ABSTRACT

Objectives. The food supply of Inuit living in Nunavut, Canada, is characterized by market food of relatively low nutritional value and nutrient-dense traditional food. The objective of this study is to assess community perceptions about the availability and accessibility of traditional and market foods in Nunavut.

Study Design. A qualitative study using focus group methodology.

Methods. Focus groups were conducted in 6 communities in Nunavut in 2004 and collected information was analyzed.

Results. Barriers to increased traditional food consumption included high costs of hunting and changes in lifestyle and cultural practices. Participants suggested that food security could be gained through increased economic support for local community hunts, freezers and education programs, as well as better access to cheaper and higher quality market food.

Conclusions. Interventions to improve the dietary quality of Nunavut residents are discussed. (Int J Circumpolar Health 2006; 65(5):416-431)

Keywords: food security, Inuit, Nunavut, traditional food, market food, focus groups, community-based research
INTRODUCTION

Traditional food is of fundamental significance in the lives of Inuit individuals, households, and communities, holding nutritional, physical, cultural, spiritual and economic importance (1, 2). A diet rich in Inuit traditional food is thought to protect from cardiovascular disease and diabetes due to relatively high levels of n-3, mono and polyunsaturated fatty acids and low levels of n-6 fatty acids (2-7). Other dietary characteristics include high intakes of antioxidants, vitamins, micronutrients and phytochemicals (2, 7-13). Beyond the many nutritional benefits, the harvesting, processing and consumption of traditional foods have great social and cultural importance and are deeply connected with community ethics and Inuit identity (8, 14-18).

The Inuit, like other Indigenous societies, are experiencing a nutritional transition, resulting from a set of complex modernizing and industrial forces (19). Dietary patterns now include processed foods high in salt, sugar, and fat and fewer locally harvested foods, resulting in low intakes of several nutrients (9, 12, 19, 20). Changes in diet and lifestyle are also associated with increased rates of obesity and chronic diseases, such as Type 2 diabetes and cardiovascular disease (1, 6, 21-23). Living with these ailments is especially difficult under conditions of increasing food insecurity, erosion of a traditional lifestyle and social instability (6, 24-26).

Food security, as defined by the Food and Agriculture Organization, “exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”(27). To be food secure, individuals and households must be able to reliably access food, usually via adequate income, and the supply and production of nutritious food at the community level must be sufficient (28). Impediments to food security in Nunavut households exist due to issues relating to both the access to, and availability of, appropriate food. Forty-nine percent of Nunavut households reported having “often” or “sometimes” not enough to eat during the previous year, compared to the Canadian average of 7% (29).

The objective of this study is to understand community perceptions about the factors associated with the availability and accessibility of traditional foods (TF) and nutritious market foods (MF). Specific objectives of the study are to identify barriers to harvesting and using traditional food, as well as feasible means by which these barriers can be eliminated or attenuated. Barriers to the use of nutritious market food are also explored.

MATERIAL AND METHODS

The project was designed by a Steering Committee that included nutritionists from the Federal and Territorial governments, a researcher from the Inuit national organization, the manager of the Food Mail Program, and researchers from McGill University. Rigorous ethical protocols were followed, including obtaining ethics approval from the Research Ethics Review Board of McGill University, a research license from the Nunavut Research Institute, and research agreements with the six participating communities. Informed consent, elicited through interpreters, was obtained from each participant in the focus groups.
Focus groups were chosen because they can facilitate the collection of a range of perspectives in a relatively short period of time and tend to be inductive and naturalistic (30). We were interested in finding out what people perceived to be the factors influencing access to traditional food, their suggestions on ways to improve current conditions, and the potential interest in the sale of traditional food as a means of improving access to food. We also wanted to find out their attitudes towards market food. Focus groups were held in April 2004 in six Inuit communities located in the Kitikmeot, Kivalliq and Qikiqtaaluk (Baffin) Regions (See Figure 1 for map). Individuals from a broad range of age and socio-economic groups were invited by a community research assistant to participate in the group discussion. With an interpreter present at each session, participants were asked to discuss the effectiveness of current traditional food and market food systems in meeting their food needs.

Each session was recorded with a mini-disc recorder, with the verbatim record of the meeting given additional context by concurrent notes taken by the moderator, or an assistant. The focus group moderators (Karen Fediuk and Sue Hamilton) debriefed with the assistants at the end of each session, compiling notes and abridged transcripts within 24 hours. This rapid compilation of the research data provided a useful aid in making accurate attribution of statements to anonymously coded individual identifiers for the participants in each group.

The focus group records were coded and analysed thematically following the qualitative methodology and data analysis laid out in Krueger and Casey (30) and Miles and Huberman (31). The focus group moderators each reviewed the transcripts line by line,
highlighting sections that answered the questions. Before reviewing the transcripts, a list of codes was created based on the research questions: sessions were coded for vulnerability, barriers/facilitators to traditional food use, food security coping mechanisms, attitude towards traditional food sales, strategies for improved food security, and attitudes towards market food use.

Upon completion of the first round of coding, the two moderators exchanged their transcripts and read them line by line to ensure that there was agreement on the coding. After agreement was reached, three documents were created with the headings: food security barriers, food security facilitators and strategies to improve food security. Coded focus group comments from the six sessions were organized into these three documents. Within these documents, comments were organized into themes within categories, using a similar process of exchanging files and comments until agreement was reached that this stage of the process was complete. The two moderators then worked together to finish the analysis and identify any of the barriers, facilitators and strategies that emerged in more than one region to aid in weighing the responses. Responses were not quantified in focus groups; however, the repeated emergence of specific themes across focus groups assisted in the positioning of categories within themes in the Tables. Results were reviewed and interpreted by the Steering committee. (Appendix A)

RESULTS

Focus group participants
The age, gender and geographical distributions of the focus group participants are summarised in Table I.

A total of 46 people attended the focus groups, with 7-9 attending per community. Participants ranged in age from 17 - >60 years, with more representation from women and people aged 31 and older. Students, elders and part-time, full-time and seasonal workers attended the focus groups, but people on income assistance who had been invited, chose not to attend.

Barriers to food security
In all communities, focus group participants perceived that many people had difficulty obtaining enough food every month. Participants perceived that barriers to food security in Nunavut are related to income available for

| Table I. Age and gender distributions of focus group participants. |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
|             | Kugluktuk n = 7 | Cambridge Bay n = 8 | Chester-Field n = 9 | Rankin Inlet n = 7 | Pond Inlet n = 7 | Clyde River n = 8 | Total n = 46 |
| Male        | 2              | 2              | 5              | 3              | 4              | 0              | 16            |
| Female      | 5              | 6              | 4              | 4              | 3              | 8              | 30            |
| Age range   |                |                |                |                |                |                |               |
| < than 20   | 1              | 2              | 0              | 0              | 0              | 0              | 3             |
| 20-30       | 2              | 0              | 1              | 0              | 0              | 2              | 5             |
| 31-50       | 4              | 2              | 4              | 1              | 4              | 2              | 17            |
| 51+         | 1              | 4              | 4              | 5              | 3              | 4              | 21            |
### Table II. Barriers to food security as perceived by participants in focus groups.

| Theme                        | Category          | Sub-category                                                                 |
|------------------------------|-------------------|------------------------------------------------------------------------------|
| Income level                 | Cash-flow         | • Household income perceived by many as insufficient to support living/hunting costs and aid to family members outside of household<br>• Food and living costs are a greater burden for families on income support, single mothers, large families |
| Food choices/Preferences     |                   | • Primary food of younger generations is market food<br>• High consumption of convenience/confectionary |
| Education                    | Skill             | • Perceived that individuals lack adequate hunting skills and knowledge of food preparation, budgeting, nutrition |
| Social structure/lifestyle changes | Sharing          | • Changing food-sharing relationships<br>• Traditional food less available to families without active hunters |
|                              | Division of labour|                                                                              |
|                              | Time              | • Elders often relied upon to support/feed younger generations<br>• For the employed, hunting often restricted to weekends |
| Social problems              | Addictions        | • Community less willing to aid people with addictions who regularly ask for financial/food aid |
| Traditional food             | Hunting costs     | • Perceived as too costly for many families<br>• Individuals reported waiting in excess of 2 years for license.<br>• License required by some stores to buy ammunition |
| Accessibility/availability   | Gun license delays|                                                                              |
| Harvester’s Support Program  |                   | • Perception of insufficient funding to cover hunter costs; distribution of harvest not enforced |
| Government-funded programs   |                   | • Harvester’s Support Program—needs perceived as greater than current funding allows<br>• Considered insufficient for community needs: hunting equipment, community freezer, hunting education programs<br>• Community Hunts usually take place once/year—considered inadequate |
| Community size               |                   | • Traditional food less available in larger communities |
| Commercial sale of traditional food |                   | • Unaffordable for those who have the greatest needs (i.e. lower income families) |
| Market food                  | Cost              | • Food costs 2-3 times higher than in south<br>• Minimal choice<br>• Quality perceived as poorer — Nutritious perishable foods are often damaged and/or spoilt soon after arrival<br>• Preference for convenience/confectionary foods |
|                              | Selection         |                                                                              |
|                              | Quality           |                                                                              |
living and hunting costs, changes at the societal and individual level in terms of diet, lifestyle, cultural practice and knowledge, as well as government involvement/support. The details are summarized in Table II.

Families vulnerable to food insecurity include those families without an active hunter and/or with low cash-flow (i.e. families on income assistance, single mothers, large families, and home-owners), people with gambling or substance abuse problems, and elders who need to stretch their pension to feed, or give money to, their children and grandchildren.

"Even though they are working, they are almost on welfare due to the fact that they can’t afford to get out onto land because of mortgage payments. A lot of people are living near poverty.” Hunter

**Facilitators of access to traditional and market food**

Various facilitators for the improvement of traditional food and market food availability were mentioned. The facilitators mentioned by focus group participants are the continued use of traditional food, subsidies on market food and a high family income. They are presented in Table III.
Elders and hunters in focus groups, as well as those individuals who received traditional food through hunters for free, or at low cost, perceived that traditional food obtained through the current redistribution system costs less than purchasing the same amount of meat at the store. The continued use of traditional food is also supported by cultural and health beliefs, sharing, government subsidies, the practice of serving traditional food at feasts and other public events, and traditional food skill-building programs.

“Yes. [Traditional food] It sustains my family. In the long run, it’s still cheaper than going to the stores to buy frozen food. The frozen meat is freezer burnt and outdated... That’s the way I see it anyways.” Hunter

**Improving food security**

Participants had very strong opinions as to different strategies on improving food security. While most measures could be implemented by the communities, financial and logistic support from the Territorial and Federal Governments would be needed (Table IV).

To improve food security in Inuit communities, participants perceived that there needed to be changes at the community and government levels. Many strategies involved extra funding, either directly through wages for workers and hunters, or indirectly through additional support to existing organizations (HTO), or programs (Harvester’s Support Program, Food Mail, Traditional Food Hunting Camps and Cooking classes) to expand services and decrease the costs to families. Participants

| Theme | Category | Sub-category |
|-------|----------|--------------|
| Government | Additional funding for | • Harvester’s Support Program – Increased level of individual support for hunting equipment/supplies (including camping equipment, ammunition)  
• Additional Community Hunts  
• Community Freezers implementation/maintenance  
• Food Bank  
• Implementation and/or expansion of youth hunting skills programs, TF and MF preparation classes  
• Salary for hunters  
• Non-profit TF processing plant and sales  
• Road infrastructure connecting communities |
| Market food |  | • Increased food subsidies  
• Increased Airline/Supplier Competition to reduce freight costs |
| Community | Meetings | • Re-affirm cultural concepts of sharing and reciprocity, and work toward improved distribution of TF |
| Advocacy |  | • Advocacy for Healthy Food Choice Promotion  
• Press Governments to increase market food subsidies, improve wage-to-living cost ratio, increase funding to Harvester’s Support Programs |
also perceived that there needed to be some community meetings and committees formed to discuss ways to approach the problem of access to adequate food for families (market and traditional food) and to act as advocates for healthy food promotion and food security at the territorial and federal levels.

“[The supply of traditional food] has improved a little bit but we still need lots of support. [The Friendship Centre program] takes out people hunting and they distribute it in the community to the elders. We still need more.” Male elder

**DISCUSSION**

Although the focus group participants were not familiar with the concept of food security, their perceptions about the ability of people in communities to get enough food to eat correspond closely to what has been documented in the food security literature, and provide insights into the unique nature of food insecurity in the remote communities of Nunavut. They articulated that barriers to getting enough food to eat included the amount of income available after bills were paid, hunting costs, changes at the societal and individual levels in terms of diet, lifestyle, culture and knowledge, as well as government involvement/support. They also identified the most vulnerable community members as being those with a low cash-flow (i.e. families on income assistance, single mothers, large families, and home-owners), families with no hunter, people with gambling or substance abuse problems, and elders who need to stretch their pensions to feed, or give money to, their children and grandchildren.

The difficulties faced by families on income support are illustrated by the calculation that approximately 95% of after-shelter social assistance income was required to purchase a basket of nutritious food in Nunavut in 1997 (32). Low cash-flow is a problem for many households and several reports suggest that the number of households either on social assistance or considered to be ‘working poor’ may be as high as 80% (33). 68% of low to lower-middle income residents in Nunavut reported experiencing not having enough food to eat, compared to 40% of middle to high income residents (29).

**Traditional food: access and availability**

The importance of having a hunter in the family for access to traditional food was mentioned by focus group participants. Duhaime et al. (34) identified the presence of a male head of household and, to a lesser extent, income, as significant determinants for the consumption of traditional food. Lower intakes of traditional food have been observed among single, divorced and widowed Inuit (34, 35), as well as among younger women (1), and were associated with a lack of exposure to traditional lifestyle during childhood in Greenland (36). Participants in focus groups described an increasingly problematic situation in Nunavut, where many households lack active hunters and cannot rely on nuclear or extended family for an adequate supply of traditional food. Participants voiced their concern that this would further accelerate a reduced exposure to, and preference for, traditional food.

“We’d eat more [traditional food]. We could ask for more but I think they have hard time looking after their own families… I don’t feel comfortable asking...they will give us some if they can. Otherwise [when food runs low I] will give my kids chips.” Single mother
The general trend in the Arctic is one of decreased subsistence hunting among youths; this results from a number of factors, such as increased wage employment, which reduces opportunities for hunting, lack of access to funds for purchasing capital equipment used in hunting/fishing, changing dietary preferences, inadequate training due to requirements of western style schooling, lack of interest in an increasingly “marginalized” activity, and an increased participation in organized sports. In a review of over 40 studies, Dewailly et al. (38) conclude that young people also appear to consume greater quantities of market foods in all circumpolar regions than do older northern dwellers. However, some young people have made conscious efforts to continue subsistence hunting, while others have actually increased their hunting activities as their parents age (39).

Some elders indicated that they had fewer problems getting enough food than the younger generations, due to their heavy use of traditional food, low reliance on market food and better budgeting skills. Food choices of the younger generations were attributed to the convenience of purchasing food, excessive presence of ‘junk food’, lack of knowledge, skills and motivation to hunt and prepare traditional food, the expense of hunting and the costs and quality of healthier market food choices. Elders also perceive that they are increasingly the main providers of traditional food and a source of financial aid to younger generations; a situation they feel is difficult to maintain and with which they are not comfortable.

“I have sisters who don’t cook. They’d rather open packages or cans. I try to encourage them to have traditional food or cook meals… They eat market food due to convenience [and] lack of cooking skills… They work hard and they weren’t taught. My parents, when they started drinking, they had no time to cook, hunt (one of sisters has alcohol issues)” Older female

Older focus group participants in Nunavut expressed concern about the shift in lifestyle and primary reliance on market food. From their viewpoint, traditional food is more cost-effective and suitable for Inuit to eat, given their environment.

“When one eats seal, you are full all day. When you eat packaged foods, 2 hours later you get cold. If eat Inuit food, you stay warm. So when I go away from here [moved to the south]…get washed out.” Female elder

Other barriers to the access and availability of traditional food reported in the focus groups include the high cost of hunting (travel distance to find game, the need for a gun license to hunt and purchase ammunition, high cost of gas, ammunition, boats and vehicles), community size (less consumption in larger communities) and current levels of hunting support through the Harvesters’ Support program, which are considered to be too low.

**Access to market food**
Relying exclusively on market food remains an unaffordable option for many families in Nunavut. Surveys conducted for Indian and Northern Affairs Canada in Kugaaruk (Pelly Bay) and Labrador found that poor quality, along with high prices and unavailability, were the major barriers to the purchase of fruit and vegetables (33, 37). Our participants were similarly dissatisfied by the cost, quality and variety of foods in their stores in general. Convenience and confectionary foods, which have
lower nutritional value, are highly consumed by younger generations, and dietary surveys have found that nutrient adequacy suffers on days when traditional food is not consumed (13, 20). Younger participants described a situation where, although they might prefer healthier choices, such as fruits and vegetables or whole wheat products, either they are not available, or the differences in quality and costs can make convenience/confectionary foods a more sensible choice in terms of cost, quality and ability to ‘fill kids up’. Additionally, ‘junk food’ is perceived to be heavily used by community members and is promoted by its use at community events and fund-raisers.

“Doctors in the south are wondering why health is so bad in the north. The kids have bad teeth, bad health in families. Now they are finally looking at diet? I usually buy pop, chocolate to fill them up. It's cheaper than other foods, cheaper than fruits and milk... I would rather use real potatoes, prefer the taste but they cost more and partly rotten. You can get more out of instant potatoes.” Female hunter

**Facilitators of access to traditional and market food**

*Cultural practice of sharing*

While the cultural practice of sharing may have developed as an effective mechanism to maintain food security in the face of environmental constraints, the sharing of traditional food continues today. Such resource sharing and mutual support has become tightly linked to the Inuit identity and way of life (40, 41). Food is given to families for free, or in exchange for gas, ammunition, or money. The practice of sharing, although under strain as indicated earlier, remains an important part of Inuit life and facilitates the redistribution of needed food into families. Voluntary sharing remains an important part of the contemporary mixed-economic system (40, 42, 43) and government subsidies to Harvester Support Programs lend support for this legacy (42).

“Inuit …are the only ones to help out each other. When we are hunting, we share. We are doing what we can do [at the individual level]. You need to understand this. People in [the] south don’t do this for their neighbours. Inuit are the only ones who really help each other out when we need some food.” Older male

“I'm glad my hunter got a machine [snow-mobile] from HTO [Hunter and Trapper Organization]. He went out hunting last week. He shared with people who have no machines, or single mothers. He mostly goes to people who can’t get any” Middle aged female

“I get hunters some gas to get more meat. My mom did that too. She wanted some meat. My stepfather is getting too old to go out and his machine is not that well. He got some gas and oil for hunter and he’ll bring back some meat.” Female hunter

While pervasive networks of solidarity can mitigate against food insecurity, the effectiveness of social networks as compensation for lack of economic resources is unclear; some Inuit households exist in precarious situations in terms of satisfying basic material needs (26, 44).
Commercial sale of traditional food
Participants were asked how they felt about the commercial sale of traditional food in their communities. Although a few people mentioned that Inuit should share, not sell country food, most felt that the sale of traditional food was simply not an effective way to improve access to traditional food, since the retail costs remain unaffordable for those with the greatest needs.

“I would rather have the HTO [Hunter Trapper Organization] get and distribute [traditional food] directly. It will not help if people have to buy [traditional food] because it won’t get to those who really need it.” Elder hunter

“I thought it would be nice to have it in store. I had no [country food]. I had no way to get [it]. Knowing it was in the store, it would be a high price. I probably could not afford it.” Young mother, Kugluktuk

Market food
In most Inuit communities, a federal program known as Food Mail subsidizes the freight costs of shipping nutritious perishable foods, such as vegetables, fruit, bread, dairy and meat. In 2004-2005, Nunavut received 58.8% of the total funding to the program, at 21.1 million dollars (45). Focus group participants were aware of the Food Mail program, but still felt that foods such as fresh fruit and vegetables and frozen meats were too expensive; the savings to the consumer were not apparent to them. Some families achieve larger savings through ordering directly from a southern supplier through Canada Post. However, to apply directly for Food Mail through Canada Post, one needs either a money order, or a credit card, which puts Food Mail out of reach for many Inuit.

Older focus group participants remarked that over the last 20-30 years the quality and variety of foods available in their communities had improved. However, the general impression of focus group participants was that market food was more limited in selection and 2-3 times more expensive than in the south, and recurring problems of damaged/spoil, or outdated foods due to transportation/shipping issues, remained a deterrent to the purchase of healthy market food. It is unclear to what extent the individual store managers or store policies influence which types of food are available in small towns (46), but it has been demonstrated that, in remote areas, their personal attitudes and practices can significantly affect the availability of healthy foods (47) and may also have strong cultural impacts.

Improving food security
To improve food security in Inuit communities, participants perceived that there needed to be changes at the community and government levels. Many strategies involved extra funding, directly through wages for workers and hunters, or indirectly through additional support to existing organizations (HTO) or programs (Harvester’s Support Program, Food Mail, Traditional Food Hunting Camps and Cooking classes) to expand services and decrease the costs to families. Participants also perceived that there needed to be some community meetings and committees formed to discuss ways to approach the problem of access to adequate food for families (market and traditional food), and to act as advo-
icates for healthy food promotion and food security at the territorial and federal level.

“[The supply of traditional food] has improved a little bit but we still need lots of support. [The Friendship Centre program] takes out people hunting and they distribute it in the community to the elders. We still need more.” Male elder

In northern Quebec, harvester income support programs were created under the James Bay Agreement in 1975, in order to “favor, encourage and perpetuate the hunting, fishing and trapping activities of the Inuit as a way of life, and to guarantee the Inuit communities a supply of produce from such activities” (42). A number of studies have found that these programs have had a positive effect on food production and harvester viability, and are recommended in addressing food security (48). In the 1980s, a government program was introduced to fund community freezers and meat-cutting plants in communities that desired them (48), although many have ceased to function, due to the lack of continued support for maintenance. Another program, the Nunavut Harvester Support Program, was initiated in 1993 and continues today to assist a limited number of community members in acquiring hunting and fishing supplies. However, its future is not secure, since it was not included in the comprehensive claims agreement (49).

A number of other initiatives currently exist that could be considered to mitigate against food insecurity in Nunavut communities. The Canada Prenatal Nutrition Program provides nutrition education, food and cooking classes to pregnant and breastfeeding women, and the “Brighter Futures” program, offered through the Department of Health and Social Services, provides funds for activities, such as school breakfast programs and food preparation and hunting skills classes. (50). However, it is clear from focus group responses that more extensive programming is required to meet community needs. Beyond building specific skills, programs that teach through imitation and participation allow for the transfer of social and moral codes important to community well-being (51, 52), particularly in Inuit society in which learning has traditionally been passed down from one generation to the next by sharing experiences (53, 54).

“[Our teacher] is trying to teach us how to do more traditional foods: cooking meat. Recently I learned how to make bannock. Still not sure what goes in to it and how’s it done. I’d like more traditional classes [in cooking and other]. Slowly, I’m understanding more Inu...Proud to say that I am learning culture. I used to look up to the elders and said that I wanted to be like them or knew what they were saying. I would like to have more traditional classes in school.” Female teenager

“It is up to the parents. Since taking a prenatal cooking class, my younger daughter is giving kids less junk food before meals. She’s noticing that they are calmer. The young people need to be educated.” Older female, Cambridge Bay

Study limitations
It is important to note that this study did not attempt to measure food security, but rather to collect participants’ perceptions about the factors that influence their ability to access
food, especially traditional food and healthier market food. Their comments were placed into a food security framework by the investigators, taking into account food access and supply issues, as well as barriers and facilitators. Potential bias in the results could have resulted from the selection of participants by the community-based research assistants, as well as by those who finally attended the meetings. The presence of a greater number of older participants may have resulted in lengthier discussions of issues about availability of traditional food, whereas the absence of those on income support means that we learned little about a vulnerable group likely to have problems in accessing food.

Influence of moderators
The moderators were chosen for their background, training, sensitivity and familiarity with Inuit culture and food practices. The moderators were aware of the need for neutrality, and the importance of eliciting the views of all participants and not inserting personal views. During the focus group, participants were asked to elaborate on their views if the moderators did not clearly understand what was said. Notes and electronic recordings were used to ensure that accurate views were obtained.

CONCLUSIONS
The perceptions of focus group participants about access to food in Nunavut communities reflect what has been documented in the literature, and provide insights into the unique and pressing food security issues that exist in Nunavut. Food insecurity is experienced by the majority of Nunavummiut, with some groups being especially vulnerable. Comments from focus group participants highlight the complex nature of the Inuit food system, which relies on both locally harvested and imported food, in a context of low income and changing cultural values. It is clear that the challenges to food security in Nunavut are great, and it is hoped that the numerous facilitators and barriers identified in this study can be used to improve the supply and production of “sufficient, safe and nutritious food.”

Acknowledgements
Funding for the project was provided by the Canadian Institute of Health Research and NSERC Northern Research Chair Grant to HM Chan. We would like to thank Ms Lori Duncan of Health Canada and Mr. Fred Hill of Indian and Northern Affairs Canada for assistance in the design of the project.

REFERENCES
1. Kuhnlein HV, Receveur O, Chan HM, Loring E. Assessment of dietary benefit/risk in Inuit communities. Final report to the Northern Contaminants Program, Department of Indian Affairs and Northern Development. Ste-Anne-de-Bellevue (QC): Centre for Indigenous Peoples’ Nutrition and Environment (CINE) and Inuit Tapirisat of Canada, 2000, 377 p.
2. Mulvad G, Pedersen HS, Hansen JC, Dewailly E, Jul E, Pedersen M, et al. The Inuit diet. Fatty acids and antioxidants, their role in ischemic heart disease, and exposure to organochlorines and heavy metals. An international study. Arctic Med Res 1996; 55 Suppl 1: 20-24.
3. Adler AI, Boyko EJ, Schraer CD, Murphy NJ. Lower prevalence of impaired glucose tolerance and diabetes associated with daily seal oil or salmon consumption among Alaska Natives. Diabetes Care 1994; 17: 1498-1501.
4. Bjerregaard P, Pedersen HS, Mulvad G. The associations of a marine diet with plasma lipids, blood glucose, blood pressure and obesity among the Inuit in Greenland. Eur J Clin Nutr 2000; 54: 732-737.
5. Dewaillie E, Blanchet C, Gingras S, Lemieux S, Holub BJ. Fish consumption and blood lipids in three ethnic groups of Quebec (Canada). Lipids 2003; 38: 359-365.

6. Young TK. Contributions to chronic disease prevention and control: studies among the Kivaliv Ilinuit since 1990. Int J Circumpolar Health 2003; 62: 323-330.

7. Cordin L, Eaton SB, Miller JB, Mann N, Hill K. The paradoxical nature of hunter-gatherer diets: meat-based, yet non-atherogenic. Eur J Clin Nutr 2002; 56: S42-52.

8. Kuhnlein HV, Receveur O, Chan HM. Traditional food systems research with Canadian Indigenous Peoples. Int J Circumpolar Health 2001; 60: 112-122.

9. Egeland GM, Berti P, Soueida R, Arbour LT, Receveur O, Geraci JR, Smith TG. Vitamin c in the diet of Inuit hunters from Holman, Northwest Territories. Arctic 1997; 52: 135-139.

10. Kuhnlein HV, Soueida R, Receveur O. Dietary nutrient profiles of Canadian Baffin Island Inuit differ by food source, season, and age. J Am Diet Assoc 1996; 96: 155-162.

11. Receveur O, Boulay M, Kuhnlein HV. Decreasing traditional food use affects diet quality for adult Dene/Mets in 16 communities of the Canadian Northwest Territories. J Nutr 1997; 127: 2179-2186.

12. Nielsen S. The socio-cultural importance of sealhunting. In: Petersen H, Poppel B, editors. Dependency, Autonomy, Sustainability in the Arctic. Aldershot, England: Ashgate Publishing Ltd 1999; 247-252.

13. Kuhnlein H, Chan H. Environment and contaminants in traditional food systems of Northern Indigenous Peoples. Annu Rev Nutr. 2000; 20: 595-626.

14. Olsen C. Language and sustainable development. In: Petersen H, Poppel B, editors. Dependency, autonomy, sustainability in the Arctic. Aldershot, England: Ashgate Publishing Ltd. 1999; 253-258.

15. Pelly D. Sacred hunt: a portrait of the relationship between seals and Inuit. Vancouver: Douglas and McIntyre 2001; 144 p.

16. Borré K. Seal blood, Inuit blood, and diet: a biocultural model of physiology and cultural identity. Med Anthropol Q 1991; 5: 40-62.

17. Kuhnlein HV, Receveur O. Dietary change and traditional food systems of Indigenous Peoples. Annu Rev Nutr 1996; 16: 417-442.

18. Young TK, O’Neil JD, Elias B, Leader A, Reading J, McDonald G. Chronic Diseases. First Nations and Inuit Regional Health Survey: National Report 1999. Ottawa: First Nations and Inuit Health Survey National Steering Committee, 33 p.

19. MacMillan HL, MacMillan AB, Offord DR, Dingle JL. Aboriginal health. CMAJ 1996; 155: 1569-1578.

20. Dewaillie E, Blanchet C, Gingras S, Lemieux S, Holub BJ. Fish consumption and blood lipids in three ethnic groups of Quebec (Canada). Lipids 2003; 38: 359-365.

21. Young TK, O’Neil JD, Elias B, Leader A, Reading J, McDonald G. Chronic Diseases. First Nations and Inuit Regional Health Survey: National Report 1999. Ottawa: First Nations and Inuit Health Survey National Steering Committee, 33 p.

22. MacMillan HL, MacMillan AB, Offord DR, Dingle JL. Aboriginal health. CMAJ 1996; 155: 1569-1578.

23. Young TK. Chronic diseases among Canadian Indians: towards an epidemiology of culture change. Arctic Med Res 1988; 47 Suppl 1: 434-441.

24. Agriculture and Agri-Food Canada. Canada’s action plan for food security: a response to the World Food Summit. Ottawa: Government of Canada, 1998. [cited 2005 Jul 10]. Available from: http://www.agr.gc.ca/misb/fsb/fsb-bsa_e.php?section=fsap&group=plan&page=toc-tdm

25. Bjerrregaard P, Young TK, Dewaillie E, Ebbroson SOE. Indigenous health in the Arctic: an overview of the circumpolar Inuit population. Scand J Public Health 2004; 32: 390-395.

26. Chabot M. Economic changes, household strategies, and social relations of contemporary Nunavik Inuit. Polar Rec 2003; 39: 19-34.

27. Food and Agriculture Organization of the United Nations. The Special Programme for Food Security. [cited 2006 Nov 17]. Available from: http://www.fao.org/sfs/

28. Tarasuk V. Discussion paper on household and individual food insecurity. In: Health Canada, ed. Ottawa: Promotion Office of Nutrition Policy and Promotion, 2001.

29. Ledrou I and Gervais J. Food Insecurity. Health Reports 2005;16: 1-5.

30. Krueger R, Casey MA. Focus groups: a practical guide for applied research. 3rd ed. Thousand Oaks (CA): Sage Publications Inc; 2000. 215 p.

31. Miles M, Huberman A. Qualitative data analysis: an expanded sourcebook. Thousand Oaks (CA): Sage Publications Inc; 1994.

32. Lannon J. Change in nutrition and food security in two Inuit communities, 1992 to 1997. Ottawa: Indian and Northern Affairs Canada, 2001. 140p.

33. Indian and Northern Affairs Canada. Nutrition and food security in Kugaaruk, Nunavut: baseline survey for the food mail pilot project. Ottawa: Indian and Northern Affairs Canada, 2003. 85p.

34. Duhaime G, Chabot M, Gaudreault M. Food consumption patterns and socioeconomic factors among the Inuit of Nunavik. Ecol Food Nutr 2002; 41: 91-118.

35. Dewaillie E, Blanchet C, Gingras S, Furgal C, Bruneau S. Socio-demographic factors influencing nutrition and contaminant exposure in Nunavik. In: Kalhok K, ed. Synopsis of Research conducted under the 2000-2001 Northern Contaminants Program. Ottawa: Indian and Northern Affairs Canada 2001; 26-35.

36. Bjerrregaard P, Tine P, Merete O. Contemporary use of traditional and imported food among Greenlandic Inuit. Arctic 2001; 54: 22.

37. Ladouceur LL and hill F. Results of the Survey on Food Quality in Six Isolated communities in Labrador. Ottawa: Indian and Northern Affairs canada, 2002. [cited 2006 Dec 4] Available from http://www.ainc-inac.gc.ca/ps/nap/air/survfoo2001_e.html

38. Dewaillie E, et al. Diet profile of circumpolar Inuit [report on the Internet] Quebec: GETIC, Collection Recherche. Université Laval, 2000. [cited 2005 Sep 5]. Available from: http://www.chaireconditionautochtone.fss.ulaval.ca/extranet/doc/101.pdf

ORIGINAL RESEARCH
39. Condon RG, Collings P, Wenzel G. The best part of life: subsistence hunting, ethnicity, and economic adaptation among young adult Inuit males. Arctic 1995; 48: 31-46.
40. Kishigami N. A new typology of food-sharing practices among hunter-gatherers, with a special focus on Inuit examples. J Anthropol Res 2004; 60: 341-358.
41. Kishigami N. Contemporary Inuit food sharing: a case study from Akulivik, PQ, Canada. Paper presented at the 5th International Congress of Arctic Social Sciences (ICASS V): University of Alaska, Fairbanks. 2004 May. 10p.
42. Kishigami N. Contemporary Inuit Food Sharing and Hunter Support Program of Nunavik, Canada. In: Wenzel GW, Hovelsrud-Broda G, eds. The Social Economy of Sharing: Resource Allocation And Modern Hunter-Gatherers (Senri Ethnological Studies No. 53). Osaka: National Museum of Ethnology 2000; 171-192.
43. Collings P, Wenzel G, Condon RG. Modern food sharing networks and community integration in the central Canadian Arctic. Arctic 1998; 51: 301-314.
44. Chabot M. Consumption and standards of living of the Quebec Inuit: cultural permanence and discontinuities. Can Rev Sociol Anthropol. 2004; 41: 147.
45. Indian and Northern Affairs Canada. Food mail program. Ottawa: INAC [updated 2005 Oct 31; cited 2005 Nov 3]. Available from: http://www.ainc-inac.gc.ca/ps/nap/air/index_e.html.
46. Willows N. Determinants of healthy eating in Aboriginal Peoples in Canada: the current state of knowledge and research gaps. Can J Public Health 2005; 96: S32-36.
47. Lee AJ, Bonson APV, Powers JR. The effect of retail store managers on Aboriginal diet in remote communities. Aust N Z J Public Health 1996; 20: 212-214.
48. Myers H. The changing food economy in Nunavut: will country food stores secure Nunavut’s food supply? [publication on the Internet]. Québec: Groupe d’Études Inuit et Circumpolaires (GÉTIC), Université Laval, 2000 [cited Sep 11 2005]. Available from: http://www.chaireconditionautochtone.fss.ulaval.ca/ extranet/doc/119.pdf.
49. Royal Commission on Aboriginal Peoples. Report of the Royal Commission on Aboriginal Peoples. Section 4: Realities and perspectives [Report on the Internet]. Ottawa: Minister of Supply and Services Canada, 2005. [cited 2005 Sep 5]. Available from http://www.ainc-inac.gc.ca/ch/rcap/index_e.html.
50. Health and Social Services Department. Brighter futures [report on the Internet]. Nunavut: Government of Nunavut, 1999-2000. [cited 2005 Sep 5]. Available from http://www.gov.nu.ca /public.htm
51. Department of Human Resources. Inuit Qaujimaja-tuqangit (IQ) [website on the Internet] Nunavut: Government of Nunavut [cited 2005 Sep 5]. Available from: http://www.ainc-inac.gc.ca/Nunavut/English/departments/HR/humanresources/beliefsystem.htm.
52. Dorais L-J. Language, culture and identity: some Inuit examples. Can J Native Studies 1995; 15: 293-308.
53. Paulsen R. Native literacy: a living language. Can J Native Education 2003; 27: 23.
54. Thorpe N. The Hukitat School of Tuktu: collecting Inuit ecological knowledge of caribou and calving areas through an elder-youth camp. Arctic 1998; 51: 403.
APPENDIX A

Questions asked in Focus Groups in 6 Communities

1. Some people have told us that they cannot afford to buy what they need to eat and that they sometimes run out of food. Is this happening in homes of your family and friends?
   Probe for
   • suggestions to improve food security at the level of the individual, community, government (ask separately).

2. Some people have said that getting traditional food is more difficult than it was 10-15 years ago. What has been your experience?
   Probe for
   • barriers to accessing traditional food
   • perception as to whether other communities are experiencing similar access issues
   • situations that make communities/members more vulnerable

3. Do you think people would eat traditional food more often, if availability was better?
   Probe for
   • reasons for market food purchases
   • facilitators of traditional food consumption
   • acceptable methods to increase traditional food access
   • factors in decision to purchase traditional food

4. Now, I’d like to get a better understanding of how well the grocery stores in the community meet your needs? I’d like to hear from you what you like and what, if anything, you would like to see change?
   Probe for:
   • acceptability of current confectionary food use
   • suggestions on reducing confectionary food use
   • suggestions to improve consumption of foods considered a healthier choice