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THE ATTITUDES AND BEHAVIORS OF NATIVE AMERICAN PATIENTS
WITH DIABETES AND THEIR RELATIONSHIP TO SEEKING HEALTH CARE

by

Madonna Azure
Master of Science, University of North Dakota, 2001

A Thesis
Submitted to the Graduate Faculty
of the
University of North Dakota
in partial fulfillment of the requirements
for the degree of
Master of Science

Grand Forks, North Dakota
December
2001
This thesis, submitted by Madonna Azure in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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Tim O'meall

This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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November 27, 2001
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PERMISSION

Title The Attitudes and Behaviors of Native American Patients with Diabetes and Their Relationship to Seeking Health Care

Department Nursing

Degree Master of Science

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Date 11/4/01
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ACKNOWLEDGMENTS

The author thanks our Creator for carrying me through this challenging endeavor. You gave me the courage, strength and willingness to start and finish a master's degree.

The author thanks her dear husband, Roy for being so supportive and patient. Many times I put my education before family, you were always there to carry the load. To my children, Joseph and Genevieve, thank you for your patience and understanding. There were times I was so preoccupied with school and not as attentive as I should have been, but you never complained.

To my thesis committee chair Dr. Heuer, a multitude of gratitude for all of your guidance. And to my thesis committee members, Dr. Burd and Dr. Driscoll thank you for your assistance and direction.

A heartfelt thanks, to Fred Baker, who encouraged me to pursue this goal and to Hattie Walker for never giving up on me that I would attain it. To Mary Lynn Eaglestaff, thank you for listening and giving much needed advice. And to Deb Wilson, Barb Dahlen and the RAIN staff thanks for your assistance and advice.

To my family, thank you for your words of encouragement and supporting me during this time.

Thanks to the Fort Berthold Community College Library staff for assisting in my literature searches.
DEDICATION

My thesis is dedicated to the memory of my grandparents, Dora Bear, Dan Hopkins, Dan and Mabel Howling Wolf, who always stressed the importance of getting an education and using it to help people.

I also dedicate my thesis to my children, Joseph and Genevieve and to my grandson, Qynn, "Little Bear," my hope for you, is to further your education, as it will open doors of opportunity for you.
ABSTRACT

Diabetes Mellitus is a major health problem for Native Americans. There has been an increase in the prevalence rate of Type 2 diabetes among this population. The increase in Type 2 diabetes has been attributed to major lifestyle changes such as decreased physical activity and a diet high in fats. The number of diagnosed patients with diabetes has almost doubled over a ten-year period on the Fort Berthold Indian Reservation.

The purpose of this study was to assess the attitudes and behaviors of Native American patients with diabetes and their relationship to patients' seeking health care services. The variables studied were attitudes and behaviors. The theoretical model chosen for the study was Nola Pender's Health Promotion Model.

The study took place in one of the communities of the Fort Berthold Indian Reservation. A convenience sample of 19 was obtained. Criteria for inclusion in the study were as follows; the participants had to be 18 years and older, live in the community and been diagnosed with Type 2 diabetes for over 1 year. The Diabetes Attitudes and Behavior Questionnaire was used to collect data during monthly "commodities day" and community meetings. The questionnaire has three components; demography, attitudes and self-reported health behaviors.
Results of the study showed the participants to have a positive attitude toward diabetes self-care. It also showed these participants to be actively seeking health care and education for their diabetes.

Data from this study provided valuable information for improving services to the diabetic population of one community on the Fort Berthold Indian Reservation. Assessing the attitudes and behaviors of Native American patients with diabetes needs to be a part of the nurse's assessment. The information can be used to help develop a plan of care and establish realistic goals. With the increasing prevalence of Type 2 diabetes in Native American communities and the nation, a diabetes course should be included in the nursing curriculum. More research is needed in assessing the attitudes and behaviors of Native American patients with diabetes.
CHAPTER I

INTRODUCTION

Diabetes Mellitus is a major health problem in the United States. There are eight million people diagnosed with diabetes (Rao & McDonald, 1998). For every person diagnosed with diabetes mellitus (also known as diabetes) there is one undiagnosed person. About fifteen million people, or approximately six percent of the United States population have diabetes (Rao & McDonald, 1998). The American Diabetes Association (ADA), has classified diabetes into four classifications: Type 1; Type 2; other specific types of diabetes mellitus; and gestational diabetes (American Diabetes Association [ADA], 1998b).

Change in lifestyles has had an impact on the increased prevalence of diabetes in minorities: 10.8 percent of non-Hispanic blacks, 10.6 percent of all Mexican Americans and 5 to 50 percent in Native Americans have diabetes (Oxendine, 1997). Type 2 diabetes is 4 to 8 times more common in the Native American population than the general United States population (Roubideaux, & et al., 2000). A disease that was rare for them prior to 1940, has now become an epidemic for many of the Native American communities (Gohdes, 1995; West, 1974). This increase of diabetes has been attributed to the lack of exercise and the change in food habits of the Native American population (Oxendine, 1997).
The residents living on or near the Fort Berthold Indian Reservation (also known as Fort Berthold), have not gone untouched by diabetes. The prevalence of diabetes is approximately 509 out of a user population of 5683 (Indian Health Service [IHS], 2000a). This is an approximated number, because not all of the residents seek care at the Indian Health Service (IHS), a major health care provider for Fort Berthold. An unknown number of individuals may seek care at any of the several private sector health care facilities surrounding the reservation, utilizing a variety of health care insurance options such as Medicare, private insurance, Medicaid, etc.

Significance of the Study

This study was significant because it provided insight as to how the attitudes and behaviors of patients have impacted their care. Results of this study also provided valuable information for improving services to the diabetic population and ultimately, to reduce the complications of diabetes.

Few studies have been done in regards to diabetes and the Native American population on Fort Berthold and those studies that have been completed have dealt only with the prevalence rates of diabetes. This study was the first in addressing the attitudes and behaviors of people who live with diabetes. And it has provided new knowledge in the psycho-social aspect of diabetes care.

North Dakota has a high rate of diabetes, with the Native American population of the four reservations contributing a large percentage of the State's prevalence rate (North Dakota State Department of Health, Diabetes Facts and Figures, 1998). The results from
this study can be used to assist in the development of new educational programs and the enhancement of existing programs for Native American patients with diabetes.

Purpose of the Study

The purpose of this study was to assess the attitudes and behaviors of Native American patients with diabetes and their relationship to health care services. Health care providers are faced with the problem of patients not coming back for follow-up, and are also seeing more complications due to diabetes. Often health care providers ask themselves "Why don't these patients return for follow-up appointments?" or "Why do they wait for something serious to happen before they come in to the clinic?". This study was the beginning in addressing this issue and hopefully will assist health care providers in finding answers to solve the problem.

Review of the Literature

A review of the literature for the four areas pertinent to this study follows. The concepts reviewed were (a) attitudes and beliefs, (b) behaviors, (c) diabetes and its complications, (d) diabetes and Native Americans, (e) the Fort Berthold Indian Reservation and health care services available on Fort Berthold.

Attitudes and Beliefs

Participation in health programs by individuals is related to their attitudes and beliefs about health and illness. A person's beliefs about health are influenced by his or her culture, social background, experience of health/illness and exposure to health promotion (McAllister & Farquhar, 1992). Attitudes and beliefs of health vary from culture to culture (Tom-Orme, 1994). By assessing the attitudes and beliefs of patients with
Anderson, Fitzgerald & Oh tell us "This information can contribute to an understanding of the patient's beliefs about good diabetes care, which will focus and guide the patient's acquisition of appropriate skills and knowledge needed for the pursuit of relevant, realistic and freely chosen goals for diabetes care" (1993, p. 292).

A few studies assessing the attitudes and beliefs of Native American diabetic patients have been done in our area. Womack (1993) examined the attitudes and beliefs of Native American patients with diabetes utilizing the revised Diabetes Attitude Scale (DAS). The study was done on two reservations in northern Minnesota. Womack concluded that patients with diabetes prefer the team care approach for learning self-care measures and they believe in the importance of special training for the health professionals who care for them. Patients also believe they should have autonomy in making self-care decisions.

Lang (1985) examined the perceptions of diabetes and prescribed therapeutic regimens by diabetics and their families in a Sioux community. Through her interviews with diabetics and their families, three broad perceptions of diabetes were put forth: "(a) diabetes as a general phenomena is an affliction that is affecting Dakota people because their whole lifestyle is out of balance, people are not "living right" anymore: the times are not good, (b) diabetes is the most recent instance of white man's destruction of Indian society and culture, (c) diabetes itself as a condition may not necessarily be treatable by traditional means because it is a new condition and there are no remedies for it" (Lang, 1985, p.255).
Miller, Wikoff, Keen, and Norton (1987) investigated relationships between demographic and medical variables, attitudes, perceived beliefs of others, coping methods and adherence to the regimen (diet, medications, activity, smoking and stress modification) of 30 controlled and 30 uncontrolled American Indian diabetics. The setting for the study was in a clinic. During clinic visits, subjects completed a coping scale, Miller Attitude Scale, regimen adherence scale, and demographic and medical data forms. Findings from this study indicated that an individualized plan for the person with diabetes needs to be developed which includes significant others and focuses on specific life situations. In addition, attitudes, perceived beliefs of others, coping methods and actual adherence behavior of the patient should be included in the plan (Miller et al., 1987).

Tom-Orne (1994) studied the traditional beliefs and attitudes about diabetes among the Navajos and Utes. Data collected from the Navajo involved using open-ended interview questions, observations and participation in community activities. Data from the Utes were collected during a diabetes intervention. The study revealed both similarities and differences about diabetes in the Navajo and Utes. Some similarities are that food is viewed as a gift from the Creator, preference for a heavy body build and a sense that diabetes was introduced by the Anglos. Some differences are: (a) the Navajo have a higher rate of diabetes than the Utes, (b) the Navajo's expression for diabetes is "sugar is killing me" while the Ute's expression is "sugar disease" and, (c) in regards to coping strategies, an extended family/kinship is used by the Navajo, whereas the Utes prefer privacy in coping with diabetes (Tom-Orme, 1994).
Behaviors

Wing et al. (2001) state, "Lifestyle factors related to obesity, eating behaviors, and physical activity play a major role in the prevention and treatment of Type 2 diabetes" (p. 117). The treatment of Type 2 is complex, involving lifestyle components and sometimes pharmaceutical components (Wing et al., 2001). These "multiple behavior changes" make it difficult to assess which combination will be more effective in the treatment plan for the patient (Wing et al., 2001). With the increasing rate of obesity and Type 2 diabetes, Wing et. al. recommends that prevention programs be developed that focus on the broader environmental perspective instead of the individual perspective.

Individuals who participate in studies tend to be more motivated in self-management of diabetes; thus, the results may not give insight into better practices for those who are less motivated (Ruggiero, 2000). The Transtheoretical Model (TMM) has been recommended in the management of diabetes. The TMM focuses on enhancing those patients who are motivated and ready for change as well as those who are not ready for change by assessing what stage of change the patient is at (Ruggiero, 2000).

Diabetes Mellitus and Complications

Diabetes is a chronic disease involving the endocrine system. It is characterized by hyperglycemia resulting from defects in insulin secretion and/or insulin action (ADA, 1998b). People at risk for developing diabetes are those who are (a) 45 years and older, (b) members of a high-risk ethnic group such as African American, Asian American, Hispanic/Latino or Native American, (c) overweight, (d) have high blood pressure, (e) have a family history of diabetes and (f) women who have a history of diabetes during
pregnancy or delivered a baby weighing more than 9 pounds at birth (ADA, 1998b). The classification of diabetes includes four clinical classes: Type 1 diabetes; Type 2 diabetes; other specific types of diabetes; and gestational diabetes mellitus or GDM (ADA, 1998a).

Type 1 diabetes is characterized by a sudden onset of the following symptoms: sudden weight loss, frequent urination, excessive thirst, extreme hunger, weakness and fatigue, irritability, nausea and vomiting (ADA, 1990). It is more common in the age groups prior to 30. In Type 1 diabetes, the beta cells of the pancreas stop working and make little or no insulin. Treatment for patients with Type 1 diabetes includes daily insulin injections, self blood glucose monitoring and a diet and exercise plan (ADA, 1990; Centers for Disease Control and Prevention [CDC], 1997).

Type 2 diabetes has a more gradual onset and usually occurs in people over 30 years of age (ADA, 1998b). In Type 2 diabetes, the pancreas makes insulin, but the body is unable to use it properly, this condition is called insulin-resistance (ADA, 1990). Patients with Type 2 can have any of the symptoms of Type 1 as well as wounds that don't heal, blurred vision, numbness or tingling in hands and feet, frequent skin infections or itchy skin and drowsiness (ADA). Being overweight is associated with Type 2 diabetes (ADA, 1998b; Jackson, 1994). A treatment plan for Type 2 diabetics includes diet and exercise, self blood glucose monitoring, and in some cases, patients may require oral medications and/or insulin injections (ADA, 1990; CDC, 1997).

"Other Specific Types of Diabetes" is a broad term used to describe the unusual cause of diabetes by certain diseases of the pancreas, drugs hormonal syndromes, conditions involving the insulin receptor and other genetic syndromes (ADA, 1998b).
Gestational diabetes is a condition of glucose intolerance during pregnancy. It occurs in two to four percent of pregnant women and is usually detected in the second or third trimester of pregnancy and has major implications for future cases of Type 2 diabetes (ADA, 1998b).

Diabetes can cause major complications if the disease is not controlled. Complications are divided into two categories, macroangiopathy and microangiopathy. The macroangiopathy category includes cerebrovascular, heart, and peripheral vascular disease. The microangiopathy category consists of retinopathy, nephropathy, and neuropathy which include sensory, motor and autonomic dysfunction (Haas, 1993). Complications of gestational diabetes for the fetus are macrosomia and other neonatal morbidity's, including hypoglycemia, hypocalcemia, polycythemia, and hyperbilirubinemia. Maternal complications are associated with increased rate of cesarean deliveries and hypertensive disorders (ADA, 1998a).

**Diabetes Mellitus and Native Americans**

Diabetes was rare in Native Americans prior to 1940 (West, 1974). However, during the second half of this century, the incidence and prevalence of diabetes has risen dramatically in Native American communities (Gohdes, 1995). Type 1 is rare in Native Americans, while Type 2 diabetes has become an epidemic for the Native American population (Gohdes). Major changes in lifestyle such as decreased activity and a diet high in fats have contributed to the increased rates of diabetes as well as, obesity which is a risk factor for Type 2 diabetes (Brosseau, 1994; Broussard et al., 1991; Muneta, Newman, Wetterball & Stevenson, 1993; Young, 1994).
To explain the rapid rise in the prevalence rates of diabetes, Neel in 1962, postulated the existence of a "thrifty gene" (Joe and Young, 1994). According to Neel's theory, the early people lived during periods of feast-famine, and the "thrifty gene" provided an avenue by which the body could store the fats or energy to be used later during periods of food shortage (Joe & Young).

Studies have shown diabetes rates to be higher in full blooded Indians, this may be attributed to genetic factors (Brousseau et al., 1979; Knowler, Pettitt, Saad, & Bennett, 1990). Rates of diabetes vary from region to region, with the Athabascan Indians of Alaska having a much lower rate than the Navajo and Apache (Gohdes, Kaufman & Valway, 1993). The Navajo Nation has seen a 200% increase in the prevalence of diabetes between 1981 to 1996 (Glass, 1996).

A study of Northern Plains tribes determined that the Winnebego and Omaha tribes have the highest age-adjusted diabetes rates, with prevalence 8.8 times and incidence 7.7 times the respective U.S. rates (Stahn, Gohdes, & Valway, 1993). The effect of diet and lifestyle changes has had an impact on increasing prevalence rates of Type 2 diabetes among Alaska natives also (Murphy & et al., 1995). The prevalence of diabetes in Alaska natives has increased by 22%, from 1986 to 1993, (Schraer et al. 1997). A recent chart review has shown a marked increase of diabetes in Alaska natives and in some areas, the increase is as high as 125% (Mayer, Brown & Kelly, 1998). The Inuit have the lowest rate of diabetes of the three major native groups of Alaska (Inuit, Aleuts, and Indians), but they have had the highest percentage increase in the past ten years (Mayer, Brown & Kelly).
Extensive studies of diabetes and its effects in the Pima Indians of the Southwest have been ongoing since 1965. These studies have shown the Pimas to have the highest incidence and prevalence rate of diabetes in the world. The Pima get Type 2 diabetes at an earlier age and have an earlier onset of kidney disease than other tribes. From these studies, researchers have determined that diabetes runs in families, as does insulin resistance and obesity (NIH Publication No. 95-3821; Robbins et al. 1996; Knowler, Nelson, & Pettitt, 1994).

Most recently, notice has been given to the increasing prevalence of Type 2 diabetes in Native American youth. According to the CDC (June 2000), the relatively new phenomena of Type 2 diabetes in children is highest in Native American youth. In the fifteen to nineteen year old age group, the prevalence rate of Type 2 diabetes per 1000 was 50.9 for Pima Indians and 4.5 for all U.S. American Indians (CDC), as compared to the prevalence rate of Type 1 diabetes for all U.S. residents aged 0-19 of 1.7 per 1000 (CDC).

Fort Berthold Indian Reservation

The Fort Berthold Indian Reservation is located in west-central North Dakota and encompasses 980,554 square miles, across six counties. Fort Berthold is home to the Arikara, Mandan and Hidatsa tribes, also known as the Three Affiliated Tribes. The Reservation is composed of six communities; Four Bears and Little Shell, which compose the New Town area, and the outlying communities of Parshall, Twin Buttes, White Shield, and Mandaree.
The Garrison Dam splits the reservation in half which means there are driving distances of over 100 miles between some of the communities. This has a major impact on delivery of services to the residents of Fort Berthold because the building of the Garrison Dam caused communities to be more remote, making services less accessible (United States [U.S.] Senate Hearing, 1987).

In 1987, a Senate Select Committee on Hunger was held on the Fort Berthold Indian Reservation. Testimony on hunger and nutrition problems among American Indians were given by tribal members, council members, Bureau of Indian Affairs and Indian Health Service staff, Congressman, Representatives, and diabetes experts (U. S. Senate Hearing). As a result of this hearing, Congress appropriated funds for a Model Diabetes Program to be established on Fort Berthold.

The Fort Berthold Diabetes program began in April 1990 and staff members include a nutritionist, fitness director, physician's assistant, medical clerk and nurse educator/coordinator. This program is one of nineteen in Indian Health Services across the United States. The purpose of these programs is to develop innovative approaches to diabetes care, education, and prevention (Stracqualursi, Gohdes, Rith-Najarian, Hosey & Lundgren, 1993). The Fort Berthold Diabetes Program has three components, which consist of medical treatment, education and prevention, but the main focus is to provide educational services (IHS, 2000b).

In 1975 and 1988, Brosseau studied diabetes prevalence rates on Fort Berthold. In 1975, there were 145 people with diabetes and in 1988 there were 255, demonstrating an increased prevalence of forty percent. The number of females with diabetes almost
doubled between 1975 and 1988 (Brosseau, 1993). According to the current Indian Health Service Diabetes Register for Fort Berthold, there are now 509 individuals who have been diagnosed with diabetes, indicating that the number of individuals with diabetes has almost doubled since 1988. Herbert Wilson, a physician who practiced on Fort Berthold for over 40 years, stated "I started seeing diabetes in the 60's. It became more prevalent in the 70's and it took off in the 80's and 90's" (H. Wilson, M.D., personal communication, December 2, 1998).

According to Indian Health Service Fiscal Year (FY) 96 diabetes prevalence rate\(^3\), Fort Berthold has a high rate of diabetes even among Native American tribes. Fort Berthold's age adjusted diabetes prevalence rate for 65 years and over is 31.8 % compared to 23.8 % for the Aberdeen Area of IHS, which encompasses North Dakota, South Dakota, Iowa and Nebraska. In contrast, North Dakota's age adjusted diabetes prevalence rate for 64 years and over is 17.9 % (North Dakota State Health Department, 1998). Complicating the scenario for diabetes at Fort Berthold, Indian Health Service FY 99 Chart Audit Results for Fort Berthold show that only 24 % of people with diabetes are controlling their blood sugar, 32 % are in fair control and 23 % are in poor control. These figures predict a higher future incidence of diabetes related complications.

Health Care Services Available on Fort Berthold

The Indian Health Services is a major health care provider, composed of a main health center in New Town, called the Minni-Tohe Health Center (MTHC) and two satellite clinics in the communities of Mandaree and Twin Buttes. The Three Affiliated
Tribes also has one satellite clinic in Wh. Shield. Primary providers at the facilities are medical doctors, physician assistants and practitioners (Fredericks, 1997).

The Fort Berthold Diabetes Program provides comprehensive diabetes care. These services include nutrition assessment/counseling, fitness assessment/counseling, medical care and education. The program follows the Diabetes Minimum Standards of Care that were developed by the Indian Health Service. The main office for the Diabetes Program is located at the Minni-Tohe Health Center, and services are provided to the outlying communities of Mandaree, Parshall, Twin Buttes, and White Shield on a monthly basis (Fort Berthold Diabetes Program Brochure, 1995).

In summary, the literature review for this study has revealed that diabetes is a major health problem for Native Americans. It also has shown that the majority of the research on Native Americans and diabetes has focused on prevalence, which leads to the following research questions.

Research Questions

The following research questions were the basis for this study:

1. What were the attitudes of patients with diabetes in relation to diabetes care?
2. What were the behaviors of patients with diabetes in relation to diabetes care?
3. Was there a relationship between the attitudes and behaviors of patients with diabetes and the way they care for their diabetes?
The theoretical framework chosen for this study was Nola Pender's Health Promotion Model. Pender defines the goal of nursing care as the optimal health of the individual (Tillett, 1994). The Health Promotion Model (HPM) is a competence or approach-orientated model. It does not include "fear" or "threat" as sources of motivation for health behavior (Pender, 1996a). For this reason, the HPM has potential applicability for all ages and to any health behavior in which "threat" is not used as a major source of motivation for the behavior (Pender, 1996a). Pender states, "The Health Promotion Model is an attempt to depict the multidimensional nature of persons interacting with their environment as they pursue health" (1996, p. 53). The model integrates components from expectancy-value theory and social learning theory (now renamed social cognitive theory). According to the expectancy-value theory, behavior is rational and economical (Pender). The major emphasis of social cognitive theory is self-direction, self-regulation, and perceptions of self-efficacy. A central component of the HPM is self-efficacy (Pender, 1996a).

The Health Promotion Model is based on seven assumptions that reflect nursing and behavioral science perspectives. The assumptions are:

1. Persons seek to create conditions of living through which they can express their unique human health potential.

2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.
3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.

4. Individuals seek to actively regulate their own behavior.

5. Individuals in all their biopsychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time.

6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their life span.

7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change.

These assumptions emphasize the patient's active role in shaping and maintaining health behaviors and in modifying the environmental context for health behaviors (Pender, 1996a).

The HPM has three categories. The categories and their variables are as follows:

(a) Individual Characteristics and Experiences include prior related behavior and personal factors which is divided into biological, psychological, and sociocultural; (b) Behavior-Specific Cognition's and Affect include perceived benefits of action, perceived barriers, perceived self-efficacy, activity related affect, interpersonal influences from family, peers, and providers, norms, support, models and situational influences; and (c) Behavioral Outcome includes immediate competing demands (low control) and preferences (high control), commitment to a plan of action and health promoting behavior (Pender, 1996a).
The use of the HPM model was useful to frame the variables for this study. The main focus of the study is the diabetic patients' attitudes and behaviors and their relationship to seeking health care. According to Pender "A thorough assessment of health, health beliefs, and health behaviors is the foundation for tailoring a health-protection-promotion plan to a given client" (1996b, p. 115). An assessment of the Native American diabetic patients' attitudes and beliefs about diabetes will increase awareness of the patient and the health care provider to areas that are helping the patient control their disease as well as areas that need improvement or change, and to assist in improving control. This assessment will also assist the patient and provider in developing goals that are realistic and relevant for the patient.

The HPM model addresses the individual, family, community and environment. All these components are very important to the Native American patient with diabetes, especially family and environment. The health care provider must consider these factors, in developing an individual care plan or community education program.

Definitions

For the purpose of this study, the following terms were defined:

**Attitude:** a feeling or emotion toward a fact or state (Merriam Webster's Collegiate Dictionary, 1993, p. 75).

**Belief:** a state or habit of mind in which trust or confidence is placed in some person or thing (Merriam Webster's Collegiate Dictionary, 1993, p. 104).

**Behaviors:** the manner of conducting oneself (Merriam Webster's Collegiate Dictionary, 1993, p. 103).
**Diabetes Mellitus:** a disorder characterized by hyperglycemia resulting from defects in insulin secretion and/or insulin action (ADA, 1998, p. 2).

**Type 1 Diabetes:** this form of diabetes is a result from an auto-immune destruction of the beta cells of the pancreas, resulting in little or no production of insulin (ADA, 2000, p. S7).

**Type 2 Diabetes:** this form of diabetes is a result of insulin resistance and is associated with obesity (ADA, 2000, p. S8).

**Other Specific Types of Diabetes:** this is a broad term used to describe the unusual cause of diabetes by certain disease of the pancreas, drugs hormonal syndromes, conditions involving the insulin receptor and other genetic syndromes (ADA, 1998, p. 2).

**Gestational Diabetes Mellitus:** any degree of glucose intolerance with onset or first recognition during pregnancy (ADA, 2000, p. S9).

**Native American:** a member of any of the aboriginal peoples of the western hemisphere (Merriam Webster's Collegiate Dictionary, 1993, p. 37).

**Fort Berthold:** a federally recognized Indian reservation, located in west central North Dakota.

**Health Care Services:** any type of service provided at a health care facility

**Assumptions**

The following assumptions were the basis for this study:

1. The attitudes and behaviors of patients with diabetes have an effect on their seeking care for their diabetes.
2. There are barriers to patients with diabetes who are seeking services for their diabetes.

3. Patients lack an understanding of general diabetes information.

Limitations

1. The location for implementation of this study was in a small rural community; therefore, generalizations could not be applied to Native American diabetics living in an urban setting.

2. Due to the small sampling of diabetic patients, generalizations from the study cannot be made for the general diabetic population.

3. The time it takes to read and fill out the questionnaire was also a limitation.
CHAPTER II

METHODS

Diabetes has become a major health problem for the Native American community (Gohdes, 1986). The disease can be frustrating for the patient and health care provider with the complex regimens available today (Glasgow & Eakin, 1996). A review of the literature indicates that there are limited studies on the psychosocial aspect of diabetes, especially in the Native American population. This descriptive study will assess the attitudes and behaviors of patients with diabetes and their relationship to seeking health care services for diabetes care.

Chapter II will discuss the methods of the study. The population and sample that was used for the study are presented, as well as the study design, and data collection methods/procedures. Instrument reliability and validity, proposed data analysis, and protection of human subjects are also a part of Chapter II.

Population

A population is defined as the entire aggregation of cases that meet a designated set of criteria (Polit & Hungler, 1995). The population for this study included all patients diagnosed with Type 2 diabetes for more than one year, who were 18 years and older, and who lived in one of the communities of the Fort Berthold Indian Reservation. There were currently 75 known patients with diabetes in this community (Indian Health Service,
2000a). This is an approximated number, as not all the residents of this community utilize the Minni-Tohe Health Center or satellite clinics.

Sample

Polit and Hungler (1995) define a sample as a representative subset of the units that compose the population. A sample of the current diabetic population was obtained by placing flyers in the community inviting patients with diabetes to participate in the research project. Of the 75 known diabetics in the community where the study occurred, it was anticipated that 40-50 would participate. The total number of participants for this study was 19.

Study Design

The study design chosen for this research project was a non-experimental structured survey. It was a descriptive correctional study, in that its purpose was to assess the attitudes and behaviors of patients with diabetes and their relationship to seeking health care.

Data Collection Methods/Procedures

Data collection was obtained by surveying a sample of the diabetic population in the specified community. All participants signed a consent form prior to completing the questionnaire (see Appendix A for consent form). Flyers were placed in various locations throughout the community inviting patients with diabetes to participate in the survey. Data collection took place during the monthly community meetings and the monthly commodity distribution day. These activities were held at the community center. The participants were paid a stipend of $5.00 for their participation.
Instrument Reliability and Validity

The study instrument was a revised diabetes attitude and behavior questionnaire (see Appendix B for the Diabetes Attitudes and Behavior Questionnaire). The original Diabetes Questionnaire was developed for use with the migrant population and it was reviewed by a panel of experts for content, reliability and culturally appropriateness of the questions. The researcher revised the questionnaire with approval from the author to address cultural relevance (see Appendix C for the Letter of Permission). There were three components to the questionnaire: demography, attitudes and self-reported health behaviors. The demographic questions involved length of time of having Type 2 diabetes, family history of diabetes, age, sex, type of primary care provider and where diabetes care and education was received. The attitudes section involved questions regarding the patients' attitudes toward specific diabetes self-care items, such as dental, eye, foot exams and education. The subjects were asked to respond to the questions using a Likert Scale of one-to-five, with one being strongly disagree and five being strongly-agree. The third section is the self-reported behaviors. It involved the subjects responding to statements on how often or whether or not they actually receive care for their diabetes; for example, how often had they seen a dentist or how often had they had a urine test and eye exam.

The instrument was reviewed by nurses who work with diabetes, for content prior to it being utilized for this research project. It was estimated that the survey took approximately ten to fifteen minutes to complete.
Data Analysis

Descriptive and inferential statistics were utilized for analyzing the data. The Pearsons's r (product-moment correlation coefficient) was used. Frequency counts and measures of central tendencies were also done.

Protection of Human Rights

A consent form explaining the purpose of the research, accompanied the survey that was given to the subjects (see Appendix A for the consent form). Confidentiality of the survey was maintained by keeping the surveys in a locked file and computerized records was protected by a password, known only by the researcher. The participants were instructed not to put their names on the survey. A request for approval of the study was submitted to the Institutional Review Board (IRB) at the University of North Dakota. A request of approval was also submitted to the White Shield Community Board and Three Affiliated Tribes.
CHAPTER III

RESULTS

The purpose of this study was to assess the attitudes and behaviors of Native American patients with diabetes and their relationship to seeking health care. The research questions for this study were:

1. What were the attitudes of patients with diabetes in relation to diabetes care?

2. What were the behaviors of patients with diabetes in relation to diabetes care?

3. Was there a relationship between the attitudes and behaviors of patients with diabetes and the way they care for their diabetes?

The study was a descriptive study. The instrument used to gather data was a Diabetes Attitudes and Behavior Questionnaire. The population for this study was Native American people with Type 2 diabetes. Diabetic residents of a small rural community of the Three Affiliated Tribes (Mandan, Hidatsa, Arikara) were invited to participate. A convenience sample of twenty questionnaires was collected. The participants were 18 years old and over, lived in the community and had Type 2 diabetes for more than one year. Data from one questionnaire was not used, as the individual did not meet the selection criteria.
Data Collection

Flyers were placed throughout the community, inviting community members to participate. Data was collected in the spring and summer of 2001 during the monthly "commodities day" and community meeting. The researcher was available for questions during the time of data collection. Each participant was paid a stipend of $5.00 for completing the questionnaire.

Characteristics of the Sample

The participants were all Native American. The majority of the participants were female, which composed (63.2 %) and males (36.8 %). The participants' age range was 25 to 65 years old with a mean of 51.33 years. The duration of diabetes ranged from 1 to 32 years with a mean of 9.42 years. A distribution of age and duration of diabetes is presented in Table 1.

Table 1. Age and Duration of Diabetes in Years of 19 Native American with Diabetes

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>51.33</td>
<td>9.78</td>
<td>25-65</td>
</tr>
<tr>
<td>Duration</td>
<td>9.42</td>
<td>7.63</td>
<td>1-32</td>
</tr>
</tbody>
</table>

Family History

There was a high incidence of diabetes in the families of the sample participants. Fifteen (79.9 %) of the sample reported at least 1 or more family members having diabetes compared to 4 (21.1 %) not having a family history of diabetes. Over 60 % reported that their mother had diabetes. See Table 2 for the number and percent of participants'
reporting a history of diabetes in selected family members. Each participant could select more than one family member.

Table 2. Number and Percent of Participants who Indicated Diabetes in Selected Family Members

<table>
<thead>
<tr>
<th>Family Member</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>12</td>
<td>63.2</td>
</tr>
<tr>
<td>Father</td>
<td>8</td>
<td>42.1</td>
</tr>
<tr>
<td>Brother</td>
<td>6</td>
<td>31.6</td>
</tr>
<tr>
<td>Sister</td>
<td>9</td>
<td>47.4</td>
</tr>
<tr>
<td><strong>Mother’s family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandmother</td>
<td>4</td>
<td>21.1</td>
</tr>
<tr>
<td>Grandfather</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Aunt</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Uncle</td>
<td>4</td>
<td>21.1</td>
</tr>
<tr>
<td>Cousin</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Father’s family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandmother</td>
<td>3</td>
<td>15.8</td>
</tr>
<tr>
<td>Grandfather</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Aunt</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Uncle</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Cousin</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

The total number of family members with diabetes was computed for each participant. Only 4 (21.1%) had none. Five (26.3%) participants had either 1 or 2 family members with diabetes. Another 5 (26.3%) had 3 or 4 family members with diabetes and
5 (26.4%) had 5 to 8 family members with diabetes. One participant had 8 family members with diabetes.

Location of Diabetes Care and Providers of Diabetes Care and Education

The participants indicated that they receive care at the local health care facility. Most of the participants visit a medical doctor and physician's assistant for their care. Over 60% reported that they receive diabetes education from the Diabetes Program Staff. Table 3 shows the location of their diabetes care and the providers of diabetes care and education.

Table 3. Location of Diabetes Care and Providers of Diabetes Care and Education

<table>
<thead>
<tr>
<th>Location for Diabetes Care</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minni-Tohe Health Center</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>White Shield Field Clinic</td>
<td>12</td>
<td>63.2</td>
</tr>
<tr>
<td>Both</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Care Provider</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Specialist</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Medical Doctor</td>
<td>9</td>
<td>47.5</td>
</tr>
<tr>
<td>Physician’s Assistant</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>15.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider of Diabetes Education</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Program Staff</td>
<td>12</td>
<td>63.2</td>
</tr>
<tr>
<td>MTHC Clinical Staff</td>
<td>4</td>
<td>21.1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>10.5</td>
</tr>
</tbody>
</table>
Analysis and Findings

Data were analyzed to address the research questions for the study. The Statistical Package for the Social Science (SPSS) program was used to generate statistical results. Significance for the study was set at $p<0.05$. In response to the research questions, findings emerge as follows.

Research Question 1

The first research question of this study states "What were the attitudes of patients with diabetes in relation to diabetes care?". Participants responded to 15 items about attitudes toward various aspects of diabetes self care. Participants marked each item on a 5 point Likert scale ranging from 1 = "strongly agree" to 5 = "strongly disagree". The items were recoded so that a high score reflects a more positive attitude toward self-care. The mean score for each item could range from 1 to 5, with 5 indicating a positive attitude.

Participants responded positively to the importance of getting yearly exams such as eye, dental, urinalysis, cholesterol and A1c. Their responses indicated that it is important to them not to smoke, to check their blood pressure at each clinic visit, to check their blood sugar and their feet on a daily basis, to drink water or diet soda when they are thirsty, to exercise and to eat a diet high in fiber, low in fat and sugar. Their responses also indicated the importance of getting a flu shot every year and receiving diabetes education annually. However, participants have difficulty eating three meals and snacks per day. Table 4 lists the activities in descending order of the mean score. The highest score was for checking blood sugar with a mean score of 4.42. Since 5 was the highest
possible score this would suggest that most respondents agreed checking the blood sugar is important.

Table 4. Attitudes in Descending Order of the Mean Score

<table>
<thead>
<tr>
<th>Attitude</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check blood sugar</td>
<td>4.42</td>
<td>0.61</td>
<td>19</td>
<td>3-5</td>
</tr>
<tr>
<td>Dilated eye exam</td>
<td>4.32</td>
<td>0.67</td>
<td>19</td>
<td>3-5</td>
</tr>
<tr>
<td>Cholesterol check</td>
<td>4.28</td>
<td>0.83</td>
<td>18</td>
<td>2-5</td>
</tr>
<tr>
<td>Check feet</td>
<td>4.22</td>
<td>1.06</td>
<td>18</td>
<td>1-5</td>
</tr>
<tr>
<td>Proper diet</td>
<td>4.16</td>
<td>0.69</td>
<td>19</td>
<td>3-5</td>
</tr>
<tr>
<td>Do not smoke</td>
<td>4.16</td>
<td>0.96</td>
<td>19</td>
<td>2-5</td>
</tr>
<tr>
<td>A1c check</td>
<td>4.16</td>
<td>0.96</td>
<td>19</td>
<td>2-5</td>
</tr>
<tr>
<td>Drink diet soda</td>
<td>4.11</td>
<td>0.74</td>
<td>19</td>
<td>2-5</td>
</tr>
<tr>
<td>Diabetes education</td>
<td>3.79</td>
<td>1.27</td>
<td>19</td>
<td>1-5</td>
</tr>
<tr>
<td>Flu shot</td>
<td>3.78</td>
<td>1.26</td>
<td>18</td>
<td>1-5</td>
</tr>
<tr>
<td>BP check</td>
<td>3.74</td>
<td>1.28</td>
<td>19</td>
<td>1-5</td>
</tr>
<tr>
<td>Exercise</td>
<td>3.68</td>
<td>1.38</td>
<td>19</td>
<td>1-5</td>
</tr>
<tr>
<td>Urine (protein) check</td>
<td>3.53</td>
<td>1.35</td>
<td>19</td>
<td>1-5</td>
</tr>
<tr>
<td>Dental exam</td>
<td>3.22</td>
<td>1.35</td>
<td>18</td>
<td>1-5</td>
</tr>
<tr>
<td>Regular meals</td>
<td>2.11</td>
<td>0.88</td>
<td>19</td>
<td>1-4</td>
</tr>
</tbody>
</table>

An overall attitude score was computed. A Cronbach's alpha was run to check for internal consistency. The alpha score for the 15 items was 0.84 indicating a good reliability. The attitude score was computed as an average for all fifteen items. The possible low score is 1 and high score is 5. Overall, the participants had positive scores.
The 19 respondents had an average overall attitude score of 3.84 (SD = 0.57) with a minimum of 2.80 and maximum of 4.93.

Research Question 2

The second research question was "What were the behaviors of patients with diabetes in relation to diabetes care?". The participants responded to 15 items about diabetes self-care behaviors. Each item had 4 choices, one of which was correct. Each of the items was recoded so that a correct answer equaled "1" and an incorrect answer equaled "0". The participants' responses indicate positive behaviors, they are receiving diabetes education and flu shots on an annual basis. They are receiving yearly exams for dental, eye, urinalysis (protein), as recommended. They are checking their blood sugar and feet on a daily basis and are receiving a blood pressure check at each clinic visit.

Table 5 shows the behaviors in descending order of the percent of participants who gave the correct answer. Blood pressure was correctly answered by over 94% while eating regular meals and snacks was the lowest score (31.6%).

<table>
<thead>
<tr>
<th>Behavior</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure check</td>
<td>17</td>
<td>94.4</td>
</tr>
<tr>
<td>Check feet daily</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td>Flu shot</td>
<td>13</td>
<td>72.2</td>
</tr>
<tr>
<td>Do not smoke</td>
<td>13</td>
<td>72.2</td>
</tr>
<tr>
<td>Check A1c</td>
<td>13</td>
<td>72.2</td>
</tr>
<tr>
<td>Dilated eye exam</td>
<td>12</td>
<td>70.6</td>
</tr>
</tbody>
</table>
An overall behavior score was computed equal to the percent correct out of the 15 items. The score was computed by dividing the number of correct responses by fifteen and multiplying by 100. A minimum of ten valid item responses had to be present for the computation. The possible score could range from 0 to 100. Of the eighteen participants the lowest score was 20.0 and the highest was 86.7. The mean score was 57.4 (SD = 17.28, n =18).

Emotional Response to Having Diabetes

One question in the attitudes section dealt with the difficulty of living with diabetes. Most participants (73.7%) responded that it is difficult to live with diabetes. Another question in the behaviors section asked what type of feelings the individual had about having diabetes. Over 50 % responded to having feelings of being nervous, depressed and angry. Table 6 displays the participants' response to the difficulty of living with diabetes and what type of feelings they experience about having diabetes.
Table 6. Emotional Response to Living with Diabetes

<table>
<thead>
<tr>
<th>Difficult to live with diabetes</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Agree</td>
<td>9</td>
<td>47.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>3</td>
<td>15.8</td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Living with diabetes I sometimes feel

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervous</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Depressed</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Anger</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>All of the above</td>
<td>10</td>
<td>52.6</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Research Question 3

The third research question states "Was there a relationship between the attitudes and behaviors of patients with diabetes and the way they care for their diabetes?". A Pearson Product Moment Correlation was done to assess whether there was an association between the attitude and behavior scores. There was a moderate, positive association between the attitude scale score and the overall behavior index, which was statistically significant \((r = 0.581, n = 18, p = 0.011)\). Therefore, a respondent with a positive attitude is more likely to have a higher score on the behavior index.
Other Findings

A t-test was used to compare the attitudes and behaviors with various demographic characteristics. There was no statistically significant difference in the mean scores of either the attitude score or the behavior index between men and women. The effect of family history on attitudes and behavior was also evaluated using a t-test. The mean behavior index of the 15 people with 1 or more family members with diabetes was 58.67 compared to 51.11 for 3 people who had no family history of diabetes. Although the respondents with family history scored better on the behavior section, the difference is not statistically significant. A t-test was also calculated to assess whether or not there is a difference in the attitude of those individuals with a family history of diabetes compared to those who don't have a family history. The t-test did not reveal a significant difference between the two. Table 7 summarizes the comparison of the attitude scale scores and behavior index by gender and family history.

Table 7. Summary of t-tests Comparing Attitude Scale Scores and the Behavior Index by Gender and Family History of Diabetes

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude Scale Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>3.97</td>
<td>0.34</td>
<td>7</td>
<td>0.77</td>
<td>17</td>
<td>0.45</td>
</tr>
<tr>
<td>Women</td>
<td>3.76</td>
<td>0.66</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>61.11</td>
<td>17.10</td>
<td>6</td>
<td>0.63</td>
<td>16</td>
<td>0.54</td>
</tr>
<tr>
<td>Women</td>
<td>55.56</td>
<td>17.83</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7 cont.

<table>
<thead>
<tr>
<th>Attitude Scale Score</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Family History</td>
<td>3.72</td>
<td>0.54</td>
<td>4</td>
<td>0.48</td>
</tr>
<tr>
<td>Family History</td>
<td>3.87</td>
<td>0.59</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior Index</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Family History</td>
<td>51.11</td>
<td>10.18</td>
<td>3</td>
<td>0.68</td>
</tr>
<tr>
<td>Diabetes in Family</td>
<td>58.67</td>
<td>18.38</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Comments from Participants

At the end of the questionnaire the participants were asked if they had any comments that they would like to share. Ten of the 19 participants shared their comments. Overall, the comments stressed the importance of following a diet, exercising and preventing complications. Some expressed the frustration of staying on a diet and exercising on a regular basis. There were comments of praise for the services and supplies provided by the Fort Berthold Diabetes Program. One participant stated that the Indian Health Service should be up to date on new techniques such as new medications. One individual shared in depth her feelings about living with diabetes, this person wants to live to be 100 and see her children and grandchildren grow old. This individual, also made comments about the "unmeasurable pain" experienced to see her brother and mother go blind because of diabetes. This individual also stated that because of her "shots," her family stays away from sweets and fatty foods, the individual saw this as "beautiful."
CHAPTER IV

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this descriptive study was to assess the attitudes and behaviors of Native American patients with diabetes living in one of the communities of the Fort Berthold Indian Reservation and their relationship to seeking health care. The incidence and prevalence of Type 2 diabetes has become an epidemic in Native American communities (Gohdes, 1995). These increases have been attributed to changes in lifestyle such as a diet high in fats and decreased physical activity (Brousseau, 1994; Broussard et al., 1991; Muneta et al., 1993; Young, 1994). Between 1981 to 1996 there has been a 200% increase in the prevalence of diabetes in the Navajo Nation (Glass, 1996). For some Alaska natives, the increase of diabetes has been as high as 125% (Mayer, Brown & Kelly, 1998).

The significance of this study was to provide insight as to how the attitudes and behaviors of patients have an impact on their care. This study was significant because it adds to the existing body of nursing knowledge and was the first in addressing the psycho-social aspect of diabetes care. This chapter presents discussion of the findings, followed by conclusions and recommendations for future study of the attitudes and behaviors of Native American patients with diabetes living on the Fort Berthold Indian Reservation.
Discussion

Sample Characteristics

The study took place in one of the six communities on the Fort Berthold Indian Reservation. The Diabetes Attitudes and Behavior Questionnaire was used to collect data during monthly community meetings and commodity distribution days. A convenience sample of 19 adults with diabetes was obtained. Females composed the majority of the sample (63.2%) compared to males (36.8%). This finding was not supported by the FY 99 IHS Diabetes Chart Audit which showed females and males to be 50%. The age range of the sample was 25 to 65 years. This finding was supported by the FY 99 IHS Diabetes Chart Audit, in which 80% of the sample were in the similar age range of 15-64 years.

There was a strong family history of diabetes, 79.9% of the participants reported 1 or more family members with diabetes. Their family history of diabetes was supported by the studies done with the Pima Indians (NIH Publication No 95-3821; Robbins et al.; Knowler, Nelson & Pettitt, 1994). Over 60% of the participants utilize the local health care facility and receive their diabetes education from the Fort Berthold Diabetes Program.

Attitudes

The first research question of this study explored the attitudes of patients with diabetes in relation to diabetes care. The attitudes of the participants were positive toward diabetes self-care behaviors. They "believe" it is important to have annual eye, foot and urine exams, to exercise and to follow a diet high in fiber and low in sugar and fat. They also believe in the importance of having annual diabetes education. This does not correlate with the negative attitude found in previous studies of Native American
diabetics. Tom-Orme (1994) studied the attitudes and beliefs of the Navajo and Ute. She found the Navajo's term for diabetes is "sugar is killing me". The Sioux viewed diabetes as the white man's destruction of Indian society and culture (Lang, 1985). This difference could be attributed to the difference in the tribal affiliation of all three studies.

**Behaviors**

The second research question of this study assessed the behaviors of patients with diabetes in relation to their diabetes care. The responses from the participants indicate that they are actively seeking care for their diabetes. They are having annual exams for their eyes, feet and kidneys. In addition they are receiving annual diabetes education. However, the participants are not eating regular meals and snacks. This is supported by Miller et al.'s (1987) study on health beliefs and diabetic regimen adherence. However, participants in this study scored high on self-reported behaviors such as taking medications and exercise, but scored low on following a diet plan.

**Attitudes and Behaviors**

Assessing the relationship between the attitudes and behaviors of patients with diabetes and the way they care for their diabetes was the third research question. A statistically significant association between the attitudes and behaviors of the participants was shown by the results, meaning that those with a good attitude score were more likely to have a high behavior index score. These results are supported by findings of a study done by Miller et al., (1987) which showed an association between attitudes and regimen adherence.
Other Findings

A comparison of the attitudes and behaviors between men and women was not statistically significant. Also, a comparison of the same two variables between those participants with a family history of diabetes compared to those without a family history did not show a statistically significant difference. Studies addressing these variables were not found in the review of the literature for this study, as such the author cannot say whether or not this set of results were supported.

Comments from Participants

Diabetes is a complex disease to manage for the patient (Wing et al., 2001). This was supported by the majority of the participants (73.7%), who responded to having feelings of being nervous, depressed, and angry. In the comments section of the questionnaire, participants also, expressed feelings of frustration in following a diet and exercising on a regular basis.

Conclusions

The results of this study indicate that the attitudes and behaviors of Native American patients with diabetes in one community of the Fort Berthold Indian Reservation were positive. Their responses show a belief in the importance of diabetes self-care and that they are actively seeking care for their diabetes.

The comments made by the participants indicate their knowledge or awareness of the importance of diet and exercise in caring for diabetes and preventing complications. Their comments also show the frustration they experience in living with diabetes.
Recommendations for Nursing Practice

Diabetes care and education guidelines are continually changing. Nurses need to keep abreast of the current diabetes standards of care and education. This study shows an association between the attitudes and behaviors of Native American patients with diabetes. Assessing the attitudes of patients with diabetes provides guidance to the patient in attaining appropriate skills and knowledge needed to establish realistic goals (Anderson et al. 1993).

Assessing how the patient is dealing with diabetes needs to be an integral part of the nursing assessment. The nurse can use the information from the assessment to assist the patient and their family in planning diabetes care and reinforcing positive behavior. By doing so, the nurse is treating the whole person.

Nola Pender's Health Promotion Model was the theoretical framework used for this study. It does not use threat or fear as a source of motivation for health behaviors, making it useful for all ages and to any health behavior (Pender, 1996). The family and environment are a very important component in Native American culture. The Health Promotion Model addresses the individual, family, community and environment. For this reason, the Health Promotion Model is applicable to nurses working in Native American communities. It can be used as a basis for planning primary prevention activities in the community and school or used in planning secondary and tertiary activities in preventing the complications of diabetes.

Results of this study should be shared with the local health care providers and the community. The information can be used to assist the health care provider and patient in
developing a plan of care. Sharing the information will give the community a sense of ownership in developing community prevention activities.

Recommendations for Nursing Education

This study adds to the existing body of knowledge for nursing. A review of the literature for this study indicates that most of the previous studies of Native American patients with diabetes have focused on prevalence and complications. This study provides information on the psycho-social aspect of diabetes. Assessing the patients' coping mechanism for diabetes needs to be reinforced in the education of new nurses.

Diabetes has become an epidemic in Native American communities (Gohdes, 1995) and there is an increased prevalence in the general population (Rao & McDonald, 1998). Because of this notable increase, a course on diabetes should be a regular part of the nursing curriculum.

Recommendations for Policy Development

Nurses need to be proactive in lobbying for more funds for diabetes care, education and research. Meeting with local or state officials to discuss the impact of diabetes on the population will increase the politician's awareness of diabetes. Becoming involved in nursing organizations will give a stronger voice for increased funding. For the nurse working on the reservation, this means meeting with the tribal business council, the policy making body, to discuss the problem of diabetes and it's impact on the tribal members. By meeting with the business council, the nurse increases their awareness of the problem and provides the council with the information they need to lobby for more funding.
Recommendations for Future Research

Studies abound on prevalence and complications of diabetes. More research is needed in the psycho-social aspect of diabetes. This research would provide valuable insight in treating the person with diabetes as a whole. Much time is spent focusing on medical regimens, diet, exercise and little on how the patient is dealing with diabetes.

A limitation of this study is the small sample size and the inability to make generalizations for all of Fort Berthold. The study should be conducted throughout the whole Fort Berthold reservation. The results would be more comprehensive and generalizations could be made for all of the reservation.

Summary

Results of this study show a strong association between the attitudes and behaviors of Native Americans and their relationship to seeking health care services for diabetes. As a nurse working with Native American patients with diabetes for several years, I expected to see a negative attitude but this was not the case. In my experiences, many times I have heard "What's the use of following a diet and exercising and I'm going to end up on dialysis anyway?". I have also heard a hundred and one reasons for not exercising and not coming to the clinic for check-ups.
APPENDICES
APPENDIX A

CONSENT FORM

Hello Participants,

My name is Madonna Azure. I have been a registered nurse for over eighteen years. I am currently pursuing a Master’s of Science Degree in Nursing, with a specialization in Rural Health Nursing, through the University of North Dakota. This survey is a partial requirement for completion of my degree.

The purpose of this questionnaire is to assess the attitudes and behaviors of Native American patients with diabetes. You are invited to participate in this research if you are over 18 years old, been diagnosed with Type 2 diabetes for one year or over, and reside in the White Shield community. The questionnaire is 2 ½ pages and it will take you approximately 15 minutes to complete. When you have completed it, place it in the box marked Diabetes Questionnaires on the table.

Completing this Diabetes Attitudes and Behaviors Questionnaire is completely voluntary. You may choose not to participate or discontinue participation at any time without prejudice. If you decide to participate, you are free to discontinue participation at any time without it being held against you. If you choose to take part, please do not place your name on any part of the questionnaire. The questionnaire will be kept in a locked filing cabinet and it will be destroyed by shredding after three years. Also, data stored in the computer will be deleted at this time. I will share the results from this research project with the White Shield Community and Minni-Tohe Health Center. The results will be presented only in grouped form at no time will your name be used. You will be compensated with a stipend of $5.00 for the time it takes you to complete the questionnaire.

The benefits from this research is that the data collected will be used for planning and implementing diabetes care and educational programs in the White Shield Community. The risks for answering this questionnaire are minimal. If by answering this questionnaire, you become aware of any health problems, please see your primary care provider.

While completing this questionnaire, I am available to answer any questions you have concerning this research project. At a future date, if you have questions regarding this research project, you may call me at xxx-xxxx or ______________ at xxx-xxx-xxxx. I will give you a copy of this consent form for your records. The consent form will be kept in a locked filing cabinet and it will be destroyed by shredding after three years.
AGREEMENT TO PARTICIPATE AND SIGNATURE

All of my questions have been answered. In the future, I am encouraged to ask any questions that I may have concerning this project.

Participant’s Signature  Date

Principle Investigator’s Signature  Date

Thesis Advisor  Date
APPENDIX B

DIABETES ATTITUDES AND BEHAVIOR QUESTIONNAIRE

Please answer the questions 1-7, by placing a check mark by the appropriate answer.

1. What is your sex? Male
   Female

2. What is your age: _____

3. How many years have you had diabetes? _____ Years

4. Do you have family members that also have diabetes or had diabetes?
   Yes
   No

If you answered yes, which family members? Please check all that apply to you.

Your:
   Mother
   Father
   Brother(s)
   Sister(s)

Mother's family
   Grandmother
   Grandfather
   Aunt(s)
   Uncle(s)
   Cousin(s)

Father's family
   Grandmother
   Grandfather
   Aunt(s)
   Uncle(s)
   Father's cousin(s)

5. Where do you usually go for your diabetes care? Please check only one.
   Minni-Tohe Health Center
   White Shield Field Clinic
   Other

6. What type of primary health care provider do you usually see for your diabetes care? Please check only one.
   Diabetes Specialist
   Medical Doctor
   Nurse Practitioner (NP)
   Physician’s Assistant (PA)

7. Who do you usually see for diabetes education? Please check only one.
   Diabetes Program Staff (Nurse Educator, Dietician, Fitness Director, Physician’s Assistant)
   Minni-Tohe Clinical Staff
   Other
For questions 8-23 place a check in the box that best describes your attitude about the statement.

<table>
<thead>
<tr>
<th>In general, I believe...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
</tr>
<tr>
<td>9. I should drink water or diet soda when I am thirsty.</td>
</tr>
<tr>
<td>10. It is important for me to eat a diet of low fat, low sugar and high fiber.</td>
</tr>
<tr>
<td>11. I do not need to exercise 30 minutes every day.</td>
</tr>
<tr>
<td>12. It is important to check my blood sugar at home.</td>
</tr>
<tr>
<td>13. I do not need to have my blood pressure checked at every clinic visit.</td>
</tr>
<tr>
<td>14. I should check my feet every day for cuts or sores.</td>
</tr>
<tr>
<td>15. I do not need to go to the dentist once a year.</td>
</tr>
<tr>
<td>16. I need to have an eye exam (dilated) every year.</td>
</tr>
<tr>
<td>17. It is not important to have a diabetic urine (protein) check every year.</td>
</tr>
<tr>
<td>18. It is important to have a diabetic blood test (HbA1c) every 3-6 months.</td>
</tr>
<tr>
<td>19. I do not need to get a flu shot every year.</td>
</tr>
<tr>
<td>20. It is important to me not to smoke.</td>
</tr>
<tr>
<td>21. I should have my cholesterol checked once a year.</td>
</tr>
<tr>
<td>22. It is not important to get diabetes education once a year.</td>
</tr>
<tr>
<td>23. It is difficult to live with diabetes.</td>
</tr>
</tbody>
</table>
Please circle the best answer, that applies to you.

25. Most days I usually eat:
   A. 3 meals and snacks
   B. 3 meals and no snacks
   C. 1-2 meals and snacks
   D. No meals, just snacks

26. Most days, my diet consists of foods that are:
   A. Low fat
   B. High fiber
   C. Low sugar
   D. All of the above

27. When I am thirsty, I usually drink:
   A. Juice
   B. Regular soda
   C. Diet soda
   D. All of the above

28. I go to the dentist:
   A. About every 6 months
   B. About once a year
   C. About every 2-3 years
   D. I don’t go

29. I exercise:
   A. About 3 times a week
   B. About once every 2 weeks
   C. About once a month
   D. I don’t exercise

30. I have my blood pressure checked:
   A. Only when I am sick
   B. About once a year
   C. At clinic visits
   D. I don’t have it checked

31. I check my blood sugar:
   A. Almost daily
   B. About once a week
   C. About once a month
   D. I don’t check my blood sugar

32. I check my feet for cuts, sores, swelling:
   A. Almost daily
   B. About once a week
   C. About once a month
   D. I don’t check my feet

33. I have the eye exam with drops (dilate the eyes):
   A. When I am sick
   B. About once a year
   C. About every 2 years
   D. I don’t have it done

34. I have my diabetic lab work (A1c) done:
   A. About once a year
   B. About every 2 years
   C. About every 3-6 months
   D. I don’t get it checked
35. I have a diabetic urine (protein) test:
   A. When I am sick          C. About every 2 years
   B. About once a year       D. I don’t get one

36. I get a flu shot:
   A. When I am sick          C. About every 10 years
   B. About once a year       D. I don’t get one

37. I smoke:
   A. Every day               C. About 1-2 times a month
   B. About 1-2 times a week  D. I do no smoke

38. I have my cholesterol checked:
   A. When I am sick          C. About every 2 years
   B. About once a year       D. I don’t have it checked

39. I get diabetes education:
   A. About every 6 months    C. About every 2-3 years
   B. About once a year       D. I don’t get diabetes education

40. Living with diabetes, I sometimes feel:
   A. Nervous                 C. Angry
   B. Depressed               D. All of the above
   E. Other__________________

Please add any comments you want to share with us.

THANK YOU AGAIN FOR PARTICIPATING IN THE SURVEY.
June 5, 2001

Madonna Azure
7243 14th Street N.W.
Garrison, ND 58540

Dear Ms. Azure:

I am granting you permission to use the Diabetes Attitudes and Behavior Questionnaire in the research study you are conducting to complete your Master’s of Science degree. You may adapt this questionnaire to meet the needs of your population.

I wish you the best in conducting your research study and collecting the data.

Sincerely,

Loretta Heuer, Ph.D., R.N.
Diabetes Coordinator
Migrant Health Service, Inc.
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