Children and Nutrition:
The growing health epidemic of diabetes in Indian Country

A literature review of the nutritional health of American Indian children, specifically diabetes, and a discussion of its applicability to the Assiniboine and Sioux tribes of the Fort Peck Indian Reservation in Montana, presented by the Fort Peck Community College

Fall, 2004

This project is funded by:
American Indian Studies at
The University of Arizona
And Food Assistance and Nutrition Research
Small Grants Program;
United States Department of Agriculture
Economic Research Service

Ben Johnson Sr., Project Director and Researcher
Fort Peck Community College
Rocky Mountain College, B.S. Elementary Education
P.O. Box 398
Poplar, MT 59255
Telephone: (406) 768-6300
Fax: (406) 768-6301

Jennifer Perez, Researcher and Writer
University of Montana, B.A. Journalism
R.R. 1 Box 44
Harlem, MT 59526
Table of Contents

I. Summary

II. The Problem

III. Review of Literature
   a. Statistics on diabetes on Montana’s Indian Reservation
   b. Statistics on diabetes on the Fort Peck Indian Reservation

Table 1: Fort Peck Reservation School
Table 2: Frontier K-8 School

IV. Prevention

Table 3: Fort Peck Adult Diabetes
   A. Education
   B. Exercise & Fitness
   C. Nutrition.

V. Recommendations

VI. Bibliography
1. SUMMARY

This paper includes a literature review that examines the prevalence of diabetes among American Indian children and parallels it with that of the Fort Peck Indian Reservation in Montana. Fort Peck Community College, chartered by the Fort Peck Assiniboine and Sioux tribes, is an accredited tribal college that has taken an active approach in dealing with health promotion and holistic wellness of the reservation residents. The College in partnership with the Fort Peck Tribal Health Diabetes Program and Indian Health Service has reviewed the general nutritional status of the reservation’s youth and have committed to providing long-standing solutions to reverse the unhealthy nutritional status of tribal members, resulting in a serious diabetic trend.

Diabetes is a rising problem throughout the region and the United States, but indications are that it is an even larger problem on the Fort Peck Indian Reservation and on other Indian reservations in Montana and the nation (Indian Health Service, 2000, 2001, 2002, 2003; National Center for Disease Control, 2001).

As described by The Center for Disease Control (2002),

"Diabetes is a group of diseases described by high levels of blood glucose resulting from defects in insulin secretion, insulin action or both. **Type 1-diabetes** has been called insulin-dependent diabetes mellitus or juvenile-onset diabetes. Though risk factors are less defined for Type 1 than for Type 2 diabetes, the autoimmune, genetic and environmental factors are involved in the development of this type of diabetes. **Type 2 diabetes** was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type 2 diabetes may account for about 90 to 95 percent of all diagnosed cases of diabetes. Risk factors for type 2 diabetes include older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, physical inactivity and race/ethnicity."
II. THE PROBLEM: *Deadly Epidemic in Indian Country Must Be Halted*

Diabetes and related health problems are sweeping through Indian Country, taking lives, resulting in amputations, blindness and other severe consequences. The Fort Peck Indian Reservation is a microcosm of the national problem. People are simply eating improperly, not getting enough exercise and not taking the precautions to stay healthy. In order for this problem to be resolved, steps need to be taken to stop the deadly trend for the sake of future generations.

III. REVIEW OF LITERATURE: *Diabetes in American Indian Populations*

Living in poverty has taken its toll on the health and nutritional status of American Indians in a number of ways. The consequences of poverty then are exacerbated for the many American Indians communities located in remote areas. Often in these remote areas food costs are high and selection is limited. Poverty also imposes barriers on transportation options. Isolation and financial constraints have forced families in these rural areas to rely on less expensive, often high-fat foods, and few fruits and vegetables, according to the Food Research and Action Center (2003).

American Indians are witnessing a surge in the prevalence of obesity and diabetes. In a population that suffers extensive morbidity and mortality from cardiovascular disease, diabetes mellitus, and other obesity-related diseases, the growing prevalence of obesity has severe consequences but can be prevented or controlled by healthy lifestyles, (WIC in Native American Communities: Building a Healthier America, 2001).

The problem starts early, between ages 2 and 5 approximately 13 percent of American Indian preschool children are already overweight. In some areas, up to 40 percent of American Indian and Alaskan Native children are reportedly overweight (Food Research and Action Center (FRAC), 2001).
The problem of overweight children is not limited to American Indian children. The percentage of overweight children has been on the rise of all groups in America. The American Indian rate is considerably higher than the overall U.S. rate for children 2 to 5 of 8.6 percent. The increasing problem of obesity in American Indian communities is caused by a complex set of interactions of poverty, isolation, food insecurity, lifestyle changes, and potentially, genetics, the FRAC reports. One of the more worrisome trends of childhood obesity is the sharp rise in type 2 diabetes, which is normally found only in adults, according to a 1998 Washington Post article on child obesity.

*A Deadly Disease*

For Montana’s American Indians, diabetes, accidents, chronic liver disease and cirrhosis follow heart disease and cancer as leading causes of death. More than 200,000 Americans with diabetes die each year of related complications (National Center for Chronic Disease Prevention and Health Promotion, 2002). Diabetes mellitus is one of the most serious health challenges facing American Indians and Alaska Natives in America today, the National Diabetes Information Clearinghouse (NDIC) reports. This group of diseases characterized by high blood levels of glucose, is very common in many tribes, and morbidity and mortality from diabetes can be severe, reports the NDIC, a service of the National Institute of Diabetes and Digestive and Kidney Diseases. The NCID reports that 15 percent of American Indians and Alaska Natives who receive care from the Indian Health Service have been diagnosed with diabetes, a total of 105,000 people.

According to the NDIC, this population includes all people who derive their origins from any of the original peoples of North America and who continue to maintain cultural identification through tribal affiliations or community recognition. Most American Indians and
Alaska Natives with diabetes have type 2 diabetes, which usually develops in adults but can develop in children or adolescents. This type is caused by the body’s resistance to the action of insulin and by impaired insulin secretion. It can be managed with health eating, physical activity, oral diabetes medications and/or injected insulin.

**Diabetes rate for American Indian youth on the rise**

For the past 30 years, the prevalence of diabetes among American Indian youth has roughly doubled (Food Research and Action Center, 2001). Childhood and adult obesity is on the rise. Thirty-four percent of Montana adults are overweight and according to a statewide survey of youth, Montana’s high school youth are less likely than U.S. teens to eat at least five servings of fruit and vegetables a day (The State of Food and Nutrition in Montana, 2003, p.2).

**a. Statistics on Diabetes on Montana’s Indian Reservation**

Montana’s American Indians experience a higher prevalence of diabetes, smoking, obesity and diabetes compared to Whites in the state, according “The State of Food and Nutrition in Montana” Report of the Montana State Advisory Council on Food and Nutrition in December of 2001. In 1999, approximately 53 percent of Montanans, many of whom are American Indians, were overweight and 16 percent were obese, the state advisory council reports.

According to the 2000 “Montana Health Agenda”, (2000), an estimated 54,000 Montanans – 6.8 percent of the population – have diabetes, of which 4.1 percent have diagnosed diabetes and approximately 2.7 percent have undiagnosed diabetes. In 1999, 12 percent of adult American’s in Montana had diagnosed diabetes. Diabetes contributes to the death of at least 500 Montanans per year. As a leading cause of death, it ranks seventh for all Montanans, and fourth for American Indians. Annually there are about 7,504 hospitalizations related to diabetes, and 2,300 of these are cardiovascular-associated hospitalizations in Montana. Also in Montana, about
$13,000 is spent each year in direct and indirect costs for each person with diagnosed diabetes. National, more than 25 percent of the Medicare budget is spent on diabetes-related care, (Montana Health Agenda, 2000)

**b. Statistics on Diabetes on the Fort Peck Indian Reservation**

Health workers at Fort Peck report that more competitive funding is becoming available for diabetes, though it still remains insufficient to the need. Indian Health Service deals more with the treatment aspect of diabetes, than prevention due to the overwhelming demand for treatment and the costs involved with diabetic patients with serious issues such as dialysis, contracted services for amputations, etc. However, since 90 to 95 percent of diabetes cases are preventable, health workers are starting to focus on prevention with the youth of the Fort Peck Indian Reservation.

The following illustrates the three risk factors identified in reservation school children:
Table 1 consists of data taken from four, predominantly Indian reservation schools, including 1,677 students. The risk factors include 453 cases of Acanthosis Nigricans; 1,045 cases of students who have a Family History of Diabetes; and 512 cases of students with Body Mass Indexes in the "at-risk" range. Frontier School, a K-8 school, is not included in the above chart. The data for Frontier is illustrated below:
Table 2

Frontier School Risk Factors

<table>
<thead>
<tr>
<th></th>
<th>Acanthosis Nigricans</th>
<th>Family History</th>
<th>Body Mass Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontier School</td>
<td>17</td>
<td>43</td>
<td>32</td>
</tr>
</tbody>
</table>

Table 2 illustrates that of the 139 children tested, risk factors include 17 cases of Acanthosis Nigricans; 43 cases of Family History of Diabetes; and 32 cases of Body Mass Index in the “at risk” range. The lower numbers can be explained by the fact that the Frontier School has a significantly lower American Indian enrollment of approximately 31 percent. Many of the students attending the Frontier School come from affluent ranching and farming families and are non-Indian.

**IV. PREVENTION: Change of lifestyle can offset Type 2 Diabetes & Obesity**

The increasing rate of diabetes is alarming, however much of this major public health problem can be prevented with early detection, improved care and education on diabetes self-management. Since Type 2 appears to be associated with obesity, people can change their lifestyles to increase regular physical activity and eat a low-fat diet. During routine doctor visits,
patients with diabetes should ask for foot exams even if the visit is related to another health matter.

According to the IHS Diabetes Program Coordinator, there were 824 registered adult diabetics on the Fort Peck Indian Reservation in 1999. Five years later, in 2004, adults on the reservation who are either Type I or Type II diabetics rose to more than 1,000 adults – and that number is growing. About 99 percent of those adults are Type II diabetics. (IHS; 2004)

Table 3

<table>
<thead>
<tr>
<th>Fort Peck Registered Adult Diabetics: Type I and Type II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
</tr>
<tr>
<td>1999</td>
</tr>
<tr>
<td>2004</td>
</tr>
</tbody>
</table>

Table 3 illustrates a ___% increase in a five-year period. At that same rate of increase, the number of adult diabetics will be ___ by the year 20##, if these alarming rates were to continue.

To assist the current diabetic patients, the IHS diabetic program educates patients on self-management and routine clinics in Wolf Point and Poplar, including foot, eye and dental care and education. The Diabetic Program Coordinator reports patients who manage a better lifestyle, exercise regularly and eat nutritious food become well controlled. (IHS; 2004)

Fort Peck Tribal Health will use funds from a federal grant to work with children and adults who are at risk for developing diabetes. The long-term objective is to prevent diabetes on
the at-risk population, according to a December 2001 report of the Montana State Advisory Council on Food and Nutrition. (IHS; 2004)

A. EDUCATION

Education programs that address the special needs of at-risk and low-income families are crucial since many families find making healthy food choices on limited budgets difficult. Officials are providing education to children on diabetes prevention, have collaborated with the schools' food services to change school breakfast and lunch menus. At one school on the eastern end of the reservation, officials got involved in their student’s health and adopted a new food program. In another, students had to boycott the school food lines and call on federal agriculture officials before changes were made in the breakfast and lunch menus. (IHS; 2004)

In the spring of 2003, multi-agency diabetes-related programs formed a coalition of health officials from seven reservations in Montana to address the diabetes problem in children in a “Healthy Schools Summit. Several workshops for team leaders were held the fall of 2003 and a final workshop was presented this spring addressing solutions to overcome children’s diabetes. The summit drew great attendance from schools, tribal governments, IHS and elders who achieved their outcomes and objectives; however, this is only the beginning to combating diabetes for American Indian youth and adults (IHS, 2004).

The local diabetes prevention coalition includes the Fort Peck Tribal Health Diabetes Program, Diabetes Education in Tribal Schools (DETS), Boys & Girls Clubs, two FPCC operated Wellness Centers, two federally funded “Children and Nutrition” grants administered by FPCC and a state funded nutrition and physical activity grant through the Center for Disease Control and administrated through the Fort Peck Tribes. (IHS; 2004)
In partnership with tribal members from several reservations, including the Fort Peck tribes, the Montana Cardiovascular Health Program created a physical activity video featuring Montana American Indians that will be distributed to senior centers and diabetes programs on the state’s seven Indian reservations. (Montana State Advisory Council on Food and Nutrition Report; 2003)

Officials with the Montana Diabetes Project also worked with the Indian Health Service to develop a software program that tracks and analyzes health-screening data collected at schools on the reservation. At the time of this writing the results of the database from the Fort Peck Indian Reservation are not available, but are in progress. (IHS; 2004)

Key strategies to reduce the rate of diabetes and its complications, as cited in the National Diabetes Information Clearinghouse, for at-risk individuals, in our case, residents of the Fort Peck Indian Reservation. Strategies are:

- Increase early screening and early treatment
- Continue to utilize College Wellness Centers and IHS routine clinic visits for diabetes education, supervised exercise and physical fitness, checking blood and glucose levels, etc.
- Improve care of control of diabetes and treatment of major complications, including eye, foot and exam
- Conduct clinical trials to prevent the onset of type 2 diabetes in individuals at most risk for developing the disease (all American Indians are at-risk).

The state policy in Montana has been to continue to form partnerships that effectively improve the health of Montana’s American Indians, according to “The State of Food and Nutrition in Montana” 2001 report of the Montana State Advisory Council on Food and Nutrition. This much-needed partnership is also the goal tribal health workers and educators on the Fort Peck Reservation who are striving to rid of deadly, preventable diseases, such as diabetes. (IHS; 2004)
B. EXERCISE & FITNESS

A sedentary lifestyle is the most common health risk behavior among Montana adults. A person who is overweight or obese is at greater risk of hypertension, high cholesterol, heart attack, stroke and type 2 diabetes, according to a 2000 Montana Health Agenda report.

Just as most Americans now live a very sedentary lifestyle, so do most American Indians. Shifting from the very active traditional lifestyle to a sedentary lifestyle significantly lowers caloric requirements. This is particularly problematic for American Indians that may have what has been called the “thifty gene,” according to a 1987 case study conducted on a reservation in North Dakota on hunger and nutritional problems among its tribal members (The Food Research and Action Center, 2001)

It has been postulated that some populations, which have survived through centuries of constant high physical demands, a relatively low-fat food supply and intermittent famine, have much higher numbers of individuals who have the “thifty gene.” This thrifty gene allows an individual to make the most of any calories he or she does ingest, protection in times of food shortages. When confronted with the typical American diet, however, the thrifty gene becomes a liability, because it means the individual will very effectively store much of the energy consumed as body fat. (FRAC, 2001)

Being physically active may help overweight and obese people to live longer and help control or improve their symptoms from not only diabetes, but also heart disease, stroke, high blood pressure and osteoporosis, a disease leading to weak bones, according “Active At Any Size”, a Weight-control Information Network service of the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institute of Health, the federal government’s lead agency responsible for biomedical research on nutrition and obesity. (2004; May)
Regular physical activity helps people feel better because it lowers stress and boosts mood, increases strength; helps control blood pressure and blood sugar; helps build healthy bones, muscles and joints; helps heart and lungs to work better, improves self-esteem and can be fun. (NIDDKD; NIH, May 2004)

Millions of overweight Americans, particularly at-risk American Indians, can delay and possible prevent the disease with moderate diet and exercise, a major clinical trial also found. The National Diabetes Information Clearinghouse reports that a nationwide Diabetes Prevention Program compared three approaches – lifestyle modification, treatment with metformin and standard medical advice – in 3,234 overweight people with impaired glucose tolerance, a condition in which blood glucose levels are higher than normal but not yet diabetic. Diet and exercise that achieved a 5-to-7-percent weight loss reduced diabetes incidence by 58 percent in participants randomized to the study’s lifestyle intervention group. Participants in this group exercised at moderate intensity usually by walking an average of 30 minutes a day five days a week, and lowered their intake of fat and calories. Volunteers randomly assigned to treatment with metformin, which lowers blood glucose mainly by decreasing the liver’s glucose production, had a 31 percent lower incidence of type 2 diabetes. (NDIC; Spring 2002)

The Director of the National Institute of Diabetes and Digestive Kidney Diseases, of the National Institutes of Health, described the 2002 study:

“Not only did changes in diet and physical activity prevent or delay the development of diabetes, they actually restored normal glucose tolerance. These findings bring us closer to the goal of containing and ultimately reversing the epidemic of type 2 diabetes in this country.”

C. NUTRITION

Today, American Indian dietary habits are defined as “the frequent intake of non-indigenous protein and high proportions of low nutrient density carbohydrates and
saturated/unsaturated fats,” according to “Counter-Terrorist Strategies In the Battle of Comod Bod”; An Introduction to Native American Nutrition; Hampshire College, Amherst, MA. (1999)

This basically means that American Indians are eating a lot of cows, chickens, pigs and too much junk fund. Where once Indians were dying from infectious diseases like influenza and small pox, they are now dying from nutritionally related diseases like diabetes, anemia and heart disease. (Hampshire College, 1999)

Eight to 20 diabetics are overweight and would not be diabetic if they lost weight.

Nutritionally, people should eat a balanced breakfast: a carbohydrate overload sets the stage for imbalance throughout the day and should end the day with “low index” foods, such as cherries, broccoli, grapefruit, milk, peaches, peanuts, peanut butter, yogurt, tomato soup or lentils, so their body will have the night to rest and rejuvenate itself. Foods that are high in fibers, especially pectin and guar gum fibers, help balance blood sugar levels. Since diabetics have a low HDL, or good cholesterol, raising HDL levels cuts their risk of heart disease, the leading cause of death among diabetics. A healthy diet and exercise should be supplemented with a daily multivitamin and mineral supplements that help diabetes: 500-1,000 mg. Vitamin C, 50-100 mg. B vitamins, 25 mg. Zinc, 3-5 mg. Manganese, 200 mg. Chromium and 100 IU of Vitamin E. (Hampshire College, 1999)

Nationwide, however, 36.2 million Americans live in food insecure households, that is, they do not always have enough money to buy food sufficient to meet their basic needs. Nearly 10 million of these individuals also live in households where hunger is experienced, (Center on Hunger and Poverty (CHP), 2002). Food insecurity and hunger are more widespread among households below the poverty line: 35.4 percent of these households experience insecurity compared to 10.2 percent of
households nationwide, the Center reports. Nearly 73 percent of households experiencing hunger are at or below 185 percent of the poverty line, a common income-eligibility cut-point for federal food programs. (CHP, 2002)

In a survey conducted in the winter of 2003-04 of 213 families on the Fort Peck Indian Reservation, 87 percent of the adults had cut the size of their meals or skipped meals because there wasn’t enough money for food in the last 12 months. In that same year, another 82 percent of the families cut the size of the children’s meals were because there wasn’t enough money for food. Another 90 percent of those children had to skip a meal because there wasn’t enough money for food. (Fort Peck Community College Wellness Center; 2004)

As a result, low-income children, many of whom live on Indian reservations, live on a diet that is negatively influenced by poverty and food security. Lack of access to a variety of resources including adequate housing, utilities, and health care, as well as good food stores, increases risk of hunger (“heat or eat”), and the likelihood of poor food choices (such as the reliance on high fat foods), the Center reports.

Obesity is not necessarily more common among poor children, but for some groups of children, hunger and overweight may be interrelated, the Center reports. A December 2003 report of the Montana State Advisory Council on Food and Nutrition identified the state’s American Indians who have diabetes as being at very high risk of a heart attack or stroke. To offset this risk, the state advisory council recommended the state provide the following policies:

- Provide adequate funding for quality health care and preventative health services for American Indians.
- Continue to support partnerships such as the Health School Summit to educate Indian communities about healthier school environments. Develop additional partnerships to foster this type of change.
- Continue to emphasize eating and exercise behavior changes to reduce the risk of chronic disease in American Indian people.
- Support existing programs that focus on nutrition and physical activity behavior change in order to improve the health outcomes of American Indians with chronic diseases like diabetes and cardiovascular disease.

In the homes, parents can help manage obesity in children and adolescents by various ways, according to “Obesity in Children and Teens”; American Academy of Child & Adolescent Psychiatry Facts for Families #79; (2004).

Methods include:
- start a weight management program
- change eating habits (eat slowly, develop a routine)
- plan meals and make better food selections (eat less fatty foods, avoid junk and fast foods)
- control portions and consume less calories
- increase physical activity (especially walking) and have a more active lifestyle
- know what your child eats at school
- eat meals as a family instead of while watching television or at the computer
- do not use food as a reward
- limit snacking
- attend a support group (e.g., Weight Watchers, Overeaters Anonymous)

Obesity frequently becomes a lifelong issue. The reason most obese adolescents gain back their lost pounds is that after they have reached their goal, they go back to their old habits of eating and exercising. An obese adolescent must therefore learn to eat and enjoy healthy foods in moderate amounts and to exercise regularly to maintain the desired weight. Parents of an obese child can improve their child’s self esteem by emphasizing the child’s strengths and positive qualities rather than just focusing on their weight problem. (American Academy of Child & Adolescent Psychiatry Facts for Families #79; 2004)
IV. RECOMMENDATIONS

Based upon the most current studies and literature on the topic of diabetes in Indian Country, coupled with the health statistics specific to the Fort Peck Indian Reservation the following recommendations are that of the researchers and writer:

1. Prevention of future diabetic cases on the Fort Peck Indian Reservation must begin in the classrooms and in the home through coherent information developed for appropriateness to all audiences.

2. All agencies, departments, institutions, governments and other entities on the Fort Peck Indian Reservation, whose mission includes diabetes prevention must continue to build strong coalitions in order to maximize resources, and share information that will be utilized to inform “at risk” community members of all prevention strategies and services available to them.

3. Special efforts need to be made to engage all children in physical activity through creative programming that encourages athletes and non-athletes to develop healthy habits to stay fit for life, and to understand the correlation between physical activity and diabetes prevention.

4. Health services must be designed to include entire families through special programming such as walks, runs, hikes, competitions, simple, family-oriented activities such as gardening, shoveling snow, cleaning the garage, mowing the lawn, softball, swimming, horseback riding, nature walks, and indoor activities at the Wellness Centers in Poplar and Wolf Point.

5. Special efforts must be made to recruit sedentary and “at risk” individuals and their families in diabetes prevention activities, including nutrition education.
V. BIBLIOGRAPHY


Assessing Health Risks in Montana, Survey Results from the 2000 Montana Behavior Risk Factor Surveillance System, Montana Department of Public Health and Human Services; Chronic Disease Prevention and Health Promotion Section; P.O. Box 202951; Helena, Montana 59620-2951.

Childhood Hunger, Childhood Obesity – An Examination of the Paradox, Center on Hunger and Poverty, Brandeis University; www.centeronhunger.org

Childhood Obesity: Linked Diabetes Rising in Children; Experts Attending Agriculture Dept. Forum Call for New Strategies to Reverse Trend; by Sally Squires; Washington Post; (1998)

Counter-Terrorist Strategies In the Battle of Comod Bod; An Introduction to Native American Nutrition, Sara L. Russell; Hampshire College, Amherst, MA, (1999, May).

Diabetes-Based Science Education for Tribal Schools (DETS) Summarized Overview, (2004), Linda Flynn, Fort Peck Community College, Poplar, MT 59255


Food Research and Action Center: WIC in Native American Communities: Building a Healthier America; (2001, April) “Hunger and nutrition problems among American Indians: A case study of North Dakota”. Quotes from the transcripts of a hearing before the Selection Committee on Hunger House of Representatives. 100th Congress; (1987) www.frac.org

Montana Health Agenda 2000; Montana Department of Public Health and Human Services; (2000)

