**Biocultural Approach to Prevalence of Diabetes Among Native Americans**

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Diabetes is defined by the Centers for Disease Control (CDC) as, “a chronic (long-lasting) health condition that affects how your body turns food into energy.” There are two types of diabetes: Type 1 and Type 2. Type 1 diabetes is an autoimmune deficiency, which prevents the pancreas from producing enough insulin to manage blood sugar levels in the body; typically, people are born with Type 1 diabetes (Centers for Disease Control [CDC], 2021). Type 2 diabetes occurs when the cells of the body develop a resistance to insulin where the production of insulin by the pancreas is ineffective in reducing blood sugar. This type of diabetes is often referred to as “adult-onset” diabetes as it typically develops over time and is most commonly diagnosed in adults and this type of diabetes accounts for 90-95% of all diabetes diagnosis (CDC, 2021). Living with diabetes can often be difficult to manage and can lead to serious health complications including heart disease, chronic kidney disease, nerve damage, limb loss, and even death (CDC, 2022). Diabetes is responsible for the annual death of 102,188 Americans, making it the eighth leading cause of death in the United States. Approximately 37.3 million people in the United States are living with diabetes, which translates to one in five Americans (CDC, 2022). Though these statistics may lead one to believe the burden of this chronic illness is equally shared by all Americans, that is not the case.

As with many other chronic diseases, diabetes (specifically Type 2) is far more prevalent in the minority population of the US. The minority group with the highest prevalence of Type 2 diabetes is Native Americans. 14.5% of Native American adults are diagnosed with diabetes; compared to 12.1% of African Americans, 11.8% of Hispanic Americans, 9.5% of Asian Americans, and 7.4% of European Americans (American Diabetes Association [ADA], 2022). Beyond diagnosis of diabetes, this disease poses a far greater threat to the health Native Americans. The mortality rate of diabetes among Native Americans is more than three times higher per 100,000 than all races combined (Indian Health Service [IHS], 2019). Why is diabetes more prevalent in the indigenous population of the United States? What environmental factors are involved? What genetic factors are involved? How are Native Americans impacted by diabetes? What can be done to reduce the prevalence of this chronic disease in this particular demographic?

In this paper I will be conducting a critical review of the current literature available to answer these questions. I will analyze the information using the biocultural approach to anthropology, and provide a conclusion discussing how medical anthropology may be utilized to discover and develop potential solutions to this health phenomenon.

The focus of this research is the prevalence and impacts of Type 2 diabetes in the Native American population in the United States. I have selected Type 2 diabetes because it is far more common than Type 1, and Type 2 can be caused through both environmental and genetic factors (Mayo Clinic, 2021). Type 2 diabetes is most common in adults who are overweight or obese, have low physical activity levels or live a sedentary lifestyle, and have a generally unhealthy diet (CDC, 2022). Symptoms of diabetes include frequent urination, severe thirst, blurry vision, numbness or tingling in the hands and feet, exhaustion, and decreased immunity against infections (Mayo Clinic, 2021). In addition to these symptoms, diabetes can cause much more severe health complications such as heart disease, chronic kidney disease, blindness, limb loss, and death (CDC, 2022). Living with diabetes is also reported to reduce overall quality of life; in the United States especially, life with diabetes comes at a steep financial cost (Rubin and Peyrot, 1999). Estimates of direct medical costs of life with diabetes range from $54,700 to $130, 800 in adults diagnosed with Type 2 diabetes (Zhuo et al., 2013). Though Type 2 diabetes is not entirely dependent on genetic predisposition, there is a significant positive correlation between Native American ancestry and the development of Type 2 diabetes (Olsen, 2017). The physical symptoms, health complications, financial cost, and environmental and genetic causes of Type 2 diabetes have created a notably poorer health experience for Native Americans in the US. Though the disproportionately high prevalence of diabetes among Native Americans is not a spontaneous phenomenon.

 Environmental causes of type 2 diabetes include where an individual lives, their access to and quality of education, and lifestyle. These factors influence an individual’s access to nutritious food, personal understanding of how to be healthy, and ability to cook and exercise. When these factors are applied to Native Americans it becomes clear why indigenous people are environmentally predisposed to developing Type 2 diabetes. Most Native Americans in the United States live on federally designated reservations (Warne and Wescott, 2019). Beginning in 1830 with the Indian Removal Act, Native Americans across the United States were moved to small stretches of land mainly placed in the western half of the nation. The designation of Native American reservations were arbitrary and located in areas that were out of the way of European Americans of the 19th century. These reservations are not only placed in areas that are completely disconnected from the ancestral lands of indigenous people in the US, but they are also located in areas of the country known as food deserts (Warne and Wescott, 2019). A food desert can be defined as an area with limited access to nutritious and diverse foods. Living in a food desert can make management of Type 2 diabetes extremely difficult. Oftentimes individuals with diabetes are left to choose between financial security and the proper management of their condition and overall health. Food deserts are also linked to increased prevalence of obesity, which is a risk factor for Type 2 diabetes (Gucciardi et al., 2014).

 Access to education is a significant factor in preventing the development of Type 2 diabetes. The more educated an individual is, the less likely they are to develop diabetes (Garg, 2013). This phenomenon occurs because education gives people the tools and information needed to understand how to be a healthy person and develop healthy behaviors. Health classes in school teach students how to create a healthy diet and exercise regimen as well as how to prevent illness, disease, and infections (Garg, 2013). The tumultuous history between Native Americans and the national education system began in the 19th century, where European Americans would kidnap Native American children and force them into boarding schools with the primary goal of destroying the Native American culture by assimilating the future generations of indigenous people (Warne and Wescott, 2019). The results of this education destroyed Native American languages, cultural traditions, families, and developed an understandable mistrust of American educational institutions. The remnants of this generational trauma has created a significant gap in the quality of education given to Native Americans and the number of students who graduate high school (The Red Road, 2022). The generally poor and limited education of Native Americans is a notable influence in the high prevalence of diabetes in indigenous communities. If students never learn how to be healthy or how to prevent chronic illnesses like diabetes, how can they be expected to lead healthy lives?

Lifestyle also plays an important role in the development and prevention of Type 2 diabetes. There are many harmful stereotypes about the lifestyle of Native Americans. Historical depictions of the “drunken savage” paired with societal beliefs that Native Americans are generally lazy and sedentary has created biases in the American health system, which attributes the negative health experiences of indigenous people to their lifestyle as opposed to other risk factors (Warne and Wescott, 2019). A healthy lifestyle with a regular exercise regimen and balanced diet is an effective way to prevent and manage diabetes; however, such a lifestyle is not possible for most Native Americans. Poor infrastructure, sedentary family dynamics, limited access to healthy food and high-quality education, and few community health programs are all barriers that prevent Native Americans from achieving the ideal lifestyle to prevent or manage diabetes.

Environmental influences such as place of residence, access to and quality of education, and lifestyle are all factors that increase the likelihood for indigenous people to develop diabetes. These factors increase the prevalence of obesity in Native Americans, generally poor diets as a result of insufficient federal food programs and food deserts, and less than ideal lifestyle for prevention of diabetes. However, environmental influence is not the only cause for Type 2 diabetes. There is also a genetic correlation for Native Americans and diabetes.

When discussing the genetic predisposition of any individual to develop diabetes it is important to note that diabetes is not caused by any singular gene. Diabetes is not hereditary. The development of diabetes in one family member does not mean every member of that family will also develop diabetes. In order for an individual to develop Type 2 diabetes there must be both genetic and environmental factors (American Diabetes Association, 2022). However, there is still a strong affiliation to a family history of diabetes and the diagnosis of Type 2 diabetes in adults. Native Americans often have a medical family history filled with numerous chronic illnesses. One study found that 89.7% of indigenous elders had been diagnosed with at least one form of chronic illness (Adamsen et al., 2018). A family history of obesity is also a contributing factor for the likelihood of an individual developing diabetes (CDC, 2018). This applies to Native Americans genetically and behaviorally. Native Americans with a family history of obesity are likely to become obese themselves partially because of their genes in the way they break down foods and distribute fat throughout the body, and partially because of the activity level and diets of their family. It can be difficult to maintain a lower body weight when an individual’s family does not or cannot participate in a lifestyle to support and maintain a medically healthy weight (Francenschini et al., 2008). Obesity, as a risk factor for diabetes, paired with a family history chronic illness can significantly increase the chances of a person developing adult-onset diabetes (Mayo Clinic, 2021). Both obesity and long-term illnesses being highly prevalent in the indigenous population of the United States add a genetic vulnerability to developing diabetes that is often triggered by the environmental factors discussed previously.

Analyzing this health phenomenon using a biocultural lens adds perspective to the cause of disproportionately high prevalence of diabetes amongst the indigenous people of the United States. Knowing diabetes was not always common in Native American adults, the increased prevalence for this chronic illness can be seen as an adaptation. Adaptations may be thought of in a more positive light, as they are often associated with evolution and survival of the fittest; however, in this context adaptation is a reaction of the population to drastic changes in their environment and their culture. The events of the 19th century changed indigenous culture forever (Solomon et al., 2022). Attacks from European settlers and the American government created a culture that brutalized Native Americans and largely destroyed traditional indigenous practices and lands. The erasure of sacred languages, cuisines, lands, and beliefs left Native Americans traumatized. In addition to losing many vital aspects of their culture, Native Americans were now living on reservations in areas of the country completely disconnected from their ancestors (Warne and Wescott, 2019). This tragic era in Native American history has largely influenced how Native Americans are treated societally and systematically.

As a result of the marginalization and oppression of Native Americans in the United States, the health and well-being of indigenous peoples across the country declined dramatically (Solomon et al., 2022). Generational trauma from the atrocities committed to indigenous ancestors, seclusion to reservations with limited resources for food, education, medical attention, and clean water, and racism at the hands of other Americans as well as the government have created the adaptation of Native Americans which makes them far more susceptible to chronic illnesses and a poorer overall health experience (Warne and Wescott, 2019). The high prevalence of Type 2 diabetes in Native Americans cannot be explained without the consideration of American culture. American bioculture also explains why European Americans have the lowest rates of Type 2 diabetes, while all other minorities disproportionately experience the burden of this chronic illness.

The prevalence of Type 2 diabetes in the Native American population of the United States is an important health phenomenon to address and investigate because it is representative of the much larger health crisis faced by indigenous people. The complex between the environmental, genetic, and cultural factors have created a health situation that largely ignores the needs of Native American people across the country. I believe medical anthropology can be applied to this phenomenon to help create solutions that improve the overall health of Native Americans and reduce the prevalence of diabetes. Medical anthropologists may be able to help policy makers improve federal food provision programs by connecting with the members of indigenous communities and creating a list of foods that are culturally appropriate and balanced to improve the diets of Native Americans who are dependent on such federal programs to feed themselves. Medical anthropologists may also be helpful in bridging the gap between the American health system and indigenous health practices through the implementation of Native American health courses in medical schools. Medical anthropologists can shed light on the effects of generational trauma on the health of Native Americans, which may help government and non-government organizations take the appropriate steps to restore indigenous culture. Beyond these suggestions, medical anthropology and the biocultural approach to the field allow others to understand various health experiences and practices from a more objective and open-minded perspective. Both objectivity and open-mindedness are vital when considering how to improve a complex issue such as Type 2 diabetes among Native Americans. This research demonstrates that the health of Native Americans is a result of environmental, genetic, and cultural factors, and to improve indigenous health we must first change the culture.

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