**Introduction**

Diabetes mellitus (DM) continues to be a growing epidemic among Native Americans with a prevalence of nearly three times that of Caucasians.1 The death rate from DM increased by 55% between 1972-1974 and 2000-2002.1 Over 16% of all Native Americans aged 20 years and older are diabetic and in some tribes 30 to 50% of their population are diabetic.2

In addition to DM having a higher prevalence in Native Americans compared to Caucasians, some studies suggest that DM is more prevalent in Native Americans when compared to other racial minorities. The results from a 2005 California Health Interview Survey by Harjo et al, showed that the prevalence of DM was highest in Native Americans (14.9%) compared to 10.1% in African Americans, 8.0% in Hispanics, 6.5% in Asians, and 6.0% in Caucasians.3 This study sample consisted of 28,979 Caucasians, 6,369 Hispanics, 3,941 African Americans, and 554 Native Americans.3 After adjusting for age, gender, other risk factors, and behavioral correlates, compared to Caucasians, Native Americans had the highest likelihood of DM odds. Native Americans had the highest prevalence of high cholesterol; and age, male gender, lower intake of fruit and vegetables, and high blood pressure were the most important indicators of DM in Native Americans.3

The purpose of this literature review is to establish the need for culturally sensitive diabetic interventions among the Native American population in Robeson County and to identify cultural barriers to health care among Native American populations.

**Summary of the evidence**

*Diabetes Mellitus in Native Americans of North Carolina*

In 2012, 1.5% (146,281) of the people living in North Carolina (9,752,073) were Native Americans and Alaskan Natives. Of these, ~36% (52,843) were Native Americans and Alaskan Natives living in Robeson County.4 American Indians in North Carolina (NC) face many health issues, and are less likely to have health insurance, see a medical professional, live above poverty level, have early prenatal care/full term baby, and get the recommended amount of daily activity.5 The leading causes of death in American Indians in North Carolina, of which there is a huge disparity between American Indians and whites, are heart disease, cancer, stroke, and DM. Additionally, the DM prevalence in American Indians is greater than that of African Americans and whites.5

DM is one of the leading causes of death in Native Americans, and Robeson County is one of ten North Carolina counties with the highest DM death rates.5 As of February 2013, the age-adjusted DM death rate per 100,000 residents in Robeson County (48.8) was more than twice that of the state of North Carolina (22.0).6 Complications of DM in NC include lower extremity (LE) amputations and end stage renal disease, both of which are three times and six times higher than the rate in the US, respectively.5 Other complications include neuropathy, osteoporosis, and eye damage, which can lead to increased risk of falls.7 Risk factors for DM include physical inactivity, obesity, family history of DM, hypertension (HTN), and low high density lipoprotein (HDL) levels.

Evidence supports DM prevention and treatment through a patient-centered approach focusing on physical activity, proper nutrition, and education. 8,9 A recent review by Duclos et al suggests that 150 to 300 minutes a week of moderate intensity cardiovascular physical activity, and two non-consecutive sessions a week of resistance activity is linked to the prevention and management of DM.9 In a 2002 Behavior Risk Factor Surveillance System (BRFSS) survey of Robeson County, only 71 of 252 respondents (29.4%) aged 45 and over reported engaging in moderate physical activity, which represented the lowest of twelve counties reported in North Carolina.10

It is evident that DM is a prevalent and serious concern for the Native Americans population, and that effective diabetes intervention programs are needed to manage and prevent this disease. However, it is necessary to ask what barriers or perceptions may hinder our ability to treat diabetes among this population. Identifying the barriers to health care and the health perceptions and views of Native Americans may allow clinicians to develop culturally appropriate interventions that are more effective.11, 12, 13

*Barriers to Health Care Among Minority Populations*

 Minority Americans (including Native Americans) have poorer health outcomes as it relates to preventable or treatable conditions such as cardiovascular disease, diabetes, asthma, cancer, and HIV/AIDS when compared to majority Americans.14,15,16  This can be contributed to multiple factors including overall lower socioeconomic status, lower levels of education, inadequate and unsafe housing, and living in close proximity to environmental hazards.14,15 Along with the increased prevalence of poor health outcomes, minority populations are confronted with barriers when utilizing health services. 14,15,16 Therefore, there is an increased need to identify what these cultural barriers are and how they can be minimized and ultimately eliminated.

 A review study by Schepper et al was conducted to raise the awareness of barriers to healthcare among minority populations. The study identified 3 main categories of barriers including the following: *barriers at the patient level* (lower education levels, income/financial means, no health insurance, poor living conditions, communication, and culture, etc.), *barriers at the provider level* (communication style, lack of minority health professionals, behavior, patient approach, lack of cultural knowledge, etc.) and *barriers at the system level* (dispassionate consumerist approach, medical paradigm, scheduling difficulties, translation). Dividing the barriers into these categories may be helpful in order to address or resolve the barriers at each corresponding levels. Schepper et al suggests that many health care providers are not aware of the existence or severity of barriers to health care among minority populations and that efforts should be made to make this issue transparent.16

 Two similar articles both discussing current evidence around health care disparities among minorities, proposed multiple ways that may aid in the elimination of health care disparities among minorities.14,15  Betancourt promotes the recommendations made by the Institute of Medicine Report *Unequal Treatment* and further explains the need for increased collection and reported data by patients’ race/ethnicity.14,15,16Betancourt states “...the Medicare database has only recently begun to collect data on patient groups outside the standard categories of white, black and other.14Native Americans are included in the ”other” group showing the increased need for information on barriers to healthcare among this population.14 He also suggests the need for an increased proportion of underrepresented minorities in the health care workforce and the need for increased training/teaching on cultural competency for current clinicians and students in health professional schools.14 Thomas also strongly promotes the need for increased diversity and cultural competency among healthcare providers.15

 All three studies/articles agree that more light should be shed on the topic of healthcare disparities and barrier to healthcare among minority populations including NAs. They also agree that increasing the development of cultural competence in all facets of the healthcare system is needed to begin dismantling this issue.

*Barriers to Health Care among Native Americans*

 Three qualitative interview studies, all examining barriers to diabetes prevention in Native Americans, reported similar findings and conclusions. The most common barriers were related to cultural barriers.13, 17,18  Tiedt et al reported cultural barriers related to communication.17 Taylor et al and Cavanaugh et al both found evidence of cultural barriers related to poor health literacy with respect to defining health and defining diabetes. In both studies, the participants defined diabetes in terms of long-term complications that were linked to fear and concern.13,18

 In the qualitative study by Tiedt el al, seven females and three males of the Coeur d’Alene tribe aged 26 to 86 were interviewed. All participants had been diagnosed with type 2 diabetes for 1 to 60 years. This study was conducted to further understand the obstacles to diabetes self-management (DSM) for the tribal members after an unsuccessful diabetes education pilot study due to lack of participation. Perceived unsatisfactory care was the major barrier to DSM and consisted of communication barriers and organizational barriers.17 Miscommunication, distrust and teaching/learning methods were included as communication barriers. Participants felt they could not connect with their provider because of their previous experiences of miscommunication including the provider falsely assuming they understood the treatment plan or how to adjust their insulin. Participants stated they didn’t feel comfortable talking and opening up to a provider because of distrust that was rooted in historical mistreatment by government. Regarding learning methods, the participants felt that the diabetes educational tools available to them were not conducive with Native American learning styles. The participants explained that the uses of words like “school” or “education” were often seen as negative due to tribal history of boarding schools. These perceptions of healthcare providers and healthcare intervention are examples of cultural barriers to healthcare.17 A cultural barrierto healthcare is any barrier due to cultural influences that restricts the use of healthcare services or medical recommendations.13,16

 Taylor et al conducted a qualitative study to identify the social and cultural barriers to diabetes prevention among Northeastern Oklahoma NA women.13 The study consisted of 79 NA women aged 18-65 who were not pregnant or lactating. The results showed that the NA women perceived health in terms of lifestyle behaviors and the presence or absence of disease or symptoms and perceived diabetes in terms of long-term complications. The women also felt that they were in good health as long as they were able to perform daily tasks. In terms of diabetes, the women confused long-term complication with symptoms. When women in the study faced diagnosis of diabetes, self-care was delayed until signs of long-term complications. Some women said dialysis and blindness were symptoms of diabetes. Fatalism toward diabetes was a common theme among the women as well as the idea that developing diabetes as a Native American was inevitable. One woman stated, "I knew it was going to happen, but when it did happen, it was a surprise to me. And I felt like I was doomed."13  Along with the perceptions of health and diabetes, another cultural barrier found among the women were denial and avoidance of screening. Also when women diagnosed with diabetes were faced with the need to make healthy lifestyle changes like healthier eating, they felt that it was wrong to put their needs above the needs and wants of their family unit.13 Many of the cultural barriers above reduce the likelihood of diabetes prevention or early diabetes management that may reduce long term complications.

Cavanaugh et al conducted a qualitative study to identify cultural perceptions of health and diabetes among Northeastern Oklahoma NA men. The study consisted of 20 NA men aged 18-65, 50% of which have a medical diagnosis of diabetes.18 Their results were very similar to the results found in their 2004 study. The results showed that the men perceived health in terms of lifestyle behaviors and diabetes in terms of long-term complications. Individuals who engaged in positive behaviors like a healthy diet and exercising or who refrained from unhealthy behaviors like smoking and drinking alcohol were considered to be healthy. The men also defined health in terms of the presence or absence of disease or symptoms. The men defined diabetes in terms of blindness, kidney disease, dialysis treatments, transplants, and amputations. The men expressed fear of diabetes and some called it a “crazy disease”. 18 Another man describing diabetes stated, “makes your heart work faster, harder. Makes your body have to work more than it should. Stuff gets clogged up. Next thing you know, you’re getting something cut off.”18 Other cultural perceptions of the men were fatalism and the idea that developing diabetes as a Native American was inevitable. Some of the men’s statements included, “diabetes is just one death sentence as far as I’m concerned,” and “yeah, you’re going to get it anyway.”18 Understanding how NAs perceive health and diabetes may improve clinicians’ ability to develop culturally sensitive interventions for this population.

 All three studies agree that additional data collection is needed to further understand the barriers that exist among Native Americans in order to have increased culturally sensitive interventions that are effective in preventing and treating diabetes among this population. "Cultural sensitivity implies a recognition and appreciation of the values, traditions, and beliefs of cultures other than one’s own. Cultural sensitivity requires an understanding not only of other cultures, but of one’s cultural biases”12

In an article, Mitchell expresses the need for culturally sensitive diabetes interventions among NAs and describes a culturally sensitive approach.19  Mitchell explains that one issue with the current diabetic interventions is the focus on individual behavior modification, which may not be most effective among the NA populations. She states, “the emphasis on personal motivation, individualized diabetic self-management plans, and self-efficacy place the daily burden of care on the individual. This is not congruent with most tribal values.”19 She argues that the individualized focused programs often have poor assumptions, stating that "Some diabetes education programs encourage patients to eat a prescribed diet to manage blood glucose levels but do not address the fact that a patient lives on a limited income, cares and cooks for extended family members without diabetes, does not have transportation, and lives in a rural community that requires a 20-mile drive to the nearest store that offers fresh, healthy and affordable food options.”19 She suggests a “social determinants of health perspective” that reframes diabetes among NAs and begins to understand the high risk for developing the disease among this population as a product of and a response to unjust conditions and environments, instead of a disease rooted solely in individual pathology and responsibility.19

Regarding diet, Mitchell discussed how the NA people have experienced a breakdown of food systems due to the loss of traditional lands, plants, animal herds, and water sources and were later introduced to government-sponsored commodity food programs including sugar, canned meats, juices, pasta, cheese, peanut butter, corn syrup, dry and evaporated milk, and vegetable oil.19 Using the social determinants of health perspective, Mitchell feels that clinicians could work with each tribe in a culturally sensitive way to discuss the historical breakdown of traditional food systems and determine ways to implement their traditional food systems back into their culture. One of the main ideas was advocating for food related policy at the tribal, state, and federal levels to increase the availability of healthy foods through subsidies that ensure fresh and nutritious foods are affordable and accessible in NA communities. Ultimately, Mitchell argues that current diabetes intervention programs that may be effective for the majority population may not be effective for NAs and that effort to implement culturally sensitive interventions should be considered.19

**Limitations**

 Some of the limitations of this literature review are small sample sizes and weakness of research design. Many of the studies were qualitative studies that collected data through interviews. The studies also focused on specific tribal groups, which may not clearly represent the Native American population because each tribe may vary in regards to culture. Also, studies and article reviews focused on barriers to healthcare among minority populations including NAs were included in this literature review due to lack of evidence focused on barriers to healthcare among Native Americans alone.

**Conclusion**

 This review of literature included qualitative study designs and a review study. The evidence supported in this literature review ranged from studies of minority populations to Native American populations and did not stay within the parameters of only Native American populations. The most common barriers to healthcare found among NAs were low income/socioeconomic status, the lack of culturally competent healthcare providers, and cultural barriers including the perceptions of health, health conditions, and providers. The need for culturally sensitive diabetes intervention programs for the Native American population is evident in the literature. Further research is needed to identify barriers to healthcare among the Native American population including data collection about barriers among Native American tribes on reservations and those off reservations. This literature review has also prompted several questions regarding the healthcare professional’s need to understand more about the cultural barriers/health care disparities among Native American people in order to provide more effective DM interventions.

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