

# Obesity prevention in the Canadian Arctic

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## Summary

Increased dependence on Western diets and low physical activity have largely contributed to weight gain and associated chronic diseases in the Canadian Inuit population. There is a growing concern amongst health professionals about the rising rates of obesity, Diabetes Type II, cardiovascular diseases, and some cancers amongst Nunavut Inuit, with increasing calls for understanding the drivers of weight gain and subsequent design of effective health promotion interventions to address energy balance-related behaviors in the population. In order to guide the development of appropriate interventions it is important to identify factors influencing the dietary and physical activity behaviors that potentially have the strongest impact on energy balance. This information is of strategic importance to diet- and physical activity-related chronic disease prevention in Inuit population. The aim of this dissertation was to explore the determinants of dietary and physical activity behaviors as critical components for potential health promotion interventions in the Canadian Inuit population. In **chapter 1**, formative research was conducted to understand the current state of knowledge and proceeded to define the scope of the current research based on identified gaps in literature.

**Chapter 2** of the dissertation describes the results of the systematic literature review. The aim was to identify the factors influencing dietary and physical activity behaviors of Canadian Inuit, uncover gaps in knowledge and propose priority areas for research. Literature searches were conducted between May 2014 and July 2014, and inclusive of articles published up until July 2014. Articles were searched using four databases: PubMed, PsycINFO, SocINDEX, and Psychology and Behavioral Sciences Collection. Eligible studies focused on diet and/or physical activity or determinants of diet and/or physical activity in Canadian Inuit population, and were published in English. A total of 45 articles were included in the analysis. A detailed appraisal of the articles suggested that many Inuit have disconnected from the traditional ways of life, including harvesting and processing of traditional food species and the associated physical activity. In the last two decades there has been a significant shift from consumption of healthy traditional foods to energy-dense store-bought foods particularly among younger Inuit (<50 years of age). Additionally, low socioeconomic status (SES) and high transportation cost affect

food accessibility and contribute to poor dietary choices in the population. The few articles that described the mediating role of motivational factors reported that increased healthful food knowledge and self-efficacy towards healthy dietary behavior were associated with greater intentions to make healthier food choices and participate in physical activity. It is evident that the rapid social, cultural, and environmental changes in the Arctic have altered dietary and physical activity behaviors of Canadian Inuit. However, our understanding is limited on how these behaviors might be influenced in the face of these changes. We concluded that prospective studies are needed to determine physical activity levels and advance our knowledge of cognitive and environmental determinants of Inuit energy balance-related behaviors. These studies can inform the development of health promotion interventions to reduce the burden of obesity in the population.

**Chapter 3** presents our findings from the objectively assessed physical activity levels amongst Nunavut Inuit adults and the socio-cognitive and environmental factors influencing the number of steps taken per day. Although research evidence suggests that Canadian Inuit have transitioned from a physically active hunter-gatherer subsistence lifestyle into sedentary ways of life over the past five decades, there is a paucity of studies that examined physical activity levels in the population. Where such studies exist, they were based on self-reported measures which are quite unreliable. Inuit and non-Inuit adults ( $N = 272$ ) in Nunavut participated in a seven-day pedometer study during summer and winter seasons. Participants completed the Neighbourhood Environmental Walkability Scale and Behavioral Regulation in Exercise Questionnaire. It was evident that participants had limited to low activity during both summer and winter. There were no seasonal and age effects on the number of steps. Gender effects and community differences were observed. Perceived infrastructure and safety as well as land use mix diversity were found to be positive environmental correlates of steps taken, which were partially mediated by identified motivational regulation. Although physical activity levels among Nunavut adults are generally low, it is evident that Nunavut Inuit may become more active by improving the external factors related to the physical environment and internal factors related to motivational regulation.

The perspectives of Nunavut Inuit on barriers to, and enablers of, healthy diets and physical activity participation are presented in **chapter 4**. The aim of the study was to provide contextual insights and deepen our understanding of the factors that influence these lifestyle choices through the lived experiences and views of Nunavut Inuit in the community of Iqaluit. In total, 22 Nunavut Inuit adults were initially recruited using a purposeful sampling technique. One-on-one semi-structured photo-elicitation interviews were held with 16 participants (ten women, six men) who met the inclusion criteria and provided consent. Interviews were conducted to uncover participants' lived experiences and thoughts regarding factors influencing healthy diets and physical activity in their community. Interviews were audio-recorded, transcribed and analyzed using an inductive thematic approach. Six main factors were identified as barriers or enablers to energy balance-related behaviors following thematic analysis: cost and affordability of healthy choices; availability of traditional foods and activities; weather conditions and climate change; infrastructure and community resources; social networks of family and friends; and effect of substance use. This study identified six broad factors that should be considered while mapping out intervention points in the design of effective and sustainable health promotion programs to reduce the burden of obesity-related chronic diseases in Nunavut communities.

Given the role of the Government of Nunavut in developing standards, policies and programs, **chapter 5** presents our findings on a study that examined the level of government readiness to implement change efforts. The aim of this study was to explore the determinants of Nunavut public health system's commitment to implement obesity prevention policies and programs in the territory to reduce the burden of obesity-related diseases. In total, 93 program managers, program officers, and policy analysts who are responsible for program and policy development and implementation within the Nunavut Department of Health (NDH) were asked to complete the validated Organizational Readiness for Implementing Change (ORIC) questionnaire. Organization-level readiness (commitment) was determined based on aggregated individual-level data using bivariate correlations and multivariate linear regression analyses. Of the 93 questionnaires that were distributed 67 (72%) were returned fully completed. Organization-level commitment to implement obesity prevention policies and programs was

low. Only 2.9% of respondents strongly agreed that NDH was committed to implementing obesity prevention policies and programs. The study showed a strong positive correlation between NDH's commitment and perceived value, perceived efficacy, and resource availability. There was no statistically significant correlation between commitment and knowledge. In the multivariate linear regression model, perceived value was the only significant predictor of NDH's commitment to implement obesity prevention policies and programs. Successful adoption and implementation of obesity prevention policies and programs in the Canadian Arctic largely depend on the perception of value and benefits of and belief in the change efforts among employees of the Nunavut Department of Health. Convincing policy makers of the value of preventive policies and programs is an important and necessary first step towards decreasing the prevalence of obesity in the Inuit population.

In **Chapter 6** the main results, methodological considerations, and implications for practice and future research, are discussed. Moreover, intervention studies that are predicated on the determinants that have been identified in the current research, and are thought to influence dietary and physical activity behaviors, are recommended. Such studies should include mapping out intervention points during the design of effective and sustainable health promotion programs to reduce the burden of obesity-related chronic diseases in Nunavut communities.