Part I
Impact of The Food Assistance Programs on Indian Reservations

Contract Y541958

Submitted to
the American Indian Studies Program
University of Arizona
Tucson, Arizona

From
Little Priest Tribal College
Winnebago, Nebraska

October, 2000
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Introduction

Little Priest Tribal College received a subcontract (Y541958) from the University of Arizona, Tucson, Arizona for $32,096 to research The Impact of The Food Assistance Programs on Indian Reservations. This subcontract was awarded in November, 1999. Because of various administrative changes in the office of the President of Little Priest Tribal College, this project was delayed in implementation until September, 2000. During September and October, interviews were conducted and the data analyzed for Hypothesis 1 of this study, reservation nutrition standards. The hypothesis stated the following:

Were the nutrition standards among the various food assistance programs on the reservation consistent? Did all programs follow the same nutrition standards in food preparation, amounts served, and interpretation of nutrition guidelines?

Background: Little Priest Tribal College and the Winnebago Tribe of Nebraska

Little Priest Tribal College (LPTC) is the educational arm of the Winnebago Tribe of Nebraska. LPTC, a two year associate degree institution, was created and chartered by the tribe in 1996. It was fully accredited by North Central in 1999. The mission of the college is twofold: 1.) to network with tribal and community agencies and then provide educational opportunities for people in the Winnebago and the surrounding communities, 2.) to provide two year degree programs for successful transfer to a four year college. By partnering the college and the community in this research project, the successful completion of this project has demonstrated LPTC's mission.

The Winnebago Indian reservation is located in the northern half of Thurston County, Nebraska and comprises approximately 113,000 acres. According to the U.S. Census, the total population of the reservation was 2,341 with 1,156 declaring membership in some Native American tribe. The Winnebago Tribe enrollment office indicated that there were 1,238 enrolled members with 51% under the age of 18. The town of Winnebago, incorporated in 1904, is the main population center for the Winnebago people and is located approximately 19 miles south of...
Sioux City, Iowa, or 80 miles north of Omaha, Nebraska. The village has a public school, grades K-12, one private Catholic school, grades K-8, an Indian Health Services Hospital, a Bureau of Indian Affairs Agency and several tribal commercial establishments including a grocery store, delicatessen, gas station, laundromat and car wash.

Rationale for this Study

The Winnebago Tribe of Nebraska has been concerned about the health of its people, especially diabetes. Part of this concern was demonstrated by their participation in Public Health Service Study (NIH), 1990-1996, concerning diabetes and the development of early diabetes markers such as obesity, heart disease, hyperinulinemia and Acanthosis Nigricans (AN). (AN is recognized by skin lesion on the back of the neck.) Of the three tribes who agreed to participate in this study, only the Winnebago people completed the study.

During the seven year study, data on the prevalence of obesity and Acanthosis Nigricans was collected and analyzed from family surveys and by conducting observations with the Head Start and elementary school children and their parents. Five hundred twenty four (524) Winnebago children were observed numerous times, 2734. The results of the data collected indicated that obesity was increasing in a linear fashion from 28% to 43% between 1991 to 1996. According to the study “The data suggested that obesity was becoming more prevalent at an alarming rate in Winnebago children and that the beginning of attempts at obesity intervention have had no discernible effect on the majority of the tribe’s children.” The results of this study alarmed the staff of the Winnebago Health Department and provided the emphasis for a community task force. This task force developed four premises for all community wide diabetes programming. They included

1.) prevention starts at the community level, community as patient
2.) aggressive interventions must begin in the early years of life.
3.) decisions will be guided by Winnebago values.
4.) Nutrition...will be addressed at the community, school and clinical level.

The Winnebago Tribe of Nebraska instituted a community problem solving approach
emphasizing wellness for all community members. Exercise, self concept building, language and cultural activities, and nutrition were to be integrated in all programs throughout the community. Proper nutrition would begin at the earliest ages; pregnancy and early childhood and continued through adulthood.

The Question

If obesity was an early marker for diabetes and Winnebago children were becoming obese, what was causing the obesity, improper nutrition and/or lack of exercise? Was there a relationship between reservation obesity and the USDA food services provided for residents? Were the nutrition standards among the various food assistance programs on the reservation consistent for reducing obesity? Did all of the food service programs follow the same nutrition standards in food preparation, amounts served, and interpretation of nutrition guidelines?

The research team of Dr. Leona M. Zastrow (Principal Investigator), Michelle Smith (Director of the tribal diabetes program), and Mary Kelsey (Diabetes staff member) contacted the seven reservation programs who receive federal and/or state food assistance. These programs were the Head Start Program, the Women Infants and Children (WIC) Program, the Winnebago Public School Breakfast and Lunch Program, the Food Stamp Program, Winnebago Senior Citizens Program, the Summer Feeding Program, and the Food Distribution Program. All their directors agreed orally and in writing to participate in a interview process.

It was the assumption of the research team that the nutrition standards, especially the preparation of food, may vary from program to program and therefore some of the food assistance programs were contributing to obesity, one of the risk factors for diabetes.

Research Methodology

A literature review was conducted concerning the nature and requirements of the seven reservation food assistance programs using the Code of Federal Regulations, Agriculture, 7, Parts 210 to 299, Revised January 1, 1999 and the Code of Federal Regulations, Public Welfare, 45, Parts 210 to 299, Revised October 1, 1999. Information concerning nutrition standards, food preparation, amounts served, and the interpretation of nutrition guidelines was reviewed. Pertinent 10/30/00
information for these programs was outlined and shared with the team members. Selected articles and books concerning Native American diabetes and obesity were reviewed to further explore the reality of the situation. Summary reports from these articles were discussed by the research team for clarification of the hypothesis and definition of terminology. A annotated bibliography of these materials follows this report.

Using the literature review and the expertise of the research team, definitions for this study were agreed upon by the team members. These definitions would provide direction for the gathering of data and conducting the interviews concerning Hypothesis One: consistency in reservation nutrition standards. The terms and their definitions used in this study were the following:

1. Diabetes: any of various abnormal conditions characterized by the secretion and excretion of excessive amount of urine
3. Obesity: weight for height 95th percentile, a condition characterized by excessive body fat.
4. Food Service Programs: Winnebago reservations programs that provide some type of food service including meals, and food commodities, food stamps for people (birth to death) living in the Winnebago Community of Nebraska, Indian and non-Indian.
5. Commodity foods: supplemental foods donated by the U.S. Department of Agriculture for the purpose of providing supplemental food to eligible persons.
6. Nutrition: eating a proper diet of foods that provide protein, calcium, iron, Vitamin A, and Vitamin C for the applicable age.
7. Traditional foods: foods eating by American Indian groups that were gathered from nature, planted and harvested, or fished or hunted.
8. Markers for diabetes: signs that one may have or be predisposed to diabetes such as Acanthosis Nigricans and obesity.
9. Winnebago tribal members: enrolled members of the Winnebago Tribe of Nebraska who participate in any one of the seven reservation food services.

10. Nutrition standards: state and federal requirements for the seven reservation food service programs concerning vitamins and minerals in specific foods, specific foods to be used, size of servings, menu preparation and recipe preparations.

11. Nutrition education: provide food and nutrition information about vitamins, food preparation methods, serving amounts for various age groups, nutritional content, menu planning, proper cooking techniques, junk food, nutritious foods, causes of obesity, and balanced diets.

12. Food preparation methods: methods of preparing various foods such as fresh washed fruit and vegetables, boiled, baked, broiled, fried, smoked, etc.

13. Serving sizes: the amount of food given, the proportion of the food given.

14. Menu: the dishes available or served at a meal.

15. Recipe Adaptation: changing recipes for better nutritional value.


17. Acanthosis Nigricans: a hyperplastic skin lesion associated with insulin resistance and hyperinsulinemia.

18. Meals: breakfast, lunch, snacks

19. Food Stamps: payment vouchers to purchase nutritious food

Using the definitions, the research team developed the interview instrument and established an interview schedule. Then Mary Kelsey arranged for and conducted the interviews with the seven reservation food service programs seeking the following information.

1. Demographics about the service agency such as funding source, budget, number of employees, number of clients, distribution schedule.

2. The purpose of their program in their own words.

3. The nutrition requirements of for their program.

4. The knowledge and training of the staff to carry out the requirements.
5. Future nutrition classes by their employees, number for classes, and topics.

6. Nutrition education given to their clients.

7. Specific education/training for your employees in food preparation, serving sizes, menu and recipe adaptation, nutritional content of foods, and usage of traditional foods.

Kelsey conducted the interviews during September, 2000 with the seven Winnebago food program directors or in some cases an assigned employee. The results of the interviews were the following:

**Head Start:** On September 9, Kelsey interviewed Pam Potter, the Director of the Head Start Program concerning their food program for their students. Potter and her 26 employees have a budget of $950,000. They feed between 90 and 116 Head Start students three times every school day: breakfast (9:15), snack (11:00), and lunch(12:30). Budget money was obtained from the federal and state governments.

The purpose of the Head Start Program was to benefit children and families of the Winnebago community so that they have a head start in education, socialization, culture and language. The USDA guidelines were followed for all meals. The staff members were aware of these guidelines and did attend state training concerning these guidelines in Lincoln, Neb. The Head Cook also attended a week workshop held in Santa Fe, NM. The tribal health department provided training in sanitizing.

The staff (1 head cook and 3 aides) were willing to attend classes. The topics they suggested were low fat, low sodium, menu planning, cultural foods and other new things.

Head Start students were taught nutrition education as part of their lessons. They were encouraged to try new foods during their meals, and have learned about the source and benefits of milk. They were given a wide variety of food experiences in taste testing and even learned how to make specific foods from recipes.

Personnel have learned about food preparation methods, the correct serving amounts, how to adapt menu and recipes, about the nutrition content of food and how to utilize traditional foods such as bison and corn. (Appendix A- food chart)

10/30/00
**Food Stamps:** On September 12, Kelsey interviewed Karen Williams of the Food Stamps Program funded by the USDA. This program provided food stamps for 150 people/families monthly. There were 3 food stamp workers.

The purpose of this program was to provide food for low income families. Their workers received training from the state. They were not interested in attending classes. They have provided their clients with a brochure concerning eligibility but have not provided any information on nutrition or the proper ways to prepare food to reduce obesity. (Appendix B)

**Summer Feeding Program:** On September 9, Mary Kelsey completed her interview about the summer feeding program which she directed. The program was funded by state and tribal money and staffed by 6 kitchen and dining room helpers and 3 health educators. Lunch was served daily for 11:30 to 12:30 and a snack from 3:00 to 3:30 PM.

The purpose of the program was to provide a healthy lunch and snack daily during the summer weeks when school was not in session and to provide foods that assist with diabetes education and reduce obesity. Examples of foods served were fresh fruits and bison meat, not ground beef.

Nutrition standards were guided by the state guidelines and standards for preventing diabetes and obesity. Staff members were aware of these guidelines and had a one day training before the beginning of the summer program. The 6 members staff are willing to attend classes. The topics, they would like taught, include diabetes prevention, making healthy choices, regulating diets, and higher energy levels.

Nutrition education for the students happened daily as they learned new eating habits. Specific education was provided in food preparation, serving amounts, and recipe adaptation. Bison was used as a traditional food. The number of meals served during the summer months were 12,141 healthy lunches and snacks. Of that number 6,642 lunches were served to children, 4,324 snacks to children and 1,175 lunches to adults.
**Food Distribution Program:** On September 13, Kelsey interviewed Ranon Wolfe of the Food Distribution Program. This program was funded by the USDA for $133,434. with a 25% match. There are 6 employees and they provide food monthly for 158 families, 516 people in August, 2000.

The purpose of the program was to provide food for income eligible clients in place of food stamps. Clients could be eligible for both food stamps and food distribution but must choose only one of the food programs. There were no required nutrition standards. The staff members were aware of the policies and guidelines and received computer training on warehousing but no training about nutrition.

The 6 staff members were willing to attend training but not in the evenings. Topic suggested were how to use the food giving to clients in a healthy way and ways to reduce fat. No nutrition education was provided for clients. Before USDA reduced funding, clients were given nutrition training when they picked up their food, given samples and taught nutritious ways to cook the foods.

**Winnebago Public School Breakfast and Lunch Program:** On September 13, Kelsey interviewed Pearl La Pointe, Director. The Public School Breakfast and Lunch Program were funded by the Child Nutritional Needs Program, USDA-Commodities. The budget for the program was $100,900. During the school year, 7 employees fed approximately 380 to 390 children every day breakfast (7:15 - 8:15), lunch (10:45 - 12:40), and a snack (2:00-3:00 PM).

The purpose of the program was to meet the nutritional needs of the Winnebago Public School children by providing nutritious meals. The required nutritional standards for each age group were followed. All staff members were aware of the standards and 5 out of 7 employees graduated from a 2 week, 3 year course at the University of Nebraska. The staff were willing to attend classes concerning low fat cooking, using sugar substitutes and cooking with fish, vegetables, and bison.

The staff did provide some nutrition education and diabetes education to the students; 10/30/00
especially in the third grade classroom and Home Economics classes. They would like to provide
nutrition education to more teachers and classes so that teachers would better understand the need
for proper nutrition and how nutrition influences learning.

Specific education for the staff was provided in food preparation such as draining and
rinsing fat, and children’s needs for nutrition. The federal guidelines were followed for the sizes of
the serving, nutrition content: margarine instead of butter, fruit packed in juice not syrup. LaPointe
also reported that she spends her allotment of $2,500 a year for fresh fruits. Her staff has modified
many recipes to reduce the fat calories using skin milk, low fat cheese, frozen meat and vegetables
instead of canned. Traditional foods such as corn soup, bison, blue berries and fry bread were
included in the menu periodically. The foods must fit the USDA guidelines. (Appendix C)

Women, Infants, Children (WIC): On Sept. 13, Kelsey interviewed Shirley Hoelting
concerning the WIC program. This program was funded by USDA and has provided food
vouchers for 183-200 mothers, expectant mothers, children and infants monthly. There were 3
employees in the program.

The purpose of the program was to provide nutritious food and an education program for
expecting mothers, post partum mothers, and children, ages 0 to 5 years. The required nutrition
standards for this program included vitamin A, B, calcium and iron. The staff members were
aware of the standards for nutrition, especially Shirley, she was a nutritionist. She had a BS in
nutrition.

Her 3 member staff were willing to attend classes especially in prevention of obesity in
infants and children. The staff did provide the clients with materials about nutrition when they
received their food vouchers. Specific topics requested were low fat ways to make eggs, ways to
 teach proper serving amounts, and the contents of baby cereal. (Appendix D)

Senior Citizens Program: On September 12, Kelsey interviewed Sydney Bird, Director. The
budget for this program ($61,000) was from the Administration of the Aging, Title 6, the
Winnebago Tribe (45%), the Northeast Neb. Area on the Aging, the State of Neb. and the USDA.

10/30/00
Four employees served 216 adults lunch daily from 10:30 to 12:30. Some lunches were delivered by tray and some were served in the Senior Citizen Center.

The purpose of the program was to provide nutritious well balanced diet and meals for the elderly, 55 years and older, Indian and non-Indian. The required nutrition standards for this program included no salt, low fat, low sodium, low cholesterol meals. Funding was a problem because of the cost of buying proper nutritious foods such as fresh fruits as required by the Nutrition Academy of Science and the National Research Council.

Three staff members received training throughout the year from in-services and a consultant from Norfolk, Neb. Three staff members were willing to attend classes about sanitizing dishes, silverware and air borne illness. Nutrition education was provided for the clients including the annual evaluation report and information on Vitamin B-12 especially items such as spinach, apricots, broccoli, cauliflower. (Lincoln Extension Office at the University.) Women over 40 lack these vitamins. There was a need to increase fresh fruits and vegetables, cottage cheese and yogurt in the daily diet.

Staff training about food preparation methods included the proper serving sizes, adaptation of the menu and recipe so that senior citizens will eat the lunches, and making diet substitution such as sweet, skim milk for whole milk, and low for sugar, whip it in place of cool whip. The menu was prepared using nutrition required content requirements as much as possible by a nutritionist. Menu planning for Senior citizens was difficult because they have formed a life pattern of eating certain foods and often would not vary from that diet. An example was the adding of lettuce to the diet. Often this item was tossed into the garbage. Attempts at changing their eating habits proved to be difficult and costly. Some traditional foods were occasionally included in the menu such as fry bread and corn soup.

**Discussion:**

The research team members were grateful for the cooperation and time commitment of the seven reservation food programs (directors and personnel). All programs participated in the interview process. The demographics revealed that the majority of the programs received their 10/30/00
funding for food services from the United States Department of Agriculture, USDA. In some cases there was a matching requirement and in one case there was tribal funding. Approximately 13,063 children and adults who live on or near the reservation participated in one or several of the food service programs. Approximately 308 families participated in either the Food Stamps or Food Commodity programs.

All seven food service programs responders knew the purpose of their programs. Not all seven responders knew the required nutrition standards for their program. It was apparent in at least two cases (Food Stamps and Food Commodities), that they were not familiar with nutrition standards. Most of the programs could not state the nutrition standards in their own words but several of the programs provided paper documentation of the required nutrition standards. In five of the seven interviews, it appeared that the employees of the programs were aware of some of the nutrition standards. According to the data collected from these interviews, it did not appear to this research team that their were consistent nutrition objectives among the seven reservation food service programs.

Most of the employees of the seven reservation food service programs received some training in nutrition standards. Only two appeared not to receive training, Food Stamps and Food Commodities, the adult food service programs. There was no consistency in nutrition staff training among the seven programs. The majority of the program staffs were willing to attend classes on nutrition standards and learn better ways to provide nutritious meals. One program was not, Food Stamps. Topic suggested for more training included the following: menu planning, traditional foods, low salt foods, low sodium foods, diabetes prevention, making healthy food choices, regulating diets, high energy foods, reduction of fat in foods, uses of commodity foods, low fat cooking, sugar substitutes, cooking with fish, vegetables, bison, prevention of obesity, sanitizing, and air borne illnesses.

Four of the seven food service programs provided some type of nutrition education for their clients. The Head Start Program and the Summer Feeding Program included nutrition education as part of their daily curriculum. The Public School Program and the Senior Citizens 10/30/00
Program provided some workshops for their clients. The WIC Program, the Food Stamps and the Food Commodities provided hand-outs on nutrition when their clients pick up their coupons, stamps or commodities.

Four of the seven food service programs provided their staffs with training in methods of preparing nutritious foods, proper serving sizes for the clients, how to adapt recipes, and nutrition content of the foods. These four were the Head Start, the Public Schools, The Summer Feeding, and the Senior Citizens staffs. Three of the programs did not respond to this question because these programs gave out food, stamps or vouchers, not meals.

Again the four reservation food service programs that provided meals used traditional foods whenever possible. These foods included bison meat, corn, berries, and fry bread. One of the programs, The Public School, reported serving fresh fruit and vegetables. Another program, the Senior Citizens, preferred to serve fresh fruit and vegetables but indicated a problem with funding for purchasing these items.

Conclusion:

Based upon the interviews, the conclusion drawing by the research team, was that the nutrition standards for the seven reservation food service programs were not consistent. Not all the programs followed the same nutrition standards in food preparation, amounts served and interpretation of nutrition guidelines. Reasons for arriving at this conclusion were the following.

All seven programs appeared, from the responses, to follow the guidelines of their programs, state and/or federal. Nutrition guidelines seemed to vary among the programs. It appeared that the Food Stamps and Food Commodities had few or no nutrition guidelines. If they had nutrition guidelines, few if any were revealed in the interviews. There appeared to be no guidelines on amounts or food preparation standards. The lack of nutrition standards for Winnebago adults and their families could be a leading cause of obesity and therefore contribute to diabetes among the Winnebago people.

The WIC program appeared to consult with their clients on purchasing nutritious foods. They seemed to provide some guidance on food preparation. How much and to what degree was 10/30/00
not revealed in the interviews.

There appeared to be more consistency in the programs that provided meals for children and/or adults. These programs were The Head Start, the Public School, the Senior Citizens and the Summer Feeding. All four programs were concerned about food preparation, serving sizes, the nutrition values of the foods served. All were willing to adapt menu/recipes to lower fat and sodium content. All these programs made a serious attempts to follow nutrition guidelines by offering low fat foods, low sodium foods, and fresh fruits and vegetables. All made serious attempts at following nutrition standards in food preparation, regulating the amounts served and proper interpretation of nutrition guidelines.

Without further research, no other conclusion can be drawn about the consistency of the seven reservation food services programs. It was the belief of the research team that the lack of knowledge about nutrition by some programs, the lack of common reservation nutrition standards and objectives by all seven programs, and the inadequate funding by USDA for fresh fruits and vegetables have lead to the obesity of the Winnenbago population and therefore increased the potential for diabetes.

**Recommendations:**

Based upon the information gather concerning the first hypothesis of this study, several recommendations were made by the research team. They were the following.

1. That the USDA provided more money for the reservation food programs, requiring that more fresh fruits and vegetables be purchased and served on a daily bases and require that programs funded by USDA develop a consistent set of nutrition objectives, reservation wide.

2. That nutrition education on any reservation include requirements for all programs to teach about nutritious foods, menu/recipe preparation, serving amounts, and the relationship of obesity to diabetes. Hypothesis One of this study demonstrated that Nutrition education was taught to some degree in WIC, Head Start, the Public School but little to none for adults: Food Commodities, Food Stamps, and Senior Citizens.

3. That the Winnebago Health Department hire a dietitian to supervise and provide nutritional

10/30/00
training programs for all the seven reservation food services programs developing consistency in program objectives, training, food preparation, and the purchasing of nutritious foods.

4. That reservation-wide educational programs continue and be increased about the relationship of food, diet, obesity and diabetes. Conduct yearly training for all seven program managers and their staffs to define clear and achievable objectives— all need to learn more about obesity as contributing factor of diabetes, what foods contribute to obesity and therefore diabetes?

5. That the reservation leaders encourage families to grow their own vegetables and fruits. That the USDA consider funding a pilot project assisting the Winnebago reservation and Little Priest Tribal College to teach how to grow nutritious fruits and vegetables.

6. That the USDA support and fund the substitution of bison meat for beef meat.

7. That several longitudinal case studies with children and families be undertaken to demonstrate that changes in nutrition and diet can decrease obesity and therefore prevent diabetes.
An Annotated Bibliography of Resources Used in this Study


Information about obesity in children, ages 5-10, revealed that dietary and nutrition habits learned during childhood may be difficult to change, the fat ratchet according to Steve Gortmaker, Ph.D., “Prevention is the treatment of choice for obesity among children.” Causes for the obesity epidemic included the increased consumption of fast foods, soft drinks, extraordinary serving sizes, and a surfeit of food products. Strategies for change included fresh fruits and vegetables, water for juice and pop, reduce reliance on fast foods, increase physical activities.

The role of the school should be to improve the eating habits of the students and increase their physical activities. Put more money into healthier food choices. Remove soda machines, walk to school, increase physical activities in school.

The results of Micronutrients malnutrition included reduced intellectual capacity, decreased resistance to infection, and decreased work capacity according to Dr. Glen F. Maberly. Suggested solutions for this deficiency were the following: balanced diet, forty or enrich staple foods, improve sanitary systems, give doses of deficient micronutrients, and follow the 5 servings or more of fruit and vegetables daily.


Overview of Diabetes in Indian Tribes, epidemic of non-insulin-dependent diabetes mellitus (NIMDDM) occurring in the second half of this century. Causes such as the change in life style from one of traditional agriculture and hunting to that of diminished physical activity such as sitting, office work. Changes in food from a traditional high carbohydrate diet to that of a high fat diet.

Diabetes rates were the highest in full blooded Native Americans, rates for their offspring were also the highest. Familial. Genetics and lifestyles predisposed individuals to NIMDDM. Also, it appeared that obesity was a major factor contributing to diabetes. Thus the teaching of 10/30/00

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proper nutrition and exercises were essential for all community diabetes programs, especially Winnebago.


This study with 20 Mohawk children, ages 1.5 to 4 years indicated that there was a need to teach and practice good nutrition at an early age for all pre-school children, especially American Indian Children.


This study documented the work of other researcher who have worked with Winnebago youth concerning diabetes prevention. Marlow developed and pilot tested curriculum materials with a group of Winnebago teens to assist them in understanding and developing techniques to prevent diabetes. She used Winnebago traditional culture components, exercise, and nutrition. Traditional stories, games and recipes for weight reduction are included in the curriculum materials. One of her major tenets was the relationship of obesity to diabetes.


This study collected infant feeding data on 993 Pima Indians born between 1950 and 1978. The data collected documented the duration of breast feeding and the time of introducing bottle-feeding. It appeared that children who were breast fed had a lower instance of diabetes.


A study conducted with selected American Indian tribes through the IHS health facilities to determine the prevalence of Diabetes. “The Winnebago and Omaha tribes had the highest age-adjusted rates, with prevalence 8.8 times and incidence 7.7 times the respective U.S. rates.” The Winnebago and Omaha tribes were 3.2 times the overall rate among American Indians. This study recommended improved health services to screen and monitor diabetes and its complications and community prevention activities such as promoting weight loss through diet and exercise.

This study documented the relationship of Winnebago and Omaha children who were overweight, obesity, to a diabetes marker called Acanthosis Nigricans. Obesity was defined as body weight in excess of 120% of the ideal weight. Ideal weight was determined by measured height for adults. Acanthosis Nigricans was characterized by skin that is thickened, coarse, and darker than the normal surrounding skin. The results of the study indicated that the prevalence of Acanthosis Nigricans increased with increasing obesity. It also documented an increase in obesity among Winnebago students as they grow older, 13% of children under age four to 37% at the age of twelve.


Documented the relationship of obesity and of non-insulin dependent diabetes mellitus (NIDDM) and the increase in the United States population, especially the minority population.

Interviews by Mary Kelsey


10/30/00
Appendices

Appendix A: Head Start Menu, Child and Adult Care Food Program
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University of Arizona
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Winnebago, Nebraska

January, 2001
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Appendix C: Pre/post inventory
Part II Impact of the Food Assistance Program on Indian Reservations

Contract YS4195K

Purpose and Demographics of the Study
The purpose of Part II of this project was to teach people how to prepare healthier meals using the food from the various reservation food assistance programs so that factors diabetes, such as obesity would be reduced. The intention of the project was to teach mothers from the Head Start and Women, Infants and Children (WIC) better ways to prepare commodity foods to reduce obesity and therefore diabetes in their children. It was felt that if obesity reduction was taught at the early childhood years by teaching mothers how to prepare and serve food in a healthy manner, the future incidences of diabetes would be reduced in the reservation populations.

Originally sixteen (16) mothers were to participate in this study, but only participated and completed the nine sessions. Reasons for the lack of participation were the lateness of the project start up, initially the lack of evening child care, and the lack of timeliness in setting up training with the Head Start Parent Committee.

Nine classes were held from October 17 to November 14, 2000 every Tuesday and Thursday evening from 5:30 to 6:30 PM. The classes were held at the Whirling Thunder Facilities, part of the tribal Blackhawk Community Center on the Winnebago Indian Reservation. They were taught by the Whirling Thunder staff member, Mary Kelsey. A copy of the course outline was located in Appendix A.

Classes were taught by Mary Kelsey and other members of the Whirling Thunder Staff. For 10 years previously, Kelsey had cooked for the Winnebago Public School and participated in many state mandated trainings and workshops concerning food preparation, and menu planning. She had learned a variety of ways to prepare foods to provide nourishing meals for children and how to modify recipes using food from government sponsored programs. For these classes, she used recipes from weight watchers to teach the participants how to reduce the fat content of foods. Copies of these recipes were located in Appendix B.

Reporting of and Discussion of the Pre/post Test Data
As a requirement for participation in these classes, each participant was required to complete a pre/post data inventory for this project. (Appendix C) The pre-tests were given October 19, 2000 and the post-tests were given November 9, 2000. The responses on the pre/post inventory were analyzed and the data was reported in the following series of charts and discussions.

1/23/01
The first chart provided demographics about the five people: position in family, number of children, number in the household and the in what early childhood program they participated. All five were mothers with a combined number of children (17) and a combined number of adults (25). Thus this small sampling influenced 47 people who live on the Winnebago Reservation and participate in one or several of food programs.

<table>
<thead>
<tr>
<th>Position in Family</th>
<th>Number of Children</th>
<th>Number in Household</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mother</td>
<td>3</td>
<td>5</td>
<td>WIC</td>
</tr>
<tr>
<td>2. Mother</td>
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<td>7</td>
<td>WIC</td>
</tr>
</tbody>
</table>

Key: WIC = Women, Infant, Children  
HS = Head Start

The second Chart described the type of food assistance received by the five participants. Notice the similarity of the programs for three of the five participants. All five receive food from the School Food Services; three from WIC, food stamps and the summer lunch program; one from Head Start; and one from commodities.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WIC, School Food Services, Food Stamps, Summer Lunch Program</td>
</tr>
<tr>
<td>2</td>
<td>WIC, School Food Services, Food Stamps, Summer Lunch Program</td>
</tr>
<tr>
<td>3</td>
<td>WIC, School Food Services, Food Stamps, Summer Lunch Program</td>
</tr>
<tr>
<td>4</td>
<td>Head Start, School Food Services, Food Stamps</td>
</tr>
<tr>
<td>5</td>
<td>WIC, Head Start, School Food Services, Summer Lunch Program, Commodities</td>
</tr>
</tbody>
</table>

Next, the participants were asked to list the various foods received from the reservation food programs. Analyzing the pre/post responses indicated that after the series of classes, the 5 participants were better able to list more and healthy foods because of the knowledge gained in the classes. The following was a list of the foods named from the various programs from both the pre/post inventory results. The responses were varied because the participants only answered for the program in which they received food.

1/23/01
Chart III

<table>
<thead>
<tr>
<th>Name of Program</th>
<th>Foods received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women, Infants and Children (WIC)</td>
<td>2% milk, cheese, juice, eggs, peanut butter</td>
</tr>
<tr>
<td>Women, Infants and Children (WIC)</td>
<td>2% milk, cheese, eggs, cereal</td>
</tr>
<tr>
<td>Women, Infants and Children (WIC)</td>
<td>powder milk, juice, baby cereal</td>
</tr>
<tr>
<td>Women, Infants and Children (WIC)</td>
<td>2% milk, cheese, juice, eggs, peanut butter</td>
</tr>
<tr>
<td>Summer Program</td>
<td>Healthy food</td>
</tr>
<tr>
<td>Summer Program</td>
<td>Kidz Cafe, bison meat, low fat milk</td>
</tr>
<tr>
<td>Summer Program</td>
<td>Healthy food</td>
</tr>
<tr>
<td>Summer Program</td>
<td>Buffalo burritos, salad, apples, oranges, watermelon, yogurt, vegetables,</td>
</tr>
<tr>
<td>Summer Program</td>
<td>chicken burritos, taco salad</td>
</tr>
<tr>
<td>School Food Service</td>
<td>Healthy food</td>
</tr>
<tr>
<td>School Food Service</td>
<td>Pizza, burgers, casseroles, soup, fry bread</td>
</tr>
<tr>
<td>School Food Service</td>
<td>Grilled Cheese, hamburgers, soup, milk, fruit, vegetables, tuna.</td>
</tr>
<tr>
<td>Head Start</td>
<td>Canned vegetables, homemade buns, fresh fruit, ground beef.</td>
</tr>
<tr>
<td>Head Start</td>
<td>Sandwiches, tacos, milk, eggs, fruit, vegetables, corn soup, frybread, turkey.</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>Healthy food</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>Edible food, chicken, potatoes, vegetables, fruits, yogurt, juices</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>Pizza, hamburger, fries, juice, pop, kool-aid, chicken, cereal, snacks,</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>crackers, potatoes.</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>Ground beef, chicken, pork cutlets, canned vegetables, peas, carrots, green</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>beans, corn, whole wheat bread, tomatoes, potatoes, pancakes, oatmeal.</td>
</tr>
<tr>
<td>Commodities butter</td>
<td>Cheese, potatoes, fruit, vegetables, meat, chicken,</td>
</tr>
</tbody>
</table>
Next, each of the five participants were asked to record what foods they used for various meals, the type of dairy products used in the home, and how they prepared the food. The same questions were asked in the pre/post inventory. The following chart indicated the responses for the five participants. #One, #Two, #Three, #Four, #Five indicated the numbers for the participants and their responses.

Notice that some of the participants chose healthier foods in the posttests. More chose fresh fruits and vegetables. Some added cereal such as oatmeal, some added soup and dropped fries. After the classes, most used reduced fat dairy products and were broiling, steaming, baking, and boiling foods. Frying was reduced and if continued Pam or Crisco was substituted for bacon fat. Also, notice the changes in additions to food such as seasonings. Salt, sugar, bacon grease and gravy were reduced or replaced by some of the participants with healthier choices.

<table>
<thead>
<tr>
<th>#One Meals</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>2 fried eggs, 2 toast, 1/2 cup of fried potatoes, 1 cup milk toast</td>
<td>Sausage, eggs, milk, juice, toast</td>
</tr>
<tr>
<td>Lunch</td>
<td>Tomato soup, grilled cheese, tea</td>
<td>Tomato soup, grilled cheese, tea</td>
</tr>
<tr>
<td>Supper</td>
<td>Pork chop, 1/4 cup green beans, mask potatoes, tea and kool-aid</td>
<td>Hamburger, rice soup, wheat bread</td>
</tr>
<tr>
<td>Snacks</td>
<td>Honey maid grahams, bananas, apples, oranges, rolls.</td>
<td>Apples, oranges, bananas.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#One Products/Preparation</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diary Products:</td>
<td>2% milk, cheese</td>
<td>Milk, cheese</td>
</tr>
<tr>
<td>Food preparation:</td>
<td>Boiled</td>
<td>Boiled &amp; steamed</td>
</tr>
<tr>
<td>vegetables:</td>
<td>Bake &amp; fry</td>
<td>Broiled &amp; baked</td>
</tr>
<tr>
<td>meat/fish:</td>
<td>Boiled</td>
<td>Bake, boiled, fried</td>
</tr>
<tr>
<td>Potatoes:</td>
<td>Salt, butter</td>
<td>Less salt and butter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#Two Meals</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Sausage, boiled eggs, toast, hash brown potatoes</td>
<td>Scrambled eggs, ham, toast, margarine, OJ.</td>
</tr>
<tr>
<td>Lunch</td>
<td>Hot dogs, mac &amp; cheese, tacos fries, fast foods.</td>
<td>Soups, crackers, cold meat sandwiches.</td>
</tr>
<tr>
<td>Supper</td>
<td>Tatter tots, pizza, mac &amp; cheese hot dogs</td>
<td>Spaghetti, corn, baked potatoes broiled steak.</td>
</tr>
<tr>
<td>Snacks</td>
<td>cake, brownies, root beer,</td>
<td>fruits, vegetables, juices</td>
</tr>
<tr>
<td>Two Products/Preparation</td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>Diary Products:</td>
<td>Yogurt, cheese, milk, Yogurt, cheese, milk, Ice cream, cottage cheese, sour cream.</td>
<td></td>
</tr>
<tr>
<td>Food preparation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vegetables:</td>
<td>Bake, boiled, steam</td>
<td>Steam or microwave</td>
</tr>
<tr>
<td>meat/fish:</td>
<td>Bake &amp; broil</td>
<td>Baked or steam</td>
</tr>
<tr>
<td>Potatoes:</td>
<td>Bake &amp; broil</td>
<td>Bake, boiled</td>
</tr>
<tr>
<td>Additions:</td>
<td>Sour cream, gravy, ketchup, salt, hot sauce.</td>
<td>Salt, butter, pepper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Three Meals</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast:</td>
<td>Eggs, sausage, bread, cereal, bacon</td>
<td>Eggs, oatmeal, sausage, bread milk, cereal, juice, butter.</td>
</tr>
<tr>
<td>Lunch:</td>
<td>Hamburger, pasta, cheese, fries, hot dogs.</td>
<td>Pizza, rice, bagels, soup, eggs, cereal.</td>
</tr>
<tr>
<td>Supper:</td>
<td>Pasta, hamburger, pizza</td>
<td>Pasta, meat loaf, chicken, rice, soup bread.</td>
</tr>
<tr>
<td>Snacks:</td>
<td>Crackers, juice, candy, cookies</td>
<td>Fruit, yogurt, crackers, cookies, milk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Three Products/Preparation</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diary Products:</td>
<td>Milk, cheese, Ice cream</td>
<td>Milk, cheese</td>
</tr>
<tr>
<td>Food preparation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vegetables:</td>
<td>Bake, steam</td>
<td>Fry</td>
</tr>
<tr>
<td>meat/fish:</td>
<td>Fry &amp; bake</td>
<td>Fry &amp; bake</td>
</tr>
<tr>
<td>Potatoes:</td>
<td>Fry &amp; bake</td>
<td>Fry</td>
</tr>
<tr>
<td>Additions:</td>
<td>Salt, pepper, gravy, butter, bacon, grease</td>
<td>Gravy sometimes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Four Meals</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast:</td>
<td>Bacon, pancakes, eggs, dry cereal milk, toast, butter</td>
<td>Cold cereal, burritos, eggs, sausage, toast, butter.</td>
</tr>
<tr>
<td>Lunch:</td>
<td>n/a</td>
<td>Mac &amp; cheese, chili dogs, bologna chip/dips, grilled cheese, tomato soup, kool-aid.</td>
</tr>
</tbody>
</table>

1/23/01
| Snacks: | Peanut butter & jelly sandwiches, crackers & cheese, chips & dip or cereal and milk. | Cheese & crackers, grapes, milk, celery & peanut butter, peanut butter & jelly sandwiches. |
| #Four Products/Preparation | Pretest | Posttest |
| Food preparation: | | |
| vegetables: | Fry with Crisco | Fry |
| meat/fish: | Fry with Crisco | Fry & bake |
| Potatoes: | Fry & boil | Fry, steam, bake |
| Additions: | Bacon grease, salt, butter | Crisco, seasonings, salt, gravy |

| #Five Meals | Pretest | Posttest |
| Breakfast: | White bread, cereal, eggs, bacon Buisquick. | Oatmeal, toast, bagels, orange juice milk, cereal, eggs, fruit. |
| Lunch: | Hamburgers, fries, chicken strips | Hamburgers, soup, salad, fruit. |
| Supper: | Roast, potatoes, corn | Salad, fresh fruit, vegetables chicken. |
| Snacks: | Chips, pop, cookies, fruit, junk food. | Popcorn, fruit, nuts. |

| #Five Products/Preparation | Pretest | Posttest |
| Diary Products: | 2% milk, cheese, yogurt. | 2% Milk, yogurt, skim milk, cheese, eggs. |
| Food preparation: | | |
| vegetables: | Boil and fry | Steam |
| meat/fish: | Fry, bake, roast | Bake |
| Potatoes: | Bake & steam | Boil |
| Additions: | Bacon grease, salt, gravy. | Onions, garlic. |
Now the five participants were asked what meals they prepare daily for their families, the time the meals were served, and the amount of the serving. The following chart recorded this information. Three people indicated that they prepared three meals daily and snacks, one said two meals and snacks and one said two meals but no snacks. The times were somewhat consistent for all the participants. Only two participants answered the question about the amount of the serving size. Both indicated large servings were provided to family members before the classes but reduce after the classes. They provided more variety of foods.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Supper</th>
<th>Snacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>9:00</td>
<td></td>
<td>6:00</td>
<td>Between meals</td>
</tr>
<tr>
<td>2</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td>9:00</td>
<td>1:00</td>
<td>6:00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>9:00</td>
<td>Noon</td>
<td>5:30</td>
<td>3:30</td>
</tr>
<tr>
<td>4.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>7:30</td>
<td>11:30</td>
<td>5:00</td>
<td>10:00 am &amp; 7:00 pm</td>
</tr>
<tr>
<td>5</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>10:00</td>
<td>12:30</td>
<td>6:00</td>
<td>midnight</td>
</tr>
</tbody>
</table>

**Part III of the Inventory**

The third part of the pre/post test inventory was given to the 5 participants to learn about physical, emotional, and other perceived changes in their diet habits because of changes in food preparation. Some of the five answered some of the questions and some left questions unanswered. (Appendix C) The following was a report of the results for each of the participants. Notice that all five reported some positive results.

Participant 1 reported a weight loss, more aware of the influence of food on attitudinal changes, now arises earlier in the morning, children are eating more, she and children have more energy, have increased water intake, and removed pop from the diet.

Participant 2 reported that she was cooking healthier, reducing the fat levels, more energetic, eating allot more fruits and enjoying them, added water to the daily diet, reduce the amount to pop and kool-aid, used kool-aid with less sugar.
Participant 3 reported that she felt better and was now aware of healthy foods, happier, the children were more satisfied, both she and the children seem to have more energy, water intake is the same but pop level was much lower.

Participant 4 reported that felt better and had an attitude change about food, now got up earlier and eat differently, saw no changes in her children yet, was drinking more water and kool-aid, reduced the level of pop, and was drinking juices.

Participant 5 reported that major changes in what she and her family eat and she cooks. She felt good about the changes to healthier cooking, she and the children sleep better, have higher energy, drink more water and less pop, and use less salt.

**Evaluation of the Classes**

Part IV of the Inventory was the evaluation of the nine classes by the 5 participants. (Appendix C)

The following summarized their responses.

Participant 1 enjoyed the classes, was eating healthier, and would continue the classes.

Participant 2 enjoyed the classes, favorite recipe was the ribs, saw changes in her family members as they were eating less without known it, her children were less hyper, would continue classes and now was using less grease, salt, sauces, and sugar in her cooking.

Participant 3 enjoyed the cooking classes, her favorite recipe was the chicken, she felt better about herself, her family members did not know the difference, and her children liked the variety of foods, she now uses Pam, rinses her meats and buys 100% juices.

Participant 4 enjoyed the classes, favorite recipe was chicken, has cut down on salts and fats, and quiet using bacon grease, salt, and fried potatoes.

Participant 5 enjoyed the classes, favorite recipe was pumpkin bars, uses less fat in cooking, family members eat more fruits and less fatty foods, would continue classes, and does not fry foods anymore, buy more fruits and vegetables, don't make meat the main course of the meal.

**“Thank you for the great class.”**

All five participants requested additional classes to learn more about healthy food preparation and wanted to bring other family members, sisters, mothers, aunts, and friends. Word about the 1/23/01
classes was spread at parent meetings and at Bingo.

**Summary, Conclusions and Recommendations**
The second part of the *Impact of the Food Assistance Program on Indian Reservations, Contract Y541958* has been completed. A series of classes were held to teach WIC and Head Start mothers healthier methods of food preparation using foods from the various food assistant programs. The classes were held during October and November, 2000 for 5 women participants.

Even though this was a very small sampling for a research study, the results for the 5 participants were very positive. All learned better food preparation methods and reported positive changes for themselves, their families and their children. All learned, through the nine cooking experiences, new methods and techniques of how to use food from the various food assistance programs to prepare healthier meals for their families. All indicated that the experience and knowledge learned in the classes have made a different in their attitudes, energy levels, and self esteem.

One other major conclusion from this study was that education in proper food preparation for all reservation food programs is either missing or hit and miss. This lack of education may be in part the reasons for the number of people who have obesity problems and the high levels of diabetes on the Winnebago reservation and other Indian reservations. Many government food services are available to people who live on Indian reservation. In this study it was obvious that programs such as food stamps and the commodity food programs allowed people to choose foods. Many of the food chosen encourage obesity and therefore predispose people for diabetes. This small study did demonstrate the value of educating people better ways of using foods from the various government programs and prove that education of the use of foods may be the key to change.

**Recommendations:**
There are three major recommendations that have resulted from this study. They are the following.

1. The first recommendation is that this study be replicated with more participants and over a longer period of time to see if any actual physical and emotional changes occur in the participants and their families. Part of this recommendation would include the revision of the pre/post instrument for clarity and better collection of information about pre/post learning and changes if they occur. Parts of the inventory could be completed as an interview as it did appear that some of the 5 participants were not able to read and understand the questions. Maybe the whole inventory should become an interview process. Also that the local Indian Health Services be included in the pre/post inventory by performing physical testing as weighing participants and checking body fat.
for changes because of diet. Follow up home visits and school visits could also be added to the research design to determine behavioral changes.

Thus the reductions of some of the variables could improve the results of the study and provide a model that would assist many Indian reservations in reducing diabetes by reducing obesity.

2. That all government food assistance programs provide their clients with educational classes on how to prepare and select foods that promote health and therefore may cause a reduction in diseases. Many diseases seemed to be caused, not by the food, but by the preparation of food that increases obesity and encourages other diseases.

3. That the project staff from Little Priest Tribal College and the Tribal Diabetes program present the results of this study to the tribal council, the Head Start Parents Committee, and host a public form for the community on the results of this study. Hopefully this will lead to more coordination of reservation food programs and better understanding of health risks and health solutions reservation wide.
APPENDIX A

CLASSES SCHEDULE