

RESEARCH PAPER

Impact of the changing food environment on dietary practices of an Inuit population in Arctic CanadaE. Mead,* J. Gittelsohn,[†] M. Kratzmann,[‡] C. Roache[§] & S. Sharma[¶]

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Abstract

Background: Nutritional inadequacies and increasing chronic disease prevalence amongst Inuit in the Canadian Arctic highlight the need to address dietary practices. Research is needed to investigate the individual and environmental factors impacting diet to guide interventions. The present study aimed to explore multiple community perspectives of key factors affecting food choice and availability in Inuit communities in Nunavut, Canada.

Methods: Semi-structured in-depth interviews were conducted with Inuit adults ($n = 43$) in two communities in Nunavut, Canada, and included community members, community leaders, elders, health staff and food shop staff. The interviewer transcribed the audio-taped interviews. Data were analysed using codes and the constant comparative method to determine categories and emergent themes.

Results: Thirty-three Inuit (27 females and six males) and 10 non-Inuit (four females and six males) adults participated. Traditional foods procured through hunting and gathering were considered the healthiest by community members, although multiple factors inhibited their procurement, including high petrol cost and decrease in traditional knowledge about hunting and gathering practices. Cost and quality were the main barriers to purchasing healthy foods at the shops. Community leaders and health staff identified multiple barriers to healthy eating in the community, such as skills to prepare some shop-bought foods. Shop managers identified several challenges to providing fresh produce and other perishable foods, such as long transportation routes that increase costs and harsh climatic conditions that may cause spoilage. They also cited factors influencing their decisions regarding whether to stock/discontinue certain foods, such as customers' requests, food cost and shelf-life.

Conclusions: An intervention to reduce chronic disease risk and improve dietary adequacy amongst Nunavut Inuit may be effective by supporting individual behaviour modifications with food environment changes.

Introduction

Inuit populations in Arctic Canada have a complex history of European contact and colonisation, and one of the most notable aspects of this history was the rapid shift from a nomadic, hunter-gatherer way of life to settlement

in permanent communities (Bjerregaard & Young, 1998). Traditionally, Inuit were hunter-gatherers living in nomadic groups before the federal government settled people from various camps into communities in the 1950s (Boult, 2006). With permanent settlement, Inuit had to adapt from a highly active lifestyle of living off the land to

engagement in the wage economy, which was more sedentary and reduced both time for hunting and gathering and dependence on traditional foods (Blanchet *et al.*, 2000). Shops were introduced as a new food source, providing access to a wide variety of imported foods, and the equipment used for subsistence practices changed, such as the adoption of motorised vehicles and firearms. In addition, the Canadian federal government enforced the residential education of Aboriginal children, in which children were enrolled in boarding schools away from their families to facilitate their assimilation into the dominant Canadian culture, including dietary patterns and practices (Kirmayer *et al.*, 2003). These lifestyle and environmental alterations brought about rapid changes in diet, culture and, consequently, health (Bjerregaard *et al.*, 2004).

To develop an effective intervention to reduce nutritional inadequacies and the dietary and lifestyle risk factors for chronic disease, research is needed into the factors that influence diet amongst Inuit in the Canadian Arctic. Key influences of diet include environmental (e.g. availability of healthy food), economic (e.g. food costs) and individual (e.g. educational levels, taste preferences) factors (Adler *et al.*, 1994; Drewnowski, 1997; Booth *et al.*, 2001; Glanz *et al.*, 2005). Previous literature has described the traditional food systems of Inuit, their perceptions of health and nutrition, and how traditional dietary practices changed as a result of Euro–Canadian contact (Borré, 1991, 1994; Condon *et al.*, 1995; Collings *et al.*, 1998). However, updated research is needed that investigates the current nutritional environment, particularly food shops, an area less studied than traditional food systems in this population, as well as Inuit and other stakeholders' perceptions of environmental constraints and other influences of dietary decision-making in Inuit communities in the Canadian Arctic.

Expanding on the results of in-depth interviews summarised by Gittelsohn *et al.* (2010), the present study aimed to describe the influences on present day Inuit dietary behaviours by exploring the historical and cultural context behind existing diet and dietary behaviours, the food environment, perceptions of healthy and unhealthy foods and their health implications, and the perceived barriers to eating a healthy diet in two Inuit communities in Nunavut, Canada.

Materials and methods

The research took place in two remote and isolated Arctic communities in Nunavut, Canada, Communities A and B, which have been described in detail elsewhere (Sharma, 2010a). Amongst the Aboriginal population in Community A, the median income is C\$60 000 and unemployment is 13% versus C\$44 000 and 31% in

Community B (Statistics Canada, 2007). Nunavut is the only Inuit self-governed territory in Canada and was formed in 1999 (Government of Nunavut, 2008). The two communities participated in the formative phase of a larger study, and the formative phase consisted of both qualitative and quantitative data gathering strategies, the results of which were used to develop a nutrition and physical activity intervention programme (Gittelsohn *et al.*, 2010; Sharma, 2010a). The quantitative data from the formative phase have been presented elsewhere (Sharma *et al.*, 2010b). The present article focuses only on the qualitative in-depth interviews that were conducted with community stakeholders. To ensure data quality, the present study employed several strategies to increase data credibility, criticality, authenticity and integrity (Fade, 2003). To gain a comprehensive perspective, five types of stakeholders were identified and recruited using purposive sampling: community members, elders, community leaders, health staff and food shop staff. Using multiple community stakeholders provided different perspectives, a form of data triangulation (Golafshani, 2003). Informants from both communities were enrolled and interviewed until the data reached saturation; a total of 43 informants were recruited to participate (Table 1). All but two of the category of community members were Inuit, and non-Inuit community informants had resided in the community for over 20 years. Only the interviews from Inuit informants were used to analyse the historical context surrounding current Inuit diet.

One in-depth interview was conducted with each participant using a semi-structured interview guide. After three days of training, a single interviewer conducted the majority of the interviews in English, and qualified, trained interpreters were used for informants who did not speak English or preferred to use the local language (Inuktitut and/or Inuinnaqtun) (Gittelsohn *et al.*, 2010). Informants were asked about a number of topics related to food choice and behaviours in their communities, and interviews took 30–60 min to complete (Table 1). Topics differed by each type of informant aiming to capture multiple facets of food access and dietary practices, and the interviewer expanded on new leads as they arose. To enhance authenticity of the data, the interviewer began with broad open-ended questions to give the informants freedom to discuss health and food issues that were important to them. The consent and compensation procedures have been described elsewhere (Sharma, 2010a). Informants understood that they were consenting to be interviewed and could refuse to answer questions at any time, thus ensuring data integrity.

Institutional Review Board approval was obtained from the Committee on Human Studies at the University of Hawaii and the Office of Human Research Ethics at the

Table 1 Characteristics of the study sample, number of in-depth interviews and interview topics conducted with Inuit adults in two communities in Nunavut, Canada

Group	Topics covered in interviews	Informant profile	Number of in-depth interviews
Community members	Sources of food, food preferences, shopping practices, changes in diet, notions of healthy and unhealthy foods, challenges to healthy eating	17 Inuit: 1 male, 16 females 2 non-Inuit*: 1 male, 1 female	19 [†]
Elders	Sources of food, food preferences, shopping practices, changes in diet, notions of healthy and unhealthy foods, challenges to healthy eating	3 Inuit females	3
Community leaders	Community health issues, community programming, changes in community, ideas and support for ways to address health issues	4 Inuit females 3 Inuit male	7
Health staff [‡]	Community health issues, community programming, changes in community, ideas and support for ways to address health issues	4 Inuit females 3 non-Inuit females	7
Shop staff	Types of foods sold, foods that sell well, processes for ordering food, promotional strategies, support for interventions	Local store 1: 3 non-Inuit males Local store 2: 2 Inuit males 2 non-Inuit males	7
Total number			43

*Each has been in the community for 20+ and 30+ years, respectively.

[†]Two informants may be considered elders by some, but do not identify themselves as such.

[‡]Inuit health staff were also asked questions from their perspective as community members.

University of North Carolina at Chapel Hill, and the Nunavut Research Institute licensed the study.

Using the constant comparative method, data analysis began with open coding of a line by line analysis of the data. As themes emerged from the initial round of coding, the codes were categorised according to these themes and compared (Creswell, 2007). Few differences were found between the informants' interviews for the two communities, and so data were pooled. The analysis was conducted using the qualitative analysis software ATLAS.TI, version 6.0 (Muhr, 2009). In the informants' discussion of factors that influence their diet and food choice, several themes emerged: the historical and cultural context surrounding dietary practices, the current food environment, their definitions of healthy and unhealthy foods, and the environmental, economic and intrapersonal barriers to eating a healthy diet. A conceptual model was created to illustrate the historical, cultural, environmental and individual factors that affect dietary behaviours and the perceived barriers to eating a healthy diet in this population (Fig. 1).

Results

Of the 43 informants, 31 were women (27 Inuit and four non-Inuit), and 12 were men (six Inuit and six non-Inuit) (Table 1). Two of the non-Inuit informants were

community members, and the remainder were health staff or shop staff.

Historical and cultural context: lifestyle and dietary transition and cultural norms

Every informant identified as a key issue in their community the ongoing change from a traditional way of life towards non-Aboriginal Canadian culture and its impact on dietary practices. Several older informants described 'living off the land' in small camps and explained how government policy forced the separation of family members from one subsistence group to becoming dispersed into different communities where traditional food availability and accessibility were unfamiliar. This also resulted in some families and groups being separated from their main hunter. Of particular concern to informants was the considerable amount and variety of high-fat, high-sugar foods available in shops that had not been previously available (Table 2).

In addition, informants stated that the structured schedules of employment and formal education in schools vastly decreased the amount of time available for hunting and gathering activities, which forced a heavy reliance on shop-bought foods to supplement the diet. Several informants described time spent away from their family when

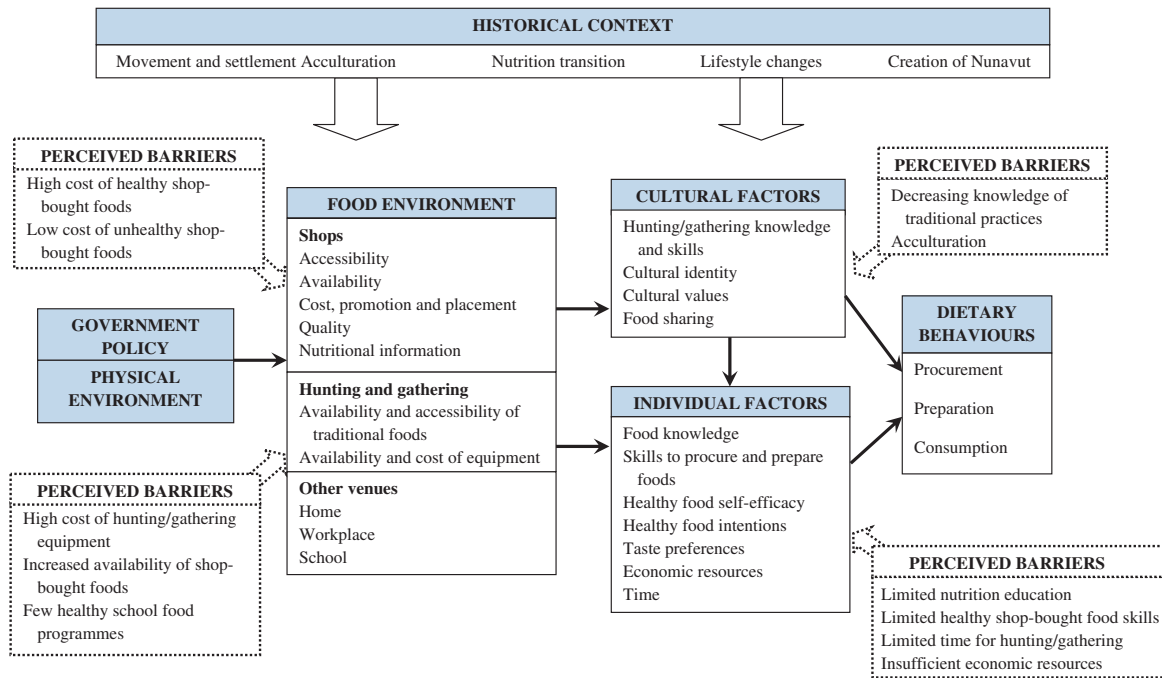


Figure 1 Conceptual model for factors influencing dietary behaviours and the perceived barriers to consuming a healthy diet amongst Inuit adults in Nunavut, Canada.

at residential schools, where they adapted to a new culture and diet and had less opportunity to learn and use traditional subsistence knowledge and skills, which were, in fact, discouraged. An exception was one informant who attended a residential school in a semi-remote Arctic community; unlike the schools in southern Canada, there was access to some traditional foods.

Some informants described the revitalisation of traditional practices in their communities in recent years, such as children learning Inuktitut in schools and survival skills from elders. One informant described the empowerment of communities from the formation of Nunavut to take a more active voice in their new territorial government (Table 2). Even with these initiatives to rebuild cultural identity, acculturation was still a major concern to the informants. A consequence of the transition described by the informants was the decreased consumption of traditional foods and increased consumption of shop-bought foods, particularly amongst children and young people. Many spoke of younger generations losing the skills to hunt and survive on the land as a major concern (Table 2).

Several core cultural values emerged from the data, including sharing food, respecting and honouring the spirits of the animals, utilising every part of the animal and the importance of family and community. Although these values and practices are still present today, they

have changed (Table 2). Food sharing has shifted from communal to more selective sharing with those in greatest need, such as elders and single parents, and includes shop-bought as well as traditional foods.

The local food environment today

In this remote Arctic setting, the two communities' food environment is shaped by available natural resources such as caribou and Arctic char fish, two small food shops, the Food Mail programme and barge shipments in the summertime. All of the informants reported that they continued to hunt, fish, and gather their traditional foods of fish, terrestrial and marine mammals, wild birds (and their eggs), and wild plants and berries, although the availability of these foods changed seasonally. Other than subsistence practices and food sharing networks (Table 2), informants indicated that traditional foods can be obtained from the local Hunters and Trappers Organisation in Community B. Shop-bought foods are a major component of the present day food environment. In addition to local shops, the informants indicated that an important source for these foods is shops in southern Canada, where community members can purchase foods and other goods at a lower cost whilst travelling. Community A has a food bank, which community leader informants stated was an important food source for low income residents.

Table 2 Summary of themes with example quotes from the in-depth interviews conducted with Inuit adults in Nunavut, Canada

Themes	Sample quotes
Historical and cultural context surrounding dietary practices	<p>Introduction of shops as a food source: ‘... like the XX Company ... they brought in pop, all these junk foods that started coming in. We never had junk food ... If you wanted to chew on something for a snack, it would be dry meat or dry fish, that was our snack. There was no sugar in that.’ [community member]</p> <p>Revitalisation of traditional practices: ‘And also with Nunavut coming in, the land claims being settled, I think also the people having a stronger voice now as to what they want and how they want things.’ [community member]</p> <p>Loss of traditional skills associated with hunting and gathering: ‘But a majority of the people, the younger generation my son’s age, like 25, they don’t go out very much, so they wouldn’t know what plants to eat and stuff... we’ll lose our culture and heritage slowly.’ [community member]</p> <p>Change in practice of core cultural values: ‘Back then it used to be with the whole community ... one hunter goes out hunting, he catches and, you know, it’s distributed among everyone. You don’t see that as much.’ [community leader]</p>
Current food environment	<p>Food sharing networks: ‘But people do share that, if they know their neighbours need it. Or single people, people that live alone ... People will share food from the [shop] with them too.’ [community member]</p> <p>Popular items purchased in shops: ‘Well your basic items are big sellers ... Ahh, pop [carbonated drinks] and juice, or pop [carbonated drinks] and potato chips [crisps] and those kind of stuff, all junk food (laughing) are good sellers. You know.’ [shop staff]</p>
Definitions of healthy and unhealthy foods	<p>Traditional foods as the healthiest foods: ‘It’s just healthy for me. I feel better and more energetic when I eat it ... We eat it every day and we get healthier and stronger.’ [community member]</p> <p>‘Elders would tell us to chew on the bones because you could get certain nutrients out of the bones that would help you through the year ... And I don’t ever remember getting a cold or earache, or even being sick or anything when I was child, because we were always eating and getting all the nutrients. Like the elders were always doing prevention so we wouldn’t get sick.’ [community member]</p> <p>Traditional foods and mental health: ‘... they’ve said that there’s a spiritual component to the country foods as well, so not only talking about the nutritional value, but also the food security value, but also then the spiritual value of the country foods and acquiring the country foods ...’ [health staff]</p> <p>Mixture of shop-bought and traditional foods: ‘There is much more store-[shop] bought food, and some people prefer the store- [shop] bought food, and some prefer the country food ... I like to mix; I think it’s most nutritious.’ [community elder]</p>
Perceived barriers to eating a healthy diet	<p>Costliness and poor quality of fruit and vegetables: ‘Just that the prices are very steep ... and the fruits and vegetables are not very fresh, it’s like a waste of money. Sometimes you buy the grapes and they’re mouldy or dried up.’ [community elder]</p> <p>‘And sometimes you don’t have any vegetables [be]cause the stores [have] rotten [vegetables] or you don’t have enough money cause they’re expensive. I mostly add chicken soup mix or tomato soup mix when I boil [traditional meats].’ [community member]</p>

The local shops have two main transportation avenues for receiving foods, as identified by the shop informants: airfreight and barge. Once a year, during a brief period in late summer, barges travel to the western Nunavut communities to deliver goods from Hay River, Canada, a great distance that limits the number of visits made to each community. Sometimes, a barge does not make it to a community at all as a result of weather and sea ice conditions. When asked what items are brought in by barge, shop staff indicated foods that were non-perishable, heavy or bulky, basic necessities and dangerous goods (e.g. cleaning supplies). Barge orders are intended to last for the year and are stored in local warehouses or, when

ordered by individuals, in homes. The staff stated that perishable foods, such as fresh produce, and high-selling items that may also be transported by barge, such as carbonated drinks, are stocked and restocked as necessary on a weekly basis through airfreight shipments, which are considerably higher in cost than shipments by barge.

As discussed by shop staff, the transportation process often reduces the quality of foods available. In winter, a 10-month season in the Arctic, foods may freeze during transit, affecting not only fresh produce and dairy products in particular, but also canned goods. In addition, many items do not transport well, such as baked goods, and items in containers that are easily crushed in transit,

such as eggs. Some items have a very short shelf-life, such as fresh berries and vegetables. Shop staff also indicated challenges such as orders being lost, delayed as a result of bad weather or arriving in such poor quality that they have to be sold at reduced price or not at all. Equipment, such as refrigerator failures, are often difficult to repair and create a challenge to providing perishable healthier foods. When deciding what foods to stock and discontinue stocking, shop managers consider all of these factors, as well as requirements from corporate offices, customers (through sales history and customer requests) and media promotion of foods.

When informants discussed use of the various food sources, affordability, food quality and personal preferences were predominant in their decision-making concerning which sources to use. Some stated that they used the local shops as their main source for shop-bought foods to support the local economy. All informants used more than one food source (approximately three on average) to procure foods for the household, such as hunting and purchase from local food shops and shops outside of the home community when travelling. None of the informants stated that they ate traditional foods exclusively. However, several indicated that traditional food was an important part of their diet because they could not afford to meet all of their dietary needs by obtaining food from shops alone. No informants indicated using the Food Mail programme as an individual, and many described the inability of many community members to participate as a result of insufficient economic resources. A few also stated that the solicitation of food from houses known to participate in Food Mail or receive barge orders may be common, causing some people to reduce orders or cease participation. In addition to the sources for purchasing foods, many informants indicated the importance of schools as a food source for children, particularly those from low income families, and stressed the need for healthy breakfast and lunch programmes in the schools.

Current perceptions of healthy and unhealthy foods

The informants' perceptions of a healthy and unhealthy diet, as well as implications for health, demonstrated a mixture of traditional knowledge and cultural values with biomedical or 'Western' knowledge. Traditional foods (known locally as 'country foods') were identified as the healthiest food, and many community members, elders and leaders described them as central to their health and wellness, stating that traditional food consumption was important for prevention of illnesses and 'to have a healthy life' (Table 2). Recognising the link between traditional food and cultural identity, both health staff and community members drew connections between the

consumption of traditional foods and mental health (Table 2). Health staff pointed to the nutritional value of traditional foods, and community members also identified them as 'high in iron' and other nutrients. Although traditional foods were identified as the healthiest food, a mixture of traditional foods with shop-bought fruit and vegetables was considered the most nutritious diet by many informants, which may reflect the fusion of traditional and 'Western' perspectives (Table 2).

Overall, informants had greater difficulty in articulating the definition of an unhealthy food, which was usually termed 'junk food' and 'fast food' and were always shop-bought. The concept of 'unhealthy food' centred on being prepackaged, instant or microwaveable as opposed to homemade. It was also described as having 'too much sugar' and as neither tasty nor filling. Informants also described the health implications of eating so-called 'junk' foods, including that they caused diabetes and 'make you fatter'. The health implication that appeared to be of most concern (i.e. discussed by most informants) was the prevalence of rotting teeth in the communities thought to be caused by elevated consumption of sugar-rich 'junk' foods. Health staff informants were also concerned about rising chronic disease prevalence and the high prevalence of dental health problems.

Perceived barriers to eating a healthy diet

When asked what factors influenced their dietary behaviours, informants identified a number of barriers to healthy eating. For traditional food procurement, many of the barriers were related to acculturation and the transition from a nomadic, traditional lifestyle to permanent settlement: lack of time, loss of traditional knowledge, culture and skills, and the increasing availability of shop-bought foods. Informants also identified lack of hunting equipment and tools, and the high cost of petrol, bullets and other necessary equipment as severe limitations to their and others' ability to hunt and gather traditional foods. Despite knowledge of the healthiness of fruit and vegetables, informants described them as prohibitively expensive and being of poor quality (Table 2). The short shelf-life of produce and many other healthy shop-bought foods impeded purchasing and consumption of these foods in favour of cheaper foods with longer expiry dates. As described by community leaders, people on income support are particularly vulnerable to buying more 'junk' foods because of the lower cost of these foods, which can be transported by barge, compared with healthier foods, which often can only be transported by more costly airfreight.

Additionally, health staff and community leaders highlighted low levels of healthy dietary skills and nutrition

education as barriers to healthy eating. They stated that there is a heavy reliance on prepackaged and prepared foods because many people in the community have limited knowledge of healthy preparation methods for shop-bought foods. Informants stressed the need for both community and school-based programmes to promote preparatory and budgeting skills and nutrition education necessary for healthier eating.

Discussion

The present study explored multiple community perspectives concerning key factors affecting food choice, including the influence of the changing food environment, within two Inuit communities in Nunavut, Canada. From these data, a conceptual model was created to illustrate the historical, cultural, environmental and individual factors that affect dietary behaviours and the perceived barriers to a healthy diet (Fig. 1). First, dietary patterns in these remote Arctic communities must be understood within their historical and cultural context. One of the major themes discussed by informants was the cultural and lifestyle transition that resulted in decreased access to traditional food systems, the introduction of a new, non-traditional food source and the exchange of food knowledge, practices and preferences between Inuit and non-Inuit. Globalisation threatens further acculturation through vehicles such as mass media and air travel, allowing for greater global exchange and homogenisation of dietary practices (Osberg, 2002; Watson *et al.*, 2003; Damman *et al.*, 2008). These factors have fostered a loss of traditional practices and increased dependence on non-traditional foods. Globally, this nutrition transition from the traditional diet towards increased consumption of shop-bought foods is associated with decreasing dietary adequacy and increasing chronic disease (Popkin, 2006). Informants were not directly asked about their perspectives on climate change, and the topic was mentioned by one non-Inuit health staff member. However, other studies with Arctic Aboriginal populations in Canada illustrated their perceptions of alterations in the weather and physical landscape and likely subsequent changes in the traditional food systems (Guyot *et al.*, 2006).

In more recent years, there has been a movement towards strengthening Inuit cultural identity and practices, a major component being the establishment of Nunavut as a self-governing, predominantly Inuit territory in 1999. The territorial government created structures and strategies to maintain and move into procedures and policies traditional Inuit language (Inuktitut) and cultural knowledge (Simpson, 2004; Boulton, 2006; Damman *et al.*, 2008). The impacts of this revitalisation were felt by at least one informant, who described the

empowerment of her community to 'hav[e] a strong voice now', and may lead to greater engagement in traditional practices related to hunting and gathering.

Government policies impact the availability and accessibility of both traditional and shop-bought foods. Since the 1960s, the Food Mail programme has subsidised the transport of perishable and non-perishable foods and other essential items to shops and a small portion of participating individuals in communities in northern Canada (Indian and Northern Affairs Canada, 2009). Although many informants did not use the programme, it may have affected their purchase of foods in the shops. Several policies also grant special hunting rights to Inuit and try to subsidise and encourage traditional food procurement (Myers *et al.*, 2004).

In addition to environmental factors, individual and economic factors had an impact on dietary behaviours. Studies with other Inuit populations have found that those with greater resources were better able to afford healthier shop-bought foods and the equipment necessary for hunting and gathering (Condon *et al.*, 1995; Myers *et al.*, 2004). In the present study, informants indicated that fruit and vegetables, which were considered to be the healthiest shop-bought food, were prohibitively expensive and were purchased as a treat. This finding may be related to the almost sole reliance of participant communities on fruit and vegetables grown elsewhere and transported to the Arctic through a complex supply system, which can affect quality and cost. However, it may also show individuals' levels of confidence in their abilities to eat a healthy diet ('self-efficacy') given the environmental constraints, leading to limited levels of intentions to perform healthy dietary behaviours in the future, which are important predictors of a healthier diet, even amongst low income populations (Van Duyn *et al.*, 2001; Sarkar *et al.*, 2006). Moreover, health staff and community leaders stated the limited skills to prepare some shop-bought foods in a healthy way and limited education on budgeting were key barriers to a healthy diet in their communities. Finally, informants and their families' preferences impacted on their food choice, a finding well established in studies of other populations (Drewnowski, 1997; Pollard *et al.*, 2002).

One limitation of the present study was the small sample size of elders ($n = 3$). Although few, the rich perspective provided by the elders on factors affecting food choice and environment, particularly the historical and cultural context, were significant, as indicated by the confirmation of their accounts by other community members. Second, a small number of interviews were conducted using an interpreter. Although this allowed the participation of individuals who did not speak English, it proved to be challenging because the languages do not

always lend themselves to direct translation. As a result, some of the depth and meaning of the interviews conducted in the local language may have been lost in translation.

The present study provides a framework through which nutrition and lifestyle interventions can promote healthy diets and improve health outcomes in this population. A number of individual factors identified in this model could be addressed to ensure a successful and sustainable programme, including perceptions of the prohibitively high cost of healthy eating and limited skills to identify certain non-nutrient-dense, high-fat and high-sugar foods and use healthy food preparation methods. In addition, work is needed at the environmental level through partnerships with food retailers to improve the availability and accessibility of healthy shop-bought foods. By changing the food environment and supporting individual behaviour change, a nutrition and lifestyle intervention programme is more likely to be successful and have a sustained impact.

Conflict of interests, sources of funding and authorship

The authors declare they have no conflicts of interest. The project was supported by American Diabetes Association Clinical Research award 1-08-CR-57 and the Government of Nunavut Department of Health and Social Services. SS developed the conception and design of the study, and JG assisted in development of the in-depth interview guide and interviewer training. CR oversaw data collection and all field activities, and MK collected the data. EM conducted the data analysis with contribution from JG and MK. All authors were responsible for data interpretation, and EM drafted the manuscript. All authors critically reviewed its content and have approved the final version submitted for publication.

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