

## **American Indian and Alaska Native Foods: Special Considerations**

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**Timothy Gilbert**, *Fred Hutchinson Cancer Research Center*  
**Elizabeth Nobmann**, *Alaska Area Native Health Service*  
**Ellie Zephier**, *Aberdeen Area Indian Health Service*

Chronic diseases such as non-insulin dependent diabetes, cardiovascular diseases, and certain cancers are increasing rapidly among many American Indian and Alaska Native (AI/AN) communities. Much of the morbidity and mortality associated with these diseases is believed to be related to changing lifestyles such as the substitution of "traditional foods" with westernized foods. There is a paucity of quantitative data available however, regarding contemporary diets and food preparation practices of AI/AN's, and nutrient composition of Native foods. In order for nutrition-related research and monitoring activities to be effective in linking diet and disease among these populations, several considerations must be addressed. The purpose of this presentation is to: 1) highlight three studies conducted in AI/AN communities that included a dietary assessment component to emphasize the uniqueness of problems encountered; 2) describe logistic and methodologic considerations for obtaining reliable and accurate dietary data among AI/AN communities; and 3) offer suggestions toward the improvement nutrition-related research, monitoring, and surveillance activities among AI/AN populations.

### **Indian Health Service**

In fiscal year 1990, the Indian Health Service (IHS) recognized 1,105,000 individuals as its user population (1). Health care is provided at hospitals, clinics, and health centers administered by 12 regional Area Offices in the respective region. The three examples discussed here are from the Aberdeen, Alaska, and Navajo Areas. The intent is to illustrate unique considerations of carrying out nutrition-related research in Indian Country rather than providing detailed descriptions of study results. It should be noted that while certain similarities exist among regions and tribes regarding the methods of obtaining reliable dietary data, AI/AN's are not a homogenous group in terms of health status and food practices.

### **Aberdeen**

The first example comes from a preliminary look at the diet component of the Strong Heart Study (2). This study was designed to estimate cardiovascular morbidity and mortality among several plains and Southwestern Indian tribes, and to evaluate the association of CVD and potential risk factors among adults. The dietary component includes a 24-hour recall and a quantitative food frequency obtained from a subsample of participants which are entered into the Nutrient Data System v.2.1

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from the University of Minnesota. Many traditional foods including wild game and plants indigenous to the respective areas are still widely consumed depending on season and availability. For example, it is not uncommon to find rabbit, sage hen, venison, wild duck, and buffalo among foods listed on the recalls. Table 1 shows a selection of foods for which no nutrient analyses could be found, as well as foods (primarily indigenous plants), for which similar foods were identified for imputing nutrient values. Dealing with such foods at the time of data entry has involved obtaining detailed information in the field and either working with NDS technical support personnel to identify like foods or "flagging" the recall to deal with it as more information becomes available.

As in many rural AI/AN communities, the available food supply is limited. For example, large supermarket stores - where a wider variety of foods would be available - are often long distances from the community and only convenience stores are in the immediate area. In addition, a high percentage of the people live below the poverty level (42.7% for the Aberdeen Area)(1) which often fosters reliance on federal food programs as well as subsistence activities

### Alaska

Alaska Natives have enjoyed lower rates of cardiovascular disease and type II diabetes in the past however, the prevalence of these and other chronic diseases seem to be increasing. The 1990 census identified 85,698 Alaska Natives which includes Eskimos, Indians and Aleuts, each with their own nuances of food habits and practices unique to their culture. To quantitate the diets of contemporary Alaska Native adults Nobmann et.al. carried out a survey to assess dietary intake from 1987-1988, a detailed description of which can be found elsewhere (3). To account for seasonal variation, one to five 24-hour dietary recalls were obtained per participant throughout the study period. The nutrient database used was the Dietetics Automatic Data Processing Application, a software package developed by the U.S. Veterans Administration. Before final analysis, published values of 210 indigenous Alaska Native foods were added to the database, and several decisions for imputing values for like foods were necessary. Table 2 shows a selection of Alaska Native foods for which no nutrient composition data could be found and the corresponding food used as a substitute. In-depth knowledge of food preparation practices of the population on behalf of the investigators and detailed information collected from the field permitted such decisions. Often nutrient composition analyses of Native foods are limited to a few nutrients or don't include the nutrient of interest for the disease in question. For example, Table 3 shows twelve selected Alaska Native foods for which there were no values for fatty acid and/or cholesterol. Nutrient composition data for other Native foods could not be found at all and had to be left out of analyses. Logistic considerations such as access to communities affect both the ability to conduct nutrition monitoring and surveillance activities, and the food supply in rural

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Alaska. Few communities are connected by road which affects the variety, timing, and cost of outside commercial food delivery.

### Navajo

The final example comes from the Navajo Area. The Navajo tribe is the largest in the U.S. with a population of approximately 200,000. The Navajo Health and Nutrition Survey (1990-92), a population-based study, had three main objectives: 1) to estimate the prevalence of selected diseases and related risk factors among adolescents and adults; 2) to define demographic variables relating to households and the population that have an impact on health status or access to health care; and 3) to establish baseline data on nutritional status and disease risk factors in the present day lifestyles of Navajo adolescents and adults ages 18+ (4). The study protocol included a variety of physical measurements, questionnaire data, blood tests, and dietary information. The dietary component included obtaining one 24-hour recall using standardized procedures and food models, and a food frequency. The Food Intake Analysis System (v.1.0) developed by the University of Texas Health Science Center is being used to enter the recall data. Table 4 shows the most frequently consumed traditional foods taken from the 24-hour recalls. For some of these food items suitable substitutes have been identified when the original food couldn't be found in the database. Table 4 also shows selected foods that are so unique that substitutes have not yet been determined. There are very few published values of the nutrient composition of traditional Navajo foods and even those are limited to macronutrients and a limited number of micronutrients (5).

In addition to a unique diet, other factors and conditions make population-based research a challenge on the Navajo. For example, of 469 homes surveyed in the Navajo Health and Nutrition Survey (selected through a 3-stage cluster design), 42% listed Navajo as their primary language; 44% had no running water; 30% had no electricity; and 73% had no telephone.

### Summary

Although disease patterns have been changing from less infectious to more chronic diseases among most AI/AN populations, few population-based studies have examined potential risk factors - particularly diet, in the etiology of these diseases. Several factors should be taken into consideration by future investigators regarding nutrition-related research in Indian Country. First, all American Indian and Alaska Native foods cannot be generalized, even within the same geographic region or state. Second, nutrient composition analyses are still needed for many Native foods and more complete analyses are needed for others. Third, standardization of methodology, particularly nutritional epidemiologic methods and choice of nutrient database used, is needed among areas and tribes. This is particularly true if meaningful comparisons are to be made between tribes or regions, or with the general

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population, depending on the intended use of the data. Finally, collaborative efforts between IHS and other federal agencies, tribes, and academia will be invaluable for improving the quality of nutrition research, monitoring, and surveillance activities among these unique populations.

**Table 1. Foods with no nutrient analyses (Aberdeen).**

- \* Buffalo berries
- \* Choke cherries
- \* June berries
- \* Sand berries
- \* Wild grapes

**Table 2. Native foods with no nutrient composition available and substitute food used (Alaska).**

<u>Native food</u>	<u>Substitute</u>
Fish broth	Chicken broth
Salmon, King, ckd.	Calculated from raw King Salmon
Sheefish	White fish, mxd. species
Goose, Canadian	Domestic goose
Seal blubber	Whale blubber
Fish, fermented	Salmon, tipnuk

**Table 3. Example of selected foods with no cholesterol and/or fatty acid values (Alaska).**

- |                     |                             |
|---------------------|-----------------------------|
| * Salmon, King, dry | * Venison, Sitka deer       |
| * Beluga Muktuk     | * Herring eggs, dried       |
| * Moose flesh       | * Salmon, Sockeye, kippered |
| * White Fish flesh  | * Pike, air dry, flesh      |
| * Reindeer meat     | * Muskrat                   |
| * Ptarmigan breast  | * Walrus dry flesh          |

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**Table 4. Most frequently consumed traditional Navajo foods**

- 1) Navajo tortilla
- 2) Fry bread
- 3) Fried potatoes
- 4) Mutton stew
- 5) Roasted mutton & other mutton
- 6) Navajo tea
- 7) Navajo yeast bread
- 8) Blue corn meal cereal, pancakes, bread

### Other unique Navajo foods

- \* Chilchin pudding
- \* Navajo cake
- \* Roasted ground corn for "Navajo coffee creamer"
- \* Kneel-down-bread (corn based, seasonal food)
- \* Various seasonal indigenous plants

### **References**

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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Indian Health Service.