Impact of Environmental Changes on Inuit Diet

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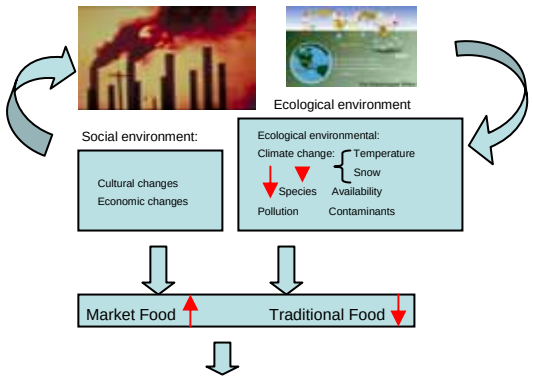
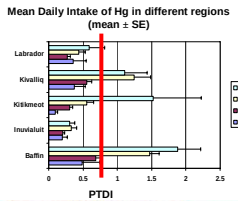
Abstract:

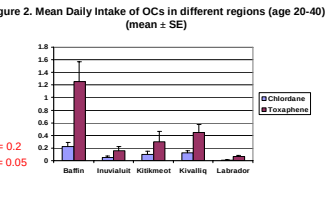
Environmental changes in the Arctic are major threats to Inuit life. One of the rapid changes is the shift of diet from consumption of traditional foods to market foods. Previous studies have shown that traditional foods have both benefits (cultural, economic, and nutritional, etc,) and risks (mainly refer to contaminants). Based on qualitative evidences, it is generally agreed that the benefits outweigh the risks. The main objective of this study is to investigate the potential impact of environmental changes to food supply and nutrient intake among Inuit from different regions of the Canadian Arctic. A novel mathematic model has been developed to evaluate nutrient intakes quantitatively under different scenarios. Caribou, Arctic char and Ringed seal are the top three contributors for nutrients especially for energy, protein, omega 3 and omega 6 fatty acids and iron. Traditional foods are important sources of nutrients particularly for the people in Baffin region and the elderly. We project a scenario that If caribou harvest decreases by 10%, protein, iron, copper and zinc intakes would decrease by more than 6%, and if caribou decreases by 50%, most nutrients would decrease by over 20% than the current intake. Results of this study can potentially aid heath care professionals, policymakers, or traditional food consumers to make well-informed decisions about traditional food use and develop adaptation plan for environmental change.

Background:

Impact of environmental change on diet and health







Objectives:

- To develop a model to represent a typical Inuit traditional diet in the Canadian Arctic
  - ❖ To compare nutrient intakes to Dietary Reference Intake (DRI)
- To model the impact of environmental changes on the nutrient and contaminant intake from the traditional food diet.

Method:

➢ Data source:

• Food intake:

CINE survey (1997-2000)

1875 24-hr recalls (18 communities among 39 communities)

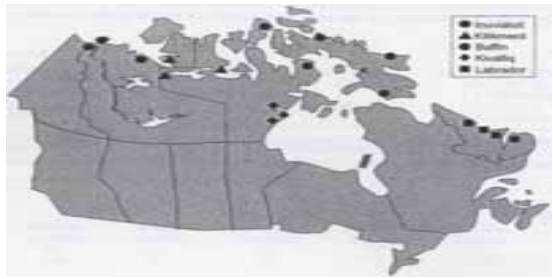
• Food composition: CINE database

➢ Mathematic model:

Nutrient =

$$\sum_{i=1}^{n} food_i weight \times Concentration\ of\ nutrient\ in\ food_i$$

➢SAS version 8.2



Results:

Objective 1:

Nutrient intake from top 3 Inuit traditional foods

NAME	MEAN INTAKE (g/d)	ENERGY (kcal/d)	PROTEIN (g/d)	OMEG3 (g/d)	IRON (mg/d)
CARIBOU MEAT	248	380.1	74.1	0.3	11.8
ARCTIC CHAR MEAT	53	67.3	11.7	0.5	0.2
RINGED SEAL MEAT	36	53.9	10.6	0.1	8.5

Contaminant intake (ng/d) from top 3 Inuit traditional foods

NAME	MEAN INTAKE (g/d)	HG	PCB	CHL	TOX
CARIBOU MEAT	248	18718	1732	534	248
ARCTIC CHAR MEAT	53	5469	957	643	4769
RINGED SEAL MEAT	36	14316	845	116	7909

Contribution of traditional food to nutrient intakes to Daily Recommended Intake (%DRI) among female in Baffin

AGE	PROTEIN	OMEG3	IRON	ZINC	COPPER	VITA
15-19	213	64	147	164	104	24
20-40	256	255	200	216	120	104

Objective 2:

Assumption: Environmental change may lead to 10% or 50% decrease of caribou in the diet.

Impact of caribou consumption decrease 10% on nutrients in Kevalliq by gender (age>61)

GENDER	CHO	OMEG6	IRON	COPPER	ZINC	VITE
FEMALE	-10	-7	-8	-7	-7	-6
MALE	-7	-7	-6	-8	-7	-7

Impact of caribou consumption decrease 50% on nutrients in Kevalliq by gender (age>61)

GENDER	CHO	OMEG6	IRON	COPPER	ZINC	VITE
FEMALE	-49	-35	-39	-36	-36	-31
MALE	-34	-35	-31	-39	-37	-34

Significance:

This study provides a link between environmental change and nutrient & contaminant intake through quantitative study. These models will be of value for environmental and health planning exercises throughout the Canadian North.

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