Grandmothers noted thirteen separate categories. In addition to those referred to by the mothers, the older age group also discussed being taught to avoid canned foods as well as large quantities of food while pregnant.

When the young women were asked if there were foods that they were told not to eat during their pregnancies, ten responded, 'Pepsi'. However, only two mothers, M005 and M009, talked about Pepsi as exclusively being something to avoid. M005, for example, described how her family and friends made her feel if she had any Pepsi while

pregnant:

> *M005: Pepsi. If I had Pepsi, everyone would be like, don't drink that! Make me feel real guilty and...*
> *H: So you only had Pepsi from time to time?*
> *M005: Time to time, yeah. With my last two, my husband would only let me have one a day. He made me feel really guilty.*

During her interview M009 talked about feeling similar pressure from her doctor while attending prenatal visits at the local hospital:

> *H: Were there things you were told not to eat when you were pregnant?*
> *M009S: Not to drink so much Pepsi. That was all.*
> *H: Who would tell you that?*
> *M009S: The doctor. He explained to me, he said that when, when a woman goes into labour and kids com out and they're screaming or upset or whatever.....the same way they react when there's drugs in their system or they're FAS. He said that these babies come out addicted to something they don't know what it is. Because people aren't honest when they're asked all of these questions. So I ended up telling him, well I drink a 2 litre of Pepsi a day. He said that makes a big difference. He said they're going to come out and want caffeine. He said that's what makes them upset the first few days, but my babies weren't upset.*

The majority of mothers grouped Pepsi into the larger category of junk foods to be avoided during pregnancy. Four women grouped carbonated sweetened beverages as well as other caffeinated beverages, potato chips and other 'treats' into the same category. M004, when asked what things she was told to abstain from, immediately stated, "*junk food*", which she went on to describe as being, "*pop, coffee. That's it mostly that. Junk food, coffee, caffeine. Told not to eat stuff like that with caffeine in there.*" Other mothers, such as M007 also associated Pepsi with junk food and therefore something for pregnant women to avoid: "*Junk food. Just junk food and pop you try not to eat.*"

Both groups of women also talked about the effects and health outcomes of Pepsi consumption. Three mothers and one grandmother made comments about the sugar

content of Pepsi as well as the salt content of other 'junk' foods on the health of the mother and fetus. For example, these women talked about the adverse effects of sugar and salt on their health:

> *M001: Well, like if you don't eat right you're going to maybe get diabetes or high blood pressure and stuff like that. Mostly I stay away from like salty foods 'cause of high blood pressure, can make you have high blood pressure. So that's another thing too, like I quit using like salt in my, you know when you sprinkle salt? Yeah, I try and stay away from like salty foods like chips and stuff like that. And, like for me, I don't drink pop. Like I drink it once in a while, but not every day like some people.*

> *M006: Healthier, like it's...uh, I stay away from foods that are, that are no good for me. I found that out, cut down on my salt and sugar intake. 'Cause I, before I was pregnant, they said I was, my husband was getting after me for drinking too much Pepsi. [laughter] You shouldn't eat all that junk food, he used to say....get after me. So I find that I, I've smartened up when I'm...*[pregnant].

Two grandmothers also made similar comments but alluded to the adverse effects of junk foods, such as Pepsi, on the health of the developing child:

> *G004: I think that's why today there's so much hyper children, eh. Too much sugars and junk. Learning disabilities they have now. I don't, I don't think that's right that they keep feeding junk food to these young mothers, eh?*

> *G014: Well one thing I wouldn't eat, well, I never did like lots of sugar. But I wouldn't use lots of sugar and salt they used to say. And of course we never had Pepsi and all this kind of junk, you know. We never had potato chips and all that stuff.*
> *H: What do you think those kinds of things do to the baby?*
> *G014: Oh I hate them. I don't know, but they must do a lot of harm.*

Two other grandmothers and three mothers also responded with comments related to the physical health and well-being of the baby. G003 cited "*carbonated pop*" as being something her grandmother told her to stay away from. She explained that such "*gassy*" foods will, "*give the baby cramps, it will give you cramps, you know.*" G003 grouped 'pop' into the sweets category, which also included items such as cakes and chocolate.

Her grandmother also warned against such foods for different reasons:

> *G003: She said, that I shouldn't have too much, anything too much sweets like cakes and chocolate and all that stuff. She said you know, that was because it will make you big and fat, you know. And, of course, pop.*

Two mothers also spoke about the effects that carbonated items such as Pepsi or junk food would have on their unborn children:

> *M010: Well, with like the foods that I would eat I was like, I would give her a sore stomach or something you know. It was mostly fried foods that I would eat. I thought that when I did eat, it would affect her and that's what kind-of scared me. And even like soft drinks and powdered drinks....anything like pork rinds or treats, french fries.*

> *M012: Not to drink, drink pop.*
> *H: Your doctor said that as well?*
> *M012: Uh, huh. She said it would bother my stomach.*
> *H: How do you think that kind of food affects the baby?*
> *M012: Uh, I think give him like heartburn or something. Sore stomach.*

Another group of two women spoke similarly about carbonated beverages adversely affecting the health of their children post-natally. Both M003 and G007 separately made mention of breast milk being influenced by the mother's ingestion of "*canned drinks*" or pop. G007, in describing how her mother discouraged her from eating onions while breastfeeding, mentioned that carbonated beverages may also cause the baby to be "*gassy*" and have a sore stomach. She said, "*canned drinks, she never let me....see me drinking a soft drink. That's no good for your baby. Don't do that.*" M003 made similar comments:

> *M003: I guess in my life my kids are my first priority, even when I'm breastfeeding. Like, I've been drinking pop a lot lately and then one night she was really sick because I was drinking pop. And I just felt so bad. She was suffering because of me drinking pop and she was just gassed up and everything and then that night I decided I'm not going to drink pop any more because my baby's suffering too much.*
> *H: Have you noticed a difference since you stopped drinking so much pop?*

M003: Yeah. There's a big difference. That's how it was with all my kids I noticed. She's not as fussy and she's not suffering with a sore belly.
H: And you think it's like the gas in the pop or whatever that is affecting her tummy?
M003: Yes. She gets really gassed up. And that's how all my other babies were too.

In addition to carbonated beverages, junk food or sweets, other types of foods were categorized as taboo because of their similar propensity to cause indigestion. Three grandmothers and one mother talked about the adverse effects of certain vegetables they were advised against consuming while pregnant, and in some cases, while breastfeeding. For example, in addition to the pop and sweets G003's grandmother cautioned her against, there were other foods her grandmother called "*acidy*", which G003 defined as being as something that, "*will give me gas, or give the baby cramps.*" She was therefore discouraged from eating a variety of vegetables such as turnips, cucumber, cabbage or cauliflower. Eggs were allowed only infrequently, "*because she said they'll make you burp and you'll have indigestion, you know.*" While she was nursing her babies, there was another proscription:

G003: When I was nursing my baby, if I had too much orange that would sort of affect them...
H: And how did you think that affected the baby? Did you notice a difference in them?
G003: Yeah, I noticed it right away. She would cry and she'd have diarrhea like if you know, if I ate too much orange and that she'd go out quite a bit, but not have diarrhea, but go quite a bit loose, you know. And so I just had to watch what I done, what I ate.

Two other grandmothers made similar comments regarding their food intake while breastfeeding. G006, for example, talked about discontinuing the consumption of strong-tasting vegetables, " *If you were going to breast-feed, you couldn't eat turnips or couldn't eat cabbage and that was all.*" Onion was noted by G007:

G007: My mother used to tell me never eat onion when you're breastfeeding. And she said, my mother used to tell me, never eat onions because it will make your baby gassy. Give her a sore stomach.

One mother talked about being advised against the consumption of similar vegetables:

M005: Oh, my sister warned me not to eat cabbage and stuff like that. That would make me all gassy.
H: So that would bother you then?
M005: Yeah, cabbage and radishes.

One other category of foods was also associated with indigestion. Three mothers and one grandmother talked about being told to avoid spicy foods. One mother reported craving jalapeno peppers during one pregnancy, and her mother advised her against eating them. M003's mother told her she could, "*burn your baby*". A doctor also told M012 to stay away from spicy foods because, according to the doctor, "*they're not good for the baby.*" During her second interview, G008 also described the adverse effect of spicy foods on the baby:

G008B: Well, it takes your body more time to digest those kinds of things so it makes you tend to want to be more, you know, you want to sit around or lay around while those things are passing through you. Whereas if you are having more nutritional foods that give you more instant energy or up or about and activity is better for you while you're carrying the baby than when you're just laying around doing nothing most of the time.
H: What sort of nutritious foods do you mean?
G008B: Like just say a regular hamburger compared to those spicy taco things or something like that.

Only one woman talked about, as she referred to it, "*wives' tales*" or folklore surrounding dietary taboos during pregnancy. She recounted three distinct foods or food categories that her mother, her grandmother and her aunties had warned her against eating while she was carrying her children. The first was a proscription against the consumption of strawberries, blueberries and beets. M006 explained that these brightly

pigmented foods are believed to cause the baby to be born with marks on them, "*like strawberry marks or blueberry marks.*" She also talked about eggs as well as meat:

> *M006: My aunts or my mom, like the older ladies will say well don't eat this and this. Or don't eat too much. Said don't eat too much eggs because your baby will drool too much when they're born. After they're born they'll be messy babies, like they'll drool.*

> *M006: Just after the baby's born, not to eat any meat 'cause you'll clot your blood or something. Don't eat any meat, anything too solid.*

Another taboo that she couldn't quite recall had to do with lard. M006 talked about it during both her initial and secondary interviews:

> *M006: I can't remember what she said about lard. It has to do something with lard anyway...so the baby will have some kind of difficulty. I think it has something to do with when it comes down to having the baby.*
> *M006B: It had to do with, when it came down to labour, it was like, it was harder for the...to push out the baby. Like it was sort of like it made it kind of sticky sort of thing, like it was harder for the woman.*

All of the women interviewed in both age groups had comments that would be best described as advice related to maternal and fetal health. Many of these opinions and recommendations were phrased in the form of proscriptions, which have been described previously. Both mothers and grandmothers, however, also had a lot of advice concerning maternal and fetal size. Grandmothers had the most to say on this topic. Twelve of the thirteen grandmothers interviewed talked about the size of pregnant women currently, some with alarm:

> *G012: Why are some of these women so big? I see that some of them are pregnant, the ones I see, they lay in bed and order chicken from this....laying in bed! I see them there. When are you having your baby? End of November? Oh, holy heck! Think they have an elephant. Yeah, I think it's what they eat, but they should be careful what they eat.*

> *G013: I find these girls having such big babies 'cause there's....I don't know what they're eating. I think they're not eating the right foods to me, anyways and then*

they are not doing nothing. I can't believe how big some of these babies are. They're way too big. There's no need of it when they can control that.

Only the grandmothers discussed the regulation of food quantity during pregnancy, mainly in relation to the eventual size of the baby and possible difficulty during delivery. Six grandmothers talked about being encouraged to watch their food intake. The following grandmothers discussed the advice of their mothers and grandmothers:

G002: I don't even know what I ate, but my mother would tell me not to eat too much. That's all she used to say.
H: And why did she say that?
G002: I don't know. I guess because she thought I'd get bigger. Yeah. That's what she thought I guess. She'd say, don't eat too much of that, you know. You eat so much and then you going to eat again. Just eat sometime again. Don't eat it all the same time.

G003: Um, well she just told me, you know, don't...you eat moderate. Like don't go overfill yourself and that, you know. Know when to stop. People just go on eating, eating because it's good.
H: Why did your grandmother discourage you from getting big when you were pregnant?
G003: She said, oh, you know, your baby will be too big if you do those things and you'll have a real hard time to have the baby.

Two grandmothers also talked specifically about certain foods that were discouraged during pregnancy in order to reduce the baby's size. G011 recalled that "*the old grandparents used to tell us not to eat too much meat.*" When the investigator asked why the practice was encouraged, she responded, "*because they said it made the baby too big, too much weight and it would be a harder delivery.*" G011 also mentioned bannock as being another food that was not to be eaten in large quantity in order to keep the size and weight of the baby down.

G013 described her grandmother's advice to consume foods like fresh fruit

instead of "*fattening*" foods so she wouldn't be "*gaining all this weight.*" Another grandmother reported receiving similar advice from her doctor, also related to the amount of weight she was allowed to gain while pregnant. G006 said, "*you just watched your diet like you didn't put on too much weight and then we didn't. I wasn't heavy then.*" Others talked specifically about the size of the fetus. For example, G001 mentioned that she was told by her grandparents that if a pregnant woman slept too long, "*the baby's head grew and not the body.*" G003 also described her grandmother's advice, "*she said don't lie around, you rest, but she said just not too long. She said do your work because that way your baby will not be too big.*"

Although generally speaking, mothers had less advice to give, they also talked about weight, both in terms of pregnancy weight gain and the size of their newborn infants. Nine of the thirteen young women, or 69%, spoke about maternal and fetal weight. Five of these women talked about attempts to lose weight or difficulties losing weight. During her second interview, for example, M003 talked about being "*cautious*" about her diet while pregnant because she had gained "*so much weight*" with her first daughter:

> *M003B: I didn't want to gain as much weight with her because it's hard to lose. So I tried not to eat the...I didn't want to, I tried not to eat 'til I was full. I tried to stop before I got full. Tried to control how much I eat.*

M013 also talked about regretting the amount of weight she gained with her first pregnancy because she, "*had a hard time losing weight because I was 140 before I got pregnant and then all of a sudden going to 220 pounds.*"

Both of these mothers went on to explain that their efforts to control their weight in subsequent pregnancies were mainly out of concern for their babies. M003, for

example, described the advice she received from a nurse:

> *M003: Oh yeah, the nurse told me once...that's when I went over my weight that month. She said that the food that I eat like the fat foods, like McDonald's and pastries and stuff like that, will make my baby fat and I'll have a hard time to deliver. I didn't know that. Didn't know that she could* [be] *overweight.*

During her second interview she talked in more detail with regard to her baby's weight from her first pregnancy:

> *M003B: She was a very big baby and I had a hard labour and delivery with her. She broke her collarbone when she was, I don't know how to say it, when she was coming out because she was so big.*

She went on to clarify that she, "*didn't want that to happen to her* [second daughter], *because that's what....I gained lots of weight and my baby gained lots of weight too. She was almost 10 pounds.*"

M013 made similar comments and also expressed concern for future children as a result of the weight she gained with her first baby:

> *M013: I just ate like whatever. I just, I didn't think that really affect, but like when I was pregnant with her, I gained so much weight because I ate so much and she was 10 pounds 8 ounces when she was born. I thought, oh maybe eating all this junk, some of this junk food and stuff like this, take-outs maybe, it got her bigger too, like chubby. I ate, because I ate so much.*

M005 talked extensively about baby size and maternal weight gain. Her opinions and advice corresponded quite closely to the comments of the older age group. She began to discuss the weight gain of her peers during the second interview. She began, "*like some girls overdo it. Like they think well I'm pregnant, I'm eating for two, so they'll eat twice as much healthy foods, but they'll also eat twice as much junk food.*" Then she went on to describe opinions related to the size of the baby:

> *M005B: A lot of girls, especially the younger ones nowadays, like I'll take my girls to the hospital and they say, oh your kids are so tiny, they're so small. And*

they'll say it like it's insulting, like is your girl ever skinny. Especially her, they call her a bony baby. So they're bigger and the fatter they are they think it's more healthier. They think like I take care of my kid better or something like that.

Six grandmothers compared to only two of the mothers interviewed mentioned the prohibition of alcohol as well as smoking during pregnancy. The group of grandmothers talked about being strongly discouraged from drinking alcohol while they were carrying their children:

G004: One thing was I never touched alcohol. Never, Never.
H: Because you knew that would be bad for the baby?
G004: Yes. To this day I don't.

G005: If they want to have a healthy baby, you eat what's good for you. You know, and what's gonna, because what you eat the baby eats. What you put in your mouth the baby puts it his mouth. No alcohol. I never drank when I was pregnant.

G008: Not by the doctors, but the traditional way our grandmothers always told us not to put alcohol into our bodies while we were child-bearing age.

G013: Long ago we never had alcohol. Never. The elders would say no alcohol. It's no good for you. I never had alcohol when I had my children. No.

More of the younger women had comments pertaining to smoking. Two mothers, for example, talked about quitting smoking for the sake of their children. M006 stated that, "*as soon as I found out I was pregnant, I quit smoking and drinking right away.*" Another mother, M010, smoked during her early pregnancies, but quit when she became Christian. She did not smoke at all during her most recent pregnancy and stated, "*I notice a difference between this one and the other ones. It's in her health.*"

5.2 Psychologically Influenced Patterns and Preferences

When asked about dietary changes made during pregnancy, both age categories

commonly recounted either cravings for particular foods during pregnancy or the aversions they had to particular foods. Many of the women talked about strange food combinations they enjoyed or their experiences with morning sickness. For example, when asked what she remembered most about being pregnant, M003 referred immediately to cravings that she encountered during her first two pregnancies. She stated, *"I remember I started liking eggs with him,"* and continued, *"I never liked eggs before I was pregnant with him. And with my second, I remember I loved jalapenos. I couldn't get enough of them."*

5.2.1 Cravings

In addition to M003, each one of the mothers and grandmothers interviewed commented on specific foods they were particularly interested in eating while they were pregnant. There was, however, variation between age groups with regard to the types of foods cited, as is illustrated in Table 5.1. Generally speaking, there was a greater assortment of foods referred to by the group of mothers. All of the women spoke of cravings for: sweets; fresh fruits and vegetables; starchy foods, such as bannock or bread; milk products; eggs as well as certain varieties of meat. The group of mothers, however, described other cravings associated with fast foods or "*take outs*", pickles, Pepsi, spicy foods as well as an overall feeling of insatiable hunger. Of the thirteen young women, six commented on the quantity of food they consumed while pregnant:

> *M002: Yeah. I just ate and ate. And other girls would say like, 'oh aren't you scared you'll get big. Like what if you don't lose it?' And I said, 'I don't care. As long as the baby gets to eat and it's healthy.'* [laughter]
>
> *M003: I found that I was always, um, always hungry. Always wanted something to eat. Always wanted...when I was pregnant with my daughter S., I used to be able to eat a whole bag of chips.*

M013: Well I just, all I can remember is just that I ate a lot more. And the stuff that the Health Centre gave me, that guide to eat, I just ate all of those things.

Table 5.1: Categories of Cravings Cited by Age Group

Grandmothers	Mothers
Fruits and Vegetables (10) Sweets (6) Starchy Foods (5) Wild Meat (2) Dairy Products (3) Fast Foods (0) Pickles (0) Pepsi (0)	Fruits and Vegetables (10) Sweets (6) Starchy Foods (3) Wild Meat (6) Dairy Products (5) Fast Foods (9) Pickles (5) Pepsi (3)

A greater proportion (61.5%) of the mothers craved foods that they referred to as "*take outs*", or in some cases junk foods. Many of the mothers seemed to need to justify eating these foods while pregnant and often categorized them all as "treats" in reference to their relative infrequency of consumption:

M011: I, well, sometimes I was craving for McDonald's food. [H: Oh really, yeah?] But like that's two hours away. I treated myself when I went in there, like I would have a Quarter Pounder with cheese, or whatever, like you know. But that's not like every darn day. [laughter] *Only once in a while like when I'd go in for my appointment in there.*

The same woman went on to explain what she did to compensate for eating fast foods during her pregnancy:

H: So you may have, like the odd craving for McDonald's or something?
M011: When I went in, like I would treat myself. I'd walk. Like I did a lot of walking, eh? Like I'd walk around in there, in malls there, and eat in one of those fast foods or whatever.
H: Yeah. Food court or whatever.
M011: Uh, huh. So whatever I had a craving for, mostly hamburgers like.

An even larger number of both mothers and grandmothers reported craving fresh

fruits and vegetables during their pregnancies. Twenty women (76.9%) in both age categories gave examples of a wide variety of fresh produce. Six of the grandmothers' comments responded to the investigator's question concerning what they would have liked to have eaten more of when they were pregnant:

> *H: Is there anything you couldn't eat?*
> *G011: No, there was, like uh, when we had no refrigeration or anything. There was no....we didn't have all the fruit we would have liked to have.*
> *H: The fresh fruit?*
> *G011: Yeah. Apples were a treat, you know. Any other kind of fruit was a treat.*

> *H: Was there anything that you felt, when you were pregnant, that you would have liked to have eaten but you couldn't for some reason?*
> *G014: Well in the winter time, I used to wish for fresh oranges or something like that. Because that was my favourite.*

When referring to fresh vegetables, two other grandmothers talked about cravings for potatoes and other fresh, home-grown produce when they were carrying their children:

> *H: Do you remember some of the things that you craved for?*
> *G007: Like potatoes, yeah. I really liked potatoes. I don't know why. I just craved for them. Fried. Cooked like and then cold and then fry them. Yeah.*

> *H: Did you have cravings for certain things?*
> *G013: Well I always liked to eat a fried potato. Cut up fried potato. Oh, I can eat a fried potato.*
> *H: Yeah. You really liked that?*
> *G013: And I liked cucumbers. Mostly the vegetables. They were really good to eat.*

Although the mothers also spoke about an increased interest in eating fruits and vegetables during their pregnancies, their responses often resulted from a different line of questioning. For example, the majority (60%) of their comments arose after the investigator asked what types of foods they would consume particularly for the health of their baby. M004 indicated that she would consume a variety of vegetables and fruit. As she said, "*I used to always crave for vegetables and fruit.*" M010 also indicated that she

ate a lot of vegetables for the health of her baby: "*I liked cooking soup and a lot of vegetables. I just loved vegetables. With my last one that's all I ate, all I was eating was vegetables.*" M013 had similar comments:

> *H: Can you give me any examples of anything special you would eat for the health of your baby?*
> *M013: Guess mostly fruits and vegetables. Strawberries, blueberries.*
> *H: Would you get them fresh or frozen?*
> *M013: Yeah, I get fresh ones, like we used to go picking around here too. Yeah, oranges, apples, bananas. I like bananas.*
> *H: When you buy vegetables, do you usually buy fresh or frozen or...*
> *M013: Yeah. All kinds. Canned or fresh. I ate a lot of tomatoes too. Like cold tomatoes. I never used to like those before. I'd just grab them like and eat them whole.*

Two mothers spoke of cravings for fresh produce and the desire to purchase more fruits and vegetables more often when they were pregnant. M003, however, found the prices restrictive. She commented, "*I think I ate more fruit* [when I was pregnant]. *But it was really hard to afford a lot of those things.*" M005 also spoke about the expense as well as the quality of fruits and vegetables locally when asked what foods she would have liked to buy more often when pregnant:

> *M005: Actually with fruits and vegetables, it's harder to get it out here because they're not always fresh and they're, like compared to in the city, like a 10 lb bag of potatoes is like three dollars. Out here it's like six.*
> *H: Okay.*
> *M005: And lots of times we, like I want to buy fruit, like even apples and oranges and that; they're really ugly and bruised up and dry.*

Both groups of mothers and grandmothers frequently mentioned craving foods many referred to as sweets. Again, an equal number from each group, twelve women in total, reported craving sweet foods while pregnant. Foods that the group of grandmothers cited included: homemade jams, cookies, ice cream as well as commercial corn syrup. As G001 described, "*I used to like eating jam, homemade jam and ice cream. I mean cream*

and bannock." G006 only discussed craving, "*Bee Hive corn syrup. Oh, I used to just...I could drink that!*" G002 and G012 also talked about sweets:

> *G002: Sometimes I thought I'd reach for, what do you call it, raspberries or strawberries to eat jam you know? But I used to make jam. Used to make jam like that.*
> *H: But you liked having berries when you were pregnant, something sweet?*
> *G002: Yeah, something sweet to eat.....once in a while. Not all the time, but....yeah that's funny eh?*
>
> *H: Was there anything you would have liked to have eaten when you were pregnant, but couldn't for some reason?*
> *G012: Um. Like nice cookies or something, eh?*
> *H: Something homemade?*
> *G012: Yeah. Homemade. A nice homemade cake or something.*
> *H: Something sweet.*
> *G012: Yeah, and pudding, you know. Like, but I never could afford those.*

Only two of the mothers reported craving similar foods such as ice cream during their pregnancies. More commonly, sweets that were mentioned by four other women ranged from pastries to various types of sweetened carbonated beverages and chocolate bars, all of which were more processed in nature and easily accessible. As M003 commented, "*I liked to eat more sweets with her, like pastries. Pastries....I liked eating pastries with her.*" M007 talked about wanting more juice as well as junk foods. She stated, "*like I just craved for chocolate or I'll eat like candy or chips or something.*"

One of the mothers also made a comment comparing the foods that she consumed when she was pregnant with her mother and grandmother. M005 explained why she thought she consumed more sweet foods, or foods containing sugar, than older female family members:

> *M005: My mom, like she just said, she said all she could eat when she was pregnant with most of her pregnancies, like she said that's why she found me so weird. She'd like mashed potatoes and pork chops or steak or something with no, with nothing at all. She wouldn't add nothing. Really, really bland. But me, I'd*

always crave like, I'd make a cake or I'd have a little ice cream or something like that.

Reference to the sweetened carbonated beverage Pepsi was common throughout the interviews, particularly with the mothers. Six mothers and two grandmothers had various comments related to Pepsi. Three mothers, including M005 quoted above, described craving Pepsi during their pregnancies, although with the knowledge that it was having an effect on the child they were carrying. Although M005 enjoyed drinking Pepsi while pregnant, her husband would try and restrict the amount she consumed. As she said, "*he made me feel really guilty. Giving my baby Pepsi!*" M013 also tried to limit her Pepsi intake prenatally even though she felt, "*sometimes I just have to like have Pepsi once in a while, chips and that.*" Another mother discussed Pepsi's influence on her children:

M002: I notice I really like Pepsi a lot. With my first one, oh I drank it lots but it's like, he doesn't really like Pepsi at all now. I guess I drank too much.
H: That's interesting.
M002: Yeah, he doesn't like it. Like I say I drank too much when I was pregnant with him. [chuckle] And the next one I couldn't even drink Pepsi at all. Yeah, the baby didn't like it. But then with her, I drank a lot of Pepsi with her too and I noticed she had, I had, she had hiccups lots inside me, like just about every other day she'd have bad hiccups. [chuckle]

5.2.2 Pica

Another type of craving that seems to be unique during pregnancy for women in many parts of the word is generally referred to as pica.[1] During the semi-structured interviews with this group of women, three mothers referred to intense cravings for non-food substances as well as ice. Although the older generation of women did not cite any similar examples, the younger women who spoke of these types of cravings often

[1] For more background information and discussion on this topic, refer to section 3.5.1.3

recounted similar experiences that their mothers or older female family members had shared:

> *M002B: I know my one, one of my aunties and she was pregnant with, like it was her oldest or second oldest. She always had a craving for mud. [H: Okay.] I remember watching her. 'How come you're eating mud?' 'Oh,' she said, 'I was just wishing for it. The baby's wishing for it.'*

> *M003: My mom craved for that, they called it mud. On the side of, what they used to make log cabins out of. That stuff in the middle. She used to crave for that.*
> *H: Is it like more like a clay, like a really thick mud?*
> *M003: Yeah. She used to crave for that. And my mom said that my auntie used to crave, my Aunt D. used to crave dirt. She used to eat soil.*

None of the mothers themselves actually mentioned instances of themselves eating any type of clay or soil, a type of pica that is often referred to as geophagia. Two of the mothers made comments about craving ice while they were pregnant, a practice termed pagophagia:

> *M002: I was pregnant with my first two in the wintertime. Oh, I would run around store to store, do you have any ice? Ice! It's wintertime! [laughter]*
> *H: What did you like about the ice that made you crave it, do you think?*
> *M002: I didn't even know. I ate lots of ice anyway with all three of them. Crunched it, yeah. I used to buy like at least four or five bags to last at least one month.*
> *H: Really? What would you do? Just put a bunch in a cup and chew?*
> *M002: [laughing] Snack on it and, while I watch T.V. or if I was eating supper or something I would. It's because too, I didn't like really drinking water that much either so.....*

The second mother that described craving ice could only eat it with a beverage that she craved as well:

> *M009S: But I have a thing for chewing ice when I'm pregnant. I fill a while big cup up with ice and I've tried it with water. I've tried it with orange juice; I've tried it with everything else.*
> *H: It's not the same?*
> *M009S: It just doesn't make the ice taste right unless you have Pepsi in there. So because I'm constantly chewing ice, I'm constantly pouring Pepsi over it.*

A third type of non-food substance was mentioned by a third mother, who talked about an unusual craving for toilet paper during one of her pregnancies:

> *M003: Yeah. And also I craved for toilet paper. [H: Pardon?] I ate toilet paper. It was my craving with her. Just really surprised. Was really craving for something one day and I didn't know what. Anyway, um, I was in the washroom one day and I seen a flat piece of toilet paper floating on top of the toilet and I looked down.....I can't be wishing for that! [laughter] And so I took some toilet paper, I put it flat on my tongue and that's what I was wishing for. I couldn't stop eating toilet paper after that.*

During secondary interviews with both M003 and M002, the topic of cravings was raised once more. The investigator took the opportunity during these unstructured interviews to ask both women to explain their interpretations of cravings, particularly in reference to pica. M003 described her unique liking for toilet paper in more detail:

> *M003B: Well I liked eating toilet paper. I liked how it felt on my tongue. And then when I'd roll it around on my tongue. It feels nice going down.*
> *H: So it's more like the consistency? You were craving to eat something with that consistency?*
> *M003B: Yeah. And then I guess my mom and them, like they must have liked how it felt between their teeth and....but it wasn't really the taste.*
> *H: Okay, so it's more like the consistency that's making you want to find something that's like that?*
> *M003B: Uh, huh. Just by looking at it. Just by looking at the toilet paper that time...I knew that, I knew that I was craving for that but I couldn't believe it. 'Cause before then I was really craving for something, I didn't know what. Like nothing would satisfy, satisfy me.*

Judging from this account, M003 related her craving experience to a desire for physical satisfaction of her own wants during her pregnancy. Her seeming irrational craving she describes as being based on an inner yearning for the physical nature of the paper substance. M002, on the other hand, is more definite in her explanation of the origins of her cravings:

> *H: It seemed like you were saying that cravings were linked to what the baby wants. Do you think that's true?*

M002B: I think that's true, yeah.
H: Why do you think that?
M002B: Well, because there's things that I didn't even like to eat at all that I craved for that I never eat. Like I never really cared for bread, I mean toasted bread, mustard and green onions...[laughs] and I just, I don't know. Mostly weird, I don't know....it's a weird, different foods mixed together that normally don't go together.

She went on to describe other experiences of geophagia in her own family, as well as her own craving for ice while pregnant. She also related these types of cravings to the needs of the fetus: "*they say that when they eat stuff like that, that's when they're lacking of iron, because one of my kids are, well they still eat mud once in a while my dad says don't give them heck, oh they're low on iron.*"

5.2.3 Maternal Aversions to Food

Another common theme that is traceable throughout almost every interview with both grandmothers and mothers is the aversion to specific types of food or foods while pregnant. Each of the mothers commented on their dislike of various drinks and food items such as sweets, vegetables, meat, milk, eggs, garlic, onion, Pepsi as well as greasy, spicy and starchy foods (see Table 5.2). All but one of the grandmothers also described types of foods that they were not interested in eating, some recalling these experiences with clarity even after thirty or more years had passed. The grandmothers also described their dislike of milk, meat, vegetables, eggs and sweets. Although the mothers made more comments, reflecting a wider selection of foods, the most common aversion to both generations was meat.

Five grandmothers made comments related to a variety of meats that they were not interested in eating during their pregnancies. G013 for example, recounted her sudden dislike of meat from the store: "*I don't care for meat* [from the store]. *I don't.*" Another

grandmother, G008, also described her dislike of foods that her doctor suggested to elevate her iron levels while pregnant. She had a strong aversion to liver, but she said, "*I went ahead and ate* [it] *anyway because he thought I should have* [it] *in the best interest of the baby.*" The three other grandmothers described aversions they had to more traditional types of meat from the land. One woman described her intense dislike for fish:

> *H: Were there things that you really didn't care for when you were pregnant?*
> *G007: Yeah, there was things that I didn't care for. Fish. Yeah, didn't like the smell of fish! It makes me sick.*
> *H: All different kinds of fish?*
> *G007: Yeah, uh, huh.*
> *H: And before you were pregnant was fish an okay thing to eat?*
> *G007: It was alright yeah, I'd eat it.*
> *H: But not when you were pregnant.*
> *G007: No.*

The other two types of wild meats cited by grandmothers were muskrat meat and elk meat. One grandmother described, for example, how the sight of a cooked muskrat repulsed her:

> *G014: I remember long ago the old people used to cook the muskrats, you know. That was something everybody liked. And it looked good and everything, but do you think I could swallow it? I could get it in my mouth, but I couldn't swallow it. That's the only thing. I don't know. Just the way it looks. It tastes all right, but just the way it looks, like a house rat or something. [laughs]*

G005 also described an extreme dislike of elk meat, even though it was very commonly served in her home where she grew up in a more northern community. She explained that she only understood why she wasn't able to eat it when she received her Indian name, after all of her children were born. As she described, "*I could never, never eat elk meat. And I....when I got my name, I knew why I couldn't eat elk meat because that's my name, Little Elk Woman.*"

A total of eight mothers also spoke about their dislike of a number of different

meats while they were carrying their babies. All of these young women specified store bought meats or commercially-prepared meat products as those that made them feel the most nauseous. For example, M009S described a dislike for pork products during her last pregnancy: "*Ham. I didn't like ham or bacon towards the end. But that was it and those are my favourites.*" Three other mothers also explained their aversions to certain domestic meat products:

> *M007: Well beginning of my pregnancy, I didn't hardly eat because like food would make me sick. Like hamburger, the smell of it and I didn't like hamburger. I never ate hamburger all through my pregnancy. But now that I'm not pregnant, I eat hamburger and now I don't like chicken. When I was pregnant I liked chicken.*
>
> *M013: I never really liked meat that much. When I was young I used to love it. I don't know why. Just because with both of my pregnancies I just didn't like it. Even now I don't feel like eating it as much.*
>
> *M014: The only thing I like eating is pork chops. But like chicken or bologna or hamburger....I just rather go without.*

Table 5.2: Food Aversion Categories Cited by Age Group

Grandmothers	Mothers
Meat (5)	Meat (8)
Vegetables (5)	Vegetables (2)
Milk (2)	Milk (5)
Eggs (2)	Eggs (3)
Sweets (2)	Sweets (2)
Greasy foods (1)	Greasy foods (6)
Starchy foods (1)	Starchy foods (3)
Spicy foods (0)	Spicy foods (5)
Pepsi (0)	Pepsi (2)

Many of the passages where the mothers cited meat as an aversion, primarily in reference to fast foods, also included comments related to 'greasy' foods or 'junk' foods

as well as 'spicy' foods. Six mothers talked specifically about not wanting to consume greasy foods while pregnant. Four of those same mothers also inter-related the two concepts of greasy or spicy, sometimes referred to collectively as strong-tasting foods such as pizza. As M005 described, "*Oh, they usually like lasagne. I just love lasagne. And pizza, I couldn't even....pizza was too much!* M006 and M014 also found pizza to be too flavourful during pregnancy:

> *M006: Oh, pizza. I couldn't eat pizza. Not with the second one. Fast, like fast foods, greasy foods I couldn't.*
> *H: Yeah, or strong-tasting foods, like with a lot of flavour to them?*
> *M006: Uh, huh. It was more or less just basic.*

> *M014: I don't, well, I don't eat pizza at all.*
> *H: Before you were pregnant or just...*
> *M014: No. Well I used to eat it, but I don't now.*
> *H: Just currently with this pregnancy?*
> *M014: Yeah, like hot dogs and hamburgers I can't eat either.*

M013 associated 'spicy' foods with causing very bad heartburn with both of her previous pregnancies. She found the heartburn so severe that she wasn't able to sleep at night and often had to sleep often sitting up after eating foods that were, "*especially like spicy and...pizza and stuff like that.*"

Four mothers also described their dislike of meat prepared at fast food establishments. Descriptions such as 'spicy' and 'greasy' were again used when talking about commercially-prepared fried chicken as well as foods from *McDonald's*. As M005 explained, "*even chicken, like chicken from the restaurants and that, I couldn't even eat that. It was too spicy.*" M014 reported:

> *M014: When we go through, like the drive through or whatever at McDonald's, and then I don't get nothing. Or I'll try, you know, I'll try to have nothing. Because I tried it and it just made me sick.*

M006, who was pregnant with her third child at the time she was interviewed, also gave the example of fast foods, such as burgers and other foods that she normally enjoyed eating as being difficult to digest. She recalled, "*I had a Big Mac there last Friday, and I ended up getting a sore stomach. [H: Yeah, why do you think that is?] I would think because as soon as I eat store bought meat I feel sick.*"

Only one grandmother talked about similar types of foods influencing her pregnancies. When G011 was asked whether or not she thought the food she consumed while pregnant influenced her health or the baby's health, she replied:

> *G011: The only thing, I don't think it in my heart, but there was some food, rich food or something, something oily or greasy, it would give me heartburn. I get that, you know. That's the only thing. I don't think it has anything to do with your heart though, it's your...*
> *H: Your digestive system?*
> *G011: Yeah.*
> *H: And it's only more greasy foods that would bother you?*
> *G011: Yeah. Greasy food or spicy food.*

Another category of aversions that was more common to the group of mothers than the older age group was the avoidance of milk. A total of five mothers compared to a smaller group of only two grandmothers described aversions to milk or milk products. Three young women described an extreme dislike for milk while pregnant. One mother confided that she never particularly liked milk. She went on to explain that while she was carrying her daughters, she found milk made her feel even more nauseous and, "*I had to force myself sometimes* [to drink it] *because I knew I had to.*" The other two mothers complained of aversions to milk during the later part of their pregnancies:

> *M002: Milk. I had a hard time to drink milk. Like the, with my first, the first one, I was able to drink milk right till like I was four months, and then after that, I couldn't. Just made me sick. Made me feel really nauseous and everything so I just started eating more ice cream and more cheese. It didn't really bother me*

that stuff.

M006, who was pregnant when interviewed, described eating quite a lot of commercially prepared cereal during the first part of her pregnancy. She felt that eating more *Corn Flakes* was the only way to have more milk in her diet but had to discontinue the practice during her second trimester because, "*the milk doesn't agree with me now.*"

One grandmother also talked at length about wanting to drink milk while she was pregnant, but had an aversion to it that stemmed from a childhood experience. She explained, "*I tried to drink milk, a lot of milk. As much milk as I could, canned milk again. I can't drink cow milk.*" When she was a child, however, she used to drink cow's milk at home because her family had a milking cow. At the age of thirteen she was in the hospital with tuberculosis, and she describes the circumstances that led to her dislike of milk:

> *G005: In the morning and in the evening, the nurses would bring us...they'd put them on our table and say, 'drink that milk!' And I could, I knew it was goat's milk. And I thought, I can't drink that milk!*

Another grandmother and one mother also stated their dislike of ice cream while pregnant. G013 complained that she "*couldn't stand ice cream*" in addition to the fact that she "*didn't care for any kind of milk or anything like that.*" M014, who was pregnant during her interview also commented, " *I don't eat, I don't eat ice cream. Not this pregnancy.*"

On the topic of vegetables, however, the grandmothers had more to say. Five grandmothers, compared to two mothers, complained about consuming certain vegetables while they pregnant. Overall, these grandmothers seemed to prefer a more traditional meat and potatoes diet while pregnant and had difficulty eating new, unfamiliar

vegetables. For example, one woman was introduced to different vegetables when she was newly married and pregnant for the first time:

> *G004: Turnip. I hated it. I hated tomatoes 'cause down there we didn't plant. At home we didn't plant tomatoes or rutabaga. So when we come to the farm, when I came to live at the farm and had to eat all that, oh I just used to gag on it, eh, because I wasn't used to eating things like that! [laughter]*

Another grandmother didn't seem to mind raw vegetables she was familiar with from her own garden. She describes her preferred diet as being, "*meat and potatoes. Once in a while I'll have carrots, turnips and cabbage.*" When she was pregnant she said she enjoyed, "*lettuce, radish. I eat that raw. Cooked vegetables, I didn't care for them.*"

Two mothers cited aversions to vegetables that were unique to each woman. One participant described a sudden dislike of pickles after consuming a whole jar one day. The only other mother to mention an aversion to vegetables identified onion as something she avoided throughout both of her pregnancies.

5.3 Discussion

Although the findings described in this chapter are undoubtedly reflective of the somewhat exploratory nature of this study, some interesting patterns and responses did indeed emerge and warrant discussion. Maternal dietary and lifestyle patterns have changed considerably between the two generations of women. Grandmothers particularly expressed their concern for the current health of mothers and their children. Unhealthy foods and lack of activity were targeted specifically as being to blame for mothers gaining too much weight prenatally and babies being born too large. Both mothers and grandmothers discussed similar foods they felt were healthy prenatally such as fruits and

vegetables, as well as milk. Foods and beverages that were proscribed were also similar between generations. Junk foods and sweets were viewed as being most harmful. Mothers, however, more commonly mentioned junk foods, such as Pepsi and other fast foods, as being particularly desirable during pregnancy. Both groups were less likely to be interested in eating store-bought meats or milk prenatally.

Similar advice in the form of dietary and behavioural prescriptions and proscriptions were found in the scientific literature, although few articles discussed prenatal practices in Aboriginal communities. Only six published articles were located that described maternal diets in North American Indigenous communities. Hildebrand (1970) and Sokoloski (1995) discussed the nutritional value and adequacy of maternal diets in Minnesota and Manitoba, respectively. In northern Alberta, Neander and Morse (1989) found good nutritional practices to be prescribed. Sokoloski reported for a small stratified group of First Nations women results that bear some likeness to comments made particularly by the group of grandmothers in the present study:

> *A well-balanced diet and moderate portions are believed to help maintain a healthy pregnancy. Foods such as wild meat or fish, white carrots, potatoes, rice and berries are thought to be particularly beneficial. Exercise in moderation is believed to be a healthy practice during pregnancy.* (p.95)

Hildebrand also commented that the mothers she observed were healthy and well nourished, particularly given the natural foods they were able to obtain from the wild. Chippewa women were also encouraged to "do hard work" (p.36) while pregnant. These comments are also reminiscent of the voices of the group of grandmothers. However, Hildebrand continued on to report that the women in her study felt that if they remained very active, the child would be "loosened" which made the delivery easier. Neander and

Morse also described advice during the prenatal period to eat healthfully and not to sleep excessively during the second and third trimester. The fear was that the baby would become too large and cause a difficult delivery. These beliefs were also shared by the group of grandmothers. In addition, Clarke (1990) reported in the most detail the difficulties that inactivity could cause: "the baby to have a hard time during labour, the woman to have a hard; long and dry labour and a large baby; the baby to be unhealthy, lazy; the baby to be stuck to one part of the body and womb."(p.28)

Almost half of the grandmothers also spoke about the regulation of food quantity during pregnancy. Two older participants also talked about discouraging the consumption of foods such as meat and bannock in order to keep the weight of the baby down. Food was also somewhat restricted, mainly during the later part of the pregnancy, to prevent problems in labour in a number of other North American Aboriginal communities. In Washington State, for example, Bushnell (1981) found similar practices to be prescribed. Women were encouraged to eat less near term and walk frequently in order to assure a smaller baby, and thus less traumatic delivery. One participant in the study recalled being told by her mother to get up early every morning and walk. Hildebrand also mentioned that women were not to eat too much food at any time during pregnancy, but particularly immediately prior to birth in order to better facilitate the birthing process.

A *Nutrition Newsletter* published in 1982 by Health and Welfare Canada informally chronicled traditional prenatal customs and practices among Canadian First Nations and uncovered similar results. In Saskatchewan, women were also encouraged to work and exercise in order to decrease the size of the fetus. In British Columbia pregnant women were encouraged to walk and get up early in the morning which "helped the baby

move around and it wouldn't stay in one place when it was time for birth."(p.19) This Coast-Salish community also explained that a pregnant woman's daily meal generally consisted of meat, fish and vegetables. As the grandmothers in this study also inferred, the women ate whatever they had in their home, or whatever they could afford.

A number of other interesting food and conduct prohibitions were mainly described by the grandmothers which correlate to those reported in the literature. Both Clarke and Hildebrand described culturally-based food restrictions based on their potential affect, or "marking" on the unborn child. For instance, Clarke noted that crab was prohibited for consumption during pregnancy because the crab's characteristics may adversely influence the baby's. The baby may grow up with "bow legs" and have soft bones. As one of the mothers also described in this study, strawberries were prohibited for the red skin marks they may make on the child. Hildebrand also uncovered a variety of food taboos such as encouraging mothers to refrain from the consumption of seagull's eggs since they were freckled and may thus influence the complexion of the child.

Other dietary proscriptions described by the sample of women in Peguis, such as the mothers being discouraged from consuming junk food, Pepsi and spicy or greasy foods do not seem to be substantiated by the literature. The majority of the taboos or restrictions seem to be mainly related to appropriate weight gain and size of the fetus, which are perhaps teachings that are more culturally embedded. According to the grandmothers, factors affecting the child's entrance into the world seem to be of most influence in the promotion of maternal as well as fetal health. Throughout Southeast Asia the restriction of food intake during pregnancy also remains one of the most prominent proscriptions for women in order to avoid giving birth to a large baby (Nag, 1994;

Manderson & Matthews, 1981; Stewart & Whiteford, 1987). In India these ideas or beliefs are reinforced through the concept of "baby space." The preference for a small baby is believed to ensure the fetus adequate space for movement and proper development. For this reason, Indian women are also encouraged to avoid the consumption of gaseous foods, such as fruits, vegetables and pulses (Nichter & Nichter, 1983).

Foods that were proscribed because of their potentially adverse affects on the fetus were also described by both generations of the sample. The mothers mainly referred to spicy or greasy foods causing indigestion and being told by medical professionals to discontinue their consumption. Vegetables, however, were the main source of gastro-intestinal discomfort for the group of grandmothers. Certain vegetables were referred to as being "acidy" which could result in causing cramping in mother and child. One mother also complained that too much Pepsi would cause similar problems and discomfort for her child. Given the evidence of the responses from all of the study participants, food consumption during pregnancy may be influenced by physiological as well as psychological needs. A variety of food aversions and cravings, including the practice of pica, were described by these women. Cravings seemed to be most easily recalled by the group of mothers, although similar foods were noted by both groups. Fruits and vegetables were most commonly craved, followed by sweets, starchy foods, wild meat and dairy products. The mothers also described a number of commerically-prepared items such as fast food products, pickles and Pepsi, which were also particularly desirable during pregnancy. These responses interestingly correspond quite closely to available sources of literature. Although no Aboriginal sources were found, in a recent review

article, however, King (2000) reported that the most commonly reported craved foods by pregnant women are dairy and sweet foods. Foods most often avoided are usually good sources of animal protein, such as milk, lean meats, pork and liver. King goes on to infer that in general most food cravings cause an increase in calcium and energy intakes, whereas food aversions can cause a decrease in alcohol, caffeine and animal protein intakes. She concludes that cravings and aversions during pregnancy do not necessarily have an adverse effect on diet quality. It is interesting to note, however, that both groups of women cited craving vegetables, in addition to sweeter fruits, as well as wild meat. These responses appear to be unique to the sample. In a cross-cultural study of pregnant Black, Cambodian, Caucasian and Hispanic women conducted by Coronios-Vargas and colleagues (1992), groups tended to crave foods that were reflective of their cultural heritage and identity. In terms of food aversions, only a small number of women in the present study spoke about aversions to unfamiliar or strong-tasting vegetables during pregnancy. Otherwise the responses of mainly animal-protein-based foods seem consistent with the literature. The mothers' responses of greasy or spicy foods such as pizza seemed even more closely tied to the aversion responses of adolescent women in the United States (Pope et al., 1992).

Pica was practiced by three young women participating in the study. One mother described eating toilet paper and other female family members who consumed dirt or clay while pregnant. The regular consumption of ice was also practiced by two other mothers. Only one literature source was located that examined geophagia in an Aboriginal community in northern Australia (Bateson & Lebroy, 1978). According to the clinical examination of eleven Aboriginal patients, the practice of eating white clay was most

commonly associated with anemia or pregnancy. It was also discovered that the clay is eaten mainly for medicinal purposes to cure stomach aches, diarrhea or simply to "settle the stomach". A more recent review article on geophagia that discussed they many hypotheses put forward to explain the practice also came to similar conclusions. Reid (1992) concluded that although pregnant women are often at risk of anemia there is no reason to conclude that they eat clay simply because they lack iron. He cautions that certain clays may in fact interfere with iron and other mineral absorption and postulates instead that such a widespread practice must somehow be adaptive in nature. As he asserts, "a stronger case can be made for the role of clay in traditional diets and medicine as an absorber of dietary, bacterial, and metabolic toxins and hydrogen ions which give rise to nausea, vomiting and diarrhea." (p.347) Given these interpretations, it is interesting to note that grandmothers did not refer directly to this practice. This outcome may be due to poor recall or perhaps their much more active lifestyle and traditional diet could be associated with less difficulty with nausea and ailments of a gastro-intestinal nature during pregnancy.

The rationale and reasoning behind many of these ideologies, proscriptions and prescriptions also deserve reflection. There is scant amount of interpretation in the literature, however, as to the implications of gestational dietary behaviours. Early articles suggest that perhaps many of the food taboos may have originated as public health measures against disease or foods with certain toxic properties. A study in East Africa also proposed that perhaps the observance of taboos by pregnant women may be related to totem observance. Therefore, a tribe that has the buffalo as its totem would not consume that particular animal (Trant, 1954). Two participants in this study, a mother

and grandmother, made reference to cultural associations being made with animals which were restricted for consumption. Another author has suggested that perhaps such food taboos, however, are mainly observed to prevent nausea, vomiting, indigestion and discomfort and that certain nutritious foods were instinctively selected by women during their pregnancies to enrich the diet with necessary nutrients (Rao, 1985). Clarke (1990) acknowledges the presence of such beliefs. For the Coast-Salish women she studied if a woman "listened" to her body, she could learn what was harmful or beneficial to her health and her baby's health.

Another interesting analysis is put forward by E.M. Rosenberg (cf Jerome et al., 1980). He contends that maternal nutritional deprivation is an important cross-cultural means of population control. Although in many societies the female may have direct access to the best food sources, access rights are often curtailed through, "jural rules or supernatural sanctions based upon the contaminating or polluting nature of the female essence" (cf Jerome et al., 1980; p. 183). Similarly, Nichter and Nichter (1983) put forward another example of gender bias related to women's dietary prescriptions and restrictions in southern India. If a male member of a family in Karnataka State is ill, it is not uncommon for the diet of the family to be altered in order to follow indigenous dietary guidelines. The male is also usually offered special foods. Conversely, when a woman is ill or pregnant, provisions for securing special foods are rarely made. Observations of pregnant women, particularly among the poor of the region, revealed that dietary restrictions influence dietary behaviour far more than the prescriptions reported to the authors. As described in a study from Bangladesh where women also have inferior status, pregnancy cravings or *dola duka* may simply result from desire for recognition by

her husband and family circle (Khare & Rao, 1986).

Regardless of the variety of hypotheses and explanations put forward, the patterns of beliefs regarding prenatal diet and nutrition are obviously quite complex. As Fieldhouse (1986) has stated: "the interrelationships of food habits with other elements of cultural behaviour and with environmental forces emphasizes the futility of treating food choices as being intellectual decisions made on rational nutritional grounds alone." (p.27) As Loughlin (1965), Bushnell (1981) and Sokoloski (1994) describe, for many Aboriginal women pregnancy is viewed as a normal and a natural event requiring no medical intervention. It is not believed to be a sickness. Loughlin found that Navajo women question the need for prenatal care when an expectant mother generally continues with her usual lifestyle and dietary habits. These sentiments were certainly echoed by the older women in Peguis, while the younger women tended to have a more medicalized view of pregnancy and childbirth. Although few mothers reported attending formal prenatal classes, all visited the hospital regularly.

These dietary and behavioural prescriptions as well as proscriptions described by both generations may provide insight into cultural mechanisms through which prenatal health information is disseminated in the community. For example, the prenatal dietary advice that the group of grandmothers received is not entirely different from the prescriptions described by the young mothers. Both groups indicated the importance of consuming fruits, vegetables as well as milk during pregnancy for the optimal health of mother and child. The grandmothers, however, tended to emphasize the greater value of fresh foods, promoting the consumption of fresh vegetables from the garden. Many also stressed that foods are of more nutritional benefit when prepared without the use of added

oil or frying. Boiling or roasting foods, as was practiced traditionally, was viewed as being of greater benefit to maternal as well as fetal health. Grandmothers also talked at great length about the importance of exercise. All of these teachings they had learned from their mothers or grandmothers. The responses from the younger participants, although similar to their elders, seemed to be associated with medical advice or formal nutrition education messages they had received or been exposed to. Three of the young women referred to brochures received from local health personnel when itemizing healthful dietary options. For the younger generation, prenatal health education and teachings may therefore be assumed to have originated from health professionals instead of more informal familial contacts.

Although the group of mothers may therefore be equipped with, what Clarke (1990) refers to as these more "common sense" or contemporary teachings, traditional advice or direction from their own mothers or grandmothers was noticeably absent in the interviews. In Clarke's study of childbearing practices of the Coast Salish Nation in British Columbia, she discovered that "traditional teachings about emotions and spirituality"(p.26) were associated with higher levels of commitment and behavioural modification. The major sources of such teachings and knowledge were found to be mothers, mothers-in-laws and grandmothers, during all stages of pregnancy. Clarke also reported the community emphasized the modification of a woman's daily living patterns while carrying her child. Instead of restrictions, additions, in the form of prescriptions, such as increased and regular activity patterns were taught. Even though similar comments were made by the older group of women in this investigation, these teachings do not appear to be reaching the new generation of mothers.

Chapter Six

Traditional Food Consumption

G012: I build up my self esteem when I'd eat rabbit soup and that, carrots and onions and everything in there.

G013: I'd rather eat wild meat then anything else in this world.

6.1 Foods From the Land

Traditional foods had many meanings to the women participating in the investigation. They talked frequently about what they often referred to as "*wild foods*" or "*foods from the land*" or "*foods from the earth.*" The term wild foods was used to describe wild meat, fish, berries as well as wild vegetables or medicinal plants that are harvested from the "bush." Foods from the land or earth also referred to these same wild foods but often included fresh vegetables or other agricultural products that were planted by hand, as M002 described, "*even like the vegetables and stuff like that, that come from the ground like. It's like when you grow it yourself.*" Both groups of women mentioned other types of traditional foods included bannock and wild rice. This chapter will focus on the context and meanings associated with foods that were obtained from the bush. Chapter Seven will describe agricultural practices in more detail.

Grandmothers and mothers talked about each category of traditional foods. Generally, wild meat was most commonly referred to by all participants, followed by fish, berries, bannock, wild plants as well as wild rice. The older generation had much more to say on the topic overall compared to the young women, especially with regard to wild berries and plants. Mothers mainly spoke about wild meats and fish.

6.2 Maternal Use of Traditional Foods

The investigator formally raised the topic of traditional foods during the semi-structured interview when all women were asked how they felt about eating traditional foods when pregnant. Twelve of the thirteen grandmothers responded that they felt foods from the land were of benefit to maternal as well as fetal health. For example, G014 responded that foods like wild meats and berries are, "*the best thing.*" She went on to explain that, "*it's not like in the stores, you know. There seems like there's nothing to* [those purchased foods]. *That's what I think. I never did a study, but I could feel it.*" Ten grandmothers talked about traditional foods being of superior quality to those purchased from the store. These three women, for example, talked about a variety of health and nutritional benefits they associated with wild foods:

> *G003: In my day we all had the, we ate a lot of wild meat, but today you don't see very many people eating that, which I think it was so lean you know and that it was much better for you.*
>
> *G005: Well, that's good for you. That's why it's there. Everything that we need out of the ground, off the earth. That's what was given to us, given to the people to eat.*
>
> *G013: I like it because it's not fattening anyway. That wild meat is better. Because there are no, they're not fat or anything. We put vegetables with it and then you're eating everything like that. It's better.*

The remaining three grandmothers did not have such strong convictions. G002 responded, "*it didn't bother me at all, I liked it*" when she was asked how she felt about eating traditional foods while pregnant. G006 replied that she felt traditional foods were, "*good....that's about it. That's about the same thing we eat, you know, that we were brought up on.*" Only one grandmother did not seem sure about her thoughts on the topic. When asked if she thought fish or foods from the land were good things to eat when you

are pregnant she answered, " *I don't really know. I don't really think that made any difference.*"

The majority of mothers also felt that traditional food consumption while pregnant had benefits. Nine young women made statements very similar to the group of grandmothers. M002, for example talked about the maternal and fetal health benefits of eating foods from the land: "*I like that better than eating fast foods and greasy foods and everything.*" M001 also mentioned the leanness of wild meat: "*I think it's better than eating, like going to the store and buying, 'cause it's not like greasy.*" M014 also said, "*those are better things to eat.*" When asked what she would eat specially for the health of her babies, M011 simply responded, "*moose meat and deer meat.*"

Four mothers, however, were not as convinced that traditional foods were of increased value. M013 said that she thought it was okay to eat wild meat during pregnancy because of a pamphlet she received at the local Health Centre:

> *M013: I think it's okay to eat wild meat because W. gave me a sheet of what to eat, like for breast-feeding mothers, and it had a picture of a moose on there. So I guess wild stuff is okay to eat.*

M010 talked rather generally on the topic and chose simply to say that, *"it's okay with* [those] *kinds of foods. I was okay with it."* Two mothers, however, stated that they were not able to answer the question. M004, for example, explained that she never really ate wild meats: "*Well, I ate bannock, but that was it. Nothing for wild meat or anything to do with wild, like nothing. The only wild meat we ever ate was fish.*" M007 was even more direct. She said, "*I don't like wild meat. Never liked it."*

6.2.1 Wild Meat and Fish

The term 'wild meat' seemed almost synonymous with the topic of traditional

foods amongst women of both generations. During both the structured and unstructured interviews, all of the women spoke about various kinds of wild meats, such as moose, deer, elk, wild chickens, ducks, geese, rabbit, beaver, bear and muskrat. Fish was often talked about simultaneously. Twelve grandmothers and nine mothers, however, mentioned fish specifically. Overall, both the grandmothers' and the mothers' statements illustrated their belief in the superiority of wild compared to domestic meats. Twelve grandmothers talked, for instance, about the health benefits associated with eating wild meats. As G003 reiterated during her second interview:

> *G003B: I think wild meat is better for you. It's more leaner you know, and we used to have a lot of bush chicken, white meat and stuff, you know. But now, like hamburgers and hot dogs, weiners and all that stuff.*

G004 and G006 also talked about the dangers of consuming processed meat products and junk foods:

> *G004: We all lived on wild meat. We never thought of hamburgers and all them weiners and....I'm pretty sure that's where this diabetes came in for us Natives was introduced to fried foods and all this junk food.*

> *G006: We used to cook everything: moose meat, fried meat and roasts and fish, everything. They don't do that anymore. You see them, they're too pregnant to cook and they go and get burgers, fries and stuff like that. That's what they're doing wrong. They're not eating normal.*

In addition, four grandmothers simply stated their preference for wild meats compared to domestic. As G011 described, for many it is a matter of taste:

> *G011: There's some difference, yeah. We had a lot of, we notice the change of the flavour in there. Wild meat and domestic animal. Yeah, there's a difference all right and some people don't like it. They said they had a barn smell of a domestic animal.*

Wild chicken or "bush" chicken, G012 explained, is "*more nourishing than chicken you buy from the store. It tastes different.*" G001 and G013 also talked about the higher

quality of wild meats:

> *G001: I still eat rabbits if I get rabbits somewhere, and I still...I prefer eating that than eating meat from the store. I still eat wild meat, geese you know.*

> *G013: Some of them turn their nose up at the food. And I said it's better than you're buying at that store. I said, I had all my kids....that's good food. You know what the animals ate and they're clean. I said all them brings up the fat and all the different things in there. You don't know.*

G013 also went on to talk about the dangers of consuming domestic meats and their possible contamination with agricultural chemicals, such as herbicides and pesticides:

> *G013: I guess I had better food than they have today, but all this here cancer, this is all from what do you think all these chemicals are spraying all these fields with. You can't touch that and I guess when they're spraying the fields, even the grain and all this...that's where all the chemicals are coming from that's in the people. Even the animals today.*

Three other grandmothers also mentioned their distrust of processed foods. G008, for example felt that the consumption of wild meats during pregnancy will "*help your baby to be strong and healthy*," and that foods from the land are, "*more natural, not so chemically processed and everything like that.*" In addition, she expressed her fear for young mothers: "*I think I would be kind of afraid of the pregnancies these days. It's not so much natural foods available now.*"G010 and G014 had similar comments:

> *G010: I think it's the healthiest food because chemicals they use in the foods now today.*
> *H: Like the things you get at the store?*
> *G010: Yeah. What they're feeding the animals today. I think I would have rather eaten the wild meats and... [pause] you know it's funny, my dad used to tell us that. The food we ate was better than the store food.*

> *G014: You know now you eat that stuff from the store, you don't know what you're eating. I don't even enjoy it. I don't enjoy eating meat because of what they feed the cows and the pigs, you know. I've seen what they feed the pigs, eh. What do you call it, fast grow or something. And when you eat that pork it's*

just...doesn't even taste like, doesn't even look like pork. It's soggy or something, grows too fast. And I don't eat the fish in the store that they have, you know, all these other things. I have the good real, the real stuff.

Later on in the interview, G010 talked in more detail about her mistrust of store-bought meat and its potential impact on child health. She said, "*I think the different things they use in fattening cattle today, you know...maybe that's why there's so many fat children.*" G004 also spoke about child health and the impact of store-bought foods. Initially, when asked if she thought that wild meats were of benefit to her babies when she was pregnant, she answered, "*oh yes, I believe so. That's why we hardly got any sickness in our home, eh? Very seldom.*" G004 also went on to comment:

G004: I think that's why today there's so much hyper children. Too much sugars and junk. Learning disabilities they have now. I don't think that's right that they keep feeding junk food to these young mothers eh?
H: You think it's related to what the mothers ate and what they're feeding their children?
G004: Yeah.

G012 also associated the poor health of her grandchildren with their increased intake of "*Kentucky chicken and that.*" As she observed, "*all these kids get so sick so fast and oh my God, ear trouble, you know. I never had that with my children.*"

Three grandmothers also mentioned their suspicion of canned foods, particularly canned meat products. G005, for example, recalled her grandmother's advice while pregnant: "*we were told not to eat too much, they were told not to eat too much canned stuff. 'Cause they would say, you don't know what's in there. You don't know what kind of meat is that.*" When asked how she felt the kind of food she ate during her pregnancies affected her children, G007 replied: "*I don't know really, but I think too much canned stuff is no good.*" When the investigator asked her to explain her response she said, "*I*

think that's why there's so many sick, too much canned food. Not cooking and boiling stuff, you know. Too much fried." G013 asserted that her grandmother had also promoted the use of fresh foods: "*We had rabbit soup and all these things like we never had all this canned.*"

Eleven mothers also talked about the health benefits associated with wild meat consumption. Seven women made mention of their preference for more "natural" foods. For instance, M003 agreed that traditional foods such as wild meat are more natural because they have, *"no preservatives and stuff like that in there.*" M009 also said, "*I think it's healthier. I think it's better than buying meat in the store. I don't know what they put in it, but I assume it's processed, but I ate a lot of fish and we have a lot of wild meat.*" M006 talked in the most detail on this topic:

> *M006: I think it's better. Because the farmers nowadays are putting so much different stuff in their feed which affects the animal. Because my husband did a little, what do you call on his own there, him and his cousin. There was a home-grown pig and one from the Hutterites and they fried the two pork chops. They were about the same size of thickness and that when they were, before they were cooked. After it was cooked, the home-grown pork chop was just nice and thick yet, but the one from the Hutterites is just shriveled right up to almost nothing. [laughter]*
> *H: So do you think commercially prepared or more agriculturally related communities, meats from those places aren't necessarily as good?*
> *M006: Not as good, no. Because you're getting, the farmers are getting, they get talked into giving their animals different kinds of things than before. It all depends where you hunt your wild meat and that.*

M001 and M014 also described their negative perceptions of domestic meat. M001 commented, *"when you eat wild meat and fish like that, they don't have that, you know, when they give the cows these uh...special things to make them, like chemicals or whatever.*" M014 referred to the 'chemicals' in domestic meats but also talked about meat from the store being contaminated:

M014: The animals eat from the land. Those are the better things to eat. There's no chemicals in there, because the stuff that you get from the store is being handled from different hands. And then whatever they put in it on top of that, and how long they sit in the freezer. Like even though I do buy things from the store I know better and we do eat like moose meat, deer meat and elk.

M001 and M002 also talked about the leanness of wild meat compared to meat from the store which both referred to as "*greasy*". During both of her interviews, M002 went on to discuss the additional maternal and fetal health benefits of wild meat:

M002: Oh I ate a lot of deer meat and moose meat and I used to make. My boyfriend got me bush chickens, like bush chicken soup. [laughs] My granny told me that's the only reason why a lot of people, a lot of Native people now have diabetes is because they don't eat wild meat no more. They always eat store bought stuff and everything.

M002B: I think I ate it [wild meat] *because my dad always told me that's the reason why a lot of Indians have the highest blood sugar diabetes and all that, you know. He said that's because they're not getting enough foods from the earth, I guess....like the wild meats and fish and stuff like that. I was scared to get that, so I started eating that.*

H: Your grandparents were saying that as well?

M002B: Yeah, so it kind of scared me. Didn't want my kids to catch, to get that and all so I started eating [wild meat], *but I don't have to eat it every day.*

As was previously illustrated in Chapter Five, five grandmothers and eight mothers spoke about their dislike of different types of meat when they were pregnant. Two grandmothers and six mothers, however, described craving wild meats and fish while carrying their babies. G007, for example said that when she was pregnant she, "*just craved for it because he always used to hunt. We always had wild meat.*" Another grandmother, originally from a more northern community, also recalled:

G005: What I missed was the wild, the wild, the fish and the moose. Here it's deer, deer meat and ducks and geese. Well I ate duck and geese out there, muskrat, but the deer...we didn't have deer. It's all moose up there and further north it's elk.

H: What would you have liked to have eaten when you were pregnant, but you couldn't?
G005: Moose soup, fish.

Almost half of the group of young women also talked about their desire for wild meat while pregnant. M005 spoke about craving fish, which was something that her mother, who was from northern Saskatchewan, could not comprehend:

M005: There was things I really craved that I didn't before, like fish. I really craved fish, lobster and that. Just craved it.
H: Were you able to eat it then too?
M005: Yeah, and my mom, like she's always lived up north on our trap lines and stuff like that, fishing. And she says, uh, she's just shocked at me...and she's like pregnant women never eat fish. Like they didn't. Like for some reason they get sick on it almost as soon as they ate any kind of fish foods. I was like, oh really? I just craved it.

Another mother who was pregnant during the time of the interview also talked about craving fresh fish when the investigator asked her if there were any foods that she would like to have had more often during her pregnancies. She answered, " *I like to eat fish, so I'd like to have it all the time.*" When she was asked if she bought her fish from the store, she replied, "*I don't know if they have fish selling in the store here. Just from whenever* [my husband] *got fish. That's the only way we get our fish. [laughs] I like to eat fresh.*"

In addition to craving wild meats when pregnant, five of these women simultaneously had an aversion to domestic meats. For this group of mothers, wild meat was the only meat they were able to consume during their pregnancies. M006, for example, talked about not being able to consume things that she normally enjoyed while pregnant, such as "*burgers and fried chicken.*" When asked if she enjoyed other types of meat, she replied, "*no, but wild meat I could eat, fish and moose meat, deer meat.*" She went on to explain:

M006: I'll ask for it, like if I order a burger...like they'll taste good but then after a while, the meat, like say if I have a burger, it'll take a while to digest. But it's not the same as having wild meat. The wild meat doesn't do that to me.

During her second interview the topic was raised again by the interviewer to try to elicit a more detailed explanation:

M006B: Maybe my system is just used to wild meat and...
H: Do you think that's what it is?
M006B: I would think because as soon as I eat store bought meat I feel like sick. Won't get sick right away but later on...I had a Big Mac there last Friday and I ended up getting a sore stomach.

M010 and M013 made similar remarks. Both described aversions to every kind of meat until the topic of traditional foods and wild meats was brought up by the investigator. When M010 was talking about her husband having recently returned from hunting, the investigator asked if she enjoyed eating the wild meats he brought home regularly. She answered, "*I like the, yeah, I like eating...it was okay for me to eat those, that kind of meats. But I noticed when I bought meats from the store I wasn't able to eat.*" M013 spoke similarly:

M013: So like right now, I eat moose meat and deer meat not so much, but I eat moose, but that's the only kind of meat I'll eat. Like I really don't like chicken and ....beef.
H: So when you were pregnant before, you said that you didn't like eating a lot of meat.
Were you still able to eat more traditional meats or more wild meats?
M013: Yeah. Just the wild meat, yeah.

M014 talked about having an aversion to meat as well when she was pregnant. She also talked about favouring wild meats, as she said, "*those are the better things to eat.*" When the investigator asked her whether or not she was able to eat wild meats during her current pregnancy, even though she had stated she was not interested in eating much meat, she replied, "*I don't because I wasn't brought up that way.*" It is interesting

to note that although M014 had been living in the reserve community with her husband for many years, she was born and grew up in a non-Aboriginal setting.

One other mother spoke uniquely when she talked about her family's experience with traditional foods and the adoption of a traditional lifestyle when she was young. At the beginning of her first interview, M002 described how wild meats may have saved her life when she was an infant. Her mother also credited a lifestyle change when she, *"started living in the traditional ways"* with preventing her from miscarrying M002. Both events were recollected together:

> *M002: Well I know my mom had a hard pregnancy with me when she carried me, and when I was born they told my mom I wouldn't survive to be like one years old. They said I wouldn't make it. I was really sick. I couldn't digest anything. Couldn't keep milk down or because my mom breast-fed so that was alright. I was able to take that, but then once she tried to put me on foods I couldn't eat foods, baby foods or....*
> *H: That's why they were worried about you?*
> *M002: Yeah, because I couldn't gain weight. I was losing weight. I lost quite a bit of weight. I was just tiny, and my mom, she went out and found some medicines, I guess, for me to drink to get my appetite back. The only things I was able to eat was like wild meats. I couldn't eat like pork and stuff like that from the stores. I had to eat wild meat, like moose meat, deer meat and bush chicken soup. [laughs]*
> *H: And then gradually you regained your strength?*
> *M002: Yeah. After about, maybe I ate like that for the first, about four or five years, and then I was finally able to eat the other foods.*
> *H: Your mom also had a difficult pregnancy with you?*
> *M002: Yeah, I think she was like four or five months pregnant and there was, they went to the hospital and told them there was no heartbeat or anything like that so they assumed...and they told my mom, we'll give you a month and if there's nothing, no heartbeat, they'll have to take the baby. But then when they went back, that's when my mom and dad started living in the traditional ways and stuff like that, and when they went back the doctor checked to see if there was a heartbeat and sure enough there was.*

6.2.2 Wild Plants

During the interviews, both groups of women talked about the gathering of wild plants and fruits. Berry picking was discussed as well as the availability of wild fruits

locally. Plants harvested from the bush were most often medicinal in nature, such as leaves and roots that were boiled to make various teas. The following section will describe the participants' use of the medicinal plants, particularly their pre and post-natal health benefits. The general use, consumption and accessibility of wild berries will be emphasized in section 6.3.1.

Six grandmothers mentioned consuming *"tea from the bush"* while they were pregnant. The tea was also termed "*muskeg tea*" or "*Labrador tea.*" According to these women, it had many uses:

> *G004: We used to, my mom and dad, well....when I was pregnant. We used to, back home, mother always gave us, to clean our system out, they gave us that tea from the bush, in the muskeg you know.*

G008 and G013 also described their grandmother's advice on when to drink the herbal tea:

> *G008: At the time they didn't say, you know, this is for your pregnancy,* [they just said] *that it will help you with your emotions like. You tend to forget about yourself when you have lots of children to look after.*

> *G013: Well, it's to...you're all stretched like, you know. So, you know, a lot of women are losing babies, having miscarriages, but she said, this is good to drink, she said, not to hurt you. I think it was that tea that you get from the muskeg. Drink that, says it's good for you.*

G008 also talked about the tea that her mother made for her when she was pregnant in more detail during her second interview when the investigator brought up the subject again.

> *G008B: You know when you have a whole bunch of little kids running around and they're always running into danger and you're always chasing them everywhere and you don't have, you don't have time for yourself. It's like you forget about yourself and if you don't watch out you will wear yourself too thin and you know, lose your strength. You have to think about yourself sometimes and you have to save your energy for when the time comes for the delivery. And if you don't take*

time to look after yourself then you're not looking after your baby. You're thinking more what's going on around you than what's going on inside you. So some of [the tea] *would be for, you know, to make me relax.*

Both grandmothers also went on to describe other teas that were recommended once the baby was born. G013 described a tea that was traditionally given to women after their baby was born, "*so that you don't hemorrhage.*" As she explained, "*that* [tea] *cleans you out and then it keeps you from hemorrhaging.*" G008 also recalled various medicinal teas that were made for women post-natally:

G008B: Other [teas] *would be like, when it was getting towards the end of the pregnancy, to help the mammary glands to prepare for making milk. And another tea would be for like uh, to just help displace the placenta so that your womb will be good and ready for the next one because there was no...we didn't think about using birth control. Like being able to have children was something that we were made for and something that we looked forward to and so...*
H: So you needed to have your womb ready just in case there's another baby on the way?
G008B: Yeah. So there is, there was teas for helping you produce milk and then there was teas also for, so that you wouldn't have trouble with your breasts, when you decide to...
H: Stop nursing, so they wouldn't be sore?
G008B: Yes.

G005 was originally from an Aboriginal community much further north and recalled being advised to consume muskeg tea when pregnant. However, she was unable to access this tea in a new environment. When asked if she drank any medicines or teas during her pregnancies, she answered: "*not when I moved out here because I didn't know where they were. But I knew at home, they used to drink what they called muskeg tea, Labrador tea.*" She also talked briefly about her knowledge of wild vegetables. Growing up with her grandparents, she had learned to identify "*wild onions, turnips*" but was not able to locate them when she moved to her husband's community.

From the group of thirteen mothers, only two told the interviewer about drinking

teas made from wild medicinal plants during their pregnancies. Both women described themselves as being "*traditional*"; they consumed their "*four directions medicines*" for health and ceremonial purposes. M002, for example drank sage, *wekes* (also identified as wild ginger or 'rat root'), cedar and sweet grass tea when pregnant as part of sweat lodge ceremonies:

> *M002: Well you go to sweats like they usually have something to represent Mother Earth, either water, depends on...use plain water but sometimes they make some kind of medicine, depending on what kind of sweat. Like if it's someone going for healing and if they have to drink some kind of special medicines.*

M014, who was pregnant during the time of the interview, also described herself as a "*traditional person*" who "*still takes her traditional medicine.*" During all of her pregnancies she drank, "*herbs from the ground like sage, wekes, cedar and sweet grass. Like I drank that to keep my system clean.*" When the investigator asked for more explanation regarding the purpose of the plants, M014 answered:

> *M014: Sage is like, for the blood. So if I, how would you say? It's hard to explain. Like normally I would drink sage when I have my period. But since I don't have my period and I want to keep my blood clean, so I just drink that. But I, right now, I...just mixing all of them together and so I get the balance of cleaning out my system completely.*
> *H: So there's four that you mentioned. So you'd mix all those four things together for your entire system?*
> *M014: Yeah.*
> *H: If sage cleans out your system, what does the wekes do then?*
> *M014: It's like for, when you get a sore throat. Any germs that are in your throat or in your chest, that takes all that out of there too. And then the sweet grass and the cedar is just....they're mild. They're just a general cleaning.*

6.3 Availability of Traditional Foods

As part of the semi-structured interview, each participant was asked how easy it was to obtain traditional foods or foods from the land while pregnant. Overall, the

majority of women in each age group responded that traditional foods were readily accessible during their pregnancies. Ten grandmothers and eight mothers told the investigator that foods such as wild meat and fish were easily obtainable. G003, for example, stated that *"well, my husband used to do it and sometimes my friend would bring some* [meat] *over or whatever, and fish of course."* All of the grandmothers who talked about having regular access to wild meat and fish generally depended on their husbands or fathers. As G007 responded, "*well, he was a good hunter. You just go out and then he'd kill something right away.*" The grandmothers that were not able to obtain wild meat regularly had to rely on the generosity of other community members. G012 described how she was not always able to eat wild meat:

> *G012: A lot of our neighbours were hunters, eh. They would come and they'd give us a rabbit or piece of deer meat, or my cousin was a good hunter. He always had wild meat. But fish, uh, my husband would go and snare rabbits and that and you know, a lot of times we didn't have, always have meat and that, eh? A lot of times it was, just would eat what was there.*

G005 also explained that it was sometimes difficult to obtain wild meat, particularly fish. She was used to consuming large quantities of fish in her home community when she and her family lived in closer proximity to a lake. When pregnant, since her husband was not a fisherman, it was necessary for her to purchase fish which she was not always able to do because of lack of income. As she stated, "*not every man had a job.*"

Only one grandmother consistently did not enjoy regular access to traditional foods during her pregnancies. She described a reliance on her husband to provide wild meats and fish, but he was not able to do so since he was of European background:

> *G008: I still like to have those, yeah, a lot of traditional foods in my diet when I was young. But again because I was married* [outside of the community], *I wasn't...he couldn't go out and get what I wanted. I'd just have to rely on gifts*

that were brought to us.

Not as many mothers as grandmothers were able to obtain foods from the land on a regular basis. Still, eight women described their husbands as good hunters and able to provide wild meat to the family. As M006 stated, "*we have a good hunter, my husband.*" M010 also said, "*my husband's a hunter. I was able to, he brought in a lot of wild meats.*" Wild fish was also easily obtainable according to M011:

> *M011: 'Cause fish, my husband's cousin, he's a fisherman too and they're always like, like they always stock up on fish in the fall and then they like send some over and we'll freeze some and even when they go hunting too. Get it all fixed up and cut up and freeze it.*

Three mothers complained that they were not always able to get wild meat when pregnant. For example, M007 relied on people outside of her family for fish: "*usually people like, they catch it and then they sell it.*" M009S also relied on neighbours for wild meat and for fish, "*we buy it off a man who fishes and then sells it at the store.*" M001 described in more detail how she occasionally had access to wild meats:

> *M001: Just whenever they had it like, if somebody from the family went to kill a moose or whatever, then they'll just give us a piece, like you know, just for the family. They give it away or whatever. That's how we got it.*
> *H: Is that something that happens regularly or just every once in a while?*
> *M001: Just once in a while, like not every day or whatever. [laughs] But whenever they can, like whenever they go out hunting they'll usually like give some away.*
> *H: And for fish and other foods off the land, how easy is it to get stuff like that?*
> *M001: Well, before it wasn't easy, just whoever had would just give. But now it's kind of easier, 'cause like my husband's a fisherman. [laughs] So whenever he goes fishing eh, like seasonal. Mostly in the summertime I think, must be easier yeah.*

Two other mothers explained that they simply did not have access to traditional foods. Neither woman particularly enjoyed eating wild meats, although other people in their extended family received gifts of meat on occasion. M004 recalled, "*just once in a*

while, like somebody'll come by and drop off a....for my grandfather, eh? But like that's not very often."

6.3.1 Wild Fruit

Ten grandmothers and six mothers specifically described various types of berries that were available in the community. They talked about a wide selection of fruit growing locally in the bush. As G001 vividly recalled, "[we] *picked raspberries, strawberries, saskatoons, cranberries, mossberries, wild plums. We had everything, blueberries and we used to make jelly out of those cranberries you know and same way with chokecherries.*" All ten grandmothers talked very similarly about the vast quantities of berries available when they were having their children. G014, for example, remembered rarely having to purchase fruit from the store because of the selection of berries accessible to her:

> *G014: There were lots of berries available in them times, you know. Oh they were just loaded on the trees. There was lots of strawberries. You could crawl around in little....have a big bowl and you'd just crawl around. No time you'd have a big bowl full.*

There was some discrepancy, however, amongst both generations of women as to whether or not the berries were still obtainable in the bush. Five grandmothers, for example, mentioned a dramatically reduced supply of berries available locally. As G003 stated, *"if you don't plant them today then you don't have them, if you can't buy them.*" G002 also mentioned, "*there's no strawberries now on reserve like how it used to be. Nice big strawberries, like I'd pick a whole bundle, but they're all gone now.*" She also went on to give her reasoning behind the current decreased availability:

> *G002: Yeah, there's some around, but not as many as there used to be. I think all this stuff that they used in these farmer's fields killed all of that stuff, you know. You just want a few berries, but not now. I don't know what happened to them, but that's what I'm going to think to myself. All this stuff they spray around*

everywhere. Long ago there used to be lots of strawberries, but I think that stuff that people uses on their farms kills everything, even the birds! Sometimes you see birds laying around, eh?
H: Your parents didn't use any of that?
G002: No, no. Never used that long ago. Never. Never used all that.

G014 also described the agricultural and environmental changes she felt were of influence. When she was young she recalled that, "*there was no highways and there was no big fields. So there was little patches of, a little bush that would be all raspberries.*" G014 also went on to describe the environmental damage associated with the use of chemical fertilizers:

G014: There's a guy that came sprayed our field. And I said would that kill the trees if it gets on the trees and he said, "oh no." And we lived quite a ways from the field and I had birch trees along the house. So after they sprayed, I don't know, about maybe 3 weeks, I looked at my birch tree and sure enough the ones that were out...
H: Closest to the field?
G014: Yeah. The tree didn't die, but the leaves did. So I told him, I said, look at that tree, them trees. "Oh they'll be all right," he said. I know I said, but just think, like...everything else. No wonder there's no berries, you know.

Two mothers also talked about the decreased availability or access to wild berries. As M007 stated, "*there's not much berries around here.*" When the investigator asked M001 if anyone collected berries or plants in the community, she described a shift taking place among those in her generation:

M001: I don't think, not now, but [when] *we were growing up we used to always go picking berries and my grandma would make--what do you call it? Jam, like raspberry jam, blueberry jam. But hardly not now. I don't know anybody does that. [laughs]*
H: Do you think they're still available out there?
M001: Yeah, um, I guess if you know where to go, I guess.
H: Not many people go any more?
M001: No I don't think so. I buy them at the store mostly.

Only three mothers talked about collecting wild berries on their own. M006, originally

from a nearby reserve community, provided the most detail:

> *H: Do you still go out and get any plants or berries or anything like that?*
> *M006: Oh berries, yes. Strawberries. Raspberries and saskatoons, mossberries.*
> *H: Yeah? Are you still able to find them?*
> *M006: The mossberries we haven't actually, haven't had any since I moved from back home.*
> *H: How do you know where to find them?*
> *M006: I don't know. We just know where to look. [laughter] Like if I were to go out looking I'd probably, I would probably still be, remember where to go.*

G001 was the only participant who asserted that wild berries are still available for those in the community willing to seek them out. When the investigator asked her if she thought wild berries were accessible to those of the younger generations, she took the opportunity to comment on social problems within the community:

> *G001: They're still available if anybody wants to use them, but young people today don't do that anymore. They're too busy running to bingos and slots and everything, you know. Life has changed so much now. We never had anything like that in our days.*

6.3.2 Generational and Ecological Changes

All of the study participants were asked whether or not they felt the foods that they consumed during their pregnancies were different from those that were available to their mothers or grandmothers during their childbearing years. Overall, ten of the mothers felt that yes, there was a difference between the generations. Only seven of grandmothers agreed. The older women talked about traditional foods such as wild meats and other 'foods from the land' as being more available to their parents and grandparents. G002, for example, felt there were many more families during her mother's era that farmed their land and raised domestic animals:

> *G002: I think* [the diet] *was different because they used to eat lots of vegetables and everything like that long ago because that's all they done is gardened and cows and animals, you know. Well that's all they'd do when my dad and mother*

were living. They'd eat the meat and make blood puddings and everything, you know. They had lovely gardens, my mom and dad. They planted vegetables.

G010 and G008 also mentioned the differences in the availability and accessibility of foods:

G010: I think in their time, I think it would be mostly wild meat: rabbit, duck, moose meat, deer meat. I think mostly it would be that. But by the time I was pregnant it was, eat that once in a while 'cause my dad was a hunter and trapper and once in a while he'd give me that.

G008: The transportation problems were different, you see. They weren't just able to go to the stores where a lot of food was available. They just lived with what was available at hand, like...hunting and fishing. They moved around a lot. There wasn't time to have gardens.

Six other grandmothers described their diets when they were younger and having their children as being the same or similar to their mothers and grandmothers. As G004 and G006 responded:

G004: No, I don't think they [were different]. *Everything was from the bush, you know, and ducks and prairie chickens. That's what they all preserved back there.*
H: It sounds like your family came from the same area so the same things were available to them [were] *available to you.*
G004: Uh, huh. Right. So this naturally passed that on to me and that's how I did to feed my children and feed myself back then during pregnancy.
G006: They weren't different. Same foods. Yeah, I remember going to my grannie's down in F.R. She ate the same way my mom cooked, ate, you know. We all ate the same yeah.

G006 went on to differentiate, however, between her diet and the maternal diets of subsequent generations. When the investigator inquired if she noticed a *"real change* [between] *your generation and the younger generation now,"* she replied, "*yes*". Three other grandmothers who felt that the foods that were available to them when they were pregnant were similar to their grandmothers' and mothers' also talked about the foods available to the young women in the community. G005 mentioned that, *"there are too*

many instant foods now, too many, even the dried foods. I really don't know what's in them. A lot of them are full of sugar and salt, you know." G011 also said:

> *G011: There's too much fast food, you know. That's what I notice anyway that there's a lot of fast food and drinks. You know, we never had soft drinks of anything like that. Never had anything. Didn't even know about it.*

G011 went on to distinguish between foods available to her mother and foods that were more plentiful and accessible for her grandmother. She talked about the different environment and the ecological changes that her grandmother lived through compared to her mother:

> *G011: My grandparents had a lot of fish in their diet, you know and wild meat. But a lot of fish.*
> *H: Would they fish then from the river, the Red River?*
> *G011: They'd fish in that river at that time. Almost any kind of fish that time, yeah.*
> *H: So your family didn't have as much fish living here?*
> *G011: No, not here. After we moved out here there was nothing like that. There might have been sometimes, you know, some kind of....when the water was high in the spring maybe they'd catch some kind of fish then. But over there, that's what they missed when they moved out here, you know. All that good fishing there. Out here it was just bush country. Just wilderness out here. Not barely, people lived far apart from one another when they moved out here, you know. They settled wherever I guess, but most of them lived along the river, yeah, where there was water, I guess. Water was good in the river at that time.*
> *H: Yeah, that's what I've heard and it was much wider than it is now.*
> *G011: But this little, not much to what the Red River is.*
> *H: So they had a lot more wild meat and things like that when they moved out here as opposed to the fish?*
> *G011: Oh yeah.*

G008 also talked about the community's move to its current location from the banks of the Red River and its impact on their lifestyle as well as the wild foods available to them:

> *G008: I remember hearing a lot of stories about the old reserve where they used to be.*
> *H: What was it like then? Did they talk about it much?*
> *G008: They seemed, I don't know, maybe just nostalgic, but it seemed they were happier at the other reserve more so than here because...they were right by the*

river and a lot of fish when the river was good.
H: The Red River?
G008: Yes. There was a lot of fish and a lot of, all the things associated with the river. Beavers and rats and....they seemed like, their memories were very happy of the other place. There was more to help their livelihood I guess than here. You had to go quite a long ways to get what was ready or obtainable over there. There was a lot of land, and it was better land. This is all lowland area here and to get anything to grow it's gotta be drained first and a lot of things like that.
H: Yeah, and a lot of flooding in the spring?
G008:Yeah. It was, a lot of it was man-made too, you know. Damming up the rivers down south. The river used to be bigger than it is now.

The group of mothers had comments similar to the seven grandmothers who agreed that maternal dietary practices had changed since their generation Most commonly the mothers felt that their diets were similar to their own mothers'. Their grandmothers, they noted, however, must have eaten more traditional foods and had regular access to wild meats:

M004: The foods that we have now, they were around when my mom was around, and I'm sure some of the foods were around when my grandmother was around too. So, I don't think they....maybe my grandmother might have, her meat might have been wild meat instead of like hamburger and store-bought meat.

M011: Well, I don't know what my mom ate, but I can imagine my grandmother there she, then they mostly had wild meat and all that. And then they had to, well I guess it's kind of the same too, because they had cows and....well my grandfather was a fisherman.

The mothers also talked about their parents and grandparents being less reliant on store-bought foods. As M001 explained, "*I think they had more, like they ate off the land more than what we do now. We just run off to the store.*" M013 also thought that her grandmother's diet was probably quite different from her own or her mother's. She also described her grandmother as having more access to 'foods from the land':

M013: 'Cause there wasn't really no like restaurants, you know, especially here. It was just like, they had like a big garden and stuff and they just ate stuff from the land. Like they grew potatoes, vegetables and stuff like that. So I think she

probably ate a lot healthier than we do now.

Three mothers had other more individualized comments related to the generational changes in maternal dietary practices. M002 immediately responded to the researcher's question that although she thought her grandmother and mother's diets were similar to hers, she felt she had more exposure to agricultural chemicals in her foods, *"because of the farmers, like they use all kinds of different stuff on their gardens or crops."* M003 and M005, however, described dietary changes and patterns of food availability that influenced both generations:

> *M003: Well my mom used to tell me the way they used to eat back then, and my mom said she hated being so poor, and oranges were a treat for her. I found it hard to believe about the way they used to live.*
> *H: Like what sort of things?*
> *M003: They used to eat, uh, they used to get these packs of, some kinds of packs of meat from town. I don't know if it was meant for humans, I mean....scrap, scrap meat. That's how poor they used to be.*

M005 described her own diet while pregnant as being much higher in sugar than her mother's or grandmother's:

> *M005: Because with my mom, like she just said all she could eat when she was pregnant, with most of her pregnancies, like that's what she found me so weird. She'd like mashed potatoes and pork chops or steak. She wouldn't add nothing. Really, really bland. But me, I'd always crave like, I'd make a cake or I'd have a little ice cream or something like that.*
> *H: But you don't think that your mom probably had as much stuff like that or your grandmother?*
> *M005: I don't think so, no. I know my grandmother wouldn't have for sure because she was up north on trap-line and the sweetest thing you ever eat is berries.*

6.4 Traditional Food Knowledge

Traditional knowledge of the seasonal calendar as well as cultural observances surrounding the taking of life were not commonly referred to by either group of women.

One mother and seven grandmothers referred to the seasonal availability of wild meat as well as fish. The only young woman to discuss this topic, M006 talked about what time of year her husband would hunt for certain types of meat:

> *M006: Moose and deer. But it's gotta be, it's not in the spring because they're too thin so they wait until it's late in the summer or in fall. But in the winter they won't bother too much 'cause...one moose will last just over the winter.*
> *H: What does he hunt in the wintertime?*
> *M006: In the winter, just rabbit. Snares rabbits. And that's not very, uh, some years it's good and some years it's not...with the rabbits, for some reason they go in cycles.*
> *H: Some years there's tons of them, and then it may be like that for a few years and they're gone?*
> *M006: Yeah. So more or less eat what they kill, like in the fall or the summer. So not too much in the winter.*

The grandmothers, overall, had a lot more to say about the seasonal cycles of hunting and trapping animals. G008 described it very simply, "*depending on a husband's occupation...fishermen go to the lake in the summer and the fall, and winter they'd be on land hunting and trapping.*" Fall seemed to be a common time for men traditionally to hunt for larger animals such as moose and deer. As G011 remembered, "*my husband used to hunt in the fall. Late in the fall he'd get a deer, mostly deer.*"G010 also recounted that her father would hunt in the fall, "*after thrashing and that, my dad used to go out hunting and bring home a lot of deer, moose meat, and he used to give to everybody, all his relatives.*" She also explained that her father "*knew what time to go hunting. He could hunt any time he thought it was cool enough to keep meat.*" Since they had no freezers at that time, the hunting season seemed to be associated with the preservation of meats and fish. G003 described in detail, for example, how the seasons were associated with the preservation of various foods:

> *G003: Especially in the springtime you'd get a lot of fish and in the summer lots*

of ducks and geese and stuff and in the fall the wild animals: the deer and the moose and the rabbits and things. Because we had no freezers we'd have to get the meat in the fall time to freeze it and hang it up in the....I remember my uncle when he'd go fishing in the springtime he would smoke it, dry it. I can remember seeing that done, but then you could keep it because it was dry and a lot of salt in it. You had to cure it. In the winter you could hang the meat in the shed. They'd stay frozen, you see? He did go out and kill a whole lot that would last you know and just go when you needed it.
H: So the rest of the year, then, it was smaller animals or birds and fish and things like that?
G003: Right. Something that you could do right away. And there was a lot of them. You could go right out and get them, you know, you could get enough for the day.

G006 also talked about trapping practices during the springtime:

G006: My dad used to be a trapper too, and in the spring we'd all go out on the trapline. I don't know where. I remember seeing my dad stretching fur out there and skinning fur and weasel and, you know, but we ate them. I remember eating muskrat. The springtime's the only time they would eat them. Other than that they wouldn't bother them. Just spring was...certain [time] of year they would trap. When they're trapping that's when they'd eat the meat. They didn't throw out too much of anything in those days.

6.4.1 Cultural Observances

Four grandmothers also described seasonal hunting patterns related to the cycles of the animals. For example, G002 explained that deer as well as moose were hunted only in the fall because during the spring and summer, "*they were calving.*" As a result, her family was more dependent on fish and other small animals during those periods of observance. G006 had similar comments:

G006: There's certain time of the year too they don't hunt. When they got babies, or gonna have babies you know, they're all....then they hunt again around August. Yeah, the moose and the elk because everybody, all the babies are grown and they're ready. They're careful about their hunting.

One mother and one grandmother also talked about special customs regulating certain animals that were taboo for them to eat. As was presented in the previous chapter,

G005 explained that could never eat elk meat because of her Indian name, *Little Elk Woman*. M006 also indicated why her grandmother never ate jackfish or her brother goose meat:

> *M006: With goose, I think it was from her clan so she couldn't eat it. And not the goose...it was jackfish. It was my brother that couldn't eat the goose. And with deer meat they never did, they never did bother with deer meat. It was just moose meat and ducks, moose and fish.*

When asked by the investigator during her second interview, M006 described why she felt so many people in the community had drifted away from their cultural teachings:

> *M006B: They're more just everyday life to them now that they're not into their...they don't go into their spiritual stuff like that. So they more or less just, they've been brainwashed that they think it's funny to them now.*

One other mother, however, described her husband's practice of not hunting or killing any living creature while she is carrying a child:

> *M014: When I'm carrying, he doesn't hunt. He doesn't kill anything when I'm carrying.*
> *H: And why is that?*
> *M014: Because I'm giving life and it's wrong to...we believe it's wrong to take life if the Creator's giving you, giving you life.*
> *H: Okay. Does that apply to any animals?*
> *M014: Well he wouldn't, like anything like if there was a stray dog hanging around like he wouldn't....he's not allowed to kill it. Or if we didn't have no deer meat or whatever he's not allowed to kill it either.*
> *H: So are you able to get those things from other people?*
> *M014: Yeah. His, like, he just takes out his father and he lets his father do the shooting, but out of respect for me and what our beliefs are, he doesn't kill when I'm carrying.*

6.5 Discussion

Cultural teachings related to the importance of traditional foods, or foods from the land, still appear to be of influence to both groups of women in Peguis. Almost as many mothers as grandmothers spoke about the availability of wild meat and fish currently.

Both groups of women also talked about the superior quality and health benefits of wild foods compared to foods obtained commercially. The sphere of knowledge surrounding the practices of hunting and trapping wild meats, fishing, and the gathering of wild fruits and other plants, however, appeared to be rapidly disappearing in this community. Certainly for this group of participants, particularly the loss of traditional food knowledge pertaining to the preservation of wild game and berries was easily apparent.

A number of other studies in Canadian Aboriginal communities also illustrated this loss of cultural knowledge related to traditional diet. Szathmary and colleagues (1987) examined dietary change and traditional food consumption among three age groups in the Northwest Territories. The oldest age group, representing those older than 65 years reported consuming the most traditional foods. Comparatively those in the youngest age group (less than 46 years) consumed the least. Young people were found to consume traditional foods less often and in smaller amounts than older adults in a study conducted in northern Alberta. (Wein et al., 1991) Campbell et al. (1992) and Receveur et al. (1997) came to similar conclusions. Harriet Kuhnlein (1989) also investigated the use of traditional foods among the Nuxalk people of British Columbia. As part of the overall study, interviews took place with three generations of women in order to define influences on traditional food usage in the community. Although the consumption of traditional foods was shown to be declining overall, the total consumption of these wild foods was found to be still considerable for most families. The older women, however, seemed to possess a greater "taste appreciation" for traditional foods such as seafoods compared to the younger generation. Other important factors described as contributing to patterns of traditional food use in the Pacific community included: legislation restricting

traditional food resources; demographic changes; the availability of new foods; acceptability of traditional as well as new foods; employment and the interruption of knowledge transfer to younger generations. The fact that this community has undergone quite significant environmental and ecological changes as a result of their relocation could also explain a more dramatic loss of knowledge. According to Kuhnlein and Receveur (1996), people who have been moved from their homelands may have little opportunity to maintain traditional knowledge and as a result, "will likely not transfer traditional food knowledge to the next generation." (p.434)

Wein and colleagues also presented factors of influence on the use of traditional foods in Aboriginal communities in Northern Alberta. A number of demographic variables were examined; however, the frequency and weight of traditional food consumption correlated most strongly with the presence of a hunter, fisherman or trapper in the home (Wein et al., 1991). The presence of an active fisherman, hunter or trapper was also indicative of increased access and consumption of traditional foods in three communities in northern Manitoba. (Campbell et al., 1992) Similar access patterns affecting the usage of wild meat and fish were noted by both groups of women in Peguis. When referring to wild meat or fish consumption, a husband or father was noted as being the provider in each case.

Traditional food usage is also highly influenced by resource availability (Wein, 1991; Whiting, 1998; Kuhnlein et al., 2001). The range of wild foods that continue to be utilized in Peguis and their reported availability seemed unusual for such a southern community. Ten grandmothers and eight mothers reported that wild meat and fish are regularly obtainable. Almost as many women also described berries and other wild fruit

being locally available. Previous studies that have examined traditional food usage and availability among First Nations groups in Canada, however, took place primarily in the more remote north (Schaefer & Steckle, 1980; Waldram, 1985; Wein et al., 1991; Campbell et al., 1992; Receveur et al., 1997) or the Pacific coastal region (Kuhnlein, 1984 & 1989). As Eleanor Wein discussed in her review of the Canadian Aboriginal food supply, "traditional foods are still frequently used by and provide substantial proportion of the daily food and nutrient intake of indigenous Canadians, especially in remote northern regions." (p.74) Therefore although it is difficult to make direct comparisons to this community, resource manuals on traditional food usage in the boreal forest region of Canada note that foods from the bush are still an important component of the diet in many communities. (Marles et al., 2000) As is also reflected in this study, wild game is traditionally the main food source supplemented by a wide variety of wild fruits such as chokecherries, saskatoons, strawberries, currants, cranberries and blueberries. Marles and colleagues also explained that wild vegetables were not often a major part of the traditional diet, although several plants, such as Labrador tea and wild mint are often used in beverages. Similar references were noted in this investigation, primarily by the grandmothers.

Although there appears to be a rapid and extreme loss of knowledge between the two generations of women participating in this study, the importance of traditional foods, particularly wild meats and fish, continues to be emphasized. Both groups of women spoke about the cultural as well as the nutritional importance of foods from the land in their community. Traditional foods were held in high esteem as being foods of superior quality compared to foods that were available to purchase from the store. Kuhlein and

Receveur (1996) similarly contend that elements such as group identity and cultural expression may be closely tied to particular foods. In their review articles, Wein (1994) Kuhnlein et al. (2001) also talked about the social and cultural significance of traditional foods and traditional food systems. Such foods have also been referred to as cultural symbols by Lang (1989). During her investigation into cultural meanings surrounding diabetes in a Dakota Sioux community, Lang made the distinction between "way back" foods and "Indian" foods. "Way back foods" such as wild plants and game were associated with the pre-European past compared to the more modified "Indian" foods such as fry breads and stews that are influenced by the European introduction of ration foods such as flour, bacon and coffee. The more traditional foods or "way back" foods were found to represent "purity, healthfulness and strength - symbols of a pre-reservation (and pre-European) life and culture." (p. 310) Grandmothers participating in the Peguis study did not tend to distinguish between foods such as fish or bannock but talked about all traditional foods in a similar manner reflective of social and cultural identity, as is indicated by the quotations at the start of this chapter. Emotional and cultural health were tied to foods such as rabbit soup, moose meat, home-made jams and fish. Although almost as many mothers commented on the benefits of consuming traditional foods such as wild meats, their comments tended to address environmental as well as health and nutritional issues.

The health benefits of traditional foods were commented on by nine of the mothers and all but one of the grandmothers in Peguis. Both groups of women felt that foods obtained from the land were more natural and thus better for the health of mother and child compared to foods obtained commercially. Traditionally, foods such as wild

meats were viewed as being lower in fat than domestically produced meat products. Wild foods were also perceived by both mothers and grandmothers as being free from harmful chemicals or environmental contaminants. Traditional foods' nutritional qualities have been compared to a more westernized diet frequently in the literature (Schaefer & Steckle, 1980; Waldram, 1985; Szathmary et al., 1987; Kuhnlein & Turner, 1991; Garro, 1994; Receveur et al., 1997; Abonyi, 2001). An overall shift away from the use of traditional foods is associated with increased caloric contributions of simple carbohydrates and saturated fat along with lower overall intakes of calcium, vitamin A, folate and dietary fibre. Wild meats in particular have been proven to be of higher nutrient density in terms of protein, ascorbic acid and iron as well as being lower in saturated fat (Schaefer & Steckle, 1980; Waldram, 1985). Marles and colleagues (2000) have also reported on the nutritional benefits of wild plant foods such as berries and plants traditionally harvested for tea. Such foods may be classified as "functional foods" due to their phytochemical content; they therefore are presumed to have a role in reducing the risk of chronic diseases.

Traditional food consumption during pregnancy and its influence on maternal and fetal health in Aboriginal populations, however, seems to have been somewhat neglected in formal literature. A study in northern Manitoba by Campbell et al. (1992) did briefly discuss the nutritional status of pregnant women as well as the frequency of traditional food consumption for men and women in various age groups. Assessment of prenatal dietary adequacy was difficult to assess, however, since pregnancy stage was not recorded. Traditional food consumption patterns were also not linked to this sub-group of women. The dietary patterns and the influence of traditional food on dietary quality were

also assessed by Receveur and colleagues (1997) in the Canadian arctic. Although pregnant and lactating women were included as participants in the study, their low numbers prevented an accurate evaluation.

Safety issues and health problems associated with traditional foods such as wild meats and fish have mainly been seen in the literature as a concern in arctic communities where organochlorine contaminants have accumulated in many species of the food chain (Kuhnlein et al., 2001). Even though this has not been shown to be as much of a problem in southern Canada, several qualitative investigations in Manitoba, North Dakota and northwestern Ontario discuss a contaminated environment and contaminated foods (Lang, 1985&1989; Garro, 1995; Bruyère & Garro, 2000; Abonyi, 2001). Grandmothers in the present study also commented specifically on the health implications of consuming too many chemicals that they felt were more concentrated in processed foods, especially canned foods. Interestingly, Lang in both publications and Garro found similar responses from southern First Nations communities. Garro referred to participants in her study sharing the belief that pollution and other environmental contaminants may cause sickness when entering the body through food. These individuals thought that harmful chemicals, such as pesticides and herbicides, were especially concentrated in canned foods and when consumed may disturb, "the balance of the body and [lead] to diabetes" (p. 42) or other illnesses.

Of further interest to the health outcomes of mother and child as well as influences on traditional food consumption, five mothers spoke about continuing to eat wild meat during pregnancy even with aversions to domestic meat products. This was not mentioned in any other source of scientific literature. It is interesting to note nonetheless,

particularly when young women's associations with traditional foods throughout the interviews appear to relate almost entirely to their health benefits. Perhaps it is another example of what was referred to in Chapter Five's discussion as a culturally familiar food. This inference may be supported by the fact that six mothers as well as two grandmothers reported cravings for wild meat during pregnancy while simultaneously expressing aversions to domestic animal protein foods. The emergence may also point to another yet unexplored cultural, social or psychological function of traditional foods.

Chapter Seven

Food Security and Access Systems

G002: Long ago they used to eat lots of vegetables and everything like that because that's all they done is gardened and cows and animals you know.

M003: I really wish I could eat healthier, but it's so inconvenient and expensive to do it.

In addition to queries about the availability of traditional foods, all of the participants responded to a series of questions pertaining to the accessibility of commercial or store-bought foods. A series of four questions asked about commercial food access, access problems, as well as overall availability during the childbearing years. Generally, the grandmothers' responses reflected an era of self-sufficiency and pride. G006, for example, recalled, "*we'd eat everything, you know. We had all our vegetables, potatoes, corn. There was nothing that we didn't have.*" Mothers, on the other hand, mainly discussed grocery shopping practices in addition to the various limitations of local food establishments. Many young women, such as M003, talked about the price of fresh produce, "*More fruits and vegetables I'd like to buy, but they are so expensive.*" Access difficulties or examples of food insecurity were common themes that arose during all but four interviews. In addition to those responses related to food access, quantitative data will be presented in order to provide a point of reference. Local grocery costs within the community as well as from two other commercial establishments within one hour's driving distance will be presented graphically, compared to pricing collected during the same time period in Winnipeg.

7.1 Food Accessibility

All study participants were asked about the availability, accessibility and variety of foods that were sold at the store when they were pregnant. The grandmothers generally talked briefly about the sorts of foods that they purchased regularly, such as flour, tea, salt, sugar, baking powder and occasionally lard. They talked at length, however, about the knowledge that enabled them to "live off the land." It was almost exclusively the group of grandmothers who shared with the investigator the processes and technology available to them to preserve foods that they grew or produced themselves. Grandmothers also spoke about farming lifestyles that allowed them to provide for themselves and their families. Their perspective emphasized and illustrated how far apart the two generations are in terms of transference of food knowledge.

7.1.1 Agricultural Practices

Although not every grandmother raised her children on a working farm, each one of the grandmothers spoke about vegetable gardens. As G014 commented, "*of course we had a big garden. The only thing that we went to the store for was the flour, sugar and tea and that kind of stuff.*" G004 also described the big garden that she and her husband still maintain and recalled:

> *G004: We've been planting a garden ever since the first one was born. Kept it up, yes. We live off the garden. Right now we're eating lettuce, radish and onion. When our kids were growing up, we always had a garden. We never bothered buying food from, you know...*
> *H: The store?*
> *G004: Yeah, so we practically lived off the land.*

G001 also described the days she spent in the garden while raising her large family and the types of vegetables that she planted: "*we had potatoes, carrots, turnips, peas, beets,*

tomatoes, squash and we had pumpkins and then we had uh, those cucumbers that we planted and that was it!" G013 also spoke extensively about "*garden food.*" In addition to working as an agricultural labourer herself, picking potatoes and carrots, she always had her own garden:

> *G013: We had our own gardens, so that we had our own gardens with our own vegetables there. We had tomatoes; we had carrots, peas. We had yellow beans. Had everything like that, like our lettuce. We bought our seeds and we'd plant potatoes, corn...everything.*

G013 went on to mention why gardens were so important to her family, "*well, we couldn't afford to go out and go buy stuff like they used to do now.*" She also said, "*it's very good to have a garden when you got children because they know fresh foods coming from the garden, all the vegetables.*" G013 as well as G003 commented that there aren't nearly the number of vegetable gardens in the community that there once were. G003 blamed the lack of gardens for change in young mother's diets: "*I think there's just too much junk...not the right food, and not too many people plant gardens, not too many people live on the farm, you know?*"

Close to half, six grandmothers spoke about other methods of food production, most commonly about the raising of cattle as well as other domesticated animals. G003 remembered, "*had our own chickens and pigs and turkeys and everything, and we milked our cows. We had lots of milk and cream. It was wonderful.*" G001 called her property a "*little farm*" and recalled "*milking eight cows*" every day by hand when she was younger. G002 spoke at length about her youth and working on her family's farm:

> *G002: We lived about two miles north, just across the bridge there. There would be cows there and a big farm and a big barn and everything. I'd milk cows and separate you know and gardens....it was nice. Yeah, had a big farm. My dad used to take the wheat and get flour made and everything, big bags of flour. Didn't*

have to go to town to buy someplace else, and we had pigs and horses and everything.

G014 also talked about a different lifestyle when she was raising her family and how self-sufficient they were. As she described, her family "*always had our own milk anyway*" from raising cattle. She always had a vegetable garden and *"had our own chickens too and our own eggs.*" In addition she went on to remember that "*we always had our own meat, but we used to kill animals too and we had all kinds of meat. [H: Cows and things?] Yeah, we'd keep a pig, and it was good. It wasn't like now.*"

Eight of the thirteen mothers mentioned gardens in various contexts. Only one mother, however, mentioned having a garden of her own. M006 described having a small vegetable garden the year before when she planted "*carrots and beets and potatoes*" for herself and her family; she planned to grow a garden again during the upcoming season. Two other mothers spoke about having access to garden produce through family members. M010 said that she particularly enjoyed fresh vegetables during her two pregnancies and was able to get them from her father since he *"had a garden for the last four years.*" M005 had two sources for vegetables: her husband's family and "*there's a guy down there...he always sells lots of potatoes and onions and stuff like that so we usually get that from him because it tastes better, plus it's cheaper.*" The other five mothers spoke about gardening in their childhoods with older family members. As M002 recalled, "*there was quite a bit of people had gardens. I remember going around and helping my aunties and that with their gardens.*" M001 also mentioned that when she was growing up, her family had a garden and grew "*mostly potatoes.*" Later on during the interview when the investigator asked whether she still had access to fresh vegetables,

she replied, "*I used to a long time ago*, [laughs] *a few years ago, but not lately.*"

7.1.2 Technology

Twelve of the thirteen grandmothers spoke about methods of food preservation that allowed them to continue to enjoy fresh meat, fruits and vegetables throughout the long winter months. All of the women remembered that there was no refrigeration available to them during that time. G011 recalled for instance that domestic as well as wild animals were often slaughtered in the fall in order to preserve the meat: "*a lot of people had their own cattle and they'd always butcher an animal or a pig or something in the fall, you know, after freeze-up.*" G002 also recalled a process that was used to preserve meat:

> *G002: My dad used to kill an animal, and we used to have it away downstairs, in the freezer-like, used to have ice down there. Put it in that big barrel you know and everything and take it out and just red like it was cooked, you know. But it wasn't cooked. We had to cook it again, but the vinegar made it so red and nice.*
> *H: You put vinegar with it?*
> *G002: Um hum. In big barrels like that. Big old barrels and then you add vinegar and water and salt. I don't know what all they put in there. We had no fridges in those days, you know. No fridges, but we used to kill animals so we'd have meat every day, eh? Didn't have to buy meat.*

G001 talked about how meat as well as fresh milk were stored on her farm:

> *G001: I have a spring here. It comes right out of the ground. I'm used to having these big eight gallon cans* [of milk]. *My husband would stick them way in* [the spring] *and that's where we kept our milk.*
> *H: Keep it cold.*
> *G001: Yeah. We even had outer cellars and then they had, um, in my dad's days I remember he'd put up an ice house. That's where we kept all the meat and stuff. We'd come in there and we'd have meat. She'd put this meat in white cotton bags so the sawdust wouldn't get on them, and she used to wrap up her butter in rhubarb leaves.*

Later on in the interview, she continued to describe what an "outer cellar" or "root house" was used for:

G001: Had a big cellar and that's where we kept some of our preserves eh? That's where she kept her preserves, jam and things, and we had potatoes in the cellar to take up, you know, to eat for the winter...and then we had an outer house, a root house they called it and dug away deep into the ground, and they made a top on it, you know, and that's where we kept the potatoes and take them out in the spring.

All of the grandmothers except for one also talked about the process of preserving or canning vegetables, fruits, as well as meats and fish for winter storage. G004 recalled learning from her mother how to can foods and how preserved foods were also stored:

G004: Back then we didn't have any deep freezes, eh? Everything had to be in bottle. I remember watching mother doing wild meat in two quart jars. Processing them, like open canners, eh? I remember that. Used to do chicken. The whole chicken into that two quart jar and preserving it like...dug a hole in the earth and put a box in there. That was their deep freeze, or a cellar in the middle of the floor....for all her preserves.
H: Then you would take out whatever you needed.
G004: Yes, and nothing spoiled. All stayed eh? Wouldn't mind if we could go back to that yet.

G005 talked about vegetable 'seasons' and why canning was necessary without refrigeration: "*when your garden isn't growing, we didn't really have freezers then, you know, and I used to can everything. And while the garden was growing, you just have to wait and unless I made enough...I got to know that I had to do more each year.*" G006 also recalled all of the pickles and jams she canned and continues to make. She said, "*I always canned and jammed...always had dills and beet pickles, bread and butter pickles, yellow beans, you know...mustard pickles. Yeah, always had lots too. I remember my old cellar was just full.*"

Two grandmothers talked about preserving fish. G007, for example, described in detail how she still cans fish from the lake every year for her family:

G007: I canned fish last year again, it's a sucker from the lake. My son-in-law

brought a big tub full up, cut up right away, can them. So I canned that, done 30 quarts. Kept it and that's what I used for salmon right now.

Eight of the older women interviewed mentioned that they still preserve foods, mainly fruits and vegetables, whether or not they have a vegetable garden of their own. All of the eight spoke about freezing foods as well, but only one of them had discontinued canning completely. G014 commented, "*I have a lot of stuff in my freezer, all full of everything.*" G003, G004 and G013 talked about freezing things like fruit. G003 said, "*now I freeze all my fruit like strawberries and raspberries. I even pick cranberries and freeze those, and I have a crabapple tree and I freeze those too.*" She also explained why she switched to freezing the fruit instead of canning it: "*I put them in just freezer bags...I cook it first and then freeze it 'cause I used to run out of bottles.*" Seven grandmothers also spoke about continuing to make their own pickles. G003 and G011 were pickling green tomatoes and beet, respectively, while they were being interviewed.

Only three mothers spoke about currently storing or preserving foods. All three women spoke about freezing large quantities of wild meat. M006, for example, spoke about freezing moose meat as well as berries for the winter. As she said, "*one moose will last just over the winter.*" She also picks berries and "*either makes jam with them or just freezes them...with saskatoons you can mix them with uh, to make pie and that.*" M011 also mentioned that they take advantage of the fact that her husband's cousin is a fisherman, and they "*always stock up on fish in the fall and then they like send some over and we'd freeze some.*"

Three other mothers also talked about preserving foods, but only in reference to

other family members. M001 recalled her grandmother making and preserving jams made with wild berries. M005 also spoke about her grandmother's as well as her mother-in-law's preserving practices. Her grandmother lived in northern Saskatchewan in a more traditional community and knew how to "*smoke moose meat and stuff like that.*" She also talked with some appreciation about her mother-in-law canning wild meat for herself and her extended family:

> *M005: I don't know exactly how she does it. She has one of those big, you know those big canning pots, [H: Yeah.] and she cooks the meat in jars. And then she cooks it in the pot, sealed like, and then once they're sealed, and then she just puts them, let's them cool and puts them away. And then when we want to eat it, all we do is put it in a saucepan and add some flour and water and then we have our meat and gravy and then it's really, really good!*

7.2 Food Preparation

Over 61% of the grandmothers also shared their knowledge of making home-made foods including bread, bannock, dairy and meat products, as well as vegetables. All spoke with fondness, especially when recalling foods their mothers had taught them to prepare. As G002 talked about homemade blood sausage, "*oh, was that ever good*!" The group also talked about the economic and nutritional benefits of preparing foods at home. Most commonly, those grandmothers who had lived on a farm with cattle described the dairy and meat products they made so they wouldn't have to depend on the store. Early on during her interview, for instance, G001 said that long ago "*everything was homemade.*" She continued to talk at length throughout her interview about the foods that were regularly prepared at her home. She "*made the butter*" from their own cow's milk and had their own cream and cheese: "*cooked cheese on the stove, eh, after I skimmed the cream off of it.*" She also made her own lard when a pig was slaughtered on the farm as

well as had her own source of flour:

> *G001: My deceased husband, when he would get through thrashing, he used to take barley flour and go and in the mill there and they'd thrash and he'd get flour from there. And there was other kinds of wheat granules and some other things that they got out of that flour and that's what we used.*

Five other grandmothers talked about preparing their own butter as well as lard for their own use. As G003 commented, "*then we had our own butter and then from the pigs you'd get the lard.*" G011 recalled making butter as well as blood sausage after the livestock was slaughtered in order to make the most use of the animal. She explained, "*they wouldn't waste too much of the butchered animal. They'd save the blood and we would make blood sausage.*" Two other grandmothers recalled making blood sausage. G002 described the process but also commented, "*I don't think anybody makes that now, not even big farmers you know.*"

Ten grandmothers also talked about making homemade bread as well as bannock. G008 described it, for example, as an integral part of the meals she prepared:

> *G008: Cereals in the morning, soups for lunch and have your meal at suppertime - potatoes and meats. Some kind of meat. I always had home-made bread. I learned how to do that when I was young living at home watching my mom. It's still the same yet.*

G013 also described homemade bread as well as homemade soup being an important part of her family's diet. She recalled, "*we always had rabbit soup and all these things, like we never had all this canned...[H: Store-bought stuff.] No. And we made our own homemade bread, like you put in whole wheat. Brown bread we called it. We cooked our own.*"

Comparatively, very few mothers spoke about food preparation methods. Those that brought up the topic of cooking or preparing food most frequently did so to convey

their lack of knowledge or understanding. Only one mother talked about making homemade soup herself during her pregnancy. M012 mentioned that she regularly bought "*things to make soup*" from the store, such as fresh carrots or celery. Four other mothers also discussed food preparation briefly only to describe how their parents or husbands cook. M007, who still lived at home with her family mentioned, for example, that her father does all of the cooking. M011 declared that her husband always prepares the wild meat, "*'cause I don't really like cooking them, I don't cook it as good.*" M009 stated that she learned how to cook from her mother who "*always cooked just meat and potatoes.*" She "*never had vegetables*" because she and her daughter didn't want to eat them.

Two mothers also talked about how difficult it is to cook with fresh produce. M001, for instance, explained that she would like to eat more fruits and vegetables but is unsure how to store them so they don't go to waste. She said, "*if you don't eat it at that time it just gets spoiled.*" M003 talked at great length about her desire to learn how to cook and complained about fresh produce going to waste: "*when I do get that stuff like, my carrots and celery usually lie in the fridge, maybe I'll use it once and the rest of it goes to waste.*" She commented, "*I don't know how to cook either. I don't know how to cook fresh vegetables and stuff.*"

During their interviews, the group of mothers also spoke about the relative convenience or inconvenience of the local store in Peguis. Six of the young women mentioned that they depend on, or do the majority of their shopping at the grocery store located in the centre of the community. M002 commented, "*it's easier to go to the store and buy everything there all at once.*" M009 stated that, "*I bought all of my food*" at the local store during her most recent pregnancy, "*except the wild meat*". She also

commented that the reason why her family shops locally is because, "*we have to*", for the sake of convenience.

Five mothers discussed the convenience of purchasing prepared foods from the store or fast foods instead of fresh items such as fruits and vegetables. M013 talked about her desire to have "*take out food*" more often during her pregnancies because "*I'm so used to eating that all the time.*" She was pleased that two commercial fast food establishments, *Kentucky Fried Chicken* and *Pizza Hut* were located within the community. As she said, "*we're lucky to have that out here.*" During her interview, M014 described the grocery items that she purchased regularly from the store:

> *M014: I just buy hamburger, pork chops and then cold meats. I don't buy a lot of other kinds of meats....I just don't.*
> *H: Do you get pretty much everything else you need from the store?*
> *M014: Well, I buy like frozen and canned vegetables and fruits.*

M010 also listed similar prepared foods that she purchases regularly from the store: "*the meats I bought was hamburger and Kraft foods, soups, stew, noodles.*" She also replied that she bought fruits and vegetables from the store as well. When the investigator asked what kinds of produce she preferred, she responded, "*I like the ones out of the can.*" M003 and M011 talked in more detail about the reasons why they often select more easily prepared foods from the store when they shop. M003, for example, talked about her time being limited:

> *M003: Since I've had* [my baby], *I don't have enough time to do what I usually do. And a lot of times my husband can't do the same things I do so a lot of times we're just eating...sometimes we'll eat cereal for supper or sometimes we'll just have sandwiches and chips.*

M011 similarly recounted how she also prefers to buy foods that are fast to prepare in order to keep up with her family activities. When asked by the investigator what she

purchased regularly from the store during her last pregnancy she replied, "*meat and eggs and some stuff that are easy to prepare, like something fast for the kids.*" She went on to describe her children's meal patterns:

> *M011: My second oldest, he'll eat cereal, but him...the first one, the oldest one, he'll have Eggo waffles or pancakes or something like that. [H: He likes that.] Yeah, so...and that's quite fast too for in the mornings, like especially when they go to school eh? They're racing around and his dad doesn't like cooking first thing in the morning....and yeah, toast or whatever. Something fast for them to eat so we can get them off to school and then they take lunch and that and...oh yeah, they go through a lot of baloney. They love baloney.*

M011 went on to explain why she prefers not to buy fresh vegetables at the store located in Peguis. She said, "*it seems half the time you buy anything, you can't get them fresh here anyways. So that's why sometimes I buy the frozen ones or in a can.*"

Later on during her interview, M003 described how she usually shops for food and how she would like to change her habits:

> *M003: It's like, when I go shopping, I always buy the same things, and I can't think of anything else at the same time, and when I get home, oh I should have bought....you know? [H: Yeah, you do your usual shopping.] Uh, huh and then you just pass right by the broccoli, and you don't even think about it.*

M003 mentioned several times during both of her interviews that she would like to learn to buy and prepare more fresh fruits and vegetables. She said, "*I'd really like to shop like that every day, like I'd like to learn to shop like that.*" During her second interview, M003 also talked about being unsure of how to buy, prepare and store fresh vegetables:

> *M003B: I don't really know, decide what to do with them besides boil them.*
> *H: So do you find you're still able to get things like frozen vegetables?*
> *M003B: Oh yeah. They're so much easier....Another reason why I don't get fresh vegetables is because there's a, they charge by the pound or by the grams and I don't know how to work those scales.*
> *H: Oh, I see. So you don't know exactly how much it's going to be just by looking at it?*
> *M003B: And I don't know how long my vegetables will stay fresh either. I don't*

know how long they last.

7.3 Food Security

All of the participants were asked what foods they generally purchased from the store when they were pregnant, what foods were available at the store to buy, as well as which foods were cost-restrictive or limited in their accessibility. Each of the participants had comments related to retail food patterns. Overall, however, the mothers had more to talk about. They mainly spoke about their shopping strategies and the cost and quality of store-bought food available locally.

7.3.1 Shopping Patterns

When the grandmothers talked about purchasing food from the store when they were younger and having their children, they often spoke about the difficulties they had reaching the store on a regular basis. As G011 remembered, "*there was no store on the reserve.*" The closest retail establishment was located in a small town a good distance away, and "*everything came in by train.*" Six grandmothers spoke about obtaining supplies during that period. G014, for example, remembered ordering groceries and clothing from *Eaton's* long ago, and "*it would come on the train.*" G007 talked about traveling by horse team to reach the store in those days. She recalled that her husband used to travel there "*maybe once a month.*" G010 and G011 also spoke about the time their parents first came to live in the new reserve community and had to walk a long way to get to the nearest store:

> *G011: I know the first years when they were here, my family moved here in 1912 and there was no store or anything around here. But they had to go to Arborg for their supplies, and it was a three-day event, coming and going, you know. Yeah, that's where they had to get their supplies...flour, all this other stuff, you know.*

The majority of the older women, eleven grandmothers, described making trips to the nearest store to buy supplies only when absolutely necessary. G004 recalled that the foods they were able to buy at the store were contingent upon the amount of money they had at their immediate disposal: "*we used to ship cream eh, so we'd buy what we needed from shipping the cream twice a week.*" G005 also talked about only needing to buy certain foods at certain times of the year. For example, she explained that, "*while the potatoes were growing, I had macaroni and rice.*" G007 remembers buying "*potatoes if we had to,*" but otherwise "*never bought anything too much.*" These grandmothers spoke about buying "*just the dry stuff*" according to G014. G010 described her regular purchases being mainly "*sugar, tea, coffee, lard and rolled oats.*" Aside from these staple goods, grandmothers who raised their children in the community did not have much access to prepared or processed foods other than canned meats, milk and vegetables. G011 remembered, *"I don't think I ever saw vegetables in the store unless they were canned.*"

G006 and G008 spoke of much different experiences and shopping habits raising their children outside of the community. G006, for example, spent some time in the Selkirk area and described how she would shop at that time: "*we'd drive in there to shop. A big store, meat markets and that. Was everything there is now, you know.*" G008 also talked about how she generally shopped for her family in another non-Aboriginal setting: "*there wasn't an awful lot of different changes there. We just did our shopping every two weeks.*" Although many young women preferred the convenience of shopping for food within their community, over half of the mothers (54%) stated that they prefer to do their

grocery shopping outside of Peguis, and if at all possible in Winnipeg. As M014 commented, "*I try to do* [my shopping] *in Winnipeg, I do it every two weeks.*" M005 mentioned as well that she only depended on the local store for "*everyday stuff*" like milk and bread. Otherwise she said, "*all our meat and everything else I'd get in the city.*" She went on to describe her regular commute to buy groceries:

> *M005: Like we'd go in just for groceries or we'd go in there and we have coolers like if you got frozen things and then come home. And we'd usually end up shopping, like spending about 400 on groceries, like once a month.*

M013 and M001 also commented on their preference to shop outside of the community for increased selection and variety. As M013 said when referring to the grocery store in Fisher Branch, "*there was more to buy there than here.*" M001 specifically talked about an increased variety of fruits and vegetables available at stores outside of Peguis:

> *M001: I find like out here there's hardly any varieties of fruits. Just the basics like apples, bananas, but not...like sometimes it's hard to get strawberries and kiwis and stuff like that. [H: You like those ones?] Yeah, those are good! So sometimes we go to Fisher Branch or Winnipeg and more variety of fruits and vegetables.*

Even some of the mothers who had mentioned their partiality towards the convenience of shopping for food locally also talked about going to the city. M002 and M003, for instance, were both dependent on reliable transportation in order to get to the Winnipeg grocery stores. M002 commented, "*either I went to, well if I had a ride I would go, if my car was working I would go to Winnipeg.*" M003 also described making shopping trips to Winnipeg on occasion and being a "*roadrunner,*" or picking up groceries for other people when she would go into the city for various appointments. That is when, she explained, "*we do a really good shop.*"

Four mothers spoke about the difficulties encountered when driving to Winnipeg

to shop for groceries on a regular basis. M006, for example, explained that she used to do most of her shopping in the city after her first child was born. Her mother would accompany her and knew "*where to go in the city to buy.*" The food she bought would last "*a good month before we had to go for another good shopping.*" She went on to say that because her family has grown since that time, she now shops locally so she is able to do the shopping "*just about every two weeks.*" M009 also recalled that for the first part of her last pregnancy, she did her shopping in Winnipeg, but since that time it was necessary for her to stay closer to home and shop locally. M001 and M011 complained as well about shopping for perishable food items. M011 spoke about being careful of her food purchases in Winnipeg, depending on the time of year. She said, *"depends if it's in the summer, I wouldn't really buy much meat and that because by the time you get home it'll be rotten. I did that once, and I'll never do it again.*"

7.3.2 Grocery Costs and Criticisms

Grandmothers also talked frequently about the price of food available at the store when they were younger. Ten of the older participants spoke about the difficulty obtaining food from the store at that time. G004 made statements throughout her interview, for example, about the problems her family encountered when purchasing foods from the store on a regular basis. She began by saying, "*we never had much money to buy food from the store so we had to eat what was available to us at home.*" When the investigator inquired about the availability and variety of commercial food products locally, she made statements like, "*there was* [a lot available], *but we never had the money,*" and "*we couldn't afford it.*" G014 also recalled that she did not have much money at that time to buy foods from the store and talked about her wages at the time: "*I*

needed to have to work a whole month before I get five dollars." She went on to explain that her family therefore needed to budget their money very carefully and compared her situation to those she sees currently. She commented, "*we always had to think, you know, not like now...you slap it in the cart and just take it. Kids do that now.*" G003 made similar observations saying about the younger generation, "*I guess they can buy everything, I don't know...I couldn't. I still don't.*"

Cost was definitely an issue for grandmothers when it came to buying "*extras*" or "*treats*" for their families from the store. When each of the older participants was asked to give examples of foods they would have liked to have bought more often when they were raising their children, seven immediately cited fresh fruit. G007 recalled that if money was available, "*we always bought oranges and apples.*" G004 also mentioned that fruit was "*what we used to look at*" at the store, and if they could they would "*buy apples or oranges for the little ones.*" In addition she remembered, "*if we had a good year, we'd buy these plums, blue plums and I'd can them, or the peaches. Once a year we did that.*" G010 had similar comments and found it difficult to find the money with an ailing husband:

> *G010: Sometimes, I don't know, I used to....those plums and pears and things like that. But I used to think they're too expensive. I'll buy oranges and apples and bananas. Something the kids had anyway. The odd time if I thought I had enough money I could....., but I couldn't keep it up like. [H: Yeah] My husband was sick too eh? He had TB I guess.*

G012 and G013 spoke about making an effort to occasionally buy fruit for their children as well, but both women had difficulty paying for such things. G012 recalled that, "*it was even hard to buy a package of raisins...once I bought a package, and my husband says, 'why did you buy those for? Look how dear that is!'*" She went on to say, "*did never have*

extras for my children." Similarly, G013 mentioned fruit as being something that she would have liked to buy more of for her children when they were young: "*lots of times like, I bought fruit for my kids...I liked them, but it was hard to get a dollar in them days.*"

Four grandmothers, including G013, contended that although money was difficult to come by when they were younger, foods available at the store were cheaper during that time. G013 recalled:

> *G013: Things were cheap. Like they weren't, they didn't cost very much, but it was hard for a dollar. Now you can make all the money, but the things are expensive today, just going the other way again.*

G001 had many of the same comments. When asked if she would have liked to buy certain foods more often when having her children, she replied:

> *G001: Well, there was nothing really expensive at that time. Lard was ten cents a pound and eggs was five cents a dozen. Ten cents or 25 cents for a big pound of flour, yeah...sugar, 50 cents for a ten pound...[H: You can remember that.] Yeah. So when you had a little bit of money, you can buy lots out of it, you know.*

When talking about the availability of commercial goods, G002 also talked about the low cost of goods when she was young and compared her situation then to young people's today. She began, "*groceries was cheap long ago you know. Pound of lard was 20 cents.*" Later on when asked to give examples of any foods that were cost-restrictive, she responded:

> *G002: Stuff wasn't that expensive at that time.....yeah, but that's not how it is now. You have to have lots of money to go to the store now eh for meat and fruit and stuff like that. At that time you could buy lots with ten dollars, twenty dollars, buy lots.*

For the group of mothers, the most common reason cited for grocery shopping outside of the community was cost. All but three of the young women interviewed discussed the limitations of grocery costs and the expense of foods available at the local

store in Peguis. For example, M001 stated, "*in Winnipeg, yeah, it's less expensive and sometimes we go there just because of that.*" M004 directly targeted the local store and said, "*it's so expensive...it's supposed to be cheaper, but it's not.*" As a result, she explained, her mother did all of her grocery shopping in Fisher Branch, twenty minutes drive away. M006 admitted that she also did most of her shopping in the nearby community of Fisher Branch because she found the local store, "*too expensive.*" M002 mentioned that the store in Fisher Branch, "*is a little bit more cheaper than here.*" She preferred, however, to travel to Winnipeg whenever possible where it is "*even cheaper*" and "*you can use your treaty card* [at some stores] *and only pay one tax.*"

Four other mothers talked about certain foods being much more expensive locally and therefore difficult to purchase on a regular basis for their families. M009 was concerned, for example, about the prices of fresh fruits and meats. M003 complained about the prices of fresh fruits, vegetables, and dairy products when she was pregnant. She said, "*I used to drink milk and ice cream, things like that. I think I ate more fruit, but it was really hard to afford a lot of those things. And vegetables.*" M003 went on to complain specifically about the price of a vegetable that she particularly enjoys: "*I used to like getting, I mean, I like green peppers really lots, and they'll charge sometimes over two dollars for just one of them.*" M005 also spoke about the prices of fresh fruits and vegetables locally:

> *M005: With the fruits and vegetables, it's harder to get it out here because they're not always fresh and they're pretty expensive too. [H: Yeah?] Yeah, like compared to in the city, like a 10 pound bag of potatoes is like three dollars and out here it's like six. [H: Right.] Well even that, like at the Superstore last time I went, it was $1.80 for a 10 pound bag. Out here I went to the store after* [the grocery store] *had closed and even* [the grocery store] *is like five bucks and this other store it was seven dollars!*

M005 continued to talk about the quality and availability of fresh produce, particularly during her second interview:

> *M005B: I'd like more fresh vegetables, especially out here...like it's so hard. Sometimes when you go to the store and it just looks so gross like you don't even want to eat....I didn't realize how much more* [expensive too] *because when I started going to school in the city, like vegetables are just like the cheapest thing. They're just fresh and I was like, no wonder so many people are vegetarians!*

M010 had very similar comments to make about the prices of fresh fruits and vegetables in the local community. She made particular mention of the cost of fruits and the shopping strategies she uses to obtain them for her family:

> *M010: The fresh fruit is what I like buying but I notice that only when it comes on sale we can buy it because they're really expensive. Even my kids enjoy eating fruit. I noticed it's expensive. When it comes on sale we buy it in bulk, eh? It's mostly the fruit that's expensive.*

M010 continued talking about the types of fruits and vegetables she purchases most often, such as, "*apples and oranges, bananas, kiwi, pears.*" The vegetables she listed as being, "*cucumbers and cut-up carrots*", which she noticed are "*expensive at the store too.*" Therefore, M010 explained that she tends to do most of her shopping in the community nearby.

The pricing data collected from Peguis, Fisher Branch and Arborg in October 2001 (see Table 7.1) is in contrast, however, to many of the mother's comments about overall food costs locally compared to Winnipeg. Although total average prices for Winnipeg were calculated to be the least expensive overall, the cost to purchase the contents of a Nutritious Food Basket in Peguis was found to be less than either Fisher Branch or Arborg.

Table 7.1: Food Costing Category Totals for Winnipeg*, Peguis, Fisher Branch and Arborg

FOOD CATEGORIES	Winnipeg Average	Peguis Average	Fisher Branch Average	Arborg Average
Milk Products	16.40	24.32	22.55	24.03
Eggs	1.79	1.79	2.05	1.99
Meats, Poultry, Fish	49.78	52.05	47.87	57.15
Meat Alternatives	4.75	4.84	5.75	5.05
Grain Products	28.77	32.59	38.42	36.93
Citrus Fruit & Tomatoes	10.12	11.29	13.34	12.94
Other Fruit	15.07	14.82	16.39	17.22
Potatoes	4.81	6.98	7.34	7.48
Other Vegetables	26.17	23.79	27.96	28.02
Fats and Oils	8.31	10.24	10.43	10.47
Sugar and Sweets	5.86	7.18	7.14	5.74
TOTAL AVERAGE	**$171.83**	**$189.89**	**$199.24**	**$207.02**

* Winnipeg data is derived from an average of prices obtained from three stores

Prices for a select number of vegetables included in the Nutritious Food Basket are presented in Table 7.2. It is interesting to note that pricing collected in Peguis was found to be least expensive overall for the vegetable category, even compared to Winnipeg. Potato prices, as M005 had suggested, were the lowest in Winnipeg; however, specific items such as fresh broccoli, celery, onions as well as turnips were cheapest in Peguis during the data collection period.

Table 7.2: Itemized Vegetable Costs in Three Communities Compared to Winnipeg

VEGETABLE ITEM	Winnipeg*	Peguis	Fisher Branch	Arborg
Potatoes	2.98	4.99	5.35	5.49
Broccoli	3.68	2.36	3.19	3.28
Cabbage	0.82	0.86	1.21	1.19
Carrots	1.92	1.29	1.19	1.99
Celery	2.12	1.54	1.74	2.43
Cucumber	3.11	2.17	2.07	2.17
Lettuce, Iceburg	2.08	2.41	2.50	2.56
Lettuce, Romaine	2.08	2.98**	4.15	2.72
Onions	1.29	1.08	1.46	1.75
Green Pepper	3.20	2.62	3.85	2.40
Turnips	1.35	1.30	1.43	1.96
Mixed Vegetables (Frozen)	2.91	2.99	2.99	2.99
Corn (Canned, 341 mL)	0.77	0.64	1.09	1.29
Peas (Canned, 398 mL)	0.84	1.09	1.09	1.29
TOTALS	**$29.15**	**$28.32**	**$33.31**	**$33.51**

** Used average of three other prices because item was unavailable

Total costs for fresh fruits priced for the Nutritious Food Basket, presented in Table 7.3, were found to be least expensive in the study community. Given the consistent opinion from the groups of mothers that the price of grocery items, however, particularly fresh fruits and vegetables, are most expensive in the study community of Peguis, it is interesting to reflect on the pricing of foods at various stores (see Appendix G for complete pricing charts). Even though various food items such as fluid milk ($4.59 locally versus $2.99 in Winnipeg) were most expensive in Peguis during the study period, overall costs for food categories such as fresh fruits and vegetables as well as staple items overall, including milk as well as eggs and bread, were found to be the least expensive locally. Meats, including poultry and fish, was the only food pricing category where

prices were found to be higher in Peguis than in Winnipeg or Fisher Branch. It is also interesting to note that even though many women participants reported travelling regularly to Fisher Branch to do their grocery shopping because of lower prices, the local store there had the most cost-restrictive prices for fresh fruits and staple items. Meats were, however, the cheapest during the survey period in Fisher Branch, even in comparison to Winnipeg.

Table7.3: Itemized Costs of Fresh Fruit in Three Communities Compared to Winnipeg

FRUIT ITEM	Winnipeg*	Peguis	Fisher Branch	Arborg
Apples	1.51	1.74	1.74	1.39
Oranges	2.03	2.84	3.19	3.50
Bananas	0.98	1.74	1.52	1.29
Grapes	5.03	2.16	4.16	4.36
Pears	2.95	2.40	3.19	3.50
Tomatoes	2.73	1.72	3.19	2.84
TOTALS	**$15.23**	**$12.60**	**$16.99**	**$16.88**

Overall costs of the Nutritious Food Basket priced in the four communities, however, did find Winnipeg's basket to be the least expensive. During the second week of October, 2001, a Nutritious Food Basket purchased in Peguis was ten percent higher than in Winnipeg. Therefore, the weekly food costs for a family of four in the study community was $189.89 compared to $171.83 in Winnipeg. Fisher Branch prices overall were the second most expensive at $199.24. Arborg food costs overall were the most cost-restrictive, particularly vegetable prices.

7.4 Food Insecurity

Each one of the study participants was also asked about food insecurity. The investigator inquired if the women knew anyone who had ever run out of food. Given the sensitivity of the topic, the wording of the question to ask about others in the community seemed to allow for people to answer the question and maintain dignity. Some women discussed food insecurity in their own homes. Others preferred to speak in generalities and describe a more ideal circumstance for themselves. Both the grandmothers as well as the mothers, however, spoke at length on the topic. Overall, their responses dramatically reflected changes in the perception as well as the value of food in their society and culture.

7.4.1 The Value of Food

When asked if they encountered situations of food scarcity during the period of time that the grandmothers were raising their families, six quickly responded that they weren't aware of such situations during their time. G002, for example, replied, "*nobody that I know of.*" Thinking back to that period G004 also answered, "*I can't recall having to help anyone.*" G010 and G011 agreed. G010 remembered when she was young that, "*it was a good life, yeah...at least we were never hungry.*" G011 commented, "*I don't remember going without. There was always enough.*" She also didn't recall anyone in her community ever running out of food. As she explained, "*there was always some way of getting something.*"

Over half of the grandmothers interviewed, however, (54%) talked about the struggles encountered in the community and at home. They had either personal experience with food insecurity or came into contact with it often. G005 responded,

"*there was people that would run out of like tea or sugar and stuff like that.*" G012 talked about her own situation. She admitted that, "*we ran out of food lots of times.*" G001 also recalled right away that although "*nobody really ran out of food*" that she knew, families in the community had to be careful of their use of staple foods from the store such as flour:

> *G001: Flour, yeah, we had to be careful. You had to be careful of flour. I we wanted to have...we had a piece of bread each when we were each having our meals and that was it because, before there were any stores here, you used to have to go all the way to Riverton, cross-country to get flour and things like that and sugar and tea, you know. So that was all rationed out, but we was never rationed out on food like vegetables and that. We used to roast beet and potatoes, turnips...*

Those grandmothers that saw food insecurity as a problem years ago and those that did not have exposure to such difficulties talked similarly, however, about social and economic issues related to food availability. For instance, a group of seven grandmothers talked about how difficult it was to make a living when they were raising their families and how hard they had to work to survive. G003 made the comment that, "*people today are lazy*" because they don't have to work for what they enjoy. As G002 recalled back then, "*there was no welfare, nothing them times. Nothing like that. Couldn't go to the Band office and get anything you wanted, not in them days. Had to work for it or starve.*" G004 also talked about how hard her family had to work on the farm, selling cream, to be able to afford food from the store. She remembered admiring the fruit in the store at the time: "*that's what we used to look at....but we got along.*" G007 and G001 also compared their lifestyles back then to the young people's today. G007 mentioned that it was due to "*carelessness*" that people would run out of food when she was younger. She went on to say that, "*it's just like today, they have the food for nothing.*" G001 also compared the

divide between the generations and spoke in more detail about the hard work that was necessary when she was raising her children simply in order to survive:

> *G001: We worked hard, you know for our living. There was no welfare, nothing them days. Band never, government never had and that's what they used to pay us our five dollars once a year...a little bit to last us at Treaty time. That was all and we had to look out for ourselves and housing and our living.*

G001 went on to comment that she was "*not really*" aware of any of her neighbours or family being without food back then. She explained that it was because, "*everybody worked you know, everybody worked hard. Nobody really ran out of food.*" G012 also described the situation today, "*extremely different from how we had to strive.*" When she was raising her family, she would work outside the home cleaning people's houses, often in exchange for food. She remembered it was "*garden stuff mostly*" that she'd receive: "*when I'd work for somebody, they'd give me pickles and jam and things like that, eh...homemade stuff.*"

Eight grandmothers talked about sharing food or "*sharing what they had*" with others in the community in order to alleviate the economic pressures of their time. Even G004 who stated that she could not recall "*having to help anyone*" who had run out of food remembered that, "*if we had extra meat we'd give them or potatoes we give them. We did all that.*" G010 also recalled her family regularly giving gifts or foods such as wild meats and fish:

> *G010: I'd say there was a lot of people that couldn't eat like we did.*
> *H: When you were young?*
> *G010: Yeah. 'Cause they, I guess they couldn't hunt for themselves. But I remember my family used to, in the fall, after thrashing and that, and my dad used to go out hunting and bring home a lot of deer meat, moose meat and he used to give everybody, all his relatives, he'd give them all meat. They would share...fish the same way with the fishermen....*

G002 had similar comments to make about her family. She could not recall ever running out of food when she was younger, as she described, "*because my father was a big farmer eh? We had lots of stuff to eat all the time.*" Her neighbour's circumstances, however, were often more difficult during the time before social assistance:

> *G002: If our neighbours ran short of stuff we'd give them stuff to eat. Their kids you know would have milk and everything. [H: Everybody used to help each other out?] Yep, um hum. Lots of times my dad used to send us over next door to take food to those kids 'cause they had nothing to eat. Put a little meat and everything...*

G005 and G001 described how sharing with others is part of their culture. G001 mentioned that if anyone ran out of food, "*people's always ready to go and give them. They was always ready to help.*" G005 talked in the most detail and gave examples from her experience as an elder in the community:

> *G005: I was working, doing home visits in the community. Some of the older people or people my age would ask me how, how do you go about living traditionally or following your culture. And they say, 'I don't know anything about that.' And you know every home, just about every home I would visit, the first thing they say is, 'do you want a cup of tea?' I'd say, 'oh, I'll just have a glass of water.' 'Would you like a piece of bannock or would you like something to eat?' I said, 'what do you mean you're not, you don't know your culture?' I said, 'every time I come in here you offer me something. You offer me tea, water or lunch or bannock.' I said, 'that's part of your culture, you know.' It's sharing what you have.*

G013 also spoke about sharing food between family and neighbours in the community and made a distinction between the terms 'sharing' and 'borrowing'. She explained that if her neighbour asked to "*borrow*" potatoes, "*I would just give that to them, say...don't say borrow. You can have because I have a garden.*" G013 went on to illustrate in more detail what types of foods you 'share' with the community:

> *G013: Long ago they shared. People were* [more] *sharing people than they can see today. Somebody come over, you know and like you got potatoes and that.*

Well, if you got this garden....I got corn or something I give them corn. I do my beets and I do everything and I share with what I don't, can't use, but it'll go to somebody else. Like I was brought up to share....very kind long ago. I could remember my mom and them when they shared a lot of their garden stuff and like if they killed pigs or something on their own, like that's just their own stuff, their chickens and that. They would share with somebody. That's how they lived long ago. Come in, have a cup of tea!

G010 made a similar distinction between the two terms when she talked about her father sharing wild meat and fish with the community, but when it came to purchased food items, she used the term 'borrow': "*different people used to come to my dad and just borrow flour and tea and things like that.*" G012 also spoke about borrowing food regularly from her neighbours and family members when her children were small. She recalled that it was quite common at that time: "*it was nothing for anybody to...nobody thought anything about it.*" G008 and G011 also talked about those circumstances and how the community would support one another:

G008: Oh, they had contingency plans like credit line with merchants and neighbours that had transportation like horses and wagons and things weren't so rushed, you know. If you knew you were going to be out of supplies this week you could walk over to the neighbour's house and ask them if they, when he had time would he be able to take you. Here and there, it was all arranged a few days ahead of time. It's not like today. Today there's always something they want to do right away, in ten minutes time. [laughs]

G011: Well they helped one another. The men would get together, you know, and some of them had oxen. My dad had oxen. They'd travel by land, through the bush to get their supplies. Travel together you know, but it was always good like that.

G001 and G012 also made mention of how support systems in the community have changed over their lifetime. G001 stated several times that it was common practice when she was younger to "*help each other out, even if the person was sick, they went there to help...not like today. Today it's not a community. If you don't look after yourself that's just too bad.*" G012 had similar comments:

G012: [Today] *they don't come and ask you for nothing. Sometimes if we know our neighbours don't have coffee, like this morning we had no coffee so I phoned across. I said bring some coffee for this morning please, and she brang it over. You know we'll give her back now that we have coffee, we'll send it back to her.*

Although practices of sharing food in the study community were talked about mainly by the older generation, one grandmother as well as one mother discussed similar innovative and practical solutions involving sharing community food resources. G005 referred back to her childhood when she attended one of the local schools:

G005: At the school we used to have a garden. And we would have, 'cause there was some kids that didn't bring lunch. And so, everybody would...this was a day school. We would make a garden in the summer. And then early summer....during the summer there would be four children, four students, that would look after that garden for so many weeks and then four more, four more. Until it was time to, you know, September. We didn't start school until September. And then, the teacher that started that, he used to have a big soup pot. And we would cook vegetables and what some of us would do was we would bring a rabbit and have rabbit stew. Rabbit and vegetable....even all kinds of vegetables we used to grow, right beside our school. Great big garden. And then somebody would bring bannock every day.

M003 also discussed prepared meals together and sharing as friends and family as a solution that she looks forward to:

M003: When everybody was in Peguis we looked after each other. We'd go over to dinner all the time. Like sometimes we'd all go to my sister's. A lot of times they would all come to my place and sometimes we'd go to my dad's or mom's. Like everybody would gather up in one place and have supper together. A lot of times at least twice a month. Like a potluck. Like you bring the potatoes, you cook the bannock and I'll have the roast here.

7.4.2 Dependance

Although nine mothers were aware of people in the community running out of food, three young women described food insecurity as a big problem in Peguis. M002 stated during her second interview that she felt it was "*really common*" for people she knows locally to run out of food. When M003 was asked if she knew of anyone that has

run out of food she responded, "*yeah, everybody.*" M011 also replied similarly by stating, "*I know that happens like all around the reserve.*" In total 69 percent of mothers talked about the difficulties of achieving food security in the community as well as the mechanisms they depend on to provide for their families.

Six of the mothers participating in the study were recipients of social assistance at the time of the interviews. Five of these women took the opportunity when talking about food insecurity to critique the welfare system. M001 described her sister's situation living on welfare with three adolescent children to feed: "*I know my sister sometimes runs out of food...I guess 'cause she's on welfare and not really much money to buy.*" M007 also talked about the situation in her parent's home with one parent receiving social assistance:

> *M007: My dad pays the bills around, when he buys groceries and there's like a lot of people that come over. But we don't complain about it and they like eat with us because they live further away and so we feed them. There's all my little nieces and cousins. So we run out pretty much.*

M002 also spoke about her own situation depending on social assistance:

> *M002B: Like welfare's not that much. It's really low, and then to try and go out and get a job is even harder. There's not much. So I think it's, I think there's quite a few people live like that around here.*

She continued to talk in more detail about the difficulty she experiences monthly trying to purchase enough groceries for herself and three children:

> *M002B: I spend all mine on groceries. But even that, I don't find it seems to last though. When I get my family allowance, I buy even more groceries! [laughter]*
> *H: That's what you need?*
> *M002B: Uh, huh. Then plus too, like social assistance doesn't cover like your bills and that if you get a phone and....like clothing for kids and that.*

Another recipient of social assistance, M011, described the situation her neighbours find

themselves in on almost a monthly basis, as well as problems associated with borrowing:

> *M011: Well, if they run out of toilet paper or something they borrow a roll off of us or salt or bread or whatever. A loaf of bread we give them, eh? But they have, well they got, she just recently had a baby and they're....they have five kids now and they're....they get their welfare monthly and it seems like they always seem to run out by the middle of the month. And whenever they run out of stuff they either phone us or they phone my brother-in-law across the road there.*
> *H: So one of the neighbours.*
> *M011: Yeah. So, but they...sometimes too it kind of gets me kind of mad too because they do that eh? And then it puts us down too, and they get more than we get.*
> *H: They have more kids?*
> *M011: Yeah, and it's more now and they should try and shop a lot better.*

Later on in the interview, M011 explained the tactics of avoidance that she is forced to use in order to save the food she has bought for her children:

> *M011: I'll turn the phone off at a certain time. It doesn't matter I guess because even if I haven't, like when I have my phone on, they'll still send their kids over. But I told them, I said, try not to make a habit of it because I can't...I'm not going to deprive my kids of having food like too, you know. I buy just enough for us like, for them.*

Seven mothers spoke about the process of borrowing money or food. In almost all cases the women talked about lending food or borrowing food from family members exclusively. M002 gave the example of her sister as someone who regularly runs out of food. Her sister would then, "*just usually come and borrow off of, like one of us. Usually we'll help her and give her some of whatever extras we had, 'cause I always made sure I had lots of groceries.*" M001 talked similarly about her sister: "*sometimes she borrows, like even if I run out of stuff I go and borrow from her too. So we borrow off each other, whatever we need.*" M003 also talked about the support she receives from her family. Whenever she "*runs short on something*," she feels able to "*ask my dad's girlfriend*" for assistance such as borrowing a "*pound of hamburger or a couple of potatoes.*" M003

went on to explain the support and security she feels from her family and how they are all able to depend on each other:

> *M003B: I feel like we never really have to worry when we have each other.*
> *H: Right, that seems like that's able to help you get by.*
> *M003B: Yeah. We're always helping each other out so we don't, we don't really owe each other back anything like if we can, we'll help each other out when we need it.*

M005 had similar comments when talking about her family's support and how they are also able to 'borrow' from each other:

> *M005B: Like nobody's poor in my family. Like poor, poor, whatever. But even a lot of us, like we'll phone each other, like oh, I'm out of eggs, can I borrow some eggs or I'm out of bread and borrow some bread.*

M005 also talked about "*never being stuck*" and described other strategies to cope with food insecurity as well:

> *M005: And then my friend, S., she's a distant cousin, but she's really good to us. One time I went there and I bought a 2 litre of milk and she goes, how come you're only buying the 2 litre? I said, I don't have enough for the 4 litre. And she goes, well you shouldn't ever be out of anything with all your kids and she goes, just take a 4 litre. You can just charge it until you get paid or whatever.*
>
> *M005B: Having to, like picking up, putting all like loonies and stuff that are around the house and going getting like lunch meat and stuff like that. Like if that happens to us and then we actually get lots of help from like everyone else. Like we're never stuck.*

Four of the young mothers interviewed, however, did not find food security to be an issue in their households. Of the four families, however, two mothers with new babies were living in their parents' homes with at least one parent working. Neither mother was responsible for food purchasing or meal preparation. Both of these individuals, M004 and M012, immediately responded "no" when asked if they knew of anyone who has run out of food. M010 and M014 also answered negatively when asked about food security issues

in the community. Again, however, both of the women's husbands were currently working full-time, and M010 recalled later on during her interview when describing her current health:

> *M010: It's like a lot better than it* [was] *before I noticed. I'm able to eat. I notice that I was able to eat any kind of foods because I've always had, back then you couldn't even have, didn't have the foods that we have now. Probably because we, we pretty well couldn't afford everything then.*

7.5 Discussion

A great divergence between generations was observed in Peguis with regard to the transference of food knowledge. Grandmothers talked about an era of self-sufficiency when they were raising their children. They planted gardens, canned fruits and vegetables as well as meats due to lack of refrigeration. Foods were generally home-made, and supplies were purchased from the store only when necessary. Fewer mothers spoke about having access to vegetable gardens. Food preservation knowledge was also generally limited to freezing wild meat, fish and berries. Many also expressed a lack of food preparation knowledge and the constraints of time and family as well as the overall inconvenience in using fresh produce in cooking. Mothers reported purchasing almost all of their food from the store.

As has been stated in one of the few articles on food security in Aboriginal communities, "studies of the diet of aboriginal peoples have tended to focus on intake; less attention has been given to understanding the food supply, perceptions of the food supply and how these affect food security."(Campbell et al., 1997; p.105) Campbell and colleagues' investigation into the changing food supply in three northern Cree communities in Manitoba (for a complete report see Campbell et al., 1992) provides the

most comprehensive analysis to-date on circumstances affecting food access and security in a First Nations community. It is also the only study located to investigate the community food supply as a whole and although was implemented in the north, the results provide a basis for comparing to the present research.

In northern Manitoba, for example, Campbell and colleagues (1992) discovered that foods, particularly traditional foods, continue to be preserved. Traditional methods of food preservation, such as drying and salting, have generally been replaced by modern methods, especially freezing. In addition, a higher percentage of older women than women of child-bearing age preserved foods in the communities studied. The most remote community reported the most extreme divergence between age groups. Freezing fish as well as wild meats, such as moose, were most commonly practiced by all groups of participants.

The same study also presented information on current patterns of purchased foods in the three communities (Campbell et al., 1997). Even in the most remote, fly-in community, 95 percent of respondents relied on the community store. Less dependance on the local store was, however, noted in the communities with road access. The majority of participants in these communities chose to travel to the city of Thompson in order to do their shopping. These patterns are similar to those expressed by the group of mothers in Peguis who relied heavily on purchased food items and regularly travelled to Winnipeg simply to shop. A decreased dependance on purchased foods or staples noted by the group of grandmothers is also echoed from a historical source of literature. Prince (1973) briefly presented information on store access and food supply as well as general purchasing patterns in his account of the relocation of Peguis in the early 1900s. He

recalled:

> *Living conditions were difficult. There was only one store, eight miles away at Fisher River, operated by a Mr. Roger. Transportation was very difficult and the storekeeper found it almost impossible to bring in enough supplies for the new settlers about Fisher River as well as for his old customers on the Fisher River Reserve established in 1871. His only means of transportation was by sailboat and I recall that it was very old and not very large. Our groceries were limited and had to be rationed. Flour was cut down to eight pounds per purchase per customer and only a week's supply of fat could be bought at one time. Many of the newcomers were forced to deal elsewhere to get enough to eat.* (p. 74)

Other references located that discuss food security in North American Aboriginal communities include studies were also mainly conducted in northern Canada and generally discuss food prices (Wein, 1994; Waldram, 1985; Bell, 1991). Each investigation reported high food prices, particularly in communities without all-weather road access. Wein, for example found that in the most remote community studied, food prices were on average 250% of those collected in Edmonton. Bell (1991) and Sinclaire (1997), however, also examined food prices and food security issues for Aboriginal people in the more southern urban centres of Vancouver and Winnipeg. Although different issues and barriers unique to those living in a more urbanized situation were found to be of influence, those families on social assistance and pregnant women were found to be most at risk (Bell, 1991). Sinclaire focused on food procurement barriers to Aboriginal women in urban Winnipeg and concluded similarly that financial insecurity was the most commonly reported.

Since no data was located that describes food costs in a southern First Nations community, it is difficult to make direct comparisons. Three studies completed in the United States, however, among First Nations published information on price barriers and

current acceptance levels of fresh produce. Fruit was cited as being most cost-restrictive by the group of grandmothers in Peguis when they were pregnant. Mothers found fruits as well as vegetables expensive. Fresh produce currently available in the study community was also described by the mothers as being poor quality. Harnack and colleagues (1999a & 1999b) reported similar finding from Aboriginal groups in Minnesota and South Dakota. In South Dakota in particular, decreased consumption of fresh produce was blamed on price barriers as well as poor availability and quality. Rapid spoilage was also discussed as a reason respondents found it difficult to consume greater quantities of fruits and vegetables. Lang (1989) also reported on low vegetable consumption in an Aboriginal community in North Dakota. Expense as well as low preference for many varieties of vegetables were cited. Among the Mushkegowuk Cree in northwestern Ontario, Abonyi (2001) also reported briefly on a general dislike of vegetables. One participant explained, "I hated vegetables when I was a kid because it wasn't fresh, it was canned food. It was canned peas, canned carrots, canned whatever. It's terrible. So I didn't have a liking for vegetables, so I grew up without eating a lot of vegetables." (p. 121)

Food pricing data collected for Peguis and two nearby communities when compared with Winnipeg prices revealed that fruits and vegetables were less expensive locally. A listing of staple food items, such as milk, bread and eggs, were also found to be cheapest overall in Peguis. From personal observation, the quality of fresh produce available in the study community, as well as in Fisher Branch and Arborg were certainly of comparable quality to fruits and vegetables for sale in Winnipeg. The price of a Nutritious Food Basket was found to be cheaper overall in Winnipeg, but only by a

difference of ten percent. Therefore, given the cost and barriers associated with reliable transportation expressed by a number of the mothers, shopping locally should be viewed as being the most cost efficient practice. The prices collected, however, were only compiled during the early fall. Produce quality, variety, as well as price may therefore increase substantially in the study community during the winter period.

More mothers than grandmothers indicated that they were cognizant if people in the community who regularly ran out of food. Just over half of the grandmothers talked about individuals running out of staple products such as flour and lard when they were raising their families. They also discussed the process of sharing what food was available to them in order to alleviate intermittent periods of scarcity during the time before social assistance payments. Nine mothers gave examples of family members and neighbours who would regularly borrow food or money to make ends meet. Social assistance was mentioned by the mothers as being insufficient to purchase adequate food on a monthly basis. The process of borrowing or relying on friends and family members for money, meals or food items was also described by the mothers as being a burden to some and a barrier to achieving household food security themselves.

Similar mechanisms of food acquisition or "adaptation strategies" were noted by Sinclaire (1997). Her study in an urban Aboriginal setting concluded that although the women she interviewed used similar coping strategies to cope with financial insecurity as has been reported in non-Aboriginal impoverished communities, Aboriginal women often are required to cope with obligations to family and friends. As Sinclaire describes, Aboriginal women who had relocated to the city would often develop, "coping strategies which would ensure they have enough food for their own families and still allow them to

maintain their cultural obligations to their family." (p. 180) For example, one participant confessed that she would hide what food she had in her home whenever her family came to visit to ensure that her immediate family had sufficient food resources available. These "obliged means" of obtaining resources from family members is also referred to by Hamelin and colleagues (1999) from an investigation conducted in urban and rural Québec. The study also discusses the unsustainable nature of such methods of food acquisition and points to a number of social implication that may arise from situations of chronic food insecurity. Many respondents from the study referred feelings of exclusion and powerlessness due to psychological suffering related to food. One mother in Peguis referred to similar feelings of isolation when discussing food security issues. Others in the Québec study, interestingly, felt strongly that "disorganized eating patterns and jeopardized ritual eroded the transfer of knowledge and practices." (P.527S) With a significant proportion of the community in Peguis dependent upon social assistance payments to supply food to their households, these implications are concerning. In addition, it is distressing that with a local Nutritious Food Basket priced at $189.89 a week for a family of four and social assistance payments for the same family size at $628 a month, the price to purchase the contents of a Nutritious Food Basket in Peguis for a month ($759.56) is out of economic reach.

A number of other authors have pointed to the inadequacies and inequities that continue to exist in society that not only undermine their right to food, but have social implications as well. Waldram (1985) has stated that "social assistance serves primarily to maintain a population at a subsistence level, and rarely allows for or facilitates any process of development." (p. 47) As Travers (1996) refers to it, this bureaucratic and

political organization of food, health and welfare has evolved from limited purchasing power as well as an increasing need for private sector responsibility over public or social problems such as poverty. In social terms, poverty is seldom self-imposed, but almost always real. McKenzie (1974) suggests that too often calculations are done which assume that if a family spent their money in a different way, they could enjoy adequate living conditions and nutritional status. To give up food patterns that are culturally or socially ingrained, however, while it may possibly temporarily remove the threat of physical deprivation, such behaviours would not remove poverty or food insecurity in any real sense. The Life Sciences Research office definition of food insecurity (Hamelin et al., 1999, cf Anderson, 1990) states that "to acquire acceptable foods in socially acceptable ways" is referring to obtaining food without having to resort to "emergency food supplies, scavenging, stealing" or other similar unsustainable and potentially unhealthy coping strategies (p. 528S).

Community interest, involvement and education about food security issues are necessary in order for Aboriginal communities to take control over their unique food systems. Food security issues are central to the health and well-being of the entire community. To achieve food security, community members themselves must identify a shared vision of food security and translate it into locally controlled food and nutrition policy in order to ensure a vibrant healthy community (Campbell, 1997). Community-based activities such as collective kitchens, community gardens, school food programs, food budgeting workshops, food cooperatives and community shared agriculture are all examples of food action projects that are effective short-term measures in attaining food security (Kalinas, 1993). The community support systems that were described mainly by

the group of grandmothers appears to be disappearing in Peguis. Sharing food is less of an issue when it is derived from renewable resources such as vegetable gardens in addition to wild foods. Innovative practical solutions such as school gardens and collective meal planning, as described by G005 and M003, respectively, involve the sharing of community resources and form the basis of longer-term sustainable solutions targeting social inequalities.

Chapter Eight

Descriptions of Diabetes

G003: I was never someone to sit around and so my babies never got really big and I was always sort of careful of what I ate because my mother was a diabetic.

M002: My granny told me that's the only reason why a lot of Native people now have diabetes is because they don't eat wild meat no more.

One of the objectives in conducting this investigation was to attempt to discern the extent to which diabetes is a concern to women in the community. The subject of diabetes was raised only once during the semi-structured interviews as one of the background questions at the beginning of the interview. Each woman was asked a close-ended question: whether or not she had been diagnosed with diabetes during past pregnancies. This investigation, therefore, did not attempt to describe diabetes prevalence within the selected community as that was not one of the study's aims. Instead, this chapter will present topics which arose during the semi-structured interviews. In some cases, however, the investigator brought up the topic during the secondary unstructured interviews in order to clarify comments made by select participants.

Overall, the participants raised the subject of diabetes during 20 of the 32 interviews recorded. More grandmothers brought up the topic than mothers. Only one grandmother did not talk about diabetes. Eight interviews with the mothers contained conversation about diabetes although two of these interviews followed an unstructured format. Therefore, for the sample of women interviewed, diabetes was a theme of interest to ten grandmothers and seven mothers. The participants discussed three main areas:

diabetes during pregnancy; the origins of diabetes, as well as emotional well-being and anxiety about diabetes; and its potential health-related complications.

8.1 Gestational Diabetes

The topic of gestational diabetes was raised by the investigator during the semi-structured interviews with each age group. In order to provide background and context relative to the prenatal health of the women, all of the participants were asked whether or not they were diagnosed with diabetes during any of their pregnancies. Only one grandmother and one mother responded to the question positively. All of the other women immediately answered, "*no*" or "*never,*" and did not elaborate any further. It was discovered, however, after other questions were asked of the participants, that one other mother was diagnosed with high blood sugar when pregnant. Another young mother, pregnant at the time of her interview, talked about symptoms generally consistent with a diabetic pregnancy.

Four grandmothers talked about diabetes during pregnancy, and generally their advice for pregnant women today was to "*be careful.*" G003, for example, and G013 spoke about the susceptibility of young women in their community and the danger of gestational diabetes developing into type 2. As G013 commented, "*there's a lot of women that are going like that....there's diabetes right away when they're pregnant. Then after the baby's born some of them get over it, but some don't. Some of them stay as one.*" G003 described the differences in diet and lifestyle she feels contribute to more young women developing gestational diabetes:

G003: They drink, they smoke and they just eat everything and anything, you

know - all this crap. No wonder they get so big and a lot of them turns into diabetes before their babies.
H: What do you think would be causing that?
G003: Well, I think there's just too much junk for one thing. Not the right food and not too many people plant gardens, not too many people live on the farm, you know. Not a lot of fresh stuff that they...there's a lot, in my day, there's a lot of wild fruit that you could go and pick.

She also went on to describe why she felt she did not develop diabetes until later in her life:

G003: I guess I was never someone to sit around and so my babies never got really big and I was always sort of careful what I ate because my mother was a diabetic, but eventually I got it.

Later on in the interview, she talked again about how certain foods could negatively influence maternal health: "*I think it makes a difference what a person, how they eat and that when they're pregnant, like a lot of greasy foods. I don't think you should do that.*" When the investigator asked if she felt foods containing a lot of fat affect a pregnant woman's health, she replied, "*I think so, and then, you know, you can get diabetes too, I imagine, from all that stuff. You have to eat the right foods.*"

During her second interview, G003 talked about her grandmother's recommendation to avoid sweet foods as well during pregnancy. She explained that her grandmother had told her, "*you can get diabetes from that.*" The investigator then inquired why she thought her grandmother was more concerned about sugar consumption while she was pregnant. She answered, "*well, because usually, you know, when they take the blood tests, usually you're diabetic or your sugar's high or something like that when you're pregnant.*" Later on she expressed her concern and made a connection between gestational and her own type 2 diabetes. She asked the investigator, "*today there's so, isn't there so much diabetes*?" Continuing, she stated, "*I think it's because of how they*

eat, because I have diabetes now, you know, and I have to be careful what I eat."

G006 and G008 questioned whether they were tested for gestational diabetes during the time they were pregnant with their children. G006 recalled going to the local hospital regularly for prenatal check-ups, but she said, "*long ago we never, I don't think they checked for diabetes years ago. I don't remember anyone having that at that time.*" When asked if she had ever been diagnosed with gestational diabetes, G008 responded, "*I did have a diabetic pregnancy, but then it wasn't well known back then.*" When the investigator asked how she knew it was a diabetic pregnancy she answered, *"from the size of the baby and all the trouble I had during the pregnancy.*" She went on to explain that she had "*a lot of urinary, they called it urine tract infections and bladder infections and....headache and just generally feeling sick.*" Her fourth child was also born "*one ounce short of eleven pounds.*" During her second interview, she also discussed her symptoms:

> *G008B:* [The pregnancy] *was different right from the beginning, like I had a lot of morning sickness and didn't experience that with the other ones. And I got large really fast, like not just my tummy, but all over.*

G008 first had suspicions that she had experienced gestational diabetes when, "*my mom told* [me] *my sister had a diabetic pregnancy and she had all the symptoms that I had and they told her that she was diabetic.*"

During both of her interviews, G008 also hypothesized about the possibility that a change in her environment as well as her diet may have affected her fourth pregnancy. She had married outside the community and had just relocated to a larger city centre in a new province. No longer did she have access to wild foods or other gifts from family members, and she became more dependent on commercially-produced foods:

G008: During the fourth one, that was difficult, maybe there was a [diet] *change. So with more, you know, our diet at home growing up, we didn't have much macaroni or spaghetti. And when my husband would get paid, or twice a month he would take me out for dinner and I always asked for that dish spaghetti and meatballs....and I did learn to make spaghetti at home. Oh I just loved it. I think I had a lot of spaghetti at that time.*

The investigator asked G008 during her second interview if she felt the circumstances leading up to her fourth child's birth were unique or somehow different than for her other pregnancies. She replied, "*I was living in a different place. We were living in Alberta and I think that my diet was different. I had to learn how to cook macaroni and pasta.*" She continued:

G008B: I didn't think, you know, that there was anything wrong with it. I thought it was very nutritious and it was easy to prepare. I had three little ones to look after, my husband and myself and so...did have quite a lot of pasta.

Twice the number of mothers talked about their understandings of gestational diabetes compared to the older age group. Eight mothers made comments about dietary influences on the mother's as well as the baby's health during pregnancy. During her second interview, for example, M002 elaborated on the benefits of consuming wild meat while pregnant. She said, "*I didn't want my kids to catch, to get* [diabetes] *and all that so I started eating* [wild meat], *but I don't have to eat it every day. I eat it now and then.*" M001, who was pregnant at the time, had a lot to say on the topic of diet influencing the onset of diabetes in pregnancy. She began by commenting:

M001: I think that you have to eat healthy so you can have a healthy baby. That they can grow, you know, when you are carrying them, that their stages of growth...like if you eat junk food and they're going to be, like...they might be sick or something. So I try to eat mostly healthy food.
H: Because you think that's of benefit to the baby overall?
M001: Yeah. 'Cause I know some ladies who, um, they didn't eat healthy and their baby was like....they had diabetes. Like gestational diabetes or something like that.

M001 then went on to describe the "*junk food*" that she has observed pregnant women eating in the community, foods that she was currently trying to stay away from: "*like chips and pop and....like fried food and that, but mostly chips and pop I see.*" Further along in the interview she talked in more detail about why she was avoiding certain foods:

> *M001: Well, like if you don't eat right you're maybe going to get diabetes or high blood pressure and stuff like that. Mostly I can stay away from like salty foods because of high blood pressure, can make you have high blood pressure. So that's another thing too like, I quit using salt in my, you know, when you just sprinkle salt. Yeah, and I try and stay away from salty foods like chips and stuff like that. And for me I don't drink pop. Like I drink it once in a while, but not every day like some people. [laughs]*
> *H: Does this relate to the baby's health or your health?*
> *M001: Well, for the baby's health too because like whatever I eat, like the baby's going to get it too, eh?*
> *H: If you have high blood pressure that can affect the baby?*
> *M001: That affects, and diabetes can affect the baby too.*

During her second interview, M005 spoke in detail about prenatal weight gain as well as its potential influence on the baby's health. She also went on to talk about the differences in infant size; the stigma associated with having a smaller baby in the community; and how a child's size could put them at risk of developing diabetes in later life:

> *M005B: And then a lot of girls, like especially younger ones nowadays, like I'll take my girls to the hospital and they say, oh your kids are so tiny, they're so small. And they'll say it like it's insulting, like is your girl ever skinny. Especially her [gesturing to youngest child], they call her a bony baby. [H: Really?] Yeah. So they're bigger and the fatter they are they think it's more healthier. They think like I take care of my kid better or something like that. But um, I know some of these girls overdo it, and then they have really huge kids, and then they're at risk for diabetes and that, especially with Native children, eh? There's always the risk of that, whether or not you eat too much fat.*

She gave also gave an example of someone in the community who gained a lot of weight while pregnant and delivered a large infant:

M005B: Okay there's this one girl and she was always really slim, really skinny, and when she got pregnant she just ate and ate and ate. And she says, oh I'm pregnant, oh I'm pregnant and then her baby ends up, her baby was like 12 pounds. [H: That's a big baby.] Really huge kid, yeah. And they think well, oh, my baby was 12 pounds and they're just proud and that's just scary because a nurse was telling me like over 9 pounds, you're more, the baby's more at risk of developing diabetes. Especially in Native children, like being overweight.

M005 was also concerned about her own health situation when pregnant and tried to concentrate on decreasing the amount of junk food she consumed during her last pregnancies:

M005B: When I wanted to eat, like if we're sitting around and the kids were having chips and that, I'd go grab a head of lettuce and then sit there and munch on that or...I got the kids into that too. Like they'll eat celery with cheese all the time.
H: What sorts of things do you think you should stay away from in terms of trying to prevent against that happening, like developing diabetes or....
M005B: More fresh vegetables.

From the sample of thirteen mothers, only two disclosed that they had been diagnosed as having high blood sugar while they were pregnant, but neither woman made straightforward statements. Initially when asked, M011 responded that she had not been diagnosed with diabetes prenatally. However when she was asked what foods she was told to avoid while pregnant, she mentioned "*sugar*" and explained, "*I guess they were worried that I might have diabetes or whatever.*" The interviewer then inquired if her blood sugar had been high at the time, to which she answered, "*yes, but it was, they just said, cut back on your sugar intake or whatever and....but I couldn't see it like, I didn't have much sugar really. Once in a while I'd have a Pepsi, but, but I guess it would make up for it.*" M007 responded directly to the investigator when asked if she was ever diagnosed with diabetes when pregnant. She stated, "*they said I was, but I wasn't.*" Later on during the interview, however, she also talked about her blood sugar being high during

pregnancy and, "*I kept on having a problem...I was getting bladder infections.*"

Although M006 did not reveal that her blood sugar was high or that she had been diagnosed as being diabetic during her current pregnancy, she described complications similar to M007 and G008. She also described symptoms that are often associated with diabetes. For example she said that she "*drank a lot of water*" with her second pregnancy, "*even during the night I'd down one of those big bottles of water.*" With her current pregnancy she also mentioned that she has "*had a lot of, actually had a lot of problems. I had a bladder infection and a yeast infection.*" A few weeks later when she was interviewed again, she mentioned having difficulty sticking to eating "*healthy foods*" and also feeling nauseous most of the time, similar to her second pregnancy:

> *M006B: Then this one too is, I don't have, like I know I should be eating healthy foods, and I eat them just because I figure they're, because I have to. And I've been eating a lot of yoghurt lately because the doctor said I have to because I've had about four bladder infections through this pregnancy.*

8.2 Causation Theories

Both groups of women talked most frequently about their theories of where diabetes originates from as well as the various risk factors that they associated with the disease. Six grandmothers, for example, gave specific examples of what dietary practices to avoid in order to prevent diabetes onset. G004 for instance, mentioned, "*I try and stay away from white bread because my son, he's on the borderline of being diabetic, eh, but he knows how to control everything from what he eats and he told us, never eat white bread.*" She went on to make the distinction between white bread, homemade bread and other whole grain varieties: *"I don't make bread any more. We just buy the* [12 grain] *bagels and the brown bread.*" Fatty foods and junk foods were also associated with the

onset of diabetes:

> *G004: Certain kind of margarine we eat, our son told us to buy, eh? So I think what happened to us Natives when we first got introduced to fast foods, I think that's where the diabetes came.*
> *H: Do you think so?*
> *G004: Yes, because we lived on wild meat. We never thought of hamburgers and all them weiners and I'm pretty sure that's where this diabetes came in for us Natives was introduced to fried foods, like fried foods and all this junk food.*
> *H: Uh, huh.*
> *G004: I blame that because I....now I cut myself off of, I used to be bad for drinking pop, Pepsi or 7-Up. Once in a while I'll have half a glass of 7-Up with my husband in the evening. We crave for that, just that little bit, just half that glass. We know to stay away from it, eh?*

G005, a retired health worker, had similar comments related to an increase in the availability and quantity of processed foods or junk foods that she felt people in her community are consuming too much of. The remark she made about needing to eat or craving junk foods also mirrored those of G004:

> *G005: When you go to the store, yes they have a good store here now, you know. There's, you can get just about anything there. Plus, I call it the garbage and candy. The sweets that's there. And when you walk in the store, what do you see first? Candy. Bags of chips. And we just have to have that, you know. That's what we used to tell our prenatals, don't eat that garbage...you're giving that to your....and that's why there's so many diabetics.*

G013 also associated sugar with the development of diabetes. When she bakes pies, for instance, she said, "*I don't use very much sugar in them because I don't want* [my] *kids to be diabetic like me.*" She also talked about diabetes being hereditary when she stated that, "*my mother was diabetic. She had diabetes. Then in years to come I knew I was going to be one because my mother was one.*" In addition she listed all of the people in her family with diabetes:

> *G013: My brother, he has both diabetes and high blood pressure, and my sister's a diabetic. The other two, there's four of us, there's three left. Now you see I'm diabetic and my daughter is diabetic and my youngest too is a diabetic.*

The investigator then asked her if she thought the fact that her children had diabetes was because she also had it. She replied, "*well they all say it runs in the family*" but also went on to blame foods such as sugar:

> *G013: The food we're eating too, you know, makes a diabetic because if you have diabetes, because there's so much sugar in everything. There's sugar, sugar...that's all they use and that in your cooking there's lots of it and there's lots of it now. Things you buy now.*

Almost the same number of women, seven mothers, talked about their impressions of what causes diabetes as well as concrete dietary changes that would prevent or slow the disease's onset. M010, for example, made comments similar to the group of grandmothers and mentioned "*being careful*" of how she eats:

> *M010: I noticed I was living on sandwiches, like it wasn't meals. I know I never ate healthy, I noticed. I noticed the difference back then and now. Just being careful what I eat and how I eat and pretty well found out all the foods that can cause diabetic...to be diabetic. Because my mom and dad are, they're diabetics.*

M012 mentioned sweets specifically. She said, "*I had to, I have to be careful, how I ate. I stay away from donuts and stuff and like sugar stuff. You could have like diabetes because there's diabetes in my family and I stay away from stuff like that.*" M002 also spoke about prevention but was the only participant to associate the rising incidence and prevalence of diabetes in Peguis with a shift away from consuming wild foods or foods from the earth:

> *M002: My granny told me that's the only reason why a lot of people, a lot of Native people now have diabetes is because they don't eat wild meat no more. They always eat store bought stuff and everything.*

During her second interview, she also explained why she ate more wild meat than domestic:

> *M002B: I think I ate it because my dad always told me that's the reason why a lot of Indians have the highest blood sugar and sugar diabetes and all that, you*

know. He said that's because they're not eating enough foods from the earth I guess, like wild meats and fish and stuff like that.

8.3 Emotional Health

Seven women interviewed used words such as "*scary*" and "*frightening*" when talking about diabetes. In general, more mothers than grandmothers expressed these emotions. M002, during her second interview, for example, said, "*I was scared to get that,*" referring to diabetes. Her father's and grandmother's advice to eat more foods from the earth in order to prevent diabetes, she recalled, "*scared*" her when she was pregnant since she did not want to develop diabetes herself, nor did she "*want my kids to catch* [it]."

Three other mothers also shared their apprehension and anxiety when talking about how gestational diabetes may or may not affect a child in utero. M005 cited earlier said she feared for the health of an increasing number of large newborns. M012 also explained that she chose to stay away from eating "*donuts and stuff, and like the sugar stuff*" during her pregnancy because, "*I want to be healthy. I want my baby to be healthy....and I know there's a lot of people on my reserve that are diabetic, my family. It's scary.*" M001 had the most to say on the subject. She was asked if she had something like diabetes during her pregnancy, how she would envision it affecting the baby. M001 responded:

> *M001: Well, one of my co-workers here, she said she had diabetes, well she is diabetic, and when she was pregnant her baby had like cleft lip or whatever. I don't know whether, if that's inherited or just due to the diabetes. But like it's kind of scary, if you don't eat right. [laughs]*
> *H: So it is a scary thing?*
> *M001: Kind of scary, yeah. And plus for yourself like, there's my cousin. She had that gestational diabetes and she had um varicose veins or whatever. And she was*

having a hard time in her last few months 'cause when you have that your babies are like....they're bigger. That's some things like, what I look at to try and stay, eat healthy for the baby plus my own health.
H: Okay
M001: Kind of scary when they....[laughs] That's probably the scariest part, not knowing like what would happen, eh?

Of the seven grandmothers who identified themselves as non-diabetes, two talked briefly about their fear of developing type 2 diabetes. G006 spoke about going to the local hospital regularly for check-ups with her doctor in order to prepare herself for the eventuality of developing diabetes like her mother. She said, "*even now when I go for a check-up, I go for a complete physical, blood and all that and blood pressure and I get all checked out now because I'm getting old and I think it's gotta happen somewhere, you know.*" G014 also talked as though her physical health was closely aligned with a diabetes diagnosis. When she was asked how she would rate her current state of health, she responded, "*good I guess because I haven't got diabetes.*"

Understandably, discussions focusing on coping with diabetes were expressed to a larger extent by the group of grandmothers. Eight grandmothers including the six women diagnosed with type 2 diabetes spoke about living with the disease as well as measures they were taking to prevent its onset. G013 talked on and off throughout her interview, for example, as if she were still struggling to come to terms with the disease and its affect on her health as well as her family's health. Her first comments related to how the diet and work ethic have changed during her lifetime. She talked about everyone in her community being "*small long ago*" which she credits to "*working hard and we ate the right food.*" She continued, "*but now today, see us, we're fat and diabetes and everything.*" Later on she talked about her lifestyle when she was younger and caring for a large number of children. She was careful of her sugar intake. As she said, "*I always*

use salt in my porridge, I was never a person for sugar," and she therefore seemed confused as to why she was "*the first one when I grew up*" to get diabetes in her family. The topic of gestational diabetes also seemed to make her reflect on why her niece was diabetic when she was pregnant, *"and then after she's not diabetic after she had the baby. She's okay. What causes that?*" Since G013 was "*never diabetic when* [she] *had any of* [her] *children,*" she gave the investigator the impression that she was questioning the fairness of her eventual diagnosis. Towards the end of the interview, she also expressed her frustration over the dietary restrictions that she must continue to adhere to as a diabetic: "*I still don't use sugar. I never use sugar and not very often I'd have anything sweet. But seeing, turning down being diabetic and then I really crave something sweet! What the heck's wrong?*"

G013 and G007 also mentioned how family members have been affected by diabetes. G013 talked about her mother, her siblings, as well as some of her children that are diabetic and how she feels that diabetes "runs in the family":

> *G013: Like my mother was diabetic. She had diabetes and then like in years to come, I knew I was going to be one because my mother was one. My brother has both diabetes and high blood pressure and my sister's a diabetic. The other two, there's four of us, there's three left. Now, you see, I'm diabetic and my daughter is diabetic and my youngest too is a diabetic.*

During her interview, G007 talked about her mother being diabetic and suffering from strokes which she blamed for the number of strokes that she has also suffered. G007 also talked about dealing with the loss of her son to diabetes over fifteen years ago:

> *G007: He died with diabetes. He went blind and his kidneys went. He went into the army when he was young. He was only fifteen and a half years old. He went into the army and started drinking and that's where he got it, in the army. They shipped him home. He was a bad diabetic, and he just about died when he got home.*

G008 spoke extensively about her health. Following a divorce from her first husband, she began suffering from a series of chronic conditions. She directly attributed the sudden health problems to her marriage going "*out of whack.*" As she said, "*your belief system and that collapses and I think emotions have an impact on physical well-being.*" What began as a cancer scare gradually developed into type 2 diabetes:

> *G008: They got the cancer out, yeah. Had problems with the healing. Like the wound wouldn't close. It kept on for quite a long time, and then that was when they noticed my sugar was up. I think it was from trying to keep my strength up from all the bleeding, like the wound wouldn't close...losing a lot of blood. But I didn't stay* [at the hospital]. *I didn't stay under the doctor's care....*
> *H: When did they notice it?*
> *G008: I'd gone back to the surgeon, to the after care I checked in about six weeks later and he sent me up to his lab and that's when they noticed the sugar was up. I'd been trying to drink a lot of sweetened juices, just to keep myself feeling strong.*

8.4 Discussion

To describe diabetes in Aboriginal populations was not one of the objectives set out for the investigation. The focus was on how much of a concern diabetes was to the group of women interviewed in this community. It was of particular interest to the focus of this research how culture idea systems influence maternal diet and how Aboriginal culture and lifestyle are being affected the current diabetes "epidemic" (Young et al., 2000). Therefore the discussion to follow will concentrate mainly on risk factors and prevention issues of concern to the changing health of mother and child within this sample group of women.

As was reported, the majority of those interviewed talked about factors and other causation theories generally associated with diabetes. Half of the participants spoke about dietary influences such as white bread, sugar and junk foods as well as hereditary factors

that may predispose individuals towards being more susceptible to the disease. Only one grandmother referred to the size or weight of the individual as being a risk factor for type 2 diabetes. The same grandmother, G013, also blamed processed foods containing hidden amounts of sugar for a rise in the prevalence of diabetes in her community. She also echoed the concerns of two other grandmothers who complained about the additives present in processed as well as canned foods. All three women felt these commercially-produced items were the cause of more and more individuals becoming sick.

Similar causation factors have been recorded in the scientific literature as well (Williams et al., 2001; Gittelsohn et al., 1997; Wolever et al., 1997; Young & Sevenheusen, 1989). The qualitative investigations of Lang (1985&1989), Garro (1995) and Bruyère & Garro (2000), however, provide some of the most direct comparisons in investigating how Aboriginal people themselves understand diabetes. Bruyère, for example, described a number of factors members of a northern Manitoba Cree community felt were associated with the etiology and onset of the disease. As the nature of diabetes is described in their own language, sugar is identified as the cause of the illness. As was also indicated in Peguis, diabetes is tied closely to the intake of sugar and junk foods as well as a decreasing availability of wild foods in the community due to environmental contamination.

For the Devil's Lake Sioux community, the underlying causes of diabetes reported by Lang (1985) also seemed to be associated with lifestyle. "Canned and store-bought" foods, including junk foods with high sugar contents, were similarly described by this community as unhealthful. These modern foods were also specifically implicated with locally causing increased diabetes rates. More Westernized descriptions, as Lang

referred to them, were made as well in statements such as "diabetes runs in our family" and "diabetes started when I became overweight." (Lang, 1985; p.255) A number of individuals also implied that supernatural forces may be at work and problems such as diabetes may affect individuals who "aren't living their life the right way"(Lang, 1989, p. 316) for example, those community members who are no longer maintaining their cultural responsibilities.

Dietary choices as well as societal and environmental changes were also described by Garro in a southern Manitoba community. Dietary explanations such as eating or drinking too much overall or consuming certain foods were also made by the study participants. For example, sugar or foods with high sugar concentrations were attributed as causing diabetes. Canned foods were also reported by Garro's study to be contaminated by, "harmful chemical substances sprayed on crops" or "injected into animals" (p. 42). These substances upon being consumed were described as interrupting the body's balance which ultimately lead to illnesses such as diabetes. A decreased consumption of wild foods and the change to increasing proportions of store-bought foods were also to blame. Heredity as well as worry and stress were also described as risk factors but rarely as primary or exclusive explanations.

Garro, Bruyère as well as Grams and colleagues (1996) point to issues of control being associated with diabetes in Aboriginal populations. Bruyère refers to an individual's lack of control over diabetes. Similarly, feelings of loss of control and the desire to regain control over lifestyle behaviours associated with diabetes were also described in focus groups conducted with Aboriginal communities in Haida Gwaii (Grams et al., 1996). In addition, Garro also talks about various diabetes causation

theories being associated with control or blame. Those individuals in her study who shared more of a biomedical focus in reference to diabetes, a group with a much higher proportion of young people, described a diabetes diagnosis as being an individual's fault. Heredity, increased weight and the consumption of too much food or the wrong food were examples of explanations given by this group of people. From this perspective, changes or control over lifestyle issues could potentially lead to health improvements. A higher proportion of older persons, however, talked about blame and placed diabetes in a more social as well as a historical context for discussion. This group of people generally described diabetes as originating from the contamination of food and the environment. The two generations of women in Peguis seemed to talk similarly about diabetes causation. As in Garro's study, their responses did not always follow predictable patterns, and mixed responses as well as doubts and confusion regarding individual interpretations often arose as a result. For example, G013 blamed high sugar intakes for the onset of diabetes in individuals; however, she seemed at the same time distressed and confused as to why she developed diabetes herself when she never ate very many sweets.

Both groups of women in the study community also shared comparable explanations in talking about gestational diabetes. Grandmothers again referred to particular dietary behaviours such as drinking alcohol, smoking and eating too many sweets and other junk foods as reasons for women to develop diabetes while pregnant. One grandmother also referred to a lack of fresh fruits and vegetables in the diet, decreased activity levels and mother's pre-delivery weight gain as being risk factors. More mothers than grandmothers discussed GDM (gestational diabetes mellitus). Similar reasoning was expressed by the young women. They were most concerned about prenatal

sugar consumption, in addition to junk foods. One mother also discussed the benefits of eating more wild meats and other foods from the land during pregnancy in order to prevent GDM. Another young woman referred maternal and newborn size as being predictor variables for GDM as well as the child later developing type 2 diabetes.

A number of recent studies have investigated risk factors associated with GDM in Canadian Aboriginal populations (Young et al., 2002; Dyck et al., 2002; Grey-Donald et al., 2000; Rodrigues et al., 1999a & 1999b; Godwin et al., 1999; Dyck et al., 1998; Mohamed & Dooley, 1998; Harris et al., 1997). It is generally recognised in this literature that North American Aboriginal women have higher rates of GDM than women in the general population (Rodrigues et al., 1999b; Godwin et al., 1999; Harris et al., 1997; Benjamin et al., 1993). Other risk factors associated with GDM, aside from Aboriginal origin include: greater age during pregnancy; pre-pregnancy obesity; family history of diabetes; multiparity; tendency to have larger babies and history of GDM in previous pregnancies (Grey-Donald et al., 2000; Rodrigues et al., 1999b; Harris et al., 1997). The majority of research on gestational diabetes in Aboriginal populations, however, concentrates on screening for GDM and comparing GDM prevalence as well as its predictors in Aboriginal women with non-Aboriginal populations.

Lifestyle factors such as maternal weight gain have been noted through this collection of literature; however, only two recent articles appear to examine prevention efforts related to other modifiable factors, such as diet. For example, a pilot project tested whether or not a supervised exercise program would have any influence on glycemic control in women with gestational diabetes in Saskatoon (Dyck et al., 1998). Due to low participation rates in the project, however, it was difficult to draw many conclusions from

the publication of results. Grey-Donald and colleagues (2000) also began an intervention program with four Cree communities in Québec. The project aimed to work at "improving dietary intake during pregnancy; optimizing gestational weight gain, glycemic levels and birth weight, and avoiding unnecessary postpartum weight retention." (p. 1247) An intervention and control group were established. Dietary advice was given. The intake of fruits and vegetables as well as dairy products was promoted while calorically-dense foods such as soft drinks and french fries were discouraged. These participants were also encouraged to stay within guidelines set for weight gain during pregnancy. A questionnaire including a 24-hour recall and physical activity assessment were also administered. When evaluated, intakes for energy and other nutrients, however, were found to be similar for the intervention and control groups. Dietary folate was found to be low and cholesterol levels high, reflecting low fruit and vegetable intake as well as a high consumption of eggs. Rates of weight gain were also very high for both groups. Glucose screening values were also similar and a higher prevalence of GDM (16.2%) was noted in the prevention group. Birth weights were also recorded and both groups were found to have infants 15 percent heavier on average than non-Aboriginal infants. Post-partum weight retention was also similar for both the control as well as the intervention group.

Although the intervention was not successful in this population, discussions of the reasons the project failed seem to reflect cultural divergence and a general lack of understanding. Grey-Donald and colleagues, for example, discovered upon closer examination that for younger women in the Cree communities physical activity during pregnancy is not seen as desirable. Older community members, however, responded that

prenatal inactivity has only relatively recently become common. A letter published in the same journal by the Special Working Group of the Cree Regional Child and Family Services Committee (2000) involved in the intervention also described reasons behind the failure of the intervention. They suggested teaching expectant mothers in group sessions would be more effective in order for them to learn about the health risks of gestational diabetes. Advice should be passed on by peers and the extended family in a more culturally appropriate fashion, "through storytelling and oral education, having the women think of their diet by beginning to look at their roles as women and mothers." (p. 1273) This way, they contend, food as well as activity messages would have been more integrated into the already established lifestyle patterns.

Implications for the health of a mother with gestational diabetes and her child were raised by three mothers in Peguis. Worries about congenital abnormalities were cited by one mother. Another woman felt that if a woman gained too much weight and developed GDM during pregnancy, her baby may be too large and result in a difficult pregnancy. Excessive maternal as well as fetal weight gain were also associated with the development of type 2 diabetes. A recent investigation in Saskatchewan outlined maternal and child health implications associated with GDM in Aboriginal populations (Dyck et al., 2002). Hypertension was found to be more common in Aboriginal women with gestational diabetes. Many were also likely to have experienced C-sections with infants more likely to be macrosomatic. Non-aboriginal newborns, born to mothers with GDM in this investigation, however, were found to be more than twice as likely to have congenital abnormalities than those mothers without GDM.

Gestational diabetes and macrosomia have been discussed in the literature as

potential risk factors in the advancement of type 2 diabetes, particularly in Aboriginal populations. GDM has been described as putting women as well as their children at increased risk of developing type 2 diabetes (Pettitt et al., 1985; Pettitt & Knowler, 1998; Mohamed & Dooley, 1998; Dyck et al., 2002). Obesity in Aboriginal communities has also been associated with an increased prevalence of infant macrosomia (Caulfield et al., 1998; Rodrigues et al., 2000). Most recently Young and colleagues (2002) reported that maternal diabetes is one of the strongest predictors of type 2 diabetes developing in children. As the article suggests, these finding are of obvious concern due to other risk factors associated with maternal diabetes in adults, such as obesity. The study also reported outcomes similar to those published by Pettitt and Knowler (1998). Breastfeeding was found to have a protective effect in reducing the risk for type 2 diabetes in adolescence and adulthood. These findings have important implications to the health of Aboriginal women and children in Manitoba since breastfeeding initiation rates for Manitoba Registered First Nations newborns is 57.1 percent compared to the provincial average of 80.5 (Manitoba Centre for Health Policy, 2002).

Chapter Nine

Summary and Conclusions

Before I was born out of my mother, generations guided me.
(Walt Whitman)

One of the strengths of qualitative research is the rich descriptive data that allows the voices of the participants to be presented in their own words (Shepherd & Achterberg, 1992). As Strauss and Corbin (1990) have also stated, qualitative research design is especially useful where little is known about the area of study because the research can reveal processes that go beyond surface appearances. However, although qualitative methodology provides researchers an opportunity to better describe and explain the social world, particularly in areas where little previous investigation has taken place, there are often limitations to the reliability as well as the generalizability of the results (Morse & Field, 1995; Wilson & Rosenberg, 2002). In addition, each researcher has their own unique cultural perspective or bias that may either directly or indirectly influence interpretation and ultimately the study's results.

For this investigation the use of qualitative methodology was chosen as being appropriate given the lack of formal study conducted thus far on cultural changes influencing maternal diet in Aboriginal populations. Due to the non-random purposive methods employed in sample selection, however, study outcomes are not necessarily directly translatable to the community of Peguis as a whole, or other First Nations communities.

That being said, it is appropriate, however, to examine some of the patterns and dominant themes that surfaced during this exploratory investigation and to suggest

recommendations based on these outcomes. All areas of the study's results are influenced, for example, by a lost connection or interruption in the transfer of awareness between the generations of mothers and grandmothers which is reflected in knowledge loss and the alteration of maternal dietary patterns. Maternal dietary practices and behaviours have changed considerably in the past two generations. Grandmothers talked about not changing their eating or activity patterns significantly while carrying their children. They continued to enjoy an abundance of fresh foods from the land and were careful not to gain too much weight during pregnancy in order to assure the infant's safe delivery. They were encouraged by their mothers and grandmothers to keep active throughout their pregnancies and continue to participate in all household duties. The group of mothers, however, tended to describe more of the, perhaps, biomedically-influenced changes they were encouraged to make prenatally. Pressure was felt from peers and medical professionals to decrease the consumption of inappropriate foods such as Pepsi and "junk" foods. In the present context, grandmothers also discussed the proscription of such dietary practices as being necessary to avoid fetal health problems and delivery complications. Similar patterns of cravings and aversions, however, were expressed by both age groups. Mothers, however, tended to crave more processed or fast food items as well as non-food substances such as ice and paper. Both groups of women talked about aversions to store-bought meats. However, the maternal consumption of perhaps more culturally-familiar wild meats was described by the group of mothers most notably as being preferable to domestic meats.

Although both groups of women talked about the superior quality, in addition to the maternal and fetal health benefits derived from the consumption of wild foods, a loss

of cultural knowledge related to traditional food acquisition and preparation was noted. Both mothers and grandmothers discussed the health benefits associated with wild meats as well as the environmental contamination of commercially-processed foods. The availability and access to wild meats was also similar for both groups of women. An increased dependance on purchased foods was associated, however, with the group of mothers. Few mothers were currently involved in wild food acquisition and knowledge related to the seasonal cycle as well as other cultural observances were expressed mainly by the group of grandmothers.

Loss of knowledge related to food accessibility, food variety and food preparation skills was also evident between generations. An era of self-sufficiency was described by the grandmothers during the time they were raising their families. Knowledge of agricultural methods and the preserving of wild meats, fruits and vegetables allowed the grandmothers to live more independently. They were forced to produce or prepare most of what they needed on their own since the store was such a long distance away. Social assistance was not yet available. Mothers, in comparison, talked about their use of conveniently-prepared foods and inexperience cooking using fresh produce. Preservation methods were limited to freezing. Mothers also generally preferred to obtain their groceries in Winnipeg due to a perceived high cost of local food and quality. Food insecurity was found to be a concern for the majority of participants. Grandmothers, however, described shortages of purchased foods only while mothers mainly discussed the limitations of living on social assistance.

A Nutritious Food Basket (NFB) priced locally was found to be cost-restrictive for those dependant on welfare payments. The total average price to purchase a NFB was

found to cost 10% more in Peguis than Winnipeg. However, with social assistance payments at $628.00 a month for a family of four, the cost of a NFB in Peguis at $759.56 monthly is out of economic reach. Prices for fresh vegetables, fruits and many staple items were found to be least costly in Peguis, even compared to Winnipeg.

Diabetes was found to be a topic of concern for seventeen of the women interviewed. More mothers than grandmothers, however, discussed risk factors associated with gestational diabetes and its potential for poor maternal and infant health outcomes. They blamed the increased consumption of junk foods, sugar and a decreased consumption of foods from the land for the rising incidence of gestational diabetes in the community. One mother targeted maternal weight gain as well as fetal size as being predictors in the subsequent development of type 2 diabetes. Although many grandmothers talked at length about maternal and fetal size, only a few briefly implicated maternal weight as being a precursor for diabetes. Grandmothers and mothers did discuss the association of higher fat, sugar and junk food intakes as being associated with diabetes in general. For both mothers and grandmothers, heredity was only associated with the development of type 2 diabetes mellitus. Only one grandmother, however implied that a lack of fresh foods, such as fruits and vegetables, an increased consumption of junk foods as well as decreased activity patterns were to blame for more women developing diabetes during pregnancy.

According to these reports, maternal diet and lifestyle patterns have changed considerably in Peguis over the last half-century. Concern over maternal and fetal weight was expressed by many of the older generation interviewed. Grandmothers are worried about the health of young women and children in the community. They observed that

maternal consumption of high fat foods of poor nutritional quality and decreased activity patterns may lead to difficult deliveries, child sickness and perhaps gestational diabetes. Cultural teachings associated with prenatal diet and lifestyle no longer appear to be of influence. Mothers seemed much more aware of biomedical advice received through the local health professionals.

The social as well as cultural significance, however, of traditional foods appear to be of continued impact. A high proportion of mothers are eating wild meats and fish and talk similarly about the contamination and inferior nutritional quality of purchased foods. Preparation and food preservation methods, as well as other more traditional methods of food acquisition such as berry-picking and vegetable gardens have decreased significantly. Mothers therefore are not nearly as self-sufficient and an increased dependance on purchased foods has resulted. Changes in food acquisition methods have also lead to a decreased level of activity and an alteration of women's roles in the community. Issues related to food security have changed. Survival is no longer an issue. Instead social assistance and seasonal work have created monthly and yearly cycles of chronic food insecurity. The borrowing instead of sharing food resources is also potentially leading to an increased sense of obligation and places strain on social as well as financial resources.

These changing dietary patterns associated with increased gestational weight and lifestyle modifications of pregnant Aboriginal women need to be placed in historical context because they are also a reflection of societal changes. An editorial commentary written by the Special Working Group of the Cree Regional Child and Family Services Committee (2000), for example, talked about freezers changing people's way of eating

since wild meat long ago had to be consumed immediately or shared. Now food is described as "always at hand" (p. 1274) with junk foods and fast foods being most convenient. Pregnant women also worked hard in the past because of their important role in the family. She was also taught to "be up early in the morning and active" as was stated by many of the grandmothers in Peguis. Also Cree teachings for women advised not to become too large when pregnant and to look after oneself. The group blames housing availability for the loss of close contact with extended family and the oral education a young mother would normally have received.

As this Cree working group has also advocated, prenatal education should involve community members with similar experience as well as members of the pregnant women's extended family as a more culturally appropriate approach for passing on information as well as advice. Perhaps in addition to one-on-one prenatal or nutritional counselling, group sessions would be of greater benefit to young Aboriginal women in order to build local support networks, which may have more of an impact on dietary as well as behavioural modification. Health care providers should also make every effort to ascertain a pregnant woman's source of advice and knowledge and support these teaching pathways by welcoming friends and family members into the formal health care setting.

Clarke (1990), in her study of a coastal Salish community in British Columbia, found the major sources of teachings and knowledge related to childbearing practices, such as those related to diet, activity, labour and breastfeeding, were mothers, mother-in-laws and grandmothers. Traditional prenatal teachings about "emotions and spirituality" (Clarke, 1990; p.26) were associated with a higher level of commitment and behavioural modification compared to more contemporary teachings originating from the health care

sector. The grandmothers' comments from the interviews certainly reflect this philosophy in advocating healthy eating and increased activity patterns during pregnancy. Pregnancy for them was viewed as a normal, natural event requiring no medical intervention. The experience of pregnancy for the young women in Peguis, however, appears more individualized and clinically monitored. Although many of the mothers interviewed were aware of prenatal health issues, few appeared to be following the advice received from health professionals and printed resource materials.

Young women in Peguis may benefit from increased exposure to traditional teachings advocating healthy eating, increased activity patterns and breastfeeding in order to increase the overall effectiveness of prenatal health education. As Aboriginal people define traditional knowledge, "it is practical common sense based on teachings and experiences passed on from generation to generation; it is a way of life." (Cochran & Geller, 2002; p.1405) Practical activities and programs aimed at increasing food preparation skills and confidence in young mothers may therefore be needed in Peguis. Sustainable food security strategies, such as collective cooking and community gardening could also potentially be of benefit if encouraged by peers, elders and local experts. Grandmothers in the community need to be given a voice and the opportunity to share advice and express their concerns.

In addition, as was illustrated by the pricing of fruits and vegetables in Peguis compared to Winnipeg, cost is not a barrier explaining their limited consumption. Families can therefore be encouraged to shop locally. Ideologies behind these eating patterns, such as inconvenience and preference, however, need to be addressed. The continued consumption of traditional foods such as wild meats, fish and other locally

harvested items may also be of nutritional as well as economic and cultural benefit. Education efforts related to traditional knowledge and wild food acquisition as well as preservation methods such as canning would also be important in order to increase nutritional variety as well as community interest and participation among all age groups.

With the exception of the high social and cultural function associated with foods from the land, loss of traditional knowledge and cultural teachings associated with maternal diet is a familiar theme that runs through the body of this thesis. Although the investigation was exploratory in nature, the results point towards a need for additional, more in-depth research to be undertaken. The potential influences on maternal diets in Peguis First Nation, as this study has revealed, are multi-dimensional and lead to additional questions, such as: is Peguis unique in the traditional and agricultural knowledge the older generations possess? How is prenatal nutrition programming currently being approached? Is food insecurity an issue in nearby communities? What is the incidence rates of gestational diabetes in Peguis and are prevention programs in place? How generalizable are these results to the community as a whole, or for other southern First Nations communities? Further research is needed to explore these topics sufficiently, in order to make appropriate, culturally-specific recommendations for maternal and infant health programming.

As the grandmothers have described the changes they have witnessed in their lifetimes, each have potential impact and influence on the health outcomes of women and children in Peguis. Increasing rates of maternal weight gain, infant macrosomia and nutritional insufficiencies, for example, may lead to more and more cases of gestational diabetes, with the potential for an even higher prevalence of type 2 diabetes in women

and children. Further research needs to be undertaken in southern First Nations communities in order to compare and address these potential cultural as well as nutritional impacts of maternal dietary change. There is need to bridge the gap between traditional and scientific knowledge, as well as the knowledge gap that is continuing to grow between the generations themselves.

References

Abonyi, S. (2001). *Sickness and Symptom : Perspectives on Diabetes Among the Mushkegowuk Cree.* Unpublished Doctoral Dissertation. Hamilton: McMaster University.

Agriculture Canada. (1996a). *Involving Canadians : A Commitment to Consultation.* Ottawa.

Agriculture Canada. (1996b). *The Canadian Contribution to World Food Security*. Ottawa.

Agriculture Canada. (1996c). *World Food Summit Food Security Situation and Issues: A North American Perspective*. Ottawa.

Alberti Fidanza, A. and R. Fidanza. (1986). A Nutrition Study Involving a Group of Pregnant Women in Assisi, Italy. *International Journal for Vitamin and Nutrition Research,* 56, 373-380.

Al-Kanhal, Mohammed Ahmed and Ibrahim Bani. (1995). Food Habits During Pregnancy Among Saudi Women. *International Journal for Vitamin and Nutrition Research,* 65, 206-210.

Arnott, Margaret L. (1975). *Gastronomy : The Anthropology of Food and Food Habits*. Chicago: Aldine Publishing Company.

Axelson, M.L. (1986). The Impact of Culture on Food-Related Behaviour. *Annual Review of Nutrition,* 6, 345-363.

Badun, Carolyn et al. (1995). Food Security and Nutritional Concerns of Parents in an Economically Disadvantaged Community. *Journal of the Canadian Dietetic Association*, 56(2), 75-80.

Barker, D.J.P. (ed).(1992). *Fetal and Infant Origins of Adult Disease*. London: British Medical Journal.

Bartholomew, Mary Jo and Frances E. Poston. (1970). Effect of Food Taboos on Prenatal Nutrition. *Journal of Nutrition Education,* 2, 15-17.

Basu, T.K. et al. (1994). Plasma Vitamin A (Retinol) and Retinol-Binding Protein in Newborns and their Mothers. *Nutrition Research,* 14(9), 1297-1303.

Bateson, E.M. and T. Lebroy. (1978). Clay Eating by Aboriginals of the Northern Territory. *Medical Journal of Australia,* 1, 1-3.

Battaglia Frederick C, and P. J. Thureen. (1998). Nutrition of the Fetus and the Premature Infant. *Diabetes Care*, 21(2), B70-4.

Bell, P. (1990.) Economic Barriers to Optimum Nutrition in Native Communities in British Columbia. *Circumpolar Health, 90*, 756-757.

Benjamin, E. et al. (1993). Diabetes in Pregnancy in Zuni Indian Women. *Diabetes Care,* 16(9), 1231-1235.

Berkes Fikret and Carol Farkas. (1978) Eastern James Bay Cree Indians : Changing Patterns of Wild Food Use and Nutrition. *Ecology of Food and Nutrition,* 7, 155-172.

Bernard, H.R. (2002). *Research Methods in Anthropology, Qualitative and Quantitative Approaches.* Walnut Creek: Altamira Press.

Best, S.C. and J.W. Gerrard. (1959). Pine House (Saskatchewan) Nutrition Project. *Canadian Medical Association Journal,* 81, 915-917.

Best, S.C. et al. (1961). The Pine House (Saskatchewan) Nutrition Project II. *Canadian Medical Association Journal,* 85, 412-414.

Bicchieri, M.G. (ed). (1972). *Hunters and Gatherers Today : A Socioeconomic Study of Eleven Such Cultures in the Twentieth Century.* New York: Holt, Rinehart and Winston Incorporated.

Birkbeck, J.A. (1971). Nutritional Status of British Columbia Indians, II. Anthropometric Measurements, Physical and Dental Examinations at Ahousat and Anaham. *Canadian Journal of Public Health,* 62, 403-414.

Bishop, Charles A. (1972). Demography, Ecology and Trade Among the Northern Ojibwa and the Swampy Cree. *Western Canadian Journal of Anthropology,* 3(1), 58-71.

Bishop, Charles A. (1974). *The Northern Ojibwa and the Fur Trade.* Toronto: Holt, Rinehart and Winston of Canada Limited.

Black, Meredith Jean. (1973). Algonquin Ethnobotany : An Interpretation of Aboriginal Adaptation in Southwestern Quebec. Unpublished doctoral dissertation. Ann Arbor: University of Michigan.

Blix, Gunnar. (ed). (1969). *Food Cultism and Nutrition Quackery : Symposia of the Swedish Nutrition Foundation VIII.* Uppsala: Almqvist & Wiksells.

Bolton, J.M. (1972). Food Taboos Among *Orang Asli* in West Malaysia : A Potential Nutritional Hazard. *The American Journal of Clinical Nutrition,* 25, 789-799.

Brand, Janette C. et al. (1990). Plasma Glucose and Insulin Responses to Traditional Pima Indian Meals. *American Journal of Clinical Nutrition,* 51, 416-420.

Bruyère, Jocelyn. (1998). *Understandings About Type II Diabetes Mellitus Among the Nêhinaw (Cree).* Unpublished Master's Thesis. Winnipeg: University of Manitoba.

Bruyère, J. and L. Garro. (2000). "He Travels in the Body". *Canadian Nurse,* 96(6), 25-28.

Bushnell, J.M. (1981). Northwest Coast American Indians' Beliefs About Childbirth, *Issues in Health Care of Women,* 3(4), 249-261.

Butte, N. F. et al. (1981) Nutritional Assessment of Pregnant and Lactating Navajo Women. *American Journal of Clinical Nutrition*, 34, 2216-2228.

Campbell, Cathy et al. (1988). The Role of Nutrition Professionals in the Hunger Debate. *Journal of the Canadian Dietetic Association,* 49(4), 230-5.

Campbell, Cathy and Ellen Desjardins. (1989). A Model and Research Approach for Studying the Management of Limited Food Resources by Low Income Families. *Journal of Nutrition,* 21, 162-171.

Campbell, Cathy C. (1991). Food Insecurity: A Nutritional Outcome or a Predictor Variable? *Journal of Nutrition,* 121, 408-415.

Campbell Marian L. et al. (1992). *Dietary Survey of Preschool Children, Women of Child-Bearing Age and Older Adults in God's River, Nelson House and South Indian Lake - Final Report.* Ottawa: Health and Welfare Canada, Medical Services Branch.

Campbell, Marian L. (1994). Energy and Nutrient Intakes of Men (56-74 Years) and Women (16-74 Years) in Three Northern Manitoba Cree Communities. *Journal of the Canadian Dietetic Association,* 55(4), 167-174.

Campbell, Marian L. (1997). Food Prices in the North: A Threat to Food Security. *Issues in the North, Volume II*, 107-118.

Campbell, Marian L. et al. (1997) The Contemporary Food Supply of Three Northern Manitoba Cree Communities. *Canadian Journal of Public Health*, 88(2), 105-8.

Canada. (1999). *Country Paper Canada Supplement*. Ottawa: Health Canada.

Canada. Department of Indian Affairs and Northern Development. (1998). *Alternative Northern Food Baskets*. Ottawa.

Canada. Food Price Review Board. (1975). *Food Prices in Northern Canada*. Ottawa.

Canada. Health and Welfare. (1973). *Nutrition : A National Priority*. Ottawa.

Canada. Health and Welfare. (1975). *Nutrition Canada : The Indian Survey Report*. Ottawa.

Canada. Health and Welfare. (1977). *Nutrition Canada : Food Consumption Report*. Ottawa.

Canada. Health and Welfare. (1983). *Recommended Nutrient Intakes for Canadians*. Ottawa.

Canada. Health and Welfare. (1985). *National Database on Breastfeeding Among Indian and Inuit Women*. Ottawa.

Canada. Health and Welfare. (1985). *Handbook of Nutrition Education Methods*. Ottawa.

Canada. Health and Welfare. (1987). *Achieving Health for All: A Framework for Health Promotion*. Ottawa.

Canada. Health and Welfare. (1990). *Action Towards Healthy Eating : The Report of the Communications/Implementation Committee*. Ottawa.

Canada. Health and Welfare. (1995). *Maternal-Child Health Care - Programs for Aboriginal People: A Review of the Literature*. Ottawa.

Canada. Health and Welfare. (1996). *Nutrition for Health: An Agenda for Action*. Ottawa.

Canada. Medical Services Branch. (1962). *Survey of Maternal and Child Health of Canadian Registered Indians*. Ottawa.

Canada. Medical Services Branch. (1982). *Nutrition Newsletter*. Ottawa.

Canada. Medical Services Branch. (1994). *Native Foods and Nutrition : An Illustrated Reference Manual.* Ottawa.

Canada. Medical Services Branch. (2000a). *Canada Prenatal Nutrition Program: First Nations and Inuit Health Component National Framework for Program Expansion.* Ottawa.

Canada. Medical Services Branch. (2000b). *Canada Prenatal Nutrition Program First Nations and Inuit Component Program Guidelines.* Ottawa

Canada. Royal Commission on Aboriginal Peoples. (1996). *Perspectives and Realities.* Ottawa.

Canada. Royal Commission on Aboriginal Peoples.(1997). *Volume 3: Gathering Strength.* Ottawa.

Canadian Dietetic Association. (1991). Hunger and Food Security in Canada: Official Position of The Canadian Dietetic Association. *Journal of the Canadian Dietetic Association,* 52(3), 130.

Canadian Pediatric Society. (1988). Vitamin D Supplementation for Northern Native Communities. *Canadian Medical Association Journal,* 138, 229-230.

Carruth, Betty Ruth and Jean D. Skinner. (1991). Practitioners Beware : Regional Differences in Beliefs about Nutrition During Pregnancy. *Journal of the American Dietetic Association,* 91, 435-440.

Caulfield, L.E. et al. (1998). Maternal Nutritional Status, Diabetes and Risk of Macrosomia Among Native Canadian Women. *Early Human Development,* 50, 293-303.

Clarke, H.F. (1990). Childbearing Practices of Coast Salish Indians in British Columbia : An Ethnographic Study. In J. Ross & V. Bergum (Eds.), *Through the Looking Glass: Children and Health Promotion* (pp.21-34). Ottawa: Canadian Public Health Association.

Clatworthy, Stewart J. (1980). *The Demographic Composition and Economic Circumstances of Winnipeg's Native Population.* Winnipeg: Institute of Urban Studies, University of Winnipeg.

Cochran, P.L. and A.L. Geller. (2002). The Melting Ice Cellar : What Native Traditional Knowledge is Teaching Us About Global Warming and Environmental Change. *American Journal of Public Health,* 92, 1404-1409.

Cohen, B.E. (1994). *The Development of Health Services in Peguis First Nation : A Descriptive Case Study.* Unpublished Master's Thesis. Winnipeg: University of Manitoba.

Coronios-Vargas, M. et al. (1992). Cultural Influences on Food Cravings and Aversions During Pregnancy. *Ecology of Food and Nutrition,* 27, 43-9.

Corrigan, Cameron. (1946). Scurvy in a Cree Indian. *Canadian Medical Association Journal,* 54, 380-383.

Crawford, Susan M. and Laura Kalina. (1997). Building Food Security through Health Promotion: Community Kitchens. *Journal of the Canadian Dietetic Association,* 58(4), 197-201.

Cresswell John W. (1994). *Research Design : Qualitative and Quantitative* Approaches. Thousand Oaks: Sage Publications.

Czuboka, M.P. (1960). *St. Peter's : A Historical Study with Anthropological Observations on the Christian Aborigines of Red River (1811-1876).* Unpublished Master's Thesis. Winnipeg: University of Manitoba.

Darby, William J. et al. (1956). Nutriture of the Navajo. *The Journal of Nutrition,* 60(supplement 2), 1-85.

Davis, Barbara et al. (1991). Nutrition and Food Security: A Role for the Canadian Dietetic Association. *Journal of the Canadian Dietetic Association,* 52(3), 141-5.

Dean, Heather. (1998). NIDDM-Y in First Nation Children in Canada. *Clinical Pediatrics,* 2, 89-96.

Desai, I.D. and M. Lee. (1971). Nutritional Status of British Columbia Indians, III. Biochemical Studies at Ahousat and Anaham Reserves. *Canadian Journal of Public Health,* 62, 526-536.

Desai, I.D. and M. Lee. (1974). Nutritional Status of Canadian Indians : I. Biochemical Studies at Upper Liard and Ross River, the Yukon Territory. *Canadian Journal of Public Health,* 65, 369-374.

Desai, I.D. and M. Lee. (1974). Vitamin E Status of Indians of Western Canada. *Canadian Journal of Public Health,* 65, 191-196.

Dickason, O.P. (1997). *Canada's First Nations : A History of Founding Peoples from Earliest Times.* Toronto: Oxford University Press.

Dickens, G. and W.H. Trethowan. (1971). Cravings and Aversions During Pregnancy. *Journal of Psychosomatic Research,* 15, 259-268.

Dilling, Louise A. et al. (1978). Growth and Nutrition of Preschool Indian Children in Manitoba : I. Vitamin D Deficiency. *Canadian Journal of Public Health,* 69, 248-252.

Dong, Alice and M. C. Feeny. (1968). The Nutrient Intake of Indian and Non-Indian School Children. *Canadian Journal of Public Health,* 59, 115-118.

Doolan, N. et al. (1991). Benefit-Risk Considerations of Traditional Food Use by the Sahtu (Hare) Dene/Metis of Fort Good Hope, N.W.T. *Arctic Medical Research,* Suppl., 747-751.

Drewnowski, A. and Barry M. Popkin. (1997). The Nutrition Transition : New Trends in the Global Diet. *Nutrition Reviews,* 55(2), 31-43.

Driben, Paul.(n.d.). *The Northern Economy : Benefits, Problems and Prospects.* Royal Commission on the Northern Environment. Toronto.

Dyck, R. et al. (1998). Preventing NIDDM Among Aboriginal People : Is Exercise the Answer? Description of a Pilot Project Using Exercise to Prevent Gestational Diabetes. *International Journal of Circumpolar Health,* 57(Suppl.1), 375-378.

Dyck, R. et al. (2001). From "Thrifty Genotype" to "Hefty Fetal Phenotype": The Relationship between High Birthweight and Diabetes in Saskatchewan Registered Indians. *Canadian Journal of Public Health*, 92(5), 340-344.

Dyck, R. et al. (2002). A Comparison of Rates, Risk Factors, and Outcomes of Gestational Diabetes Between Aboriginal and Non-Aboriginal Women in the Saskatoon Health District. *Diabetes Care*, 25(3), 487-493.

Ebomoyi, Ehigie. (1988). Nutritional Beliefs Among Rural Nigerian Mothers. *Ecology of Food and Nutrition,* 22, 43-52.

Edwards, Cecile Hoover et al. (1954). Odd Dietary Practices of Women. *Journal of the American Dietetic Association,* 30, 976-981.

Ellestad-Sayed, J.J. et al. (1981). Growth and Nutrition of Preschool Indian Children in Manitoba : II. Nutrient Intakes. *Canadian Journal of Public Health,* 72, 127-133.

Emmons, Lillian. (1987). Relationship of Participation in Food Assistance Programs to the Nutritional Quality of Diets. *American Journal of Public Health,* 77, 856-8.

Farkas, Carol S. (1979). Commentary : Potential for and Implications of Thiamine Deficiency in Northern Canadian Indian Populations Affected by Mercury Contamination. *Ecology of Food and Nutrition,* 8, 11-20.

Fathauer, George H. (1960). Food Habits - An Anthropologist's View. *Journal of the American Dietetic Association,* 37, 335-8.

Ferro-Luzzi, G.E. (1978). More on Salt Taboos. *Current Anthropology,* 19(2), 412-3.

Ferro-Luzzi, G.E. (1980). Food Avoidances of Pregnant Women in Tamilnad. *Ecology of Food and Nutrition,* 2, 259-266.

Fieldhouse, Paul. (1986). *Food and Nutrition : Customs and Culture.* London: Chapman and Hall.

Foley, Cynthia et al. (1979). Attitudes and Food Habits - A Review. *Journal of the American Dietetic Association,* 75, 13-18.

Garb, J.L. and A.J. Stunkard. (1974). Taste Aversions in Man. *American Journal of Psychiatry*, 13, 1204-7.

Garro, Linda C. (1995). Individual or Societal Responsibility? Explanations of Diabetes in an Anishinaabe (Ojibway) Community. *Social Science and Medicine*, 40(1), 37-46.

Gibbs, G.R. (2002). *Qualitative Data Analysis - Explorations With NVivo.* Buckingham: Open University Press.

Gibson, R.S. (1990). *Principles of Nutritional Assessment.* New York: Oxford University Press.

Gittelsohn, Joel et al. (1995). Developing Diabetes Interventions in an Ojibwa-Cree Community in Northern Ontario : Linking Qualitative and Quantitative Data. *Chronic Diseases in Canada,* 16(4), 157-164.

Gittelsohn, Joel et al. (1996). Use of Ethnographic Methods for Applied Research on Diabetes Among the Ojibway-Cree in Northern Ontario. *Health Education Quarterly*, 23(3), 365-382.

Gittelsohn, J. et al. (1997). Specific Patterns of Food Consumption and Preparation are Associated with Diabetes and Obesity in a Native Canadian Community. *Journal of Nutrition,* 128, 541-547.

Glaser, Barney G. (1992). *Emergence vs Forcing - Basics of Grounded Theory Analysis*. Mill Valley: Sociology Press.

Glaser, Barney G. and Anselm L. Strauss. (1967). *The Discovery of Grounded Theory : Strategies for Qualitative Research*. Chicago: Aldine Publishing Company.

Godel, John C. and Alan G. Hart. (1984). Northern Infant Syndrome : A Deficiency State? *Canadian Medical Association Journal,* 131, 199-204.

Godel, John C. et al. (1992). Iron Status and Pregnancy in a Northern Canadian Population : Relationship to Diet and Iron Supplementation. *Canadian Journal of Public Health,* 83(5), 339-343.

Godwin, M. et al. (1999). Prevalence of Gestational Diabetes Mellitus Among Swampy Cree Women in Moose Factory, James Bay. *Canadian Medical Association Journal,* 160(9), 1299-1302.

Grams, G.D. et al. (1996). Haida Perspectives on Living with Non-Insulin-Dependent Diabetes. *Canadian Medical Association Journal,* 155(11), 1563-1568.

Gray-Donald, K. et al. (2000). Intervening to Reduce Weight Gain in Pregnancy and Gestational Diabetes Mellitus in Cree Communities : An Evaluation. *Canadian Medical Association Journal,* 163(10), 1247-1251.

Guo, Xuguang et al. (1999). Food Price Policy Can Favorably Alter Macronutrient Intake in China. *Journal of Nutrition,* 129, 994-1001.

Hamelin, Anne-Marie et al. (1999). Food Insecurity: Consequences for the Household and Broader Social Implications. *Journal of Nutrition,* 129, 525S-528S.

Hargrove, Denise et al. (1994). Food Security: What the Community Wants. Learning Through Focus Groups. *Journal of the Canadian Dietetic Association,* 55(4), 188-191.

Harnack, L. et al. (1999a). Diet and Physical Activity Patterns of Urban American Indian Women. *American Journal of Health Promotion,* 13(4), 233-236.

Harnack, L. et al. (1999b). Diet and Physical Activity Patterns of Lakota Indian Adults. *Journal of the American Dietetic Association,* 99, 829-835.

Harries, J.M. and T.F. Hughes. (1958). Enumeration of the "Cravings" of Some Pregnant Women. *British Medical Journal,* 2, 39-40.

Harris, S.B. et al. (1997). The Epidemiology of Diabetes in Pregnant Native Canadians. *Diabetes Care,* 20(9), 1422-1425.

Haworth, J.C. (ed). (1975). *Nutrition of Indian and Eskimo Children : Report of the Second Canadian Ross Conference on Paediatric Research*. Montréal: Ross Laboratories.

Haworth, J.C. and Louise A. Dilling. (1986). Vitamin-D-Deficient Rickets in Manitoba, 1972-84. *Canadian Medical Association Journal,* 134, 237-241.

Helm, June (ed). (1981). *Handbook of North American Indians, Volume 6.* Washington D.C.: Smithsonian Institute.

Helman, Cecil G. (2000). *Culture, Health and Illness*. Oxford: Butterworth-Heinemann.

Hertzler, Ann A. (1982). Classifying Cultural Food Habits and Meanings. *Journal of the American Dietetic Association*, 80, 421-5.

Hildebrand, Carol E. (1970). Maternal-Child Care Among the Chippewa : A Study of the Past and Present. *Military Medicine,* 1, 35-43.

Hill, Fred at al. (1994). The Impact of a Food Transportation Subsidy on the Cost of a Nutritious Northern Food Basket. *Arctic Medical Research,* 53(suppl.2), 276-281.

Hoffer, John et al. (1981). Nutritional Status of Quebec Indians. *American Journal of Clinical Nutrition,* 34, 2784-2789.

Holloway, I. and S. Wheeler. (1996). *Qualitative Research For Nurses.* Oxford: Blackwell Science Limited.

Honigmann, John J. (1956). The Attawapiskat Swampy Cree : An Ethnographic Reconstruction. *Anthropological Papers of the University of Alaska,* 5(1), 23-82.

Honigmann, John J. (1961). *Foodways in a Muskeg Community*, Publication 62(1). Ottawa: Northern Coordination and Research Centre, Department of Northern Affairs and Natural Resources.

Hook, Ernest B. (1978). Dietary Cravings and Aversions During Pregnancy. *The American Journal of Clinical Nutrition,* 31, 1355-1362.

Hunter, J.M. (1973). Geophagy in Africa and the United States : A Culture-Nutrition Hypothesis. *Geology Review,* 63, 170-95.

Jackson, Yvonne M. (1986). Nutrition in American Indian Health : Past, Present and Future. *Journal of the American Dietetic Association,* 86(11), 1559-65.

Jerome, N.W. et al. (1980). *Nutritional Anthropology : Contemporary Approaches to Diet and Culture.* New York: Redgrave Publishing Company.

Joe, Jennie R. and Robert S. Young. (eds). (1994). *Diabetes as a Disease of Civilization : The Impact of Culture Change on Indigenous Peoples.* New York: Mouton de Gruyter.

Johnston, J.L. et al. (1977). Nutrient Intake and Meal Patterns of Micmac Indian and Caucasian Women in Shubenacadie, N.S. *Canadian Medical Association Journal*, 116, 1356-1359.

Kalina, Laura. (1993). *Building Food Security in Canada: A Community Guide for Action on Hunger.* Kamloops: FoodShare.

Khare, R.S. and M.S.A. Rao. (1986). *Aspects In South Asian Food Systems : Food, Society and Culture.* Durham: Carolina Academic Press.

King, Janet C. (2000). Physiology of Pregnancy and Nutrient Metabolism. *American Journal of Clinical Nutrition,* 71(suppl), 1218S-1225S.

Kruger, Susan and Linda Dore Maetzold. (1983). Practices of Tradition for Pregnancy. *Maternal-Child Nursing Journal,* 12, 135-9.

Kuhnlein, H.V. and D.H. Calloway. (1977). Contemporary Hopi Food Intake Patterns. *Ecology of Food and Nutrition,* 6:159-173.

Kuhnlein, H.V. (1984). Traditional and Contemporary Nuxalk Foods. *Nutrition Research,* 4, 789-809.

Kuhnlein, H.V. (1989). Factors Influencing Use of Traditional Foods Among the Nuxalk People. *Journal of the Canadian Dietetic Association,* 50(2), 102-6.

Kuhnlein, H.V. and N.J. Turner. (1991). *Traditional Plant Foods of Canadian Indigenous Peoples : Nutrition, Botany and Use.* Philadelphia: Gordon and Breach Science Publishers.

Kuhnlein, H.V. (1992). Change in the Use of Traditional Foods by the Nuxalk Native People of British Columbia. *Ecology of Food and Nutrition,* 27, 259-282.

Kuhnlein, H.V. (1995). Benefits and Risks of Traditional Food for Indigenous Peoples : Focus on Dietary Intakes of Arctic Men. *Canadian Journal of Physiology and Pharmacology,* 73, 765-771.

Kuhnlein, H.V. and O. Receveur. (1996). Dietary Change and Traditional Food Systems of Indigenous Peoples. *Annual Review of Nutrition,* 16, 417-442.

Kuhnlein, H.V. et al. (2001). Traditional Food Systems Research with Canadian Indigenous Peoples. *International Journal of Circumpolar Health,* 60, 112-122.

Laderman, Carol. (1983). *Wives and Midwives : Childbirth and Nutrition in Rural Malaysia*. Los Angeles: University of California Press.

Landman, J. and J. St. E. Hall. (1983). The Dietary Habits and Knowledge of Folklore of Pregnant Jamaican Women. *Ecology of Food and Nutrition,* 12, 203-210.

Lang, G.C. (1985). Diabetics and Health Care in a Sioux Community. *Human Organization,* 44(3), 251-260.

Lang, G.C. (1989). "Making Sense" About Diabetes : Dakota Narratives of Illness. *Medical Anthropology,* 11, 305-327.

Langner, N. (1988). *National Database on Breastfeeding Among Indian and Inuit Women - Survey of Infant Feeding Practices from Birth to Six Months.* Ottawa: Health and Welfare Canada.

Laughlin, Charles D. and Ivan A. Brady (eds). (1978). *Extinction and Survival in Human Populations.* New York: Columbia University Press.

Lawn, J. and J. Steckle. (1985). *Handbook of Nutrition Education Methods Used Successfully in Indian and Inuit Communities*. Ottawa: Medical Services Branch.

Lawn, J. and F. Hill. (1998). *Alternative Northern Food Baskets.* Ottawa: Department of Indian Affairs and Northern Development.

Lawn, J. et al. (1998). Food Consumption Patterns of Inuit Women. *International Journal of Circumpolar Health,* 57(Suppl.1), 198-204.

Leacock, Eleanor B. and Nancy Oestreich Lurie (eds). (1971). *North American Indians in Historical Perspective.* New York: Random House.

Lebrun, John B. et al. (1993). Vitamin D Deficiency in a Manitoba Community. *Canadian Journal of Public Health,* 84(6), 394-396.

Lee, Melvin et al. (1971). Nutritional Status of British Columbia Indians. 1. Dietary Studies at Ahousat and Anaham Reserves. *Canadian Journal of Public Health,* 62, 285-296.

Lee, Melvin and J.A. Birkbeck. (1977). Anthropometric Measurements and Physical Examinations of Indian Populations from British Columbia and the Yukon Territories, Canada. *Human Biology,* 49(4), 581-591.

Le Gros Clark, F. (1968). Food Habits as a Practical Nutrition Problem. *World Review of Nutrition and Dietetics,* 9, 56-84.

Loughlin, Bernice W. (1965). Pregnancy in the Navajo Culture. *Nursing Outlook,* 3, 55-58.

Manderson, Lenore and Megan Mathews. (1981). Vietnamese Behavioral and Dietary Precautions During Pregnancy. *Ecology of Food and Nutrition,* 11, 1-8.

Manderson, Lenore. (ed). (1986). *Shared Wealth and Symbol : Food, Culture and Society in Oceania and Southeast Asia.* New York: Cambridge University Press.

Manitoba Centre for Health Policy. (2002). *The Health and Health Care Use of Registered First Nations People Living in Manitoba : A Population-Based Study.* Winnipeg: MCHP.

Marles, R.J. et al. (2000). *Aboriginal Plant Use in Canada's Northwest Boreal Forest.* Vancouver: University of British Columbia Press.

Marshall, Catherine and G.B. Rossman. (1989). *Designing Qualitative Research.* Newbury Park: Sage Publications.

Martens, Patricia Joan. (1999). *Evaluating the Effectiveness of a Breastfeeding Promotion Community Strategy in Sagkeeng First Nation.* Unpublished Doctoral Dissertation. Winnipeg: University of Manitoba.

Mason, Leonard. (1967). The Swampy Cree : A Study in Acculturation. *National Museum of Canada Anthropology Paper* No. 13. Ottawa.

Mathews, Fiona et al. (1999). Influence of Maternal Nutrition on Outcome During Pregnancy : Prospective Cohort Study. *British Medical Journal,* 319, 339-343.

McCance, David R. et al. (1994). Birth Weight and Non-Insulin Dependent Diabetes : Thrifty Genotype, Thrifty Phenotype, or Surviving Small Baby Genotype? *British Medical Journal*, 308, 942-945.

McDermott, Robyn. (1998). Ethics, Epidemiology and the Thrifty Gene : Biological Determinism as a Health Hazard. *Social Science and Medicine,* 47(9), 1189-1195.

McKenzie, John. (1974). The Impact of Economic and Social Status on Food Choice. *Proceedings of Nutrition and Society,* 33, 67-73.

McLoughlin, J.V. and B.M. McKenna. (eds). (1983). *Food Science and Human Welfare.* Dublin: Boole Press.

McMillan, Alan D. (1995). *Native Peoples and Cultures of Canada.* Vancouver: Douglas & McIntyre Limited.

Meyer-Rochow, V.B. (1998). Ethnic Identities, Food and Health. *International Journal of Circumpolar Health,* 57, 2-3.

Millar, John. (1952). Some Observations on Haemoglobin Levels of An Indian Population. *Canadian Medical Association Journal,* 67, 414-417.

Moffatt, Michael E.K. (1989). Nutritional Problems of Native Canadian Mothers and Children. *Canadian Family Physician,* 35, 377-382.

Moffatt, Michael E.K. (1995). Current Status of Nutritional Deficiencies in Canadian Aboriginal People. *Canadian Journal of Physiology and Pharmacology*, 73, 754-8.

Mohamed, N. and J. Dooley. (1998). Gestational Diabetes and Subsequent Development of NIDDM in Aboriginal Women of Northwestern Ontario. *International Journal of Circumpolar Health,* 57(Suppl.1), 355-358.

Moore, Harriet Bruce. (1957). The Meaning of Food. *The American Journal of Clinical Nutrition,* 5(1), 77-82.

Moore, Percy et al. (1943). Nutrition in the North : A Study of the State of Nutrition of the Canadian Bush Indian. *The Beaver,* 3, 21-23.

Moore, P.E. et al. (1946). Medical Survey of Nutrition Among the Northern Manitoba Indians. *Canadian Medical Association Journal,* 54, 223-233.

Moore, William M., Silverberg, Marjorie M., Read, Merrill S. (eds). (1969). *Nutrition, Growth and Development of North American Indian Children.* Washington D.C.: National Institute of Child Health and Human Development.

Morrison, R.B. and C. Roderick Wilson (eds). (1995). *Native Peoples : The Canadian Experience.* Toronto: McClelland & Stewart Incorporated.

Morse, Janice M. (ed). (1994). *Critical Issues in Qualitative Research Methods.* Thousand Oaks: Sage Publications.

Morse, Janice M. (2002). *Read Me First For A User's Guide to Qualitative Methods.* Thousand Oaks: Sage Publications.

Morse, Janice M. and Peggy Anne Field. (1995) *Qualitative Research Methods for Health Professionals.* Thousand Oaks: Sage Publications.

Murcott, Anne. (ed).(1983). *The Sociology of Food and Eating.* Hants: Gower Publishing Company Limited.

Nag, Moni. (1994). Beliefs and Practices About Food During Pregnancy : Implications for Maternal Nutrition. *Economic and Political Weekly,* 8(10), 2427-2438.

Neander, W.L. and J.M. Morse. (1989). Tradition and Change in the Northern Alberta Woodlands Cree : Implications for Infant Feeding Practice. *Canadian Journal of Public Health,* 80, 190-194.

Nichter, Mark and Mimi Nichter. (1983). The Ethnophysiology and Folk Dietetics of Pregnancy : A Case Study from South India. *Human Organization,* 42(3), 235-246.

Northern Health Research Unit. (1998). *Manitoba First Nations Regional Health Survey Final Report.* Winnipeg: University of Manitoba.

Ogbeide, O. (1974). Nutritional Hazards of Food Taboos and Preferences in Mid-West Nigeria. *The American Journal of Clinical Nutrition,* 27, 213-216.

Ojofeitimi, E.O. and C.M. Tanimowo. (1980). Nutritional Beliefs Among Pregnant Nigerian Women. *International Journal of Gynaecology and Obstetrics,* 18, 66-69.

Ojofeitimi, E.O. et al. (1982). Diet Restriction by Pregnant Women in Nigeria. *International Journal of Gynaecology and Obstetrics,* 20, 99-103.

O'Dea, K. et al. (1988). An Investigation of Nutrition-Related Risk Factors in an Isolated Aboriginal Community in Northern Australia : Advantages of a Traditionally-Oriented Lifestyle. *Medical Journal of Australia*, 148, 177-180.

O'Rourke, D.E. et al. (1967). Geophagia During Pregnancy. *Obstetrics and Gynecology,* 29(4), 581-584.

Partington, M.W. (1969). The Heights and Weights of Indian and Eskimo School Children on James Bay and Hudson Bay. *Canadian Medical Association Journal,* 100, 502-509.

Patton, Michael Quinn. (1990). *Qualitative Evaluation and Research Methods.* Newbury Park: Sage Publications.

Pelto, Gretel H. (1987). Cultural Issues in Maternal and Child Health and Nutrition. *Social Science and Medicine,* 25, 553-559.

Pett, L.B. (1950). Signs of Malnutrition in Canada. *Canadian Medical Association Journal,* 63, 1-10.

Pettitt, David J et al. (1993). Diabetes and Obesity in the Offspring of Pima Indian Women with Diabetes During Pregnancy. *Diabetes Care,* 16(S1), 310-314.

Pettitt, David J. and William C. Knowler. (1998). Long-Term Effects of the Intrauterine Environment, Birth Weight, and Breast-Feeding in Pima Indians. *Diabetes Care,* 21(2), B138-141.

Plaxton, Kim et al. (1983). Preventive Health Care in Indian Preschoolers in the Sioux Lookout Zone, Northwestern Ontario. *Canadian Medical Association Journal*, 129, 965-968.

Plenty Canada. (1995). *Feasibility Study : Integrated Indian Agriculture and Food Centre*. Brantford: Six Nations.

Pool, Robert. (1987). Hot and Cold as an Explanatory Model : The Example of Bharuch District in Gujarat, India. *Social Science and Medicine,* 25(4), 389-399.

Pope, Catherine and Nicholas Mays.(eds). (2000). *Qualitative Research in Health Care*. London: British Medical Journal.

Pope, Janet F. et al. (1992). Cravings and Aversions of Pregnant Adolescents. *Journal of the American Dietetic Association,* 92, 1479-1482.

Posner, Lewis B. et al. (1957). Pregnancy Craving and Pica. *Obstetrics and Gynecology,* 9(3), 270-272.

Pottier, Johan. (1999). *Anthropology of Food: The Social Dynamics of Food Security*. Malden: Blackwell Publishers Incorporated.

Power, Elaine et al. (1996). Food Security: CDA Members Identify Strategies for Change. *Journal of the Canadian Dietetic Association,* 57(4), 162-167.

Pumpian-Mindlin, E. (1954). The Meanings of Food. *Journal of the American Dietetic Association,* 30, 576-580.

Rao, Meera. (1985). Food Beliefs of Rural Women During the Reproductive Years in Dharwad, India. *Ecology of Food and Nutrition,* 16, 93-103.

Ravelli, A.C.J. et al. (1998). Glucose Tolerance in Adults After Prenatal Exposure to Famine. *Lancet,* 351, 173-177.

Receveur, O. et al. (1997). Decreasing Traditional Food Use Affects Diet Quality for Adult Dene/Métis in 16 Communities of the Canadian Northwest Territories. *Journal of Nutrition*, 127, 2179-2186.

Reid, R.M. (1992). Cultural and Medical Perspectives on Geophagia. *Medical Anthropology,* 13, 337-351.

Riches, Graham. (1986). *Food Banks and the Welfare Crisis*. Ottawa: Canadian Council on Social Development.

Riches, Graham. (1989). Responding to Hunger in a Wealthy Society : Issues and Options. *Journal of the Canadian Dietetic Association,* 50(3), 150-154.

Riches, Graham. (ed). (1997). *First World Hunger: Food Security and Welfare Politics*. New York: St. Martin's Press Incorporated.

Robbins, L.G. and L. Robichon-Hunt. (1989). The Agriculture Canada Nutritious Food Basket and the Thrifty Nutritious Food Basket, 1989. *Food Market Commentary,* 11(1), 31-42.

Robinson, E.J. et al. (1995). Effect of Bush Living on Aboriginal Canadians of the Eastern James Bay Region with Non-Insulin-Dependent Diabetes Mellitus. *Chronic Diseases in Canada,* 16(4), 144-148.

Robson, J.R.K. (ed). (1980). *Food, Ecology and Culture - Readings in the Anthropology of Dietary Practices*. New York: Gordon and Breach Science Publishers.

Rodrigues, S. et al. (1999a). Interaction of Body Weight and Ethnicity on Risk of Gestational Diabetes Mellitus. *American Journal of Clinical Nutrition,* 70, 1083-1089.

Rodrigues, S. et al. (1999b). Prevalence of Gestational Diabetes Mellitus Among James Bay Cree Women in Northern Quebec. *Canadian Medical Association Journal,* 160(9), 1293-1297.

Rodrigues, S. et al. (2000). High Rates of Infant Macrosomia : A Comparison of a Canadian Native and Non-Native Population. *Journal of Nutrition,* 130, 806-812.

Rogers, Edward S. and Jean H. Rogers. (1959). The Yearly Cycle of the Mistassini Indians. *Arctic,* 12(3), 131-138.

Rogers, Edward S. (1962). *The Round Lake Ojibwa.* Occasional Paper 5, Art and Archeology Division. Toronto: Royal Ontario Museum.

Rogers, Edward S. (1963). The Hunting Group - Hunting Territory Complex Among the Mistassini Indians. *National Museum of Canada Bulletin* No. 195. Ottawa.

Rogers, Edward S. (1973). The Quest for Food and Furs : The Mistassini Cree, 1953-4. *National Museum of Man, Publications in Ethnology 5.* Ottawa.

Rogers, Edward S. and Mary B. Black. (1976). Subsistence Strategy in the Fish and Hare Period, Northern Ontario : The Weagamow Ojibwa, 1880-1920. *Journal of Anthropological Research,* 32(1), 1-43.

Rothney, Russ. (1992). *Neechi Foods Co-op Ltd.: Lessons in Community Development.* Winnipeg: Winnipeg Native Family Economic Development Incorporated.

Sanjur, D. (1982). *Cultural Perspectives in Nutrition.* Englewood Cliffs: Prentice-Hall.

Schaefer, O. and J. Steckle. (1980). *Dietary Habits and Nutritional Base of Native Populations of the Northwest Territories.* Yellowknife: Department of Information, Government of the Northwest Territories.

Schwab, Ellen B. and Marta L. Axelson. (1984). Dietary Changes of Pregnant Women : Compulsions and Modifications. *Ecology of Food and Nutrition,* 14, 143-153.

Scott, Colin. (1982). Production and Exchange Among Wemindji Cree : Egalitarian Ideology and Economic Base. *Culture,* 2(3), 107-120.

Scott, Kim and Olivier Receveur. (1995) Ethics for Working with Communities of Indigenous Peoples. *Canadian Journal of Physiology and Pharmacology,* 73, 751-753.

Segal, Judith A. (1970). *Food for the Hungry: The Reluctant Society*. Baltimore: Johns Hopkins Press.

Seifrit, Emma. (1961). Changes in Beliefs and Food Practices in Pregnancy. *Journal of the American Dietetic Association,* 39, 455-466.

Seldon, James R. (1972). *A Note on the Cost of Living in the North: Food Prices in Small Northern Manitoba Settlements*. Winnipeg: Center for Settlement Studies, University of Manitoba.

Sevenhuysen, G. and L. Bogert-O'Brien. (1987). Nutrient Intake of Women and School Children in Northern Manitoba Native Communities. *Journal of the Canadian Dietetic Association,* 48, 89-94.

Shifflett, Peggy A. (1976). Folklore and Food Habits. *Journal of the American Dietetic Association,* 68, 347-350.

Silverman, Bernard L. et al. (1995). Impaired Glucose Tolerance in Adolescent Offspring of Diabetic Mothers - Relationship to Fetal Hyperinsulinism. *Diabetes Care,* 18(5), 611-617.

Silverman, Bernard L. et al. (1998). Long-Term Effects of the Intrauterine Environment. *Diabetes Care,* 21(2), B142-149.

Sinclair, H.M. (1953). The Diet of Canadian Indians and Eskimos. *Proceedings of Nutrition and Society,* 12, 69-82.

Sinclaire, Moneca.(1997). *Barriers to Food Procurement: The Experience of Urban Aboriginal Women in Winnipeg*. Unpublished Master's Thesis. Winnipeg: University of Manitoba.

Skinner, Alanson. (1911). Notes on the Eastern Cree and Northern Saulteaux. *Anthropological Papers of the American Museum of Natural History,* 9(1), 1-177.

Smith, P.J. (2000). *Vitamin D Deficiency in Three Northern Manitoba Communities.* Unpublished Doctoral Dissertation. Winnipeg: University of Manitoba.

Snow, L.F. and S.M. Johnson. (1978). Folklore, Food, Female Reproductive Cycle. *Ecology of Food and Nutrition,* 7, 41-49.

Special Working Group of the Cree Regional Child and Family Services Committee. (2000). Planning Research for Greater Community Involvement and Long-Term Benefit [Commentary]. *Canadian Medical Association Journal,* 163, 1273-1274.

Spence, J.A. (1972). *Not By Bread Alone*. James Bay Task Force of the Indians of Quebec Association. Northern Quebec Inuit Association.

Sokoloski, Elizabeth H. (1995). Canadian First Nations Women's Beliefs About Pregnancy and Prenatal Care. *Canadian Journal of Nursing Research,* 27(1), 89-100.

Starkey, L.J. et al. (1998). Food Bank Users : Sociodemographic and Nutritional Characteristics. *Canadian Medical Association Journal,* 158(9), 1143-1149.

Statistics Canada. (1993). *Aboriginal People's Survey : Schooling, Work and Related Activities, Income, Expenses and Mobility*. Ottawa.

Statistics Canada. (1996). *Family Food Expenditure in Canada*. Ottawa.

Statistics Canada. (1996). *1996 Census Community Profiles for Peguis 1B (Indian Reserve), Manitoba*. Retrieved February 10, 2003 from http://www12.statcan.ca.

Steinhart, J.R. et al. (1997). Gestational Diabetes in a Herald of NIDDM in Navajo Women. *Diabetes Care,* 20(6), 943-947.

Stewart, J. et al. (1988). Regional Differences in British Attitudes to Diet in Pregnancy : Priorities and Pragmatism. *Ecology of Food and Nutrition,* 20, 211-229.

Stewart, Martha M., and Michael B. Whiteford. (1987). Dietary Habits and Obstetrical Service Utilization During Pregnancy and Lactation Among Tai Dam Women of Central Iowa. *Ecology of Food and Nutrition,* 20, 121-142.

Stewart, P.J. (1985). *National Database on Breastfeeding Among Indian and Inuit Women.* Ottawa: Health and Welfare Canada.

Storer, Jenny. (1977). Hot and Cold Food Beliefs in an Indian Community and their Significance. *Journal of Human Nutrition,* 31, 33-40.

Strauss, A. and J. Corbin. (1998). *Basics of Qualitative Research - Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks: Sage Publications.

Szathmary, E.J.E. et al. (1987). Dietary Change and Plasma Glucose Levels in a Amerindian Population Undergoing Cultural Transition. *Social Science and Medicine,* 24, 791-804.

Tarasuk, Valerie and Heather MacLean. (1990). The Institutionalization of Food Banks in Canada: A Public Health Concern. *Canadian Journal of Public Health,* 81, 331-332.

Tarasuk, Valerie and Barbara Davis. (1996). Responses to Food Insecurity in the Changing Canadian Welfare State. *Journal of Nutrition Education,* 28(2), 71-75.

Tarasuk, Valerie and George H. Beaton. (1999). Women's Dietary Intakes in the Context of Household Food Security. *Journal of Nutrition,* 129, 672-679.

Thompson, A.E. (1973). *Chief Peguis and His Descendants.* Winnipeg: Peguis Publishers.

Tierson, Forrest D. et al. (1985). Influence of Cravings and Aversions on Diet in Pregnancy. *Ecology of Food and Nutrition,* 17, 117-129.

Tisdall, Frederick F. and Elizabeth Chant Robertson. (1948). Voyage of the Medicine Men. *The Beaver,* 12, 42-46.

Thouez, J.P. et al. (1989). The Other Face of Development : Native Population, Health Status and Indicators of Malnutrition - The Case of the Cree and Inuit of Northern Québec. *Social Science and Medicine,* 29(8), 965-974.

Trant, Hope. (1954). Food Taboos in East Africa. *The Lancet,* 2, 703-705.

Travers, Kim D. (1995). Using Qualitative Research to Understand the Sociocultural Origins of Diabetes among Cape Breton Mi'kmaq. *Chronic Diseases in Canada,* 16(4), 140-143.

Travers, Kim D. (1996). The Social Organization of Nutritional Inequities. *Social Science and Medicine,* 43(4), 543-553.

Tyler, Wright and Daniel Limited. (1983). *The Illegal Surrender of St. Peter's Reserve.* Winnipeg: Treaty and Aboriginal Rights Research Centre of Manitoba.

Valberg, Leslie S. et al. (1979). Evaluation of the Body Iron Status of Native Canadians. *Canadian Medical Association Journal,* 120, 285-289.

Van Der Goes Ladd, G. (1986). *Shall We Gather at the River?* Toronto: The United Church of Canada.

Vivian, R.P. et al. (1948). The Nutrition and Health of the James Bay Indian. *Canadian Medical Association Journal,* 59(6), 505-518.

Vogel, E. et al. (2001). Gestational Diabetes Mellitus : A "Kitchen Table" Approach. *Canadian Journal of Dietetic Practice and Research,* 62, 169-173.

Waisberg, Leo G. (1975). Boreal Forest Subsistence and the Windigo : Fluctuation of Animal Populations. *Anthropologica n.s.,* 17, 169-185.

Waiters, B. et al. (1998). Perinatal Vitamin D and Calcium Status of Northern Canadian Mothers and Their Newborn Infants. *Journal of the American College of Nutrition,* 18(1), 122-126.

Waldman, C. and M. Braun. (1985). *Atlas of the North American Indian.* New York: Facts on File Publications.

Waldram, James B. (1985). Hydroelectric Development and Dietary Delocalization in Northern Manitoba, Canada. *Human Organization,* 44(1), 41-49.

Waldram, James B. et al. (1995). *Aboriginal Health in Canada : Historical, Cultural, and Epidemiological Perspectives.* Toronto: University of Toronto Press Incorporated.

Waugh, F.W. (1916). *Iroquis [sic] Foods and Food Preparation.* Ottawa: Government Printing Bureau.

Wein, Eleanor E. (1986). Nutrition of Northern Native Canadians. *Canadian Home Economics Journal,* 36(1), 25-29.

Wein, E.E. and J.H. Sabry. (1988). Use of Country Foods by Native Canadians in the Taiga. *Arctic Medical Research,* 47(Suppl.1), 134-138.

Wein, E.E. et al. (1989). Food Health Beliefs and Preferences of Northern Native Canadians. *Ecology of Food and Nutrition,* 23, 177-188.

Wein, Eleanor E. et al. (1991). Nutrient Intakes of Native Canadians Near Wood Buffalo National Park. *Nutrition Research,* 11, 5-13.

Wein, E.E. et al. (1991) Food Consumption Patterns and Use of Country Foods by Native Canadians near Wood Buffalo National Park, Canada. *Arctic,* 44(3), 196-205.

Wein, Eleanor E. (1992). Food Consumption Patterns of Native School Children and Mothers in Northern Alberta. *Journal of the Canadian Dietetic Association*, 53(4), 267-273.

Wein, E.E. et al. (1993). Food Preferences and Food Health Beliefs of Native School Children and Mothers in Northern Alberta. *Ecology of Food and Nutrition,* 29, 259-273.

Wein, Eleanor E. (1994a). The Traditional Food Supply of Native Canadians. *Canadian Home Economics Journal,* 44(2), 74-77.

Wein, Eleanor E. (1994b). The High Cost of a Nutritionally Adequate Diet in Four Yukon Communities. *Canadian Journal of Public Health,* 85(5), 310-312.

Wein, Eleanor E. (1995a). Evaluating Food Use by Canadian Aboriginal Peoples. *Canadian Journal of Physiology and Pharmacology,*73, 759-764.

Wein, Eleanor E. (1995b). Nutrient Intakes of First Nations People in Four Yukon Communities. *Nutrition Research,* 15(8), 1105-1119.

Wellin, Edward. (1955). Maternal and Infant Feeding Practices in a Peruvian Village. *Journal of the American Dietetic Association,* 31, 889-894.

Whalen, Elaine A. et al. (1997). Prevalence of Anemia in First Nations Children of Northwestern Ontario. *Canadian Family Physician,* 43, 659-664.

Whiting, S. and M. Mackenzie. (1998). Assessing the Changing Diet of Indigenous Peoples. *Nutrition Reviews,* 56(8), 248-250.

Whyte, Robert Orr. (1972). *Rural Nutrition in China*. Hong Kong: Dai Nippon Printing Company (International) Limited.

Whyte, Robert Orr. (1974). *Rural Nutrition in Monsoon Asia*. Kuala Lumpur: Mun Sun Press.

Wiese, H. J. C. (1976). Maternal Nutrition and Traditional Food Behavior in Haiti. *Human Organization,* 35(2), 193-200.

Williams, C.N. et al. (1977). Prevalence of Gallstones and Gallbladder Disease in Canadian Micmac Indian Women. *Canadian Medical Association Journal,* 117, 758-760.

Williams, D.E. et al. (2001). The Effect of Indian or Anglo Dietary Preference on the Incidence of Diabetes in Pima Indians. *Diabetes Care,* 24(5), 811-816.

Wilson, Christine. (1973). Food Taboos of Childbirth : The Malay Example. *Ecology of Food and Nutrition,* 2, 267-274.

Wilson, K. and Mark W. Rosenberg. (2002). Exploring the Determinants of Health for First Nations Peoples in Canada : Can Existing Frameworks Accommodate Traditional Activities? *Social Science and Medicine,* 55, 2017-2031.

Wolever, Thomas M. et al. (1997). Low Dietary Fibre and High Protein Intakes Associated with Newly Diagnosed Diabetes in a Remote Aboriginal Community. *American Journal of Clinical Nutrition,* 66, 1470-1474.

World Health Organization. (1979). *Traditional Practices Affecting the Health of Women and Children: WHO/EMRO Technical Publication No. 2.* Alexandria: W.H.O.

Young, T. Kue. (1988). *Health Care and Cultural Change : The Indian Experience in the Central Subarctic.* Toronto: University of Toronto Press.

Young, T.K., and Gustaaf Sevenhuysen. (1989). Obesity in Northern Canadian Indians : Patterns, Determinants, and Consequences. *American Journal of Clinical Nutrition,* 49, 786-793.

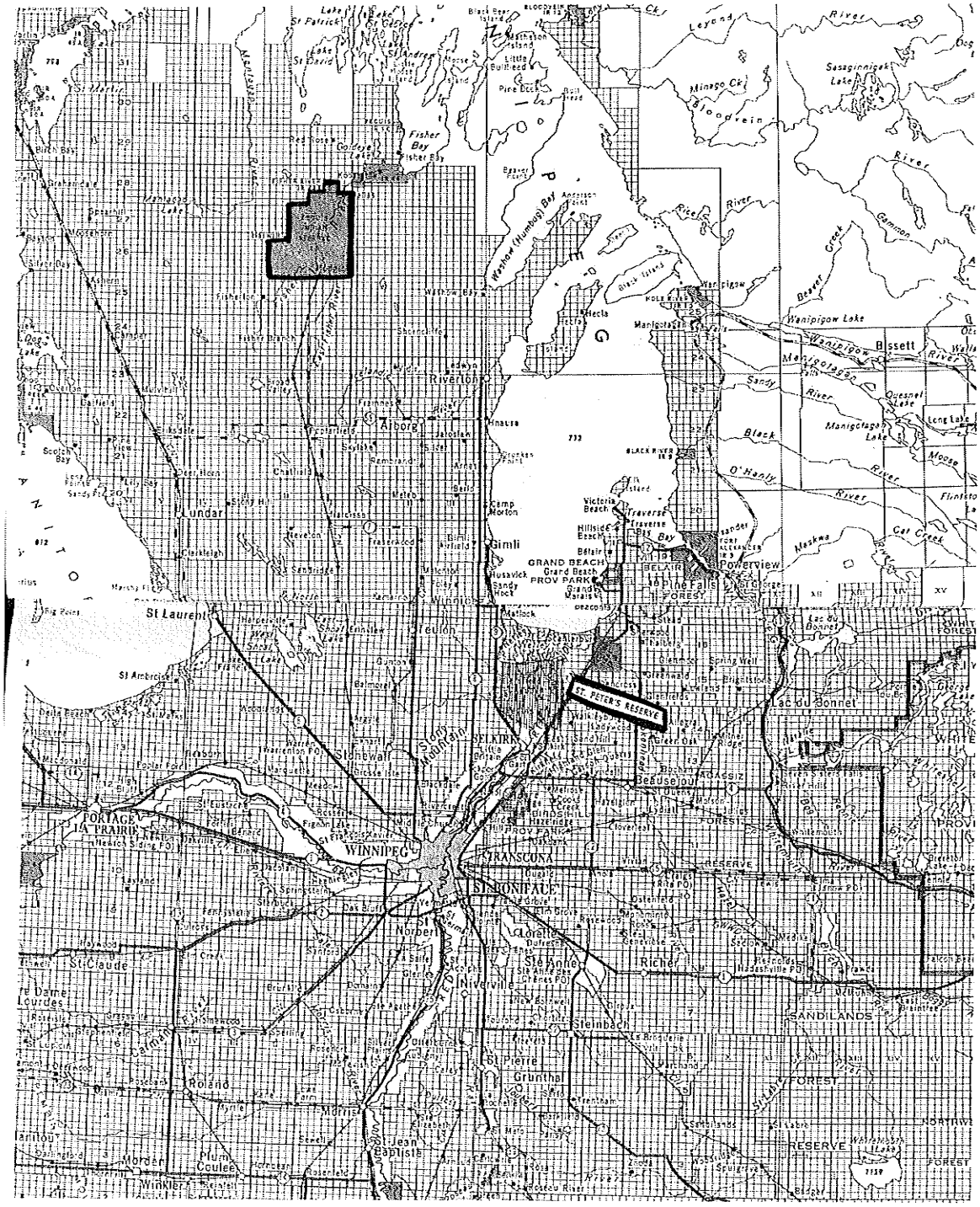
Young, T.K. et al. (2002). Type 2 Diabetes Mellitus in Children : Prenatal and Early Infancy Risk Factors Among Native Canadians. *Archives of Pediatric and Adolescent Medicine,* 156, 651-655.

Zobairi, Sumaiya E. et al. (1998). Diet and Nutrition : A Knowledge, Attitude and Practice Study of Pregnant Women in Karachi. *Australia and New Zealand Journal of Obstetrics and Gynaecology,* 38(2), 188-193.

Appendices

Appendix A-1

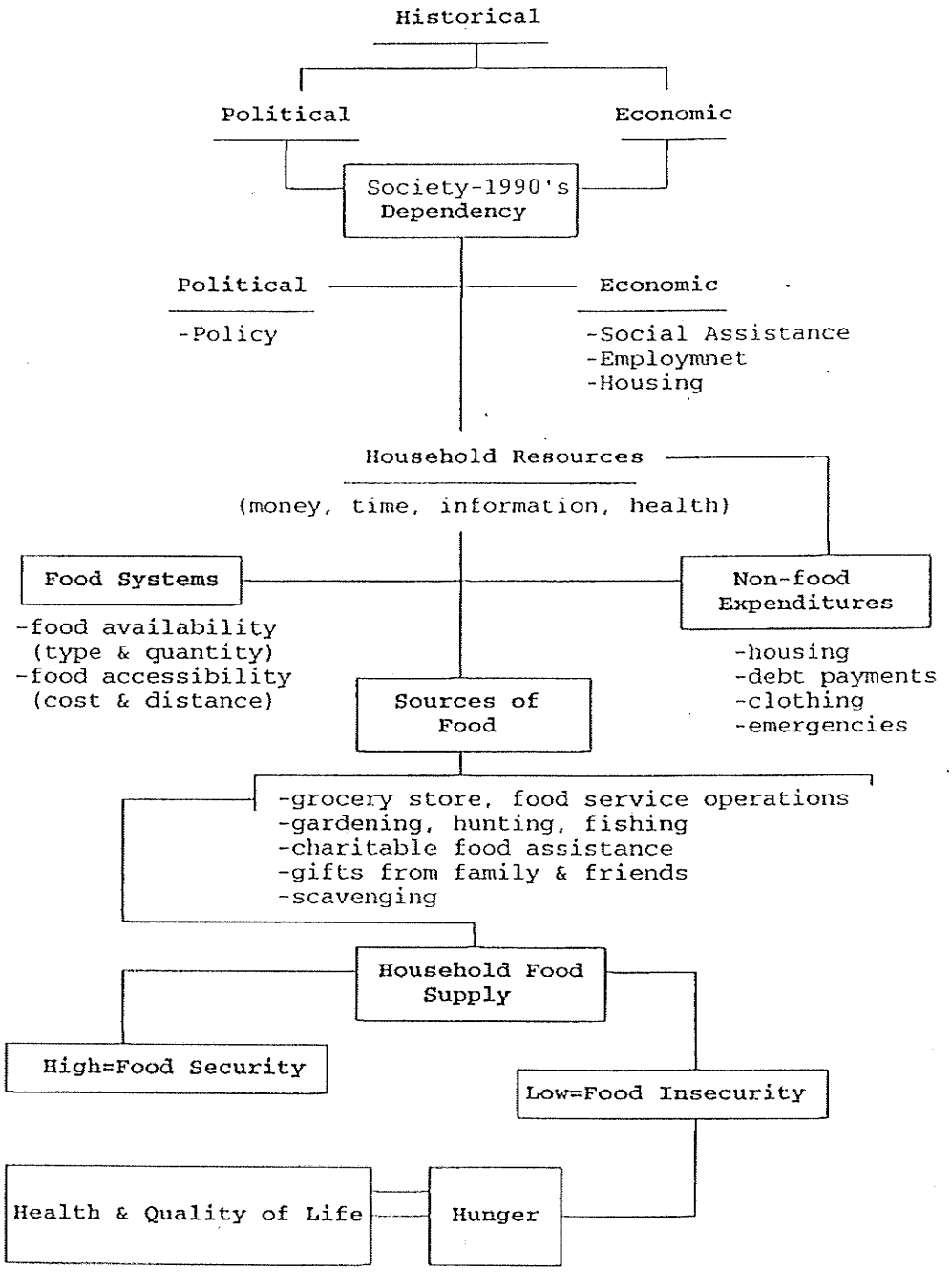
Map of Peguis First Nation



Appendix A-2

Theoretical Model of Urban Circumstances

Urban Circumstances



(Adapted from Campbell et al., 1988 by Sinclaire, 1997)

Appendix B

Interview Protocol and Questions

Record of Interview

Code: Mother - _____
Grandmother -_____

1. Date of Interview : _____

   Start_____ End_____ Length_____ hours_____minutes

2. Physical Setting : _____

General Directions to Researcher:

**Name on Consent Forms only

1. Participant Information and Consent form – **leave copy** with participant
2. Oral Interview - including both background questions and interview guide
3. Field Notes

Response Record Sheet

Mother _____
Grandmother _____

1. When and where were you born? (If not from this community when did you move here?)

a) Date of Birth: _____

b) Place of Birth: _____

c) Time of Arrival in Community: _____

2. Have you ever lived away from this community? _____
(Where have you lived?) _____

3. Who did you live with when you were growing up? _____

4. Who do you live with now? _____
(Who lives in your home?)

5. How many children do you have? _____ How many times have you been pregnant?____

What is the age of each child? _____

6. Were you ever diagnosed with diabetes during (any) of your pregnancies? _____

7. Did you ever attend prenatal classes or visit someone regularly when you were pregnant?

_____

8. What is a typical day like for (you) your family?

9. Can you tell me about your family's heritage (ancestry)?

_____

10. How would you describe your faith (spirituality)?
(What religion were you raised in?) _____
(What is your present religion?) _____

11. Is there anything else you would like to tell me about yourself?

Semi-Structured Interview Guide

1. Thinking back to the time(s) you were pregnant, what do you remember most?
2. How did you change your eating patterns throughout the pregnancy? How? Why?
3. What did you feel you would liked to have eaten but couldn't while you were pregnant?
4. Can you tell me about any type of food you were not interested in eating? Were there things that you were told not to eat during your pregnancy?
5. Could you give me examples of anything special that you would eat for the health of the baby?
6. How do you think the kind of food you eat when you are pregnant affects the baby?
7. Were there any medicines or teas you took while you were pregnant? For what reasons?
8. How are the foods that you ate during pregnancy in any way different from what your mother or grandmothers consumed when they were going to have a baby?
9. How do you feel about eating traditional foods during pregnancy?
10. How easy was it to get traditional or country foods to eat when you were pregnant?
11. What sorts of foods did you buy from the store when you were going to have a baby?
12. When you were pregnant, usually what foods were available to buy at the store?
13. Do you know anyone who has run out of food?
14. Can you think of any examples of foods you would have liked to buy more often, but they were too expensive?
15. How would you rate your health? Why?
16. How do you think diet affects your health and your baby's health while you are pregnant?

Post-Interview Questionnaire

Mother _____
Grandmother _____

1. How much formal education do you have?
   1. NO FORMAL EDUCATION
   2. LESS THAN GRADE 7
   3. GRADE 7-9
   4. GRADE 10-12
   5. COMPLETED HIGH SCHOOL
   6. SOME COLLEGE OR UNIVERSITY
   7. COMPLETED COLLEGE OR UNDERGRADUATE DEGREE
   8. SOME GRADUATE WORK
   9. COMPLETED GRADUATE DEGREE

2. How much formal education does your spouse/partner have?
   (Use above codes) _____

3. Are you presently: (Circle number)
   1. WORKING FULL-TIME
   2. WORKING PART-TIME
   3. UNEMPLOYED
   4. RETIRED
   5. FULL-TIME HOMEMAKER
   6. STUDENT

4. Is your spouse/partner presently: (former partner/spouse)
   (Use above codes) _____

5. What is your approximate annual household income?
   1. LESS THAN $5,000
   2. $5,000 - $9,999
   3. $10,000 - $14,999
   4. $15,000 - $19,999
   5. $20,000 - $24,999
   6. $25,000 - $29,999
   7. $30,000 - $34,999
   8. $35,000 - $39,999
   9. $40,000 - $45,999
   10. $50,000 OR MORE

6. Do you have any other sources of income other than your salary (s)? 1 YES 2 NO

7. If yes, what are the additional sources of income for your household?
   _____

Appendix C-1

In-Store Costing Form

City/Town:	Store Name:
Store Address:	Date:

Food Item Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
MILK PRODUCTS				
2% Milk, fresh 4L				
Yogurt, fruit flavoured, 2% M.F. or less 750g				
Medium Cheddar Cheese 227g				
Processed Cheese Slices 500g				
Partly-skimmed Mozzarella Cheese block 227g				
Vanilla Ice Cream, regular 2L				
* Evaporated Milk 385mL				
* Milk Powder 500g				
* Cheese Spread 500g				
* Cottage Cheese 500g				

Food Item Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
EGGS				
Grade A large eggs 1 dozen				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
MEATS, POULTRY, FISH					
Inside round steak	1 kg				
Stewing beef	1 kg				
Medium ground beef	1 kg				
Pork loin centre-cut chops	1 kg				
Chicken legs, no back	1 kg				
Beef and pork weiners	450g				
Sliced cooked ham	175g				
Frozen fish fillets, block	400g				
Canned pink salmon	213g				
Canned flaked light tuna, water packed	170g				
* Beef liver	1 kg				
* Bacon	500g				
* Bologna (beef)	500g				
* Canned luncheon meat	340g				
* Canned stew	665g				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
MEAT ALTERNATIVES					
Canned baked beans	398mL				
Dry navy beans	450g				
Smooth peanut butter	500g				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
GRAIN PRODUCTS					
Enriched white bread, Sliced	450g				
60% whole wheat bread, sliced	450g				
Hotdog buns	12 pack				
All purpose white flour	2.5 kg				
Whole wheat flour	2.5 kg				
Spaghetti, dry	900g				
Long grain white rice	900g				
Boxed macaroni and cheese	225g				
Regular oatmeal	1 kg				
Corn flakes cereal	675g				
Shreddies® cereal	620g				
Salted soda crackers	450g				
Social tea cookies	350g				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
CITRUS FRUIT AND TOMATOES					
Oranges	1 kg				
Canned unsweetened apple Juice made from concentrate	1 L				
Frozen orange juice Concentrate	355 mL				
Fresh tomatoes	1 kg				

Canned whole tomatoes	796 mL				
Tomato juice, canned	1.36 L				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
OTHER FRUIT					
McIntosh apples	1 kg				
Bananas	1 kg				
Green seedless grapes	1 kg				
Bartlett pears	1 kg				
Sultana raisins	750 g				
Canned fruit cocktail, juice packed	398 mL				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
POTATOES					
Fresh potatoes	4.54 kg				
Frozen french fried potatoes	1 kg				

Food Item	Purchase Unit	Price	Comments	✓ On Sale	✓ Data Entered
OTHER VEGETABLES					
Broccoli	1 kg				
Cabbage	1 kg				
Fresh carrots, bagged	2 lb bag				
Celery	1 unit				
Cucumber, field	1 unit				
Iceberg lettuce	1 unit				
Romaine lettuce	1 unit				

Onions, cooking	3 lb bag				
Green pepper	1 kg				
Rutabagas	1 kg				
Frozen mixed vegetables	1 kg				
Canned whole kernel corn	341 mL				
Canned green peas	398 mL				

Food Item	**Purchase Unit**	**Price**	**Comments**	**✓ On Sale**	**✓ Data Entered**
FATS AND OILS					
Margarine, tub	454g				
Salted butter	454g				
Canola oil	1 L				
Mayonnaise-type salad dressing, for instance, Miracle Whip®	500 mL				
* Lard	454 g				

Food Item	**Purchase Unit**	**Price**	**Comments**	**✓ On Sale**	**✓ Data Entered**
SUGAR AND OTHER SWEETS					
White sugar	2 kg				
Strawberry jam	500 mL				
* Fruit drink crystals	603g				

Appendix C-2

Thrifty Nutritious Food Basket
(Cost for a Family of Four, 1990)

Components of Cost of Thrifty, Nutritious Northern Food Basket for a Family of Four for One Week, 1990

Community	Postage on perishables		Total cost of perishables			Cost of non-perishables		Total cost of food basket	
	$	%	$	%	Index[1]	$	Index[1]	$	Index[1]
Arctic Bay	70	24	145	50	299	147	189	292	231
Pond Inlet	70	24	150	52	308	140	180	290	230
Broughton Island	70	26	147	54	301	127	163	273	216
Pangnirtung	70	26	138	52	284	126	162	265	209
Iqaluit[2]	n.a.	n.a.	109	45	223	131	168	240	189
Rankin Inlet	n.a.	n.a.	110	43	225	146	187	256	202
Repulse Bay	n.a.	n.a.	139	49	286	145	186	284	225
Gjoa Haven	n.a.	n.a.	144	51	295	139	178	283	223
Yellowknife	n.a.	n.a.	63	39	129	97	125	160	126
Salluit	21	10	91	43	187	119	153	211	166
Povungnituk	21	11	83	42	170	116	148	198	157
Kuujjuaq	21	11	76	40	156	115	147	191	151
Kuujjuarapik	21	11	76	40	156	116	149	192	152
Wemindji	21	10	85	42	175	120	154	205	162
Nemiscau	n.a.	n.a.	72	39	148	113	146	186	147
Val d'Or	n.a.	n.a.	45	36	93	81	104	126	100
Big Trout Lake[2]	n.a.	n.a.	84	40	172	128	164	211	167
Sachigo Lake	17	8	94	44	193	121	156	215	170
Fort Severn	17	7	104	42	213	140	180	244	193
Thunder Bay	n.a.	n.a.	56	41	115	80	103	136	108
Nain	n.a.	n.a.	66	43	135	87	112	153	121
Rigolet	n.a.	n.a.	66	39	135	101	130	167	132
West St. Modeste	n.a.	n.a.	63	42	129	87	112	150	118
Goose Bay	n.a.	n.a.	68	43	140	90	115	158	125
St. John's	n.a.	n.a.	56	41	114	79	101	134	106
Fort Ware	n.a.	n.a.	106	45	218	132	170	239	188
Ottawa	n.a.	n.a.	49	38	100	78	100	127	100

n.a. Not applicable, i.e. communities not receiving food mail.

[1] Cost as a percentage of cost in Ottawa. Percentages are calculated from unrounded figures on costs.

[2] Iqaluit and Big Trout Lake are eligible for food mail service but the stores there are not currently receiving food through Canada Post.

(DIAND, 1990: p. 83)

Appendix D

Letter of Introduction

March 14, 2001

Dear

My name is Hannah Neufeld. I am a graduate student from the University of Manitoba in the Department of Community Health Sciences. As part of my study program I will be doing a research study called "How Culture and Ecology Influence Dietary Choice During Pregnancy." I am interested in learning about women's beliefs about the food they eat during their pregnancy as well as how food patterns have changed for different generations of women over the years. I wish to talk to young mothers as well as older women in this community.

I would like to talk to you about this topic. By participating in this study, I will arrange to talk to you for about an hour at your convenience. All of the information that I learn from talking with you will be kept strictly confidential.

You have been recommended to me by staff at the Health Centre as someone who might be interested in talking to me about this topic. I would very much appreciate the chance to speak with you personally to explain more about the study and to answer any questions that you may have. If you have any objection to me contacting you directly please call XXX XXX at the Health Centre (xxx-xxxx) and she will let me know.

If you would like to call me directly for more information, or arrange a time to talk, my phone number in Winnipeg is 582-9037. Please feel free to call collect.

I am looking forward to talking with you.

Sincerely,

Hannah Neufeld

Appendix E-1

Letter of Application to Chief and Council

November 17, 2000

Chief and Council
P.O. Box 10
Peguis, MB R0C 3J0

Dear Chief Stevenson, Councillors Wilson, Sutherland, Sinclair and Sinclair :

I am a graduate student in the Department of Community Health Sciences at the University of Manitoba and am interested in conducting research for my Masters thesis on the influence of cultural and ecological factors on dietary choice during pregnancy for First Nations women. In consulting with XXX XXXX at your Health Centre, she suggested that I contact you as soon as possible to clarify further to you my research objectives. I am enclosing a draft of my research proposal that XXX has read and has expressed interest in its possible connection to the Canadian Prenatal Nutrition Program.

I hope to travel up to meet with XXX in January and would appreciate the opportunity to discuss with you further my research objectives. If you have any need for clarification or further information with regards to my research proposal please do not hesitate to contact me by telephone at (204)582-9037 or e- mail : umneuf3@cc.umanitoba. Thank you for your consideration.

Sincerely,

Hannah Neufeld

Appendix E-2

Letter of Application to the Health Research Ethics Board

February 9, 2001

Dr. Alan Katz
Chair, Health Research Ethics Board
The University of Manitoba
P126 Pathology Building
770 Bannatyne Avenue
Winnipeg, Manitoba
R3E 0W3

Dear Dr. Katz,

I am a graduate student enrolled in the Masters programme in the Department of Community Health Sciences at the University of Manitoba. As a partial fulfillment of my degree I am interested in conducting original qualitative research for my thesis on the influence of cultural and ecological factors on dietary choice during pregnancy for First Nations women.

The enclosed application for ethical approval of my study should include all of the required documents for submission. I should note, however, that although I have had a number of meetings with Band Council staff of my chosen research community a formal letter of approval for the project is forthcoming. As no formal study budget exists I have not included one in my application and although it is my first time submitting to your committee, a curriculum vitae is not included. Even though I am the Principal Investigator for the proposed research, my project is part of the Interdisciplinary Health Research Teams Program of the Canadian Institutes of Health Research that is being coordinated and supervised by my advisor, Dr. T. Kue Young.

Thank you in advance for your consideration of my application. Please do not hesitate to contact me for further clarification or information regarding my research proposal.

Sincerely,

Hannah Neufeld

Appendix E-3

Letter to the Assembly of Manitoba Chiefs

November 21, 2000

Doreen Sanderson
Regional Health Survey Coordinator
Assembly of Manitoba Chiefs
2nd Floor
260 St. Mary Avenue
Winnipeg, MB R3C 0M6

Dear Doreen:

To follow up on our meeting last Friday, I am sending along a more comprehensive draft of my research proposal. I caution you and your committee to be aware, however, that this is still only a draft that my advisory committee has not yet approved. I also look towards you and your committee members for advice on how to better design my research, with the benefits of First Nations women and children in mind.

As I mentioned in my previous letter, I am still hoping to attend the Canadian Prenatal Nutrition Program conference coming up on the 12th and 13th of December. It would be ideal if I was able to meet with your committee prior to that time to enable me to introduce my research proposal to the various First Nations community representatives in attendance. I am also looking forward to finding out more information as to how my proposed study could have an impact in helping design CPNP programs on and off-reserve.

If you have any need for clarification or further information with regard to my research proposal please do not hesitate to contact me by telephone at / or e- mail : Thank you for your consideration. I look forward to hearing from you.

Sincerely,

Hannah Neufeld

Appendix F

Participant Information and Consent Form

Title of Study: How Culture and Ecology Influence Dietary Choice During Pregnancy

Principal Investigator: Hannah Neufeld, Department of Community Health Sciences, University of Manitoba, 750 Bannatyne Avenue, Winnipeg, MB, R3E 0W3 [Tel:]

You are being asked to take part in a research study. Please take the time to review this consent form and discuss any questions you might have with myself, Hannah Neufeld, the Principal Investigator. You may take your time to decide to participate in this study and may discuss it with your friends and family before making your decision. Please ask me to explain if there is anything that you do not understand contained in this consent form.

Purpose of Study: The purpose of this study is to look at changes in access to traditional foods in this community as well as women's beliefs about the food they eat during pregnancy. I will be talking to young women as well as older women in the community in order to compare the differences in ideas about the food a woman eats during pregnancy between two generations. In total I will want to talk with 26 women in the community who are interested in participating in the study.

Study Procedures: Women asked to take part in the study have been recommended to me by local Health Centre staff. Based on your age you will be placed into one of two equal groups. If you take part in the study I will meet with each participant at an agreed upon time and place to ask you questions as part of an interview. One to two interviews, each lasting approximately one-hour, will be conducted with all 26 participants. During the interviews, background questions will be asked about yourself and your family, such as how long you have lived in this community, your place of birth, number of children and livelihood. After these questions you will be asked about your eating patterns during past pregnancies as well as what kind of food was available to you then. With your permission I will tape record the interviews. Although I will try and write down your responses as well, the results from the interviews will be more accurate and better represent your actual words if they are tape recorded. All of the tapes will be erased at the end of the study.

Risks and Discomforts: All research carried out by the University must describe any risks or discomfort associated with participating in a study. The only potential problems this study may cause are taking up your time to answer questions as well as bringing up topics that you may not wish to talk about. You do not have to answer any question you do not want to. If you would like to stop the interview or skip a question at any time just ask me.

Benefits: There may or may not be any direct benefit to you from participating in this study. You will not receive any payment for your participation. I hope, however, that the information learned from the interviews will help health professionals working in this community to better understand women's thoughts and concerns about the food they eat during pregnancy, as well as any potential problems in obtaining certain kinds of foods.

Confidentiality: Records of the interviews will be coded only with a number in order that none of the records could be identified with a name. None of the cassettes, nor the final transcripts made of the interviews will be shared with anyone other than myself, the primary investigator. The consent forms will be the only record with your name on it and will be stored, along with the tapes and transcripts, in a secure and locked location. Upon completion of the study all of the interview recordings will be destroyed. A report of the findings and any subsequent publications will not mention your name or provide any description that might identify you. The University of Manitoba Health Research Ethics Board may review records related to the study for quality assurance purposes.

Voluntary Participation / Withdrawal from the Study: Your decision to take part in this study is completely voluntary. You may refuse to participate or you may withdraw from the study at any time. If you decide not to participate or drop out of the study, this will not affect your treatment at the Health Centre. The Health Centre will also only receive a report about the whole project and will therefore not know any specific information about your interview.

Questions: You are free to ask to ask any questions that you may have about your rights as a research participant. If questions come up either during or after the study please feel free to contact Hannah Neufeld at . For further questions about your rights as a research participant you may contact The University of Manitoba, Bannatyne Campus Research Ethics Board Office at (204)789-3389. Do not sign this consent form until you have had a chance to ask questions and have received satisfactory answers to all of your questions.

Statement of Consent: I have read this consent form. I have had the opportunity to discuss this study with Hannah Neufeld and have had my questions answered in language I understand. The risks and benefits have been explained to me. I understand that I will be given a copy of this consent form after signing it. I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this study. I understand that information regarding my personal identity will be kept confidential. I authorize the inspection of any of my records that relate to this study by The University of Manitoba Research Ethics Board for quality assurance purposes. By signing this consent form, I have not waived any of the legal rights that I have as a participant in a research study.

_____ _____

Participant's Signature Date

_____

Participant's Printed Name

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has knowingly given their consent.

_____ _____

Investigator's Signature Date

_____

Investigator's Printed Name

Appendix G-1

Spreadsheet of Food Prices Locally

FOOD ITEM	Unit	Store 1	Store 2	Store 3	Average cost
		Oct.03/ 01	Oct.10/ 01	Oct.12/01	
MILK PRODUCTS					
2% MILK	4 L	$4.59	$2.98	$4.15	**$3.91**
YOGURT	500 GM	$1.53	$1.99	$1.83	**$1.78**
CHEDDAR CHEESE, MEDIUM	227 GM	$4.29	$3.99	$3.26	**$3.85**
PROCESS CHEESE SLICES	500 GM	$4.59	$4.59	$5.19	**$4.79**
MOZZARELLA CHEESE	227 GM	$3.33	$3.99	$3.17	**$3.50**
VANILLA ICE CREAM	2 L	$5.99	$6.49	$4.95	**$5.81**
EGGS					
GRADE A LARGE	1 DOZ.	$1.79	$1.99	$2.05	**$1.94**
MEATS, POULTRY, FISH					
ROUND STEAK	1 KG	$11.98	$13.00	$11.65	**$12.21**
STEWING BEEF	1 KG	$6.89	$7.99	$6.56	**$7.15**
GROUND BEEF, MEDIUM	1 KG	$6.21	$6.93	$4.38	**$5.84**
PORK CHOPS, LOIN	1 KG	$10.97	$7.99	$9.40	**$9.45**
CHICKEN LEGS	1 KG	$3.59	$4.59	$2.16	**$3.45**
WIENERS, BEEF & PORK	450 GM	$2.29	$2.29	$2.29	**$2.29**
SLICED HAM	175 GM	$2.05	$2.79	$2.33	**$2.39**
FROZEN FISH FILLETS	400 GM	$4.99	$7.99	$5.56	**$6.18**
PINK SALMON, CANNED	213 GM	$1.59	$1.89	$2.05	**$1.84**
TUNA, LIGHT,FLAKED,CANNED, WATER (2)	170 GM	$1.49	$1.69	$1.49	**$1.56**
MEAT ALTERNATIVES					
BAKED BEANS W/TOM SCE, CANNED	398 ML	$0.65	$0.66	$0.66	**$0.66**
DRY NAVY BEANS	454 GM	$1.20	$1.40	$1.50	**$1.37**
PEANUT BUTTER	500 GM	$2.99	$2.99	$3.59	**$3.19**
GRAIN PRODUCTS					
BREAD, ENRICHED, WHITE	675 GM	$1.41	$1.78	$1.37	**$1.52**
BREAD, WHOLE WHEAT	675 GM	$1.41	$1.78	$1.37	**$1.52**
HOT DOG/HAMBURG ROLLS	480 GM	$1.77	$1.66	$2.05	**$1.83**
FLOUR, WHITE, ALL PURPOSE	2.5 KG	$1.75	$3.79	$3.85	**$3.13**
FLOUR, WHOLE WHEAT	2.5 KG	$2.24	$3.79	$3.85	**$3.29**
MACARONI/SPAGHETTI	900 GM	$1.99	$2.19	$1.99	**$2.06**
RICE, LONG-GRAIN, WHITE	900 GM	$4.29	$4.29	$4.15	**$4.24**
MACARONI /CHEESE DINNER	225 GM	$0.65	$0.79	$0.79	**$0.74**
OATMEAL, REGULAR	1 KG	$2.69	$2.99	$2.44	**$2.71**

CORN FLAKES	675 GM	$2.96	$3.29	$3.79	**$3.35**
SHREDDIES	800 GM	$5.51	$4.63	$6.18	**$5.44**
SODA CRACKERS, SALTED	450 GM	$1.59	$2.19	$2.19	**$1.99**
SOCIAL TEAS	400 GM	$4.33	$3.76	$4.40	**$4.16**
CITRUS FRUIT & TOMATOES					
ORANGES	1 KG	$2.84	$3.50	$3.19	**$3.18**
APPLE JUICE, CANNED OR TETRA	1.36 L	$2.16	$2.03	$1.89	**$2.03**
ORANGE JUICE, FROZEN, CONCENTRATE	355 ML	$0.99	$1.19	$1.49	**$1.22**
TOMATOES	1 KG	$1.72	$2.84	$3.19	**$2.58**
WHOLE TOMATOES, CANNED	796 ML	$1.59	$1.89	$1.69	**$1.72**
TOMATO JUICE, CANNED	1.36 L	$1.99	$1.49	$1.89	**$1.79**
OTHER FRUIT					
APPLES	1 KG	$1.74	$1.39	$1.74	**$1.62**
BANANAS	1 KG	$1.74	$1.29	$1.52	**$1.52**
GRAPES	1 KG	$2.16	$4.36	$4.16	**$3.56**
PEARS	1 KG	$2.40	$3.50	$3.19	**$3.03**
RAISINS	750 GM	$4.79	$4.39	$4.29	**$4.49**
FRUIT COCKTAIL, CANNED, JUICE PACK	398 ML	$1.99	$2.29	$1.49	**$1.92**
POTATOES					
POTATOES, FRESH	4.54 KG	$4.99	$5.49	$5.35	**$5.28**
FROZEN FRENCH FRIED POTATOES	1 KG	$1.99	$1.99	$1.99	**$1.99**
OTHER VEGETABLES					
BROCCOLI	1 KG	$2.36	$3.28	$3.19	**$2.94**
CABBAGE	1 KG	$0.86	$1.19	$1.21	**$1.09**
CARROTS, FRESH	1 KG	$1.29	$1.99	$1.19	**$1.49**
CELERY	1 KG	$1.54	$2.43	$1.74	**$1.90**
CUCUMBER	1 KG	$2.17	$2.17	$2.07	**$2.14**
LETTUCE, ICEBERG	1 KG	$2.41	$2.56	$2.50	**$2.49**
LETTUCE, ROMAINE	1 KG	$3.43	$2.72	$4.15	**$3.43**
ONIONS	1 KG	$1.08	$1.75	$1.46	**$1.43**
GREEN PEPPER	1 KG	$2.62	$2.40	$3.85	**$2.96**
TURNIPS	1 KG	$1.30	$1.96	$1.43	**$1.56**
MIXED VEGETABLES, FROZEN	1 KG	$2.99	$2.99	$2.99	**$2.99**
KERNEL CORN, CANNED	341 ML	$0.64	$1.29	$1.09	**$1.01**
GREEN PEAS, CANNED	398 ML	$1.09	$1.29	$1.09	**$1.16**
FATS AND OILS					
MARGARINE, TUB	454 GM	$0.98	$1.29	$1.25	**$1.17**
BUTTER	454 GM	$3.39	$2.50	$2.50	**$2.80**
CANOLA OIL	1 L	$2.48	$3.39	$3.19	**$3.02**

SALAD DRESSING	500 ML	$3.39	$3.29	$3.49	**$3.39**
SUGAR AND OTHER SWEETS					
SUGAR, WHITE	2 KG	$2.79	$2.85	$3.15	**$2.93**
STRAWBERRY JAM	500 ML	$4.39	$2.89	$3.99	**$3.76**
TOTAL		$189.88	$207.02	$199.24	$198.71

Appendix G-2

Spreadsheet of Food Prices in Winnipeg

FOOD ITEM	Unit	Store 1	Store 2	Store 3	Average
					Cost
		Oct 12/01	Oct 16/01	Oct 9/01	
MILK PRODUCTS					
2% MILK	4 L	$2.99	$2.99	$2.98	$2.99
YOGURT	500 GM	$1.92	$1.44	$1.46	$1.61
CHEDDAR CHEESE, MEDIUM	227 GM	$3.33	$2.77	$2.59	$2.90
PROCESS CHEESE SLICES	500 GM	$4.99	$3.46	$2.68	$3.71
MOZZARELLA CHEESE	227 GM	$3.13	$2.20	$2.59	$2.64
VANILLA ICE CREAM	2 L	$2.99	$2.37	$2.28	$2.55
EGGS					
GRADE A LARGE	1 DOZ.	$1.99	$1.50	$1.87	$1.79
MEATS, POULTRY, FISH					
ROUND STEAK	1 KG	$13.87	$10.15	$7.45	$10.49
STEWING BEEF	1 KG	$9.42	$7.95	$4.37	$7.25
GROUND BEEF, MEDIUM	1 KG	$4.61	$4.69	$7.18	$5.49
PORK CHOPS, LOIN	1 KG	$10.78	$9.85	$9.44	$10.02
CHICKEN LEGS	1 KG	$5.93	$2.44	$7.44	$5.27
WIENERS, BEEF & PORK	450 GM	$2.59	$1.97	$1.88	$2.15
SLICED HAM	175 GM	$3.99	$2.27	$1.57	$2.61
FROZEN FISH FILLETS	400 GM	$4.59	$4.46	$3.19	$4.08
PINK SALMON, CANNED	213 GM	$1.59	$1.26	$0.95	$1.27
TUNA, LIGHT,FLAKED,CANNED, WATER (2)	170 GM	$1.49	$0.97	$0.99	$1.15
MEAT ALTERNATIVES					
BAKED BEANS W/TOM SCE, CANNED	398 ML	$0.89	$0.66	$0.87	$0.81
DRY NAVY BEANS	454 GM	$1.53	$1.46	$1.39	$1.46
GRAIN PRODUCTS					
BREAD, ENRICHED, WHITE	675 GM	$1.69	$1.67	$1.52	$1.63
BREAD, WHOLE WHEAT	675 GM	$1.69	$1.87	$1.52	$1.69
HOT DOG/HAMBURG ROLLS	480 GM	$1.59	$1.47	$1.39	$1.48
FLOUR, WHITE, ALL PURPOSE	2.5 KG	$2.99	$2.97	$2.98	$2.98
FLOUR, WHOLE WHEAT	2.5 KG	$4.99	$2.97	$3.28	$3.75
MACARONI/SPAGHETTI	900 GM	$1.50	$1.26	$0.97	$1.24
RICE, LONG-GRAIN, WHITE	900 GM	$2.06	$1.47	$1.46	$1.66
MACARONI /CHEESE DINNER	225 GM	$0.79	$0.75	$0.33	$0.62

OATMEAL, REGULAR	1 KG	$3.49	$2.67	$1.48	$2.55
CORN FLAKES	675 GM	$2.99	$4.74	$2.23	$3.32
SHREDDIES	800 GM	$4.40	$4.70	$4.29	$4.46
SODA CRACKERS, SALTED	450 GM	$1.79	$1.58	$1.38	$1.58
SOCIAL TEAS	400 GM	$2.19	$1.56	$1.69	$1.81
CITRUS FRUIT & TOMATOES					
ORANGES	1 KG	$3.06	$1.94	$1.09	$2.03
APPLE JUICE, CANNED OR TETRA	1.36 L	$1.70	$1.30	$1.74	$1.58
ORANGE JUICE, FROZEN, CONCENTRATE	355 ML	$1.59	$0.89	$0.91	$1.13
TOMATOES	1 KG	$3.28	$2.16	$2.76	$2.73
WHOLE TOMATOES, CANNED	796 ML	$1.49	$0.96	$0.97	$1.14
TOMATO JUICE, CANNED	1.36 L	$1.79	$1.36	$1.38	$1.51
OTHER FRUIT					
APPLES	1 KG	$1.74	$1.72	$1.06	$1.51
BANANAS	1 KG	$1.08	$0.93	$0.93	$0.98
GRAPES	1 KG	$5.03	$5.69	$4.37	$5.03
PEARS	1 KG	$3.28	$2.82	$2.76	$2.95
RAISINS	750 GM	$3.99	$3.20	$2.88	$3.36
FRUIT COCKTAIL, CANNED, JUICE PACK	398 ML	$1.79	$0.96	$0.97	$1.24
POTATOES					
POTATOES, FRESH	4.54 KG	$4.99	$2.48	$1.47	$2.98
FROZEN FRENCH FRIED POTATOES	1 KG	$1.99	$2.26	$1.25	$1.83
OTHER VEGETABLES					
BROCCOLI	1 KG	$4.39	$3.70	$2.94	$3.68
CABBAGE	1 KG	$0.86	$0.77	$0.82	$0.82
CARROTS, FRESH	1 KG	$1.53	$1.92	$2.31	$1.92
CELERY	1 KG	$2.12	$1.38	$2.87	$2.12
CUCUMBER	1 KG	$4.39	$2.39	$2.56	$3.11
LETTUCE, ICEBERG	1 KG	$2.48	$1.84	$1.92	$2.08
LETTUCE, ROMAINE	1 KG	$2.35	$2.08	$1.82	$2.08
ONIONS	1 KG	$1.30	$1.50	$1.06	$1.29
GREEN PEPPER	1 KG	$3.51	$4.14	$1.96	$3.20
TURNIPS(Rutabagas)	1 KG	$1.51	$1.06	$1.48	$1.35
MIXED VEGETABLES, FROZEN	1 KG	$3.49	$2.26	$2.98	$2.91
KERNEL CORN, CANNED (3)	341 ML	$1.29	$0.57	$0.46	$0.77
GREEN PEAS, CANNED (3)	398 ML	$1.29	$0.76	$0.46	$0.84
FATS AND OILS					
MARGARINE, TUB	454 GM	$1.49	$0.97	$2.19	$1.55
BUTTER	454 GM	$2.49	$0.77	$2.49	$1.92

CANOLA OIL	1 L	$3.69	$2.57	$2.48	$2.91
SALAD DRESSING	500 ML	$2.73	$1.96	$1.09	$1.93
SUGAR AND OTHER SWEETS					
SUGAR, WHITE	2 KG	$3.49	$2.77	$1.86	$2.71
STRAWBERRY JAM	500 ML	$3.69	$3.27	$2.50	$3.15
TOTAL		**$199.67**	**$159.89**	**$148.48**	**$169.35**

Appendix H-1

Letter of Approval from the Health Research Ethics Board

UNIVERSITY OF MANITOBA

BANNATYNE CAMPUS
Research Ethics Boards

P126-770 Bannatyne Avenue
Winnipeg, Manitoba
Canada R3E 0W3
Tel: (204) 789-3255
Fax: (204) 789-3414

APPROVAL FORM

Principal Investigator: Ms. Hanna Neufeld

Protocol Reference Number: H2001:032
Date: March 20, 2001

Protocol Title: **How Culture and Ecology Influence Dietary Choice During Pregnancy**

The following are approved for use:

- **Research Proposal, dated March 14, 2001**
- **Informed Consent Form, dated March 14, 2001**
- **Letter of Introduction to Participants, dated March 14, 2001**

The above was approved by Dr. A. Katz, Chair, Health Research Ethics Board, Bannatyne Campus, University of Manitoba on behalf of the committee per your letter dated March 14, 2001. The Research Ethics Board is organized and operates according to Health Canada/ICH Good Clinical Practices, Tri-Council Policy Statement, and the applicable laws and regulations of Manitoba.

This approval is valid for one year only. A study status report must be submitted annually and must accompany your request for reapproval. Any significant changes of the protocol and informed consent form should be reported to the Chair for consideration in advance of implementation of such changes. The REB must be notified regarding discontinuation or study closure.

This approval is for the ethics of human use only. For the logistics of performing the study, approval should be sought from the relevant institution, if required.

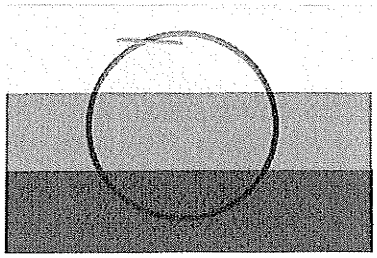
Sincerely yours,

Alan Katz, MB., Ch.B., MSc., CCFP, FCFP.
Chair,
Health Research Ethics Board
Bannatyne Campus

Please quote the above protocol reference number on all correspondence.
Inquiries should be directed to the REB Secretary
Telephone: (204) 789-3883 / **Fax:** (204)789-3414

Appendix H-2

Letter of Approval from Peguis Chief and Council



Peguis Indian Band

P.O. BOX 10, PEGUIS RESERVE, MANITOBA
R0C 3J0
TELEPHONE - FISHER RIVER (204) 645-2359
FAX - FISHER RIVER (204) 645-2360

File No. _____

April 23, 2001

Hanna Neufeld
Department of Community Health Services
Faculty of Medicine
University of Manitoba
750 Bannatyne Avenue
WINNIPEG, MB.
R3E 0W3

Dear Ms. Neufeld:

RE: YOUR RESEARCH REQUEST TITLED, "HOW CULTURE AND ECOLOGY INFLUENCE DIETARY CHOICE DURING PREGNANCY"

This letter is to inform you that the above study has been approved in principle.

Participation in your research project is voluntary and any participant may withdraw at any time during the data collection procedure.

As a result of our participation in your study, a copy of the research results should be submitted to this office at its completion.

Regards,

PEGUIS FIRST NATION

_____

COUNCILLOR GLENNIS SUTHERLAND
HEALTH PORTFOLIO

CC: Denise Bear
Peguis Health Centre

Chief Louis J. Stevenson

CGS/lm

Appendix H-3

Letter to Inform the Health Information and Research Committee

April 30, 2001

Doreen Sanderson
Regional Health Survey Coordinator
Assembly of Manitoba Chiefs
2nd Floor
260 St. Mary Avenue
Winnipeg, MB R3C 0M6

Dear Doreen:

This letter is to inform your HIR committee of a study that I am conducting as part of my Masters degree entitled, *How Culture and Ecology Influence Dietary Choice During Pregnancy.* I am also attaching a letter of approval from Peguis, indicating their consent to participate in the research.

If you have any need for clarification or further information with regard to the study please do not hesitate to contact me by telephone at (204)582-9637 or e- mail: umneuf30@cc.umanitoba.ca. Thank you for your consideration.

Sincerely,

Hannah Neufeld