

12-24-2025

## Perceptions of Lumbee Tribe Members on Participating in Diabetes Type II Prevention Practices

Jeremy Wesley Lowery  
*Walden University*

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>



Part of the [Public Health Commons](#)

---

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact [ScholarWorks@waldenu.edu](mailto:ScholarWorks@waldenu.edu).

# Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral study by

Jeremy Lowery

has been found to be complete and satisfactory in all respects,  
and that any and all revisions required by  
the review committee have been made.

Review Committee

Dr. Richard Jimenez, Committee Chairperson, Public Health Faculty  
Dr. Stacy-Ann Christian, Committee Member, Public Health Faculty

Chief Academic Officer and Provost  
Sue Subocz, Ph.D.

Walden University  
2025

Abstract

Perceptions of Lumbee Tribe Members on Participating in Diabetes Type II Prevention

Practices

by

Jeremy Lowery

MPH, East Carolina University, 2020

BA, East Carolina University, 2018

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

February 2026

## Abstract

Type II diabetes (DB2) is one of the leading causes of death in the United States, whether directly or as a comorbidity. This is especially alarming for Native Americans, who have the highest DB2 prevalence and death rates when compared to their non-Native American peers. This qualitative phenomenological study explored the lived experiences of Lumbee Tribe members in Robeson County regarding DB2. The health belief model was used as a lens through which to understand and interpret findings. In-person semi-structured audio-recorded interviews were conducted with 12 participants recruited through social media. Data were coded and analyzed using deductive thematic analysis. All 12 participants identified being diagnosed with diabetes or having a diagnosed family member. All participants identified proper nutrition and exercise as major DB2 prevention/management factors and perceived diabetes as a serious issue within the Lumbee Tribe. Half of the participants felt that Indigenous people do not perceive DB2 as a serious issue and felt that their lifestyles had room for improvement for reducing DB2 risk factors. To address these findings, a multilevel intervention was suggested targeting Lumbee tribal members, their family/community, health care providers/organizations, Lumbee Tribal Government, and policymakers. The intervention focused on increasing interactions between the stakeholders, promoting positive health behaviors, improving DB2 health education, forming partnerships to seek funding for programs, and providing culturally appropriate care. Findings may promote sustainable positive social change by providing new knowledge that may be useful in increasing DB2 awareness and prevention programs for members of the Lumbee Tribe.

Perceptions of Lumbee Tribe Members on Participating in Diabetes Type II Prevention

Practices

by

Jeremy Lowery

MPH, East Carolina University, 2020

BA, East Carolina University, 2018

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

February 2026

## Acknowledgements

I would like to first thank God for giving me the strength, determination, and ability to advance my education to this point. To my fiancée, Zulma Arroyo; my mom, Pamela Hunt; my dad, Jennings Jacobs; and the rest of my friends and family, I would like to express my deepest gratitude. To all my loved ones, your unwavering support, encouragement, and belief in my abilities have carried me through every challenge. I don't know if I would have been able to reach this point without your constant motivation, patience, and love throughout this journey. Your faith in me pushed me to keep going, and I couldn't have reached this milestone without you. Thank you all for not letting me stop and for continually pushing me to earn this degree. And, to my loved ones looking down from heaven, I know that you all cheered me on all the way, and I hope that I was able to make you proud.

I would also like to thank all my mentors whom I met along the way during my time studying at East Carolina University, during my internships at the Robeson County Health Department, my time working at UNC Eshelman School of Pharmacy, and finally, my time studying at Walden University. Through your support, I was able to acquire the skills and knowledge necessary to reach this point in my educational and professional career.

Finally, I would like to thank my committee chair, Dr. Richard Jimenez, and my committee member, Dr. Stacy-Ann Christian, for their continual guidance during my study process. You both provided me with excellent levels of support, mentorship, and knowledge, ensuring that I reached my goals. Without both of your assistances, I would not have been able to accomplish this.

## Table of Contents

List of Tables .....	v
Section 1: Foundation of the Study and Literature Review .....	1
Background.....	2
DB2 .....	2
Epidemiology of Diabetes in the United States .....	5
Problem Statement.....	7
Purpose of the Study .....	8
Research Questions.....	9
Theoretical Framework.....	9
Nature of the Study .....	10
Literature Search Strategy.....	11
Literature Review Related to Key Study Variables and Concepts .....	12
DB2 Knowledge, Attitudes, Beliefs, and Behaviors in General and Among Native Americans.....	12
Current DB2 Prevention Efforts in General and Among Native Americans and Lumbee.....	15
Studies Using the Current Study’s Methodology .....	18
Studies Focused Toward Research Questions .....	22
Gap in the Literature .....	24
Definitions.....	25
Assumptions.....	27

Scope and Delimitations .....	27
Scope of Study .....	27
Delimitations.....	28
Limitations .....	28
Recall Bias .....	28
Response Bias .....	29
External Validity.....	29
Significance.....	29
Summary and Conclusions .....	30
Section 2: Research Design and Data Collection .....	31
Research Design and Rationale .....	31
Role of the Researcher .....	31
Methodology .....	32
Participant Selection Logic.....	33
Instrumentation .....	34
Procedures for Recruitment, Participation, and Data Collection.....	36
Data Analysis Plan.....	38
Issues of Trustworthiness.....	39
Credibility .....	39
Transferability.....	40
Dependability .....	40
Confirmability.....	40

Ethical Procedures .....	41
Summary .....	42
Section 3: Presentation of the Results and Findings .....	43
Pilot Study.....	43
Data Collection .....	44
Setting .....	44
Demographics .....	45
Data Collection Process .....	46
Data Analysis .....	48
Evidence of Trustworthiness.....	50
Credibility .....	50
Transferability.....	50
Dependability .....	51
Confirmability.....	51
Results.....	52
Theme 1: Experience With Disease .....	53
Theme 2: DB2 Knowledge .....	55
Theme 3: Perceived Severity .....	58
Theme 4: Perceived Susceptibility.....	60
Theme 5: Management .....	63
Theme 6: Perceived Barriers.....	70
Summary .....	74

## Section 4: Application to Professional Practice and Implications for Social

Change .....	75
Interpretation of the Findings.....	75
PRQ .....	75
SRQ1 .....	83
SRQ2 .....	87
SRQ3 .....	91
Limitations of the Study.....	95
Recommendations for Future Research .....	96
Public Health Practice and Field-Based Products.....	97
Policy Brief.....	98
Executive Summary: Considerations for Program Development and Implementation Strategies .....	98
Positive Social Change .....	101
Conclusion .....	101
References.....	104
Appendix A: Research Flyer.....	112
Appendix B: Research Protocol.....	113
Appendix C: Policy Brief.....	121
Appendix D: Executive Summary .....	122
Appendix E: Intervention Plan Framework .....	124
Appendix F: Fact Sheet.....	125

## List of Tables

Table 1. Research Question and Interview Questions .....	35
Table 2. Selected Participant Demographics .....	46
Table 3. Analyzed Themes and Categories.....	50

## Section 1: Foundation of the Study and Literature Review

The number of people who have contracted diabetes in the United States has been on the rise. According to the Centers for Disease Control and Prevention (CDC, 2022), 38.4 million people in the United States have diabetes, or about 11.6% of the U.S. population. This means more than 1 in every 10 people have diabetes makes it more than likely that they are someone, know someone, or are related to someone who has diabetes. About 29.7 million people are clinically diagnosed with diabetes in the United States, of which 29.4 million are adults (CDC, 2022). The remaining 8.7 million individuals are undiagnosed, of which 22.8% are adults (CDC, 2022). This is alarming in that those who are undiagnosed more than likely do not know about the effects that diabetes can have on their body. Furthermore, they may not partake in activities that could improve their health, such as lifestyle changes and other methods. This lack of knowledge of the importance of positive lifestyle changes most likely will lead to individuals succumbing to complications related to Type II diabetes (DB2) or other health problems associated with it. Though not a new issue in the United States, DB2 diabetes has been on the rise, especially in recent years.

Diabetes is currently labeled as a health disparity due to its higher effects on disadvantaged populations (CDC, n.d.). The race with the highest prevalence rate of diabetes is Native Americans. Native Americans' prevalence rate for diabetes is 13.6% (ADA, n.d.). This is higher than all other U.S. races among men and women. Native Americans are often highly disadvantaged when it comes to combating diabetes, whether through prevention or management.

Across the United States, there are 574 federally recognized Native American tribes and over 400 that are not federally recognized but have recognition through their state. Though there may be similarities in how each tribe experiences diabetes prevention/management practices, there will often be differences. These differences can stem from factors such as the tribe's culture, beliefs, diet, environment, education level, and more (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2023). Outlining these factors may provide a better understanding of what issues may need to be addressed to tailor culturally competent diabetes prevention/management efforts.

Section 1 focuses on the background, problem statement, purpose, and research questions that guided this study. Section 1 also details the theory that guided the study, the health belief model (HBM). Finally, the nature of the study, definitions, scope and delimitations, limitations, and significance are provided.

## **Background**

### **DB2**

DB2 is a disease that occurs when a person's body either does not produce enough insulin or the insulin that it produces does not do its job effectively (CDC, 2022). If this occurs, the body cannot break down its blood glucose to be converted into energy. This can cause several issues for the body. The most effective method for addressing this issue is to implement primary prevention practices before the onset of diabetes occurs, though both secondary and tertiary prevention can have their benefits depending on the situation. If the proper intervention practices are implemented early enough, they can

prevent or reverse prediabetes, thereby preventing the onset of DB2 diabetes (CDC, 2022).

Diabetes is a disease that has been linked to several causes and influences. According to the NIDDK (2023), DB2, which is more common than Type 1 diabetes, has been linked to several factors, including lifestyle factors and genes. Diabetes factors that can commonly influence the onset of diabetes include having low levels of physical activity, being overweight, and having an unhealthy diet (NIDDK, 2023). All of these are risk factors that can be changed to decrease the likelihood of DB2 or to help manage it if it is already contracted. According to Beulens et al. (2022), lifestyle choices that can cause/prevent diabetes are linked to an individual's environment. Environmental factors related to adverse diabetes outcomes include area-level socioeconomic deprivation and air pollution. In contrast, neighborhood walkability and green space are often associated with more positive diabetes outcomes (Beulens et al., 2022).

DB2 can also be influenced by genetic factors, which cannot be avoided. These genetic factors include age, having family members with diabetes, and the individual's race (NIDDK, 2023). Individuals who are over the age of 45 are more likely to contract diabetes due to changes in the body as they age that can affect the effectiveness of insulin and its production. Diabetes often can run within families, increasing the likelihood that the disease manifests in relatives, especially those who are closely related. Some racial groups are more likely to contract DB2. According to the American Diabetes Association (ADA, n.d.), the racial groups that are more likely to contract diabetes include African Americans, Hispanics, Native Americans, Alaskan Natives, Native Hawaiians, and

Pacific Islanders. Though genetics have been identified as a factor for diabetes, many researchers have found it difficult to separate genetic and environmental influences (Yaghootkar et al., 2020). Further research into the topic may allow for reductions in genes that influence diabetes.

Diabetes has increased costs for both those affected by it and the health care industry. According to the ADA (n.d.), the total cost of diagnosed diabetes in the United States in 2022 was \$412.9 billion, with \$306 billion being direct medical costs and \$106.3 billion being indirect costs. Such costs can lead to increases in pricing for certain services of care as well as medications and treatments that can help combat diabetes. Additionally, according to Parker et al. (2024), people with diabetes are likely to incur annual medical expenditures of \$19,736, of which about \$12,022 is attributed to diabetes. The medical expenditures of individuals who are diagnosed with diabetes are likely to be 2.6 times higher than those of individuals who do not have diabetes, on average (Parker et al., 2024). Such an increased cost can make it difficult for some Americans to seek continual care, leading to further adverse health outcomes.

Prolonged diabetes that is not managed can have additional adverse effects on an individual's health. Individuals who have diabetes are more likely to develop additional health issues such as heart disease, vision loss, kidney disease, and the need for lower-limb amputation (CDC, 2022). If positive behavior changes are implemented early enough, all issues can be avoided. The factors that are most associated with an increase in diabetes risk for Native Americans include living in poverty, residing in a rural food desert, low educational attainment, lack of insurance, overnutrition, poor health care,

lower activity levels, a high intake of sugar, past trauma from colonialism, and genetic mechanisms (Blue Bird Jernigan et al., 2020; CDC, 2020; Yracheta et al., 2015). With the various factors having a basis in the different realms of the social determinants of health, it can be challenging to address them all. According to Lucero and Roubideaux (2022), increases in diabetes risk among Native Americans can be linked to the replacement of the traditional Native American lifestyle with a more Western lifestyle, as well as from past traumas caused by relocation. Many Native Americans moved away from the healthier lifestyles of their ancestors and toward consuming more fatty foods and exercising less. Though diabetes can be challenging for a Native American to manage alone, having further comorbidities can make it even harder to manage, increasing the medical costs the individual will accrue.

Further issues may emerge for some Native Americans who live in communities with limited access to health care specialists that they may need. Native Americans may be required to travel longer distances to obtain the needed care if they are able, but if not they may forgo seeking care and instead suffer through the adverse effects of their disease (Chopra et al., 2022). It would be desirable to avoid this issue, but it can be unavoidable for some.

### **Epidemiology of Diabetes in the United States**

The impact that diabetes has had on the U.S. population has gradually changed over time. Between 2001 and 2004, the prevalence estimates for total diabetes were 10.3%, which increased to 13.2% between 2017 and 2020 (CDC, n.d.). This increase in prevalence can partially be attributed to more Americans taking in adverse health

outcomes such as not eating healthy and less physical activity. Though skewed toward adults, children and teens are being diagnosed with diabetes more now than in the past. Within the United States, about 35 of every 10,000 youths below the age of 20 are diagnosed with diabetes (CDC, n.d.). The onset of diabetes early in a child's life can be devastating for them in the long run because diabetes is a disease that is incurable and must be managed throughout a person's life.

Different races are more susceptible to developing and being diagnosed with diabetes. Of all racial groups in the United States, Native Americans are the most likely to develop diabetes at 13.6%, followed by non-Hispanic Black adults at 12.1% and Hispanic adults at 11.7% (ADA, n.d.). This is slightly more than double when comparing Native Americans at 13.6% to non-Hispanic White adults at 6.9%, and slightly below double when comparing non-Hispanic White adults to non-Hispanic Black adults and Hispanic adults (ADA, n.d.). Drastic differences can make racial minority groups subject to more negative health outcomes that can put a significant hindrance on their life. Both Native American men and women have the highest prevalence rates for diabetes when compared to their peers (ADA, n.d.).

Not only are Native Americans more likely to develop DB2 compared to their non-Native American peers, they are also more likely to have a diabetes-related death. According to Murphy et al. (2021), American Indians/Alaska Natives were 2.3 times more likely than non-Hispanic Whites to die from diabetes. This disparity needs to be addressed to ensure better health outcomes for Native American populations. A better

understanding of why Native Americans partake in behaviors that allow diabetes to develop is necessary as well.

According to comparisons of federally recognized Native American tribes to their nonfederally recognized brethren, there are drastic differences in the amount of federal funds, programs, and other forms of assistance they will have access to. One tribe that fits into this nonfederally recognized narrative is the Lumbee Tribe of North Carolina. The current study focused on the Lumbee Tribe and their experiences combating DB2.

### **Problem Statement**

Though diabetes is a common disease among Lumbee Tribe members, there was a lack of information on how their perceptions, knowledge, and beliefs toward diabetes may influence their likelihood to participate in diabetes prevention practices. Due to the Lumbee Tribe not having the same federal recognition as other federally recognized tribes, they do not have access to all the same federal funding for Native American diabetes programs, access to the Indian Health Service, and other services that can lower the effects of diabetes in other federal tribes (Libguides, n.d.; Special Diabetes Program for Indians [SDPI], n.d.). This difference in funding and resources can limit the efforts to combat diabetes within the population. Even if the Lumbee Tribe could partake in a federal diabetes program, it may not accurately translate well due to variances across Native American tribes (Wilson et al., 2022). Additionally, with a mass of Lumbee people living in poverty, having varying levels of health education, having more sedentary lifestyles, and having poor eating habits, diabetes has been able to increase in prevalence within the population (Robeson County Health Department et al., 2020). All

these factors are stacked against the Lumbee people, who must make do with what is available to them. One of the best ways, though, to fight back is to have a better understanding of the knowledge and beliefs that many Lumbee hold toward diabetes.

Various researchers have identified that knowledge and beliefs about a disease will shape how people respond to it (Joiner et al., 2022; Lucero & Roubideaux, 2022). A better understanding of Lumbee people's beliefs and knowledge about diabetes may help identify any shortcomings or misconceptions that can be addressed in needed health education or other types of diabetes programs. Limited research has been done to address this, with signs of the last attempt being over 5 years before the current study. Beliefs and knowledge can change, so what was identified may have improved or gotten worse since then. Thus, there was a need to identify current Lumbee knowledge and beliefs regarding diabetes.

### **Purpose of the Study**

The purpose of this qualitative study was to explore the perceptions and beliefs of Lumbee Tribe members regarding DB2 and its prevention using a descriptive phenomenological approach. More research was needed to determine what perceptions and beliefs Lumbee Tribe members may hold about DB2 and their role in tribal members' participation in diabetes prevention/management practices. The results of this study could reveal valuable insight into the population's reasoning in choosing/preceding prevention strategies and may allow for future efforts to take this into account to push the population toward better outcomes. Additionally, the findings could assist in developing programs that are more tailored and culturally competent for the Lumbee Tribe.

Qualitative findings would allow for greater insight into the experiences the Lumbee Tribe members regarding how they have dealt with trying to prevent and manage diabetes.

### **Research Questions**

The following primary research question (PRQ) and subquestions (SRQs) guided this study:

PRQ: What are the lived experiences of Lumbee tribal members with respect to trying to partake in DB2 diabetes prevention?

SRQ1: What is the level of perceived susceptibility and severity in relation to diabetes for members of the Lumbee Tribe?

SRQ2: What are the perceived benefits to partaking in diabetes prevention practices for members of the Lumbee Tribe?

SRQ3: What perceived barriers do members of the Lumbee Tribe have in relation to partaking in diabetes prevention practices?

### **Theoretical Framework**

Rosenstock and Becker's (1974) HBM will be used to help understand and interpret the study findings. The HBM was developed in the early 1950s to understand why some individuals find it hard to adopt disease prevention strategies (Green et al., 2020). The HBM model posits that an individual will change their behavior based on six concepts (Joiner et al., 2022). The first concept is an individual's perception of the severity of the potential illness, or how much of a problem the person believes a disease can be. The second concept is susceptibility to illness, or how likely the person feels that

they will contract the disease. The third concept is the individual's perceived benefits of changing behavior to prevent or reduce the effect of illness, or if the individual views partaking in prevention/management practices as helpful and worth it for them. The fourth concept is the individual's perception of the possible obstacles that may occur when trying to achieve the behavior change; these can be any barriers that the individual may believe will stop them from implementing change, such as costing too much, taking too much time, or being overall inconvenient.

These four concepts were used in the original introduction of the HBM, with two more being added as more research was conducted. The fifth concept, cue to action, focuses on what stimuli need to be present for an individual to want to pursue behavior change (Joiner et al., 2022). The sixth concept, self-efficacy, focuses on how well the individual believes they can implement and perform a behavior change. Each concept within the HBM can vary widely depending on how an individual perceives it.

Perceptions can range from high or low in importance, effect, benefits, barriers, and self-efficacy. These factors will vary from person to person, but some patterns should show throughout much of the population. Utilizing the HBM to analyze the Lumbee tribal members' health beliefs toward diabetes allowed me to obtain a better understanding of their health choices and adoption of certain health behaviors not only for diabetes but for other diseases as well.

### **Nature of the Study**

This qualitative and descriptive phenomenological study utilizes primary data collected through in-person interviews with Lumbee tribal members. Qualitative studies

can be beneficial in studying abstract ideas and experiences that cannot be adequately expressed through quantitative means. Descriptive phenomenological studies are often used in research that explores a person's experiences in dealing with a phenomenon through interactions with study participants, examination of their views on the experience, and gaining insight that may pave the way for a better understanding of their behavior choices. Through descriptive phenomenology, the primary focus is to identify the essential structure of the phenomena, which makes it what it is (Morrow & King, 2015). Breaking down the interactions that participants may have when dealing with a disease like diabetes can provide insight into why they may make choices, such as whether they engage in positive behaviors, like changing their diet, or negative behaviors, like continuing to be sedentary. Such insights into a population's experiences may pave the way for future program development strategies that are better suited to addressing issues in positive behavior change, making uptake and retention easier.

### **Literature Search Strategy**

To determine the current findings of the selected topic, an exhaustive literature review was conducted, focusing on scholarly literature written primarily within the last five years (2019-2024). Multiple electronic databases were utilized to search the literature, including BioMedCentral, Free Medical Journals, Google Scholar, MEDLINE, National Center for Health Statistics ProQuest, and PubMed. The keywords that were used throughout the literature search included: *diabetes Type II*, *diabetes Type II prevalence*, *diabetes perception*, *diabetes Type II mortality rates*, *Native Americans*, *Native American's diabetes Type II prevalence*, *Health Belief Model*, *Native American's*

*perceptions of Diabetes, Diabetes impact on Native Americans, Native American diabetes prevention, Native American's knowledge of Diabetes, Diabetes health education, Lumbee Tribe, Lumbee Tribe and Diabetes, social determinants of health, diabetes risk factors, Health belief model and Diabetes, proper nutrition and exercise, and diabetes behavior changes.* The literature review focused on diabetes influencers for Native Americans, Native Americans' health beliefs towards diabetes, the impact that diabetes can have on Native Americans, experiences of Native Americans in diabetes prevention/management, and current diabetes prevention/management practices/programs. The literature, though thorough, often did not specifically focus on specific Native American tribes. Very few articles focused on the Lumbee Tribe; for those that did, they were nearly ten years old and not peer reviewed. To make up for this lack of research, articles focusing on various Native American tribes across the US were used.

### **Literature Review Related to Key Study Variables and Concepts**

#### **DB2 Knowledge, Attitudes, Beliefs, and Behaviors in General and Among Native Americans**

When preventing and managing a disease, the population's knowledge, attitudes, beliefs, and behaviors (KABB) are essential in developing diabetes management/prevention programs. Having a population knowledgeable about a disease, with attitudes and beliefs that view the disease as unfavorable, and who desire to participate in preventive measures, will result in far better outcomes than the opposite. Better outcomes are not always the case, though, for Native Americans, who have for

years been the group with the highest diabetes prevalence rates. Exploring the literature, a common theme across various Native American tribes was participation in health behaviors that would foster adverse health outcomes concerning diabetes.

For many Native Americans, their knowledge about diabetes and the factors that influence it is low. Lower knowledge towards diabetes will negatively impact the likelihood of them partaking in healthy behaviors that will increase the likelihood of the disease appearing. These risk factors often include consuming foods high in fat, adopting a less healthy diet, leading a more sedentary lifestyle, and others (Zhao et al., 2022). If the population were more knowledgeable about the disease, they would have a better chance of engaging in behaviors that reduce the likelihood of diabetes manifesting or mitigating its overall impact (Misra & Fitch, 2020). Being more knowledgeable enables the population to have a better understanding of diabetes and its impact on them.

Attitudes and beliefs play a vital role in shaping a person's perception of diabetes, influencing how they feel about the disease and what they believe about it, whether those beliefs are accurate or not. Suppose attitudes towards a disease such as diabetes are something that does not matter. In that case, the individual will most likely engage in activities and behaviors that will lead to worse outcomes associated with diabetes (Lucero & Roubideaux, 2022). Beliefs and attitudes that view diabetes as an issue that needs to be addressed will result in the person being more likely to take action to change their behaviors for the better, thereby decreasing the impact that the disease will have on them. Attitudes and beliefs can be rooted in an individual's culture, linked to those of their family, acquired through their experiences, and influenced by many other sources (Zhao

et al., 2022). These factors can influence the likelihood of an individual adjusting their attitudes and beliefs, which should be considered when implementing any behavioral change.

Behaviors are a significant factor in determining whether an individual will develop various diseases or conditions. Ideally, an individual should participate in more positive effecting behaviors to avoid contracting diabetes, but often, they partake in the more negative options. This has been expressed within many Native American communities where diabetes rates have been on the rise. The literature shows that many Native Americans tend to partake in more negative lifestyle behaviors, such as having lower exercise levels and eating more fried and higher-calorie-dense foods (Zhao et al., 2022). Though these two factors do not account for higher diabetes rates among Native Americans alone, they do stand as vital behavioral factors that, if adjusted, could make a difference. These factors have been identified as critical issues within Robeson County, where many Lumbee Tribal members reside, and efforts have been made to mitigate their impact (Robeson County Health Department et al., 2020).

When looking at the grand scale of DB2 KABB for Native Americans, it can be a daunting task to address the issue. Looking at Native Americans' KABB towards DB2 is essential when determining what types of prevention efforts can be successful within the population. Such efforts may not work across tribes and even within the same tribe, depending on factors such as education, social status, and personal beliefs (Wilson et al., 2022). It has been a challenge, though efforts have been made to form DB2 prevention efforts for Native Americans.

## **Current DB2 Prevention Efforts in General and Among Native Americans and Lumbee**

When it comes to diabetes, the best way to prevent its effects on a person is to focus on prevention. Prevention can be divided into two categories: primary and secondary prevention. Primary prevention occurs when a person has not yet developed a disease and continues to work against its onset. Secondary prevention occurs when a disease is detected early in a person, and efforts are made to prevent any serious effects from the disease. A person who is diagnosed with prediabetes can stop the further development of DB2 through secondary prevention practices such as lifestyle changes. This is not the case for an individual who has already fully contracted DB2, as once a person contracts DB2, there is no known medical cure. Instead, they can reduce the impact that DB2 has on their life by managing blood sugar levels until medications are no longer needed and maintaining a proper diet and exercise regimen (Taylor, 2021). Thus, to avoid this, primary prevention practices should be implemented so that individuals can be more educated and knowledgeable about the disease.

Although primary prevention efforts are the most effective tool in preventing diabetes for an individual, they can be designed in various ways. Through primary prevention, an individual can adopt lifestyle habits that decrease the likelihood of developing diabetes. This is different from secondary prevention because someone who must partake in secondary prevention may already have signs of prediabetes that have some effect on them. However, if worked on enough, they can prevent any significant

effects. Prevention methods may focus on teaching proper diet techniques, the importance of exercise, increasing knowledge of proper diet and nutrition, and emphasizing the importance of eating right and exercising, among other approaches. The most effective method will be determined by the knowledge and needs of the community in which it is implemented, although each can have its own impact.

Diabetes prevention methods among Native Americans are like those of other races, but what is emphasized can be different. According to Wilson et al. (2022), past DB2 prevention practices for Native Americans have focused on improving health education, but have fallen into a “one size fits all” approach. This style of approach is not always effective among different Native American communities due to their cultural, dietary, and belief system variations. A more personalized approach for each Native American tribe would be more effective in their adoption of diabetes prevention methods, as the population feels that it was developed with them in mind and aligns with their cultural beliefs. These preventative measures can be formed through interaction with the desired community’s cultural leaders.

Regarding diabetes prevention programs for Native Americans, the two entities that provide the most funding are the CDC and the Indian Health Service (IHS). Both agencies offer Native American tribes opportunities for grant funding that can be utilized for diabetes-related programs. For a Native American Tribal Government to be eligible for IHS funding, it must be formally recognized by the US Government. Under the IHS, such efforts fall under the Special Diabetes Program for Indians (SDPI) and offer various resources for tribes on combating diabetes, including publications, grant resources, fact

sheets, education materials, and more (SDPI, n.d.). The IHS annually provides \$150 million in grant funding for federally recognized Native American tribes for diabetes treatment and prevention programs. This funding can be significant for those tribes with limited healthcare options to give them a better fighting chance to reduce the impact that diabetes has on their people and community. To assist the IHS director in diabetes subject matter, Diabetes policy development, and managing SDPI funding, the Tribal Leaders Diabetes Committee (TLDC) was formed.

As mentioned before, the Lumbee are a federally recognized Native American tribe, but they do not receive the federal benefits typically afforded to such tribes. This can be limiting for Lumbee in terms of the types of services/programs they have easy access to and the affordability of such practices. Within the areas where the Lumbee reside, several diabetes-related programs are available. The NC Department of Health and Human Services funds many of these programs. One such program administered by the Lumbee Tribe is Changing Lifestyles – Living Longer. This program focuses on chronic diseases and their impact on Lumbee tribal members. To assist the population, community forums promote the importance of preventative health measures and teach about the causes of various chronic diseases (Lumbee Tribe of NC, n.d.). Another option, though not directly targeted at natives, is using UNC Health Southeastern’s Diabetes Community Center. The community center comprises a team of healthcare professionals, including certified diabetes educators, certified diabetes dietitians, and registered pharmacists (UNC Southeastern, n.d.). This team of care professionals aims to educate individuals with diabetes on managing the disease to reduce its impact on their lives.

There have been other diabetes prevention and management programs that the Lumbee have had access to, but some have since ended. These programs include the Faithful Family's Diabetes Prevention Program in Robeson County, the Diabetes Self-Management Education program in Hoke County, Diabetes Self-Management Education classes across various counties, Community Diabetic Support Groups in Scotland County, and other additional services. Though they do have Lumbee members of the population in mind, the programs present are focused on more than just the entire county. As mentioned before, this approach may not be effective in addressing the Lumbee population, and a better understanding of their KABB could be beneficial in developing programs that are a better match. Implementing a population's KABB when developing programs allows considerations to be made towards the population's perspective of a given situation or disease (Pakpour et al., 2024). If a group's KABB is low towards diabetes then considerations will have to be made to try to increase the population's knowledge of the disease, show that it is important to manage, and that other factors to show its importance (Pakpour et al., 2024). Such actions should promote more positive outcomes for the population. If the groups KABB is high towards diabetes, then less efforts may have to be focused on that aspect. Variances will be present throughout the community, so some common ground will have to be made to make sure that needs can be made throughout.

### **Studies Using the Current Study's Methodology**

The proposed methodology for this qualitative study is phenomenology. Qualitative research methods were chosen due to their strength in collecting and

analyzing thematic data that cannot be numerically measured. Exploring the Lumbees' perceptions and beliefs towards DB2 requires methods to better understand the various phenomena that come into play when exploring KABB. These phenomena can be adequately organized and grouped into themes and schemes using qualitative methods to facilitate a better understanding. Past research exploring perceptions and beliefs about DB2 has been successfully applied.

Lakshmi et al. (2023), Hashim et al. (2022), and Carrier & Beverly (2021) believe that qualitative research methods are more effective than quantitative methods in understanding beliefs about diabetes prevention and management, as qualitative studies provide more in-depth information on people's views and real-life experiences. A deeper understanding of an individual's experiences can be far superior to numerical data because it allows a better understanding of why certain behaviors are done or have developed. Imogen et al.'s (2022), study demonstrates how qualitative studies can also be used to effectively identify barriers within a population regarding participation in diabetes programs and open possibilities for addressing them. These factors are essential to address because there are many different reasons why a population may not be able to participate in diabetes prevention/management. However, through qualitative means, data can be more open to findings that may still need to be accounted for. Additionally, qualitative studies, such as those by Kumar and Mohammadnezhad (2022), demonstrate how the method can gauge the population's knowledge of diabetes, assisting in future program development. Overall, quantitative methods can be highly effective in studying the KABB of a Diabetes-related population.

An essential aspect that qualitative studies capture more effectively than quantitative studies is lived experiences. A vital methodology that often can capture this is phenomenology. According to Neubauer et al. (2019), “phenomenology is a form of qualitative research that focuses on the study of an individual’s lived experiences within the world”. Lived experience, in many cases, is used to determine whether an individual may partake in a particular behavior. Various phenomenological studies have been conducted concerning diabetes to explore various experiences with the disease, such as barriers to adherence to medical advice (Davoodi et al., 2022), experiences living with Diabetes (Hosono & Tochikawa, 2022), knowledge of possible foot-related complications that may arise from Diabetes (Bossman et al., 2021), and more. These articles show the various possibilities that using phenomenological methods can provide. Through the experiences of those who participated in the study, valuable knowledge was gained that can be used to help prevent others from experiencing the same outcomes.

The literature indicates that employing phenomenological methods in diabetes research has several advantages. Phenomenological designs are practical tools for detailing patient experiences and narratives that would have required more detailed analysis using quantitative approaches (Bossman et al., 2021). A wide range of knowledge can be gained from these two factors that may influence what needs to be addressed in future efforts to combat diabetes. Phenomenological studies are essential for exploring various disease factors, as they enable the examination of individuals' unique experiences (Hernandez et al., 2020). There will be similarities and differences in people’s experiences with preventing/managing diabetes, and the data that can be gained

from this information can be critical in helping others combat the disease. According to Deol et al. (2022), phenomenological methods can also effectively understand a population's beliefs about the causes of diseases, such as diabetes, because they highlight everyday beliefs and understandings that guide action. This is important because the beliefs a person may have about a disease can influence their efforts and desire to combat it. If they believe it is something they should not worry about, they may engage in more behaviors that influence negative outcomes than if they believe it is something they should worry about or combat. A better understanding of a group's beliefs about a disease is the first step towards helping them properly comprehend how it can affect them.

One weakness identified in the literature concerning this study is that, in cases where phenomenology is used in relation to diabetes, it often focuses on the experiences of individuals who already have the disease. That data would be necessary for this study, but further data on other groups would also be needed to obtain a better overall picture of the Lumbees' KABB of Diabetes. These groups would also include individuals trying to prevent diabetes and those not taking any action to prevent it. This would provide a better understanding of the various types of experiences that may occur in relation to diabetes. Another area for improvement in phenomenological studies is that, although it can capture a wide range of experiences, a larger sample may be needed to capture possible experiences of the population (Bossman et al., 2021). Though it would be ideal to avoid this situation, the most likely alternative that can be reached is to identify the significant shared experiences of the population.

### **Studies Focused Toward Research Questions**

Using phenomenological studies to understand the experiences of Lumbee tribal members in combating and managing diabetes would be a practical choice.

Phenomenological studies enable the examination of various phenomena that may occur in Diabetes prevention and management, allowing for the information to be properly organized. The study seeks to answer the following questions: What are the experiences of Tribal members with diabetes prevention and management? What are their perceived susceptibility and severity towards diabetes? What are the Lumbees' perceived benefits of preventative practices? Answering these questions should provide a better understanding of why a Lumbee tribal member may seek out or not seek out prevention/management practices.

The experiences that we have are vital to the various views that we hold. Likewise, experiences that an individual has with a disease, whether through their own experiences, a family member, or another source, can shape the behaviors they exhibit regarding the disease (Ard et al., 2020; Kwan et al., 2020). As individuals gain more experience and interactions with a disease, they become more knowledgeable about it, allowing for more favorable behaviors to develop. The overall amount of knowledge gained varied for each individual, but any new improvement in knowledge about the disease helps with future changes toward positive health behaviors. People will have different experiences, and even those with the same experiences may view them differently. Having A better understanding of how an individual in the population views

their experience dealing with diabetes can allow more insight into why they decide to participate in a particular behavior.

An individual's perceptions of the susceptibility and severity of a disease can either increase or decrease their views of the importance of combating the disease. Perceived susceptibility and severity are significant factors in diabetes-related situations due to the numerous factors that must be considered to achieve the most favorable outcomes or prevention (Sukeri et al., 2020). If the individual views diabetes as something not to worry about, they may continue to participate in behaviors that will promote further issues related to diabetes. These perceptions will need to be changed in order to replace them with more positive ones, in the hope of achieving better outcomes. Perceptions may not change immediately, but they can be changed progressively with proper education and knowledge.

For many, benefiting from a particular behavior will likely motivate them to perform or implement it in their lives. In many cases, if an individual has a positive perception of the benefits of preventing/managing a disease, they will be more likely to adhere to treatment (Warren & Hixenbaugh, 2020; Kubiak et al., 2020). Helping individuals understand the benefits of combating diabetes will be beneficial to the push to encourage them to adopt positive health behaviors. If an individual feels that there is no benefit to changing their behaviors, then it is more than likely that they will not, possibly resulting in further adverse outcomes (Warren & Hixenbaugh, 2020). The extent to which someone views the benefits of prevention/management can depend on their knowledge of the disease and its potential effects. Increasing knowledge about the benefits and risks of

a disease can lead to positive changes that may need to be implemented (Lakshmi et al., 2023).

The interconnection of these questions, which explores the health beliefs of the Lumbee people, will provide valuable insight into their diabetes prevention/management behaviors. Each aspect explores a part of our beliefs that shapes the behaviors that we choose to partake in. Examining them should provide insight into how Diabetes prevention/management programs can be shaped for the population in hopes of better outcomes.

### **Gap in the Literature**

There is a need for more current information on the Lumbee population regarding their perceptions and beliefs toward DB2, as confirmed in this literature review. This is surprising because even though the Lumbee are the largest Native American tribe east of the Mississippi and have had issues dealing with diabetes within the population, there is not much information on it. The few studies on the issue occurred over ten years ago and may not accurately represent today's population. It is essential to have a current understanding of the population's perceptions and beliefs towards diabetes so that needs can be addressed. Once Lumbee's perceptions and beliefs towards DB2 have been identified, prevention and management programs/practices that consider them can be developed.

Many phenomenological studies on diabetes focus on the lived experiences of those with the disease. This is vital information to have, but it would also be helpful to show the experiences of those trying to prevent the disease from occurring in their life.

Comparing individuals who are trying to prevent the disease in their lives, those who are not working towards preventing the disease, and those who have already contracted diabetes would be valuable because it would demonstrate three possible outcomes that can occur. Having information from both outcomes should provide a better understanding of the Lumbees' attitudes, beliefs, and knowledge of diabetes. Furthermore, the information gained from these three perspectives could warrant a change in practice to help promote more positive health outcomes.

This study has filled the gap in the literature regarding the limited knowledge of the Lumbee population's perceptions and beliefs towards DB2. To help fill this gap, the study aimed better to understand Lumbee tribal members' KABB concerning DB2. This was accomplished through firsthand interviews with the population, allowing its members to have their KABB expressed and recorded. The study aimed to obtain a representative sample of the population, enabling an accurate and general representation of the Lumbees' perceptions and beliefs. Ideally, participants ranged from those trying to prevent diabetes from occurring, those who do not care to try to prevent it, and those who are already diagnosed with diabetes. Having these groups represented will enable a better understanding of how the population views diabetes and inform future development of diabetes prevention/management programs. Additionally, since the study collected this information, it will provide a better basis for further research.

### **Definitions**

The definitions and terms used throughout the study are derived from the constructs of the HBM developed by Irwin Rosenstock. The definitions are as follows:

*DB 1:* An autoimmune disease in which a person's immune system mistakenly treats the beta cells in the pancreas as foreign invaders and destroys them. Once enough beta cells are destroyed, the pancreas cannot make enough insulin for the body to function. (*Understanding Type 1 Diabetes* | ADA, n.d.).

*DB 2:* A health condition that occurs when the body has a problem regulating and using sugar. This can be due to the body not producing enough insulin or the body's cells responding poorly to insulin and taking in less sugar. A person is not born with DB2, but they can develop it any time throughout their life, with it being most common in adulthood (*Type II Diabetes* | Mayo Foundation for Medical Education and Research, 2023)

*Lumbee Tribe:* The largest Native American tribe east of the Mississippi, primarily resides in several counties in Southeastern North Carolina. The Lumbee Tribe was recognized as an Indian Tribe by Congress in 1956 but without the federal benefits given to other federally recognized Native American tribes. To this day, the tribe continually pursues efforts to obtain their full federal recognition (libguides, n.d.).

*Perceived barriers:* The perceived obstacles/challenges a person may feel will get in the way as they try to prevent/manage an illness or disease (Rosenstock, 1974).

*Perceived benefits:* A person's perception of the benefits of preventing or managing a disease or illness (Rosenstock, 1974).

*Perceived severity:* How serious a person believes contracting a disease or illness will be. It can vary from high in severity to low in severity (Rosenstock, 1974).

*Perceived susceptibility*: How likely a person believes that they will contract a disease or illness. It can vary from high susceptibility to low susceptibility (Rosenstock, 1974).

### **Assumptions**

This study is based upon the following assumptions: Lumbee Tribe members desire the best possible health outcomes that they can get; Lumbee Tribe members may be willing to participate in diabetes prevention/management practices if needed; Lumbee Tribe members who are recruited were truthful with the feedback that they provide. The final assumption is that Lumbee Tribe members may have varying perceptions about diabetes.

### **Scope and Delimitations**

#### **Scope of Study**

The scope of this research study is to gain a deeper understanding of the Lumbee Tribe's health beliefs regarding DB2 through their lived experiences. An individual's health beliefs are complex and can be influenced by several factors. Additionally, a person's experiences often reinforce certain positive or negative behaviors. Many health beliefs can be broken down through the concepts of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Community members may hold varying health beliefs and experiences, so a random sample of participants from the population was used. These individuals participated in an open-ended survey, the findings of which have been transcribed, and a qualitative analysis has been conducted.

**Delimitations**

Due to the various parts of the problem that need to be addressed, some delimitations must be identified. Access to healthcare is one such delimitation. Although access to healthcare may be an issue in receiving diabetes care, the scope of this study, which focuses on perceptions of diabetes, may not fully address this issue. Likewise, economic status may be identified as a delimitation due to its effect on diabetes management, but it cannot be adequately addressed in terms of its actual effect. Another delimitation is that the study excluded the diabetes beliefs of other races and even other Native American tribes. Although gaining knowledge of other populations would benefit diabetes research, this study aimed to gather information on Lumbee tribal members residing primarily in Robeson County and the surrounding areas. Those Lumbee Tribe members who live outside of this range may not share the same perceptions towards diabetes as those identified in this study, due to varying influences.

**Limitations****Recall Bias**

Some information provided by participants may be subject to recall bias. Recall bias may occur when participants are asked to recall their experiences. Depending on the time since the experience, participants may provide a less accurate retelling that does not accurately detail their experiences. Recall bias will be addressed by asking participants to describe their most recent experiences with diabetes prevention/management practices. Targeting more recent experiences should allow for better recall of experiences for participants and more accurate data.

**Response Bias**

Some participants may provide information that is affected by response bias. Response bias occurs when a participant wants to provide more positive answers, but they do not truly reflect their experiences or beliefs. Another possibility is providing the researcher with answers they want to hear. To address this, participants were asked to provide answers that accurately reflect their experiences in dealing with diabetes prevention/management practices.

**External Validity**

As mentioned before, there are around 55,000 enrolled members of the Lumbee Tribe. For this study, a target sample of 8 to 12 participants was set. Having a small sample size enabled a more thorough analysis of participants' experiences. However, it may have only accounted for some possible population experiences, which limited generalizability due to potential variances between the sample and the population. The data collected was analyzed through deductive reasoning, which can limit generalizability because it focuses on specific scenarios to draw generalized conclusions. This may have led to conclusions that can only be generalized for some populations.

**Significance**

This study explored the health beliefs that members of the Lumbee Tribe hold about Diabetes. The perceptions that someone holds towards a disease, whether positive or negative, influence the likelihood that they will engage in disease management/prevention practices (Warren & Hixenbaugh, 2020; Kubiak et al., 2020). The findings provide a better understanding of the experiences that Lumbee tribal

members have had with Diabetes and the extraction of knowledge that may assist in future efforts to achieve better outcomes. Though there has been research into general Native American beliefs towards Diabetes, the research does not always fit every Native American tribe due to tribal differences (Wilson et al., 2022). Some similarities may be present across tribes, but not all will translate well when focusing on the Lumbee. Additionally, this study aimed to determine the current beliefs of the tribe, which may evolve due to changes in factors such as education, socioeconomic status, environmental changes, and others (Joiner et al., 2022). The significance of this study lies in building upon the literature for a Native American tribe that is often overlooked in research practices.

### **Summary and Conclusions**

Diabetes is a significant problem within the US, and Native Americans have continually held the highest prevalence rates (ADA, n.d.). An important factor in disease prevention/management is someone's perceptions of the disease and how it may affect them (Kubiak et al., 2020). The Lumbee Tribe is the largest Native American tribe east of the Mississippi River. They have a large population that is affected by Diabetes, but little is known about their perceptions of the disease. A phenomenological study was proposed to better understand the Lumbee tribal members' perceptions and beliefs towards Diabetes. Study findings may help the development of diabetes prevention/management practices that better fit the tribe. Section 2 continues the research by thoroughly exploring this study's research design and data collection methods.

## Section 2: Research Design and Data Collection

The purpose of this qualitative study was to explore the perceptions and beliefs of Lumbee tribal members regarding DB2 and its prevention using a descriptive phenomenological approach. Section 2 focuses on the research design and data collection methods that were used to answer the research questions. Major topics include the research design and rationale, role of the researcher, methodology, issues of trustworthiness, and ethical procedures.

### **Research Design and Rationale**

The research questions that guided this study were as follows:

PRQ: What are the lived experiences of Lumbee tribal members with respect to trying to partake in DB2 diabetes prevention?

SRQ1: What is the level of perceived susceptibility and severity in relation to diabetes for members of the Lumbee Tribe?

SRQ2: What are the perceived benefits to partaking in diabetes prevention practices for members of the Lumbee Tribe?

SRQ3: What perceived barriers do members of the Lumbee Tribe have in relation to partaking in diabetes prevention practices?

### **Role of the Researcher**

My role as the researcher in this qualitative study was to act as a data collection instrument. I made sure to listen to my participants, while also making sure that I objectively collected and interpreted the data. Professional representation was upheld throughout the various processes with each participant to ensure that a standard was held

that allowed interactions to be unhindered and unwanted barriers avoided. Being the primary researcher, I understood that it was up to me to uphold the research process and make it a safe space for my participants. I allowed my participants opportunities to share with me the information they felt comfortable sharing and made sure that I understood how they perceived their interactions and experiences. I made sure to lead the interviews in a way that participants could be comfortable and not feel that I was overreaching power in any way.

Being from the Lumbee Tribe, I was mindful that not all participants in the study were as knowledgeable on the topic as I was. Some knew more, and some knew less, but as the researcher I held an objective stance in both data collection and analysis. Taking this stance allowed for better control of researcher bias by targeting and designating the data attributed by each participant, no matter the variance to my own beliefs. Variances in health literacy and education were noted as important factors to ensure that interactions with all participants allowed them to have a proper understanding.

The study was not conducted at my place of work to avoid possible conflicts of interest. To show appreciation for participation, I offered participants a \$10 gift card after study completion. Due to the participants joining the study randomly from the population, socioeconomic status of participants was random as well. This collection of information had no effect on who received the gift card or what amount was offered.

### **Methodology**

A descriptive phenomenological approach was chosen for this study due to its ability to describe the universal essence of an experience as it is lived (Shorey & NG,

2022). Having methods driven by lived experiences will allow for greater detail on how members of the Lumbee Tribe have dealt with Diabetes and the perceptions that may have been developed from such experiences. To further this, semistructured interviews were chosen due to their ability to explore additional ideas and themes that participants may bring up that I may not have considered, and to provide ample opportunities for participants to provide further details about their experiences. Having the overall structure of the interview in place allowed for the desired topics to be visited and addressed, while also exploring concepts on a broader spectrum that added new data that may help explain the phenomenon. The interviews were audio-recorded using voice recording software and transcribed using Microsoft Word. Transcripts were analyzed and coded using deductive thematic analysis guided by the HBM.

### **Participant Selection Logic**

This study focuses on Native Americans of the Lumbee Tribe residing in Robeson County and its surrounding areas. The primary sampling strategy utilized was social media outreach on Facebook. This approach was chosen because social media is a valuable tool that can be used to reach the target population and drive interest toward those who may want to participate. Social media platforms are often integrated into the daily routines of many. Due to social media's extensive outreach potential, using a post to advertise the study enabled it to be easily disseminated, with the hope that it would reach those who might be interested in participating. Even if someone wants to refrain from participating, it may open up an opportunity for snowball sampling if they decide to share the information with others who are more likely to participate.

One participation criterion was that the participant must be a member of the Lumbee Tribe and reside within either Robeson County or one of the surrounding counties, including Cumberland, Hoke, or Bladen. To participate, individuals had to be at least 18 years of age. The age range started at 18, and there was not a maximum age. For this study, 8 to 12 participants were recruited. Data saturation was determined through consultation with my committee. When data saturation was met, the recruitment of new participants was terminated.

### **Instrumentation**

Once informed consent was given, a brief demographic survey was administered to the participants. This instrumentation tool was used to collect demographic information, such as age, gender, race, and others, which assisted in describing the sample population. These variables were necessary for the data in case any variances arose within the sample population due to some level of influence from them. Once the demographic survey was completed, the semistructured interview was conducted.

A semistructured interview protocol was developed to guide the in-person interviews. I developed the interview protocol to gauge participants' perceptions of diabetes. The interview protocol was an effective tool for answering the research questions because it focused on gathering data on participants' perceptions of diabetes and its perceived benefits to prevention, perceived barriers to prevention, and their perceived susceptibility to developing diabetes. The protocol also tasked participants with expressing their experiences in trying to participate in diabetes prevention practices. Table 1 shows the research questions that were used for the study.

**Table 1***Research Question and Interview Questions*

Research question	Interview question
Primary RQ: What are the lived experiences of Lumbee tribal members with respect to trying to partake in Type II diabetes prevention?	<p>What is your knowledge of and experience with DB2?</p> <p>What do you know about Type II diabetes?</p> <p>What Diabetes prevention practices are you aware of?</p> <p>What are the signs and symptoms of Type II diabetes?</p> <p>Have you ever been diagnosed with Type II diabetes or prediabetes?</p> <p>Has your doctor ever warned you of the possibility of you developing Diabetes?</p> <p>Have you ever participated in any diabetes prevention practices?</p>
Secondary RQ: What is the level of perceived susceptibility and severity in relation to Diabetes for members of the Lumbee Tribe have?	<p>Do you believe that you are likely to develop Diabetes?</p> <p>Do you think that Diabetes is a disease that you should take seriously?</p> <p>How likely do you think it is for a Native American to get Type II diabetes?</p> <p>Have you ever believed that you may be affected by Type II diabetes?</p>
Secondary RQ: What are the perceived benefits to partaking in diabetes prevention practices for members of the Lumbee Tribe?	<p>Do you think there are any benefits to participating in activities to prevent Diabetes? (Such as proper diet and exercise?)</p> <p>What ways can someone help prevent themselves from developing Type II diabetes?</p> <p>How many diet and exercise help with Type II diabetes prevention?</p> <p>Do you know any ways that you can prevent Type II diabetes from developing?</p>
Secondary RQ: What perceived barriers do members of the Lumbee Tribe have in relation to partaking in diabetes prevention practices?	<p>Have you experienced any barriers when trying to partake in activities that could reduce the chance of Diabetes developing?</p> <p>How hard is it for you to partake in diabetes prevention methods?</p> <p>Is there anything stopping you from participating in diabetes prevention methods?</p> <p>If you wanted to, would you easily be able to participate in diabetes prevention practices?</p> <p>Do you believe that there are any cultural barriers preventing you from participating in diabetes prevention practices?</p>

The second instrument used was an iPhone and a MacBook to record the interview sessions. Having a digital recording of the interview sessions allowed me to play back the sessions and facilitated a more straightforward transcription. Two recording devices were used simultaneously in case the first failed. Recorded sessions were kept secure. All identifiable information has been removed during transcription to protect the participant's confidentiality.

### **Procedures for Recruitment, Participation, and Data Collection**

As mentioned before, the primary method for recruiting participants was the use of the social media platform Facebook. A post was made with a flyer providing basic details of the study, including the study's inclusion criteria, my email and cell phone number, and requesting that those who read the flyer share it with potential participants, as well as other necessary information. Participants had to be at least 18 to participate. However, efforts were made to ensure that members of the population who are most at risk for developing diabetes (adults over 45) were also included in the study. The flyer listed three ways for interested individuals to make contact: call or text my cellphone, email, or direct message through Facebook. The post was uploaded on the first day allowed and was reposted each week until either the desired number of participants was reached or saturation in the data obtained was achieved. If there was a lack of participants within the sample who are older, then flyers could have been posted at community centers where permitted.

Once an interested individual initiates contact, they are responded to promptly. First, the individual was asked for their age and the county in which they reside, so that

the inclusion criteria could be verified. Once verified, the individual was provided with more details of the study and allowed to ask any questions before deciding whether they wanted to participate. If the individual agreed to participate, a meeting was scheduled with them to conduct the interview in person. Before conducting the interview, informed consent was obtained, the necessary details of the study were explained, and information on how the results would be disseminated was provided. During the consent process, the individual was made aware that there is only one interview session, that they are allowed to terminate the study at any time if they feel the need to, that the study will be recorded using a recording device, and that steps will be made to ensure that all data gained remains confidential. Once the informed consent paperwork is completed, the participant was given a brief demographic survey. The demographic survey was used to collect critical demographic data that helped describe the sample population. Once the demographic survey was completed, preparations were made to start the interview.

An interview protocol was developed to hold semistructured interviews. The focus was on the Lumbee participants' perceptions of various aspects of diabetes and how it may impact their likelihood of participating in diabetes prevention practices. Qualitative interview practices were chosen due to their ability to allow participants to detail their thoughts, perceptions, and experiences, thereby providing a deeper understanding of their health beliefs regarding diabetes. The interviews were recorded using an audio recording device to facilitate data review. This allowed sessions to be played back and transcribed, assisting in the identification of key themes and validating any other helpful information collected during the interview. The participant was

informed when the interview section begins and that the recorders were active. If they wished to pause at any time, the recorders could be stopped until the interview resumed.

Once the interview had concluded, the participant was thanked for their time and consideration. The participants were given a \$10 Starbucks gift card as a token of appreciation for their cooperation. All documents and recordings were held in a secure location to maintain confidentiality.

### **Data Analysis Plan**

The data analysis plan outlines the statistical steps taken during the study to answer the research questions. The type of data collected for this study was quantitative. The data consisted of the participants' experiences in trying to engage in diabetes prevention practices, as well as their perceptions and beliefs that may have developed from these experiences.

For each interview interaction, the sessions were recorded on a recording device. Additionally, notes were taken during each session to highlight potential themes. After sessions, the recordings were transcribed using Microsoft Word, and efforts were made to remove any identifiable information. Once transcription was completed, the interaction transcript was analyzed, and the answers to the open-ended questions were grouped into themes. Microsoft Word was used to organize and record the themes for further organization and analysis.

The method used for analyzing the data is deductive thematic analysis. The HBM shaped the analysis themes. The HBM was chosen due to its usefulness in explaining why individuals choose to partake in or refrain from certain behaviors (Green et al.,

2020). Understanding such factors can lead to more effective efforts in modifying unwanted health behaviors within a community and help identify where needed changes may be required. The primary themes that data may fall into included perceived severity, perceived susceptibility, perceived benefits, perceived barriers, and cues to action. Once the interviews were transcribed, they were coded to identify data matching the above themes. This approach enabled a clear understanding of why participants may or may not have chosen to participate in diabetes prevention programs.

### **Issues of Trustworthiness**

#### **Credibility**

When conducting research, an essential factor that needs to be addressed is the study's internal validity. Internal validity measures how well the findings of a study accurately represent a cause-and-effect relationship within the population, without being influenced by error. Various actions can be taken to maintain the study's internal validity. To maintain internal validity, each interview session followed the interview protocol. This ensured there were no variances in what was administered, and each participant received the same questions and opportunities to respond. The interview protocol was developed in consultation with my committee to ensure that it aligns with the study's intentions. The exact transcription and coding processes were also maintained to maintain coding standards throughout. Additionally, during the coding phase, I shared my findings with my committee to ensure that no issues had occurred.

**Transferability**

In research, the findings of your sample must be generalized to the broader population. A study with little to no generalizability cannot be applied to the real-world population. Snowballing recruitment on social media was employed as a strategy to mitigate selection bias. This strategy provided a realistic representation of the population variance. To maintain external validity, each participant had to match the inclusion criteria to participate in the study. Those who did not meet the criteria were excluded from participation. When scheduling interviews with participants, I ensured that the sessions were held in an environment they were comfortable with, and I was willing to provide the most accurate details of their experiences.

**Dependability**

The reliability of a study is essential because if the study is replicated, the findings are likely to remain similar. Reliable data should remain constant over time, provided the same processes are used. Ensuring that all interviews, coding, and transcriptions adhered to their protocols ensured that data collection and analysis methods remained constant. Additionally, transcripts were coded multiple times within a set period to ensure coding consistency.

**Confirmability**

Objectivity in research aims to reduce the impact of a researcher's biases on the data, instead providing data rooted in verifiable observations. To maintain an objective standpoint, I had to communicate my role in the research process and acknowledge any potential biases (Lemire M., 2023). Interactions were held with my committee throughout

the research process to obtain outside perspectives, interpretations, and feedback, which helped identify potential biases. I allowed time between the data analysis and interpretation phases to make it easier to distinguish between data-driven insights and my own personal interpretations (Lemire M., 2023). It was essential to share my insights, but to represent and display my findings accurately, I had to find a balance between objectivity and interpretation, providing excellent opportunities for new knowledge.

### **Ethical Procedures**

Before appointments were scheduled with participants, they were informed about the purpose of the study and given the opportunity to ask any questions they may have had. Once at the in-person meeting, the individual was informed of the study's purpose and received an explanation of their role. Once this was explained, a copy of the informed consent was provided to clarify it for them and explain how their confidentiality would be maintained. One copy was provided to the participant, while another was retained for record-keeping purposes. The informed consent form also provided the participant with my contact information, the contact information for the study committee members, and the contact information for the Walden University IRB, in case they had any questions after completing their participation.

No ethical concerns arose during the study that could impact participant recruitment or data collection. During the informed consent process, participants were made aware that their participation in the study would not cause any physical, mental, or emotional harm. All participants were also informed that they could withdraw from the study at any time without any consequences.

### **Summary**

Chapter 3 outlined the study's components, including the researcher's role, methodology, recruitment procedures, and data analysis plan. This section also included the instrumentation used, as well as issues of trustworthiness and ethical procedures. A phenomenological approach was chosen due to its ability to analyze participants' experiences in trying to participate in diabetes prevention practices and how these experiences shaped their adopted behaviors. Section 3 will continue the study by detailing the results.

### Section 3: Presentation of the Results and Findings

This qualitative study aimed to explore the perceptions and beliefs of Lumbee tribal members regarding DB2 and its prevention using a descriptive phenomenological approach. My goal was to fill the gap in the literature regarding the Lumbee population's perceptions and beliefs toward DB2. The PRQ that the study aimed to address was the following: What are the lived experiences of Lumbee tribal members with respect to trying to partake in DB2 prevention? This section focuses on the results of the study. This includes data collection, data analysis, evidence of trustworthiness, and the study's overall findings.

#### **Pilot Study**

The pilot study was conducted on June 11, 2025, with one female participant recruited through a Facebook post. The pilot study's purpose was to test the interview questions, identify any possible areas of improvement, and conduct a phenomenological qualitative research interview. Prospective participants were recruited by responding to a Facebook post containing some information about the study. Once prospective participants contacted me, I confirmed with them that they met the inclusion criteria for the study. I also made arrangements to meet at the community center nearest to them. Once we met in person, I reminded the participant of the purpose of the study and ensured that they met the inclusion criteria again. Once this was verified, I walked the participant through the consent form. Once the consent form was signed, I provided the participant with a short demographic survey for them to complete on their own. Before

starting the interview, I informed the participant again that the interview would be recorded and that no personal identifiers would be used.

The interview questions were designed to explore participants' knowledge, experiences, and beliefs concerning DB2. During the pilot study interview process, the participant was able answer all of the questions asked, and no significant issues arose. The pilot study was audio recorded using an iPhone and a MacBook. Once the session was transcribed, the audio recording and transcription were sent to my committee members for review. My committee members approved the interview process and technique, including the recording and transcription, and asked me to proceed to thematic analysis. As I proceeded with my thematic analysis, I contacted my committee members throughout the data analysis process to ensure consistency, to lay out codes, and to identify themes. Once my committee chair approved the thematic analysis for the pilot study, I proceeded with other participants with the pilot study as my guide.

## **Data Collection**

### **Setting**

This study's targeted recruitment range was set at between 8 and 12 participants. The final number of participants recruited for the study was 12. Recruitment began on June 7, 2025. A Facebook post was developed and posted, asking members of the Lumbee Tribe to contact me if they were interested in participating, and asking them to share the post with others who may be interested. Some participants responded to the Facebook post to participate, while others participated by being referred by others via the snowball technique. Participants were screened over the phone prior to an in-person

interview session. All participants provided their consent to be audio-recorded.

Interviews began on June 11, 2025, and concluded on June 22, 2024. All participants recruited met all inclusion criteria, including (a) being 18 or older, (b) being a member of the Lumbee Tribe, and (c) residing within one of the previously identified counties. The interviews were held at the nearest community center to the participant to maintain confidentiality. The IRB approved the study protocol and all procedures, IRB approval #04-03-25-1107767.

### **Demographics**

Table 2 below provides a demographic breakdown of the participants, including age, gender, presence of disease, household income, and educational background. My study included twelve participants with varying demographics present within the study population. All participants in the study identified themselves as members of the Lumbee Tribe, as per the eligibility requirements. The 12 participants for this study included six female (50%) and six male (50%) Lumbee Tribal members. Participants' ages ranged from 21 to 64, allowing for representation of both younger tribal members and older members who may be more susceptible to the disease. The sample included six (50%) of participants who did not have diabetes, one participant who was pre-diabetic (8%), and five (42%) participants who had already contracted the disease. This breakdown allowed for varying knowledge and experiences with the disease from both diagnosis types.

**Table 2***Selected Participant Demographics*

Participant	Age	Gender	Education level	Diabetes Type II diagnosis	Gross household income
01	21	Female	Some college	Not present	0
02	40	Female	Associate's	Not present	45,000
03	48	Female	Graduate degree or above	Not present	100,000
04	51	Female	Graduate degree or above	Type II diabetic	92,000
05	46	Female	Some college	Type II diabetic	65,000
06	49	Male	High school graduate	Type II diabetic	48,000
07	53	Male	High school graduate	Type II diabetic	180,000
08	64	Female	High school graduate / certificate	Not present	25,000
09	63	Male	High school graduate	Type II diabetic	11,400
10	43	Male	Associate's degree	Prediabetic	120,000
11	43	Male	High school graduate	Not present	44,000
12	44	Female	High school graduate	Not present	75,000

**Data Collection Process**

A Facebook post was used to recruit participants, and interested individuals were asked to contact me (See Appendix A). Once I was certain that the inclusion criteria had been met and the participant was willing to participate, an in-person meeting was scheduled. The meeting was held at the closest community center available to the participant. The sessions were held in a private room at the designated community center. Before any data collection occurred, I guided the participants through the consent document. I ensured that I spoke to participants in a way that they could understand what

they were signing up for, were reminded of the key features of the study, and gave them ample time to ask any questions they may have had. The twelve participants were allowed to take as much time as they desired with the interview. The average length of the interview was nine minutes.

At the beginning of the in-person session, the participant was again informed of the study's purpose and aims. Once informed again, they were walked through the informed consent process, asked if they had any questions, and asked to sign the consent form. The informed consent process did not raise any questions from participants. Once consents were signed, they were stored in a locked drawer in my office. No other individuals have access to the drawer. After obtaining the participants' informed consent, they were given a brief demographic survey. Once the demographic survey was completed and collected, the participant was informed that the tape recorders would be turned on when the semistructured interview began. Once they said they were ready, the recorders were started, and the interview began. Interview recordings were completed using Voice Memo on a password-protected phone and MacBook. Two devices were used to ensure that data would be collected in case of an issue. Recordings from the phone were transferred to the MacBook and deleted from the phone. The MacBook is stored in a locked drawer in my office when not in use. Only I have access to it.

To guide the interview sessions, I developed an interview guide with the assistance of my committee and obtained approval from both the Walden IRB and the Lumbee Tribe IRB (See Appendix B). The interview protocol consisted of various questions that were developed to gauge participants' knowledge, experiences,

perceptions, and beliefs regarding DB2. Interviews were guided based on whether the participant was diabetic or not, and were adjusted accordingly. To ensure that participants provided as much detail as possible in their responses, they were prompted to elaborate if they had provided little detail.

Once all questions had been asked, I asked each participant if there were anything else they would like to add or elaborate on. Once they felt that they had said all that was needed, the interview was concluded, and the recorders were stopped. Participants were asked if they could be contacted later to clarify transcriptions, informed about how to contact me if needed, and asked if they would like to receive a copy of the research once it was completed. Research saturation was determined in consultation with my committee, once no new data were identified. No unusual circumstances were encountered during the data collection process. There were no deviations from the data collection plan, as detailed in Section 2.

### **Data Analysis**

All interviews conducted as part of this research study were recorded using Voice Memos on both an iPhone and a MacBook. Once each interview was completed, the recordings were transcribed into Microsoft Word documents. To ensure that transcriptions were accurate and validity was upheld, I listened to the recordings at least three times each and made corrections to ensure that transcriptions matched the recordings. To ensure that I correctly understood what the participants were saying, I took notes and conducted a self-debrief after each interview. The notes were also

consulted during the transcription process to ensure that I accurately captured the participants' intent.

Once the interviews were transcribed, they were analyzed using a deductive thematic analysis approach, as described by Braun and Clarke (2006). I utilized the Health Belief Model (Rosenstock, 1974) to aid in understanding and interpreting the findings. Each transcript was coded manually and reviewed multiple times to ensure consistency in the coding process. Similar codes began to occur throughout the transcripts, and they were grouped into categories. A total of eleven categories were identified. The categories that occurred include (a) personal experiences with disease; (b) family diagnosis/indirect impact; (c) accurate DB2 knowledge; (d) inaccurate DB2 knowledge; (e) DB2 prevention; (f) perceived barriers; (g) perceived severity; (h) perceived susceptibility; (i) management strategies; (j) management issues; and (k) comorbidities.

Once the categories were identified, they were further refined, and some categories were grouped into related themes. The themes included (a) experience with disease; (b) DB2 knowledge; (c) perceived severity; (d) perceived susceptibility; (e) management; and (f) perceived barriers. The categories and themes used are listed in Table 3 below. Many of these themes align with the Health Belief Model, including perceived severity, perceived severity, and perceived benefits. The themes will be further explored within the results section.

**Table 3***Analyzed Themes and Categories*

Theme	Category
Experience with disease	Personal experiences with disease/diagnosed with DB2 Family diagnosis/indirect impact
DB2 knowledge	Correct DB2 knowledge Incorrect DB2 knowledge
Perceived severity *	Perceived severity *
Perceived susceptibility *	Perceived susceptibility *
Management / prevention	Management strategies Prevention Management issues
Perceived barriers *	Perceived barriers *

\*Related to the health belief model.

### **Evidence of Trustworthiness**

#### **Credibility**

As mentioned before, to maintain credibility, an interview protocol was developed and implemented in cooperation with my committee and approved by both the Walden IRB and the Lumbee Tribe's IRB. I ensured that the interviews followed the interview protocol, which included variations in questions based on whether the participant had diabetes or not. No additional questions were asked of the participant, regardless of whether they had diabetes or not, to maintain consistency. I was as consistent as possible with the transcription and coding process for all participants. I conferred with my committee throughout the coding process to ensure that no issues arose and that the coding was consistent.

#### **Transferability**

Due to the nature of qualitative research, which often employs convenience or purposive sampling strategies, the transferability of findings is limited.

**Dependability**

To ensure dependability, the same interview protocol was used for all sessions. During the interviews, I took notes to ensure that I understood the participants' tone, feelings, and perspective on their responses. I transcribed the recordings promptly, and the process remained consistent by listening to the recordings multiple times to ensure that all transcriptions were accurate and by comparing them to my notes to verify my understanding of the participant's emotions at any given time. Interactions with my chair helped me organize the coding process, and it was replicated across all transcripts. For each transcript, I journaled all the codes that I identified, so that I could organize them more effectively as new categories emerged and group them by themes as they began to take shape. To ensure consistency, transcripts were analyzed and coded multiple times to verify accuracy. All processes were detailed to ensure replication can be achieved.

**Confirmability**

To maintain confirmability, time was allowed between the data analysis and interpretation processes, making it easier to distinguish between data-driven insights and my personal interpretations (Lemire, M., 2023). There are times in research for both, but they should be completed separately to remove bias. To ensure I understood the content, I took detailed notes during the interview process, recording the participants' emotions and feelings as they answered the interview questions. These notes were used to ensure that I matched the transcription to how the participants expressed themselves when answering. This was also aligned with listening to the recordings multiple times to ensure I was transcribing the participant's true intent. If these two measures were insufficient, I

ensured that I asked the participant before the interview process was completed if I could contact them for any needed clarification afterwards. This process was not needed, but all participants confirmed that I could. Interactions with my committee were designed to gain an outside perspective and help identify any potential researcher biases.

### **Results**

Twelve members of the Lumbee Tribe participated in this research study, which utilized in-person semistructured interviews. The interview questions focused on gaining a better understanding of participants' knowledge, perceptions, and beliefs about DB2 and their experiences with the prevention/management of the disease. The sample population consisted of six (50%) participants without diabetes and six (50%) participants diagnosed with diabetes or prediabetic. Participants could fully disclose their experiences dealing with DB2 prevention/management, their perceptions of the disease, knowledge of the disease, and any other beliefs they may have had. The themes that emerged within the study provided an opportunity to explore the issue of DB2 through an HBM framework. All 12 participants (100%) identified either being directly diagnosed with diabetes or having a family member affected by it. All 12 participants (100%) identified proper nutrition and exercise as major factors in preventing or managing DB2. Six participants (50%) identified the Lumbee diet as a possible factor for increased DB2 within the Lumbee community. All 12 participants (100%) perceived diabetes as a serious issue within the Lumbee Tribe—five participants (42%) labeled genetics/heredity as an influencer for the onset of DB2. Five participants (42%) felt that indigenous people do not take DB2 as a serious issue. Five participants (42%) felt their lives had room for

improvement. Four participants (33%) believed that the lack of insurance was a barrier for DB2 management.

The HBM helped me identify the themes present in the study participants' responses. The HBM framework enabled me to analyze participants' responses in terms of their experiences with the disease, knowledge of DB2, perceptions of the disease, and their beliefs about DB2. The key findings fall within the realm of the themes that emerged: (a) experience with disease; (b) DB2 knowledge; (c) perceived severity; (d) perceived susceptibility; (e) management; and (f) perceived barriers.

### **Theme 1: Experience With Disease**

The first theme focused on the Lumbee peoples' experience with DB2 prevention/management. Experiences with diabetes could fall into two categories: whether the participant had not been diagnosed with DB2 and was or was not on the path of prevention, or if the participant had been diagnosed with DB2 and was trying to manage it. The breakdown of the participants included six participants who had diabetes and six participants who either had prediabetes or DB2. All participants within the study had been diagnosed with DB2 or had a family member/friend who was affected by the disease. Data from this study population indicates that diabetes is highly prevalent within the Lumbee community.

Though six participants had no personal experiences with diabetes, all six of them had a family member who was affected by the disease. These instances included family members such as aunts, grandparents, and others not directly specified. The ways that these family members were affected included the family member going blind, while

others experienced the loss of their limbs. For example, participant 02 stated, “Um, my mother was bord borderline diabetes, but hers was controlled. And then my grandfather, on my mother’s side, had diabetes. His was pretty severe to the point where he lost both legs had to be amputated.” Participant 03 spoke about how one of her family members was affected by DB2 stating, “Umm, I had an aunt that had diabetes that didn’t regulate them like she could, and she actually went legally blind.” Data from this study population indicates that even though participants are not directly affected by diabetes, most often they have a relative who is or has been. The data also indicates a high presence of the disease within the sample population of Lumbee tribal members.

Outside of these instances, the participants not affected by the disease had no other experiences.

The remaining six participants affected by the disease had varying experiences in its management. For participant 04, she knew that she was borderline for years but did not make efforts to change their lifestyle before fully contracting DB2. Participant 04 stated,

Um, for my experience, it was um for so many years, it was something that I kind of knew I was borderline, but I kind of overlooked because I didn’t really want to accept the fact that, you know, that I was going to be affected by it.

Furthermore, participants 04 and 05 did not want to believe that they would be affected by diabetes, and they did not want to accept being diabetic in the beginning. Participant 04 thought initially, “I thought it was something that I could fix on my own.” Similarly, participant 05 stated that, “Being diabetic, because, like, for me, at one time I

didn't want to accept it, right. So, I didn't want to take my medication." Once they were fully diagnosed, they began implementing some management changes in their lives, which will be explored more in the management section. Changes in management practices for participants 04, 06, and 10 included educating themselves more on the disease. For example, participant 04 stated, "Um, but as I educated myself on diabetes and how it can affect the whole body as a whole, um, I got quite I got acquainted with um some things that I needed to do for my health."

For some participants who had contracted diabetes, it affected their vision. Participants 04, 05, and 10 had a change in their vision. For participants 04 and 05, the vision change resulted in the need for reading glasses. Participants 05 stated their experience as, "The blurred vision, my eyes just got worse, had the worse, start wearing glasses." Additionally, participants 05 and 10 reported experiencing periods of blurred vision. Participant 10 stated, "I've had some elevated readings. I'd get a little blurry, eyes get, vision get a little blurry." No participants reported a complete loss of vision for themselves, though participant 08 reported that their grandmother had lost her vision due to the disease.

## **Theme 2: DB2 Knowledge**

The second theme focused on the Lumbee peoples' knowledge of DB2. DB2 knowledge could be broken down into correct DB2 knowledge and incorrect DB2 knowledge. The questions asked allowed participants to share their knowledge of DB2, while also allowing opportunities to voice incorrect knowledge they may have had. There were variances in the amount of knowledge known by participants.

### ***Correct DB2 Knowledge***

Looking through the data, participants 01, 02, 03, 04, 05, and 07 knew that diabetes involves the body not producing enough insulin to regulate blood sugar. Though they all said it in a variety of ways, they still understood the main points. For example, participant 02 stated that diabetes occurs when “the body don’t produce enough insulin to actually regulate the blood sugar level within the body.” Similarly, participant 01 stated, “The pancreas doesn’t produce enough insulin to manage the blood sugar levels in the body, which leads to type 2 diabetes.” Both cases showed participants’ basic understanding of the workings of the disease. Participants 03, 04, 05, 06, 07, 09, and 10 expanded on this by explaining the need for medications to manage blood sugars. For example, participant 07 stated, “Um, it’s where your body produces insulin, but not enough to fight off sugars. So, you have to be able to take medication to help with that to help give your body insulin through medication.” Participant 06 detailed his experience, stating, “cause once you start eating right, and you’re taking a bunch of medicine, you have to watch you control your medicine a little bit, talk with your doctor about it.”

Many of the participants had correct knowledge of possible influencers of the disease. All participants mentioned that a poor diet can negatively influence the onset of DB2, and that increasing exercise can be helpful. For example, participant 02 stated, “A well-balanced diet, um low amount of sugar intake and physical activities” could help prevent diabetes. Similarly, participant 01 believed that “healthy lifestyle, healthier food choices, healthier activities in day-to-day, I feel like time management affects a lot of those things”, played a role in diabetes prevention and management. In addition to

prevention methods, some participants believed education on the subject was important, 04, 08, 10, and 12. Participant 12 stated that preventive measures that could help include, “Definitely our diet and be more educated, also as far as diabetes.” Some participants even stated that the disease can be passed down through hereditary means, including patients 03, 08, 09, and 11. Participant 11 stated, “I mean some people’s born with it. They inherit it, I guess, so.”

In terms of what the disease can affect, participants gave correct information on the disease’s impact. Participants 01, 02, 03, 05, and 12 mentioned that if the disease is not properly managed it can have serious side effects. For example, participant 03 stated, “So they could actually become hospitalized. Is that like you’re talking about more health-related issues. It could also affect their kidneys.” Other side effects like blindness were mentioned, including participant 05 stating,

All I know is that my pancreas is not producing the insulin that I needed and that’s why I end up having to take medications and it could cause a lot, a lot, a lot of health issues, like blindness.

### ***Incorrect/Lack of DB2 Knowledge***

While analyzing the data, though, there were a lot of correct DB2 knowledge instances; there were also some instances where incorrect information was given. During the interview process, participants 02, 09, 10, 11, and 12 believed that they had limited knowledge of diabetes, though they did provide some good insights. For example, participant 11 stated, “the only thing I really know is, um it’s sugar in the body that either it’s too high or too low.” Similarly, participant 02 stated, “I don’t know what it might

effect, but I know if it's not properly took care of, you can lose vision and limbs.”

Participants seemed to know more information than they believed.

Participants 10 and 12 admitted that they did not know the differences between Type 1 and Type 2 diabetes. Participant 10 stated, “All I know, there's two types. No, I don't know, I'm not really familiar with it. Unfamiliar. The difference in the type a, the type one and type two.” Participant 12 stated, “Would that so with the type two, I'm assuming that it's kind of would be kind of severe. Where they have to wear the actual portal or port on their arm? Is that?” This shows some correct diabetes management knowledge, but it is usually related to Type 1 diabetes instead of Type 2 diabetes.

### **Theme 3: Perceived Severity**

The third theme focused on the participants' perceived severity of DB2. Perceived severity relates to how serious a problem an individual believes the disease may impact them. participants believed that diabetes was a problem. Participant 11 believed that it was the leading cause of death, stating, “I do know it's like one of the leading causes of death, among, around here among our Lumbee people.” No other participants directly stated it as a leading cause of death among the population, but participant 10 did label it as a deadly disease. Participant 10 stated, “I don't know why we don't have more talks about it. It's such ah ah deadly disease.”

Other participants labeled DB2 as a serious problem that can have other serious effects 01, 02, 03, 05, 08, 11, and 12. Participant 08 stated,

Oh, it can have serious effect. I mean, like, where you have to take shots or pills, check your blood work, or blood glucose, and I don't know type two can do it, but diabetes can make you go blind. It made my grandmother go blind.

Side effects were not only mentioned as blindness, but other mentions included kidney failure 03, 05, and 11, and loss of limbs 01, 02, 08, and 12. Regarding kidney failure, participant 11 mentioned, "I mean, it causes functions to shut down, your kidneys and stuff like that." While participant 03 mentioned, "So, it could cause a person to go blind, cause kidney failure." Regarding loss of limbs, participant 02 mentioned that, "my grandfather, on my mother's side, had diabetes. His was pretty severe to the point where he lost both legs had to be amputated." Participants 05 and 06 felt that the consequences could be severe if you did not correctly manage your DB2. Patient 06 stated, "It's been hard. But want to live as long as I can, so I had to make the choice. Either wise try to eat right and do better take my medicine or suffer the consequences."

The participants who did not have diabetes mentioned that its effects were motivators for them to live healthier 01, 02, 03, 08, 11, and 12. Participant 01 stated, "It does and it should motivate you to live healthier to avoid the risk of having and developing type two diabetes." This sentiment was further backed by participant 08, stating,

Oh, yes, definitely. Cause I started walking and I have not done that in years and trying to eat better, more healthier, get outside more not just sit on the couch. You got to move your body. Keep all this stuff moving moving moving.

Results show that beliefs that the disease can cause serious problems can promote efforts towards positive lifestyle changes.

Contrary beliefs were voiced by both participants 01 and 10. They stated that some members of the Lumbee Tribe do not consider diabetes a serious issue. Participant 01 mentioned that, “as I’m speaking for my indigenous native community um some barriers would be the not wanting to listen, being very stubborn when it comes to health and our health.” Participant 01 also mentioned, “Lumbee people are resilient very resilient, and they choose that they choose not attend doctor visits because they think they know everything which is not the case in most in most points yeah.” Similar sentiment was shown by participant 10, stating,

Oh, just people not, I say, once again, uneducated about the disease, and grew up in an environment where nobody didn’t go to the doctors. They just kind of self-medicated. Nobodies. Going to doctor was taboo. It just ain’t what people did. They just worked with it.

Both approaches show a lower perceived severity of the disease, possibly linked to past cultural thoughts/practices or lack of knowledge. Further sentiment of this was shown by participant 10 stating, “They didn’t nobody couldn’t identify what it was and we would just count it off. We counted off. Oh, that ain’t nothing.”

#### **Theme 4: Perceived Susceptibility**

The fourth theme focused on the participants’ perceived susceptibility to DB2. Perceived susceptibility relates to how likely an individual believes they are to develop a disease. For the study population, six participants already had diabetes or prediabetes,

while the remaining six did not have it. The six participants without diabetes were asked if they believed that they were likely to develop DB2. Participants 02, 03, and 12 of those asked believed they could be at risk of developing the disease. Participant 03 believed they, “Could be at risk for it, I am not my normal body weight, so, yes.” Participant 12 believed they may develop it because “My diet is poor, and I definitely, no exercise at this point.” On the opposite spectrum, participant 11 believed they would be unlikely to develop the disease. Participant 11 stated,

Mine, I would say no, because I’m very careful about what I eat. I mean, I do like a sweet here and there, but when it comes to consuming what we call starches, I’m very careful about my intake there, and I don’t really do fast food and when it comes to drinking sodas, I don’t even drink sodas.

When looking through the data, participants identified several factors that could make them susceptible to DB2. A factor identified by all participants was the consumption of high amounts of sugar. Participant 03 believed that decreasing sugar intake would help, stating, “That means decrease the sugar intake, drink more water versus sugary, sodas and tea and drinks. Um, they could limit their intake of sugar sources such as candies, sugary cakes, so they could eat healthier.” Similarly participant 01 gave the possibility that,

Mothers don’t have enough time of the day, so they just stop by; pick up something, you know, probably way too much sugar in and don’t have a chance or the time to get their daily exercise in which leads them consuming sugary stuff and then contracting diabetes.

Lastly, low levels of physical exercise were another possible susceptibility point identified by all participants. Participant 03 reflected this belief in susceptibility by stating, “Well, um, I’m not active. I don’t exercise on a daily basis. Sedentary lifestyle. That means not being active other than working. Yes, I probably could.”

Another reason that participants believed they may be susceptible to diabetes is due to it being hereditary. Participants 03, 04, 08, 09, 10, and 11 labeled it as a possible susceptibility factor for DB2. Participant 09 stated, “Well, like, so we inherit it from family members, these diabetes and arthritis.” Participant 03 added to this, stating, “Since my grandfather had diabetes, it probably could be sent down genetically.” Participant 04 further explored the genetic idea with a cultural twist. They stated,

That’s diabetes is one of those things that I think our people are not educated enough about in our youth, on how to take care of our bodies and what to do to take care of our bodies so we can break the generational curses of our people.

The data showed some recurring possible cultural influences for perceived susceptibility. One of the major recurring points was an unhealthy cultural diet from participants 01, 04, 06, 08, 11, and 12. Participant 01 stated, “the Lumbee diet, which includes all your greasy food, your fried food, such as fried bread, collard wraps, the amount of sugar they put in their sweet tea, Kool-Aid, all does things would lead to someone to have diabetes.” Participant 11 supported this stating,

We still have a lot of food that we cook back in a day that’s not really healthy.

Fried foods and stuff like that. Fried foods and a lot of times I believe we tend to overeat. We associate food with family, so. And that can lead to us overeating.

Among participants, the sentiment was that the traditional Lumbee diet was not healthy. Another cultural influence mentioned by participants 01, 04, and 05 is that Lumbee people believe they will not be affected by DB2. Participant 04 stated,

For my experience, it was um for so many years, it was something that I kind of knew I was borderline, but I kind of overlooked because I didn't really want to accept the fact that, you, know, that I was going to be affected by it.

Participant 05 had a similar experience stating, "like, for me, at one time I didn't want to accept it, right. So, I didn't want to take my medication. But you gotta be." Both cases showed instances where the participants did not want to accept that the disease would affect them.

### **Theme 5: Management**

The fifth theme focused on the participants' thoughts on managing and preventing DB2. All participants within the study were focused on prevention, but different types. Those without a diagnosis were focused on primary prevention (not getting diagnosed) and those with a diagnosis were focused on secondary prevention (managing DB2, trying to reverse it, or keep it from getting worse). Secondary prevention practices were split between management strategies and management issues.

#### ***Primary Prevention***

Participants provided data supporting various preventative strategies that can be used to combat diabetes. All participants listed choosing healthier food choices/healthier diet and increasing physical activity as preventative measures. Participant 02 stated, "a well-balanced diet, um low amount of sugar intake, and physical activities." Participant

08 stated, “Early intervention at a young, young age for better dieting, more exercising, more getting out in nature.” Outside of diet and exercise, education on the disease at a younger age was listed as a possible prevention method by participants 02, 03, 04, 08, 10, and 11. Participant 08 stated change can come by, “encouraging the families that we have and the loved ones and friends to eat better, to move more and to start teaching about this at a younger age so that they don’t have to deal with it.” Participant 04 showed a similar sentiment, “the younger we educate our people about diabetes, the better off we will be as our future generations become populated.”

There was other prevention methods and mindsets mentioned throughout the data that could be helpful for the prevention of DB2. Participant 08 mentioned that a person needs “Determination, a strong willpower, and the determination to want to live. Not be sick and not be having to take pills, shots, take pills, shots.” Participant 08 also mentioned, “it can be prevented and sometimes all it takes for people is mind over matter. But some people don’t and they’re stuck with shots, and pills.” Some participants voiced their opinions on changes that needed to be made to prevent/manage the situation. Participant 03 mentioned the need for “Well, I wish they would make more programs available for those individuals that can’t afford insulin because insulin is actually expensive.” Participant 10 advocated for the need for more community awareness and for doctors to talk more about it. Participant 10 stated,

More awareness, more awareness on what the difference is, cause I really don’t know what the difference is in type one and type two diabetes. I don’t even know if a doctor around here’s ever explained to me what it was. They just checked it.

Participants were asked if they partake in cultural practices such as? that can prevent diabetes, but participants 01, 02, 03, 08, 11, and 12 admitted to not partaking in any. Participant 03 said that the Lumbee Tribe provides, “sessions that teach and inform the Native Americans about how to prevent and what they can do to lessen the risk of getting diabetes.” Participant 03 also stated,

The Lumbee culture they provide a lot of brochures and information of since diabetes, and hypertension run high in risk factors for the Lumbee people. They provide a lot of brochures and pamphlets and informational text about how to control and how to handle that. They have health sessions they provide meetings for them to attend to.

Though participant 02 did not partake in any, she mentioned that, “we do promote them with my place of employment, um classes to help maintaining control your diabetes and education on diabetes.”

### ***Management Strategies (Secondary Prevention)***

For those individuals who had already contracted DB2, they had to implement management strategies. For participant 04, the first thing that she needed to do was educate herself on the disease. Participant 04 stated, “as I educated myself on diabetes and how it can affect the whole body as a whole, um, I got quite I got acquainted with um some things that I needed to do for my health.” A significant factor that was noted for successful management was a change in diet by participants 04, 05, 06, 07, 09, and 10. Participant 06 had difficulty initially stating,

You can't eat anything hardly. Everything's got sugar in it. You just can't eat nothing. You have to watch, what you eat. I mean you got to read label, do research and if you do eat certain things, you got to watch how much you eat.

Participant 10 detailed their experience with needing to change their diet stating, Change my diet. I well. I haven't bought a box of little Debbie's in about six months. Still not eating the best, but I have cut little Deb. I was eating about three little Debbie's a day. I did cut that out.

Participants 04, 05, and 07 did see noticeable differences in their DB2 management after weight loss. Participant 07 stated,

I lost a significant amount of weight, and I can tell it's helping me control the diabetes a little more, instead of being overweight. I actually lost around 50 pounds since started taking it, and I'm back down to my average size.

Participant 05 has been pushing to lose weight stating,

Here lately, I've been on up the losing weight thing cause I know If I could lose weight, it help control the diabetes and I could probably come off some dis medicine. If I could lose the weight and eat right.

Participants 04, 05, 06, 07, and 09 all detailed their need to check their blood sugar multiple times daily. Participant 09 stated, "I used to check it in the morning when I get up. I had to check it in the evening when I get home and mainly at night. Three times a day." To assist in management, participants 04, 05, 06, 07, and 09 take medications to keep their DB2 in check. Participant 07 detailed their experience, stating, "with the new medicine I take, which is called synjardy, um I lost a significant amount of weight, and I

can tell it's helping me control the diabetes a little more, instead of being overweight.”

Participant 06 detailed their experience taking DB2 meds, stating,

You got to watch how much you eat. And that affects your medicine, too, cause once you start eating right, and you're taking a bunch of medicine, you have to watch you control your medicine a little bit, talk with your doctor about it.

Participants 04, 05, 06, 07, 09, and 10 included regular doctor visits/interactions to keep their DB2 managed. Participant 07 stated that they had,

Dr's visits every three months, and I do a wellness check. Um checks blood, urine, and everything to make sure the obvious symptoms ain't moving into effect. Like she checks my feet and make sure I have no pain in my feet cause that's a diabetic trait and just trying to stay on top of it.

Participant 09 detailed their experience keeping their sugar levels down, stating, I had to watch that because it do be high, sometime. So then the Dr. be given me that look. So she said, we got to get the sugars down, got to get them down. So they'll work with me for about a month about a week, and it's down normal, normal range.

For participants 08, 09, and 10, there was a faith-based aspect to their prevention/management ideas. Participant 08 stated, “I think God puts something here to heal everything.” Similarly, participant 09 stated, “Just trust in the Almighty. He would help us through it.” Both aspects represent the importance of God within the Lumbee culture and beliefs.

Finally, several management strategies, experiences, and beliefs were unique to one or a few participants. Participant number 08 was the only participant who believed that herbs could help with diabetes. Participant 08 stated, “even if you were to get it, I feel like there’s natural herbs from the earth that could heal.” Participant 09 mentioned managing stress as a way they help manage their diabetes. In response to be asked how they keep their DB2 in check, participant 09 stated, “Mainly walking. Don’t have stress. Try not to anyway. Type of job I have.” A useful tool that participant 10 mentioned that could be used is seeing a dietician. Participant 10 stated, “A dietitian, I’ve got an aunt in a California that she’s goes visits a dietician, and I don’t even know if we’ve got a dietitian around here, tell people what they should eat, can eat.”

### ***Management Issues***

Individuals with DB2 sometimes have issues managing it. One of the bigger issues mentioned was dealing with fluctuations in the blood sugars of participants 04, 05, 06, 07, 09, and 10. Participant 06 detailed their experience stating,

Besides it running high, well, my blood pressure runs high, too, and if it weren’t for mah blood pressure, I wouldn’t found out that my sugar was running high. So sometimes when I’m trying to eat right and take my medicine if my sugar is too low, I feels bad.

Participant 04 detailed their experience,

I can tell by 9:30, 10 o’clock that my body’s telling me that I need to put something in it. I need to eat something. I can normally tell when it’s dropping, more so than I can when it’s getting higher.

Another common issue participants 05, 07, and 09 mentioned was aches and pain in the feet. Participant 05 stated, “And I do get some aches and pain in my feet, which just that come from the diabetes too.” An experience shared by participants 09 and 10 was that at times they felt dizzy or had weak spells if their sugar levels were not correct. Participant 09 stated, “So I know I better try to get something in there for I start having that little weak spell.”

There were some other issues that some participants encountered, such as participant 04 having to overcome stress eating while they had diabetes. Participant 04 stated, “Stress eating, affected my diabetes as well. So I had, that was another barrier learning not to stress eat or, you know, because I was in graduate school, when I found out that I was a Type II diabetic.” Participants 06 and 07 have trouble consuming foods that are their favorite, but high in starch. Participant 07 stated, “When I eat certain foods, it makes me very sleepy, my blood sugar shoots up, and so I have to watch what I eat on. Try not to eat that certain food, which is rice.” Both participants 05 and 10 had instances when they had to deal with blurred vision due to DB2. Participant 10 detailed their experience, stating, “I’ve had some elevated readings. I’d get a little blurry, eyes get vision, get a little blurry.” Participant 05 had issues with finding the right DB2 meds. Participant 05 stated,

When I started medication, some medicine was causing it to be too low. So I had to work to be put on the right medication, and right now, I’m experiencing the same thing because now I take two different types of sugar pills, and I take a

Ozempic shot. So now I'm having to go back to the doctor to figure out if I need to come off with something.

Participants 07 and 10 both had issues with the need for frequent urination.

Participant 07 stated, "Um, having to use the bathroom a lot. Urine had very frequently I go about 15 times a day."

As mentioned in the management strategies section, participant number 10 was the only participant who mentioned using a dietitian as a strategy. The only issue is that they also did not know if there were any dietitians around, stating, "I've got an aunt in a California that she's goes visits a dietician, and I don't even know if we've got a dietitian around here, tell people what they should eat, can eat." Another concern participant 10 had was with doctors not informing him what to do with his prediabetes properly.

Participant 10 detailed their experience, stating,

I don't know why we don't have more talks about it. It's such ah ah deadly disease and like I say, when the doctors check your sugar and they'll say, well your sugar is high, your sugar is low. And well let's do this or that. But they won't say, well, hey, let's cut back on this, and let's not do this, and let's.

### **Theme 6: Perceived Barriers**

The sixth and final theme focused on the participants' perceived barriers towards the prevention/management of DB2. Perceived barriers identified were rooted in a variety of bases. The most significant factor that participants noted was behavioral. All participants labeled a poor diet as a possible barrier to the prevention/management of DB2. Participant 04 detailed their experience with dieting, stating, "Yeah, the big eaten

right, proper nutrition was one of the biggest barriers that I've had to overcome. Because within our culture, the Native American culture we like to eat um things that are not healthy." Participant 09 detailed their experience with high sugar and trying to diet, stating, "Sometimes I gets to be honest, it gets to sometimes I gets to snacking too much sometime. Trying to go to bed, trying to eat snacks and you know it ain't good."

Lack of exercise was another barrier that participants identified. Participant 01 stated, "exercise someone may not have the opportunities or the resources for their physical daily life or they may leave in a not they may live in a... Yes, or a dangerous area." Participant 11 detailed their barrier with lack of exercise, stating,

Just pretty much probably laziness where I could get up and do exercise, which I do right about sometime and I do still walk some, but just not as often as I do. So it would just be just not actually taking the time out to do it.

Though participants had already labeled unhealthy foods as a barrier, participants 08, 10, and 11 felt the current food was bad due to various additives. Participant 08 voiced her concerns on additives, stating,

Our government is the biggest barrier. They got all this poisons and dyes, and... Yeah, and make it last so I'm going like. I mean, good grief, one day it's a biddy the next day it's a chicken. One day it's a pig, and the next day it's a hog. It's our government. Other countries don't have food like we do.

Participant 10 mirrored this sentiment, stating,

I think a lot of the food we eating now has probably got more to do with it than they did growing up in their time. A lot of stuff in our food. That's just my

opinion. Well, the food we're eating has more preservatives and stuff in it, sugar, artificial sugars, fructose.

Though not mentioned often, a possible barrier mentioned was time. Participant 01 seen time as a possible barrier stating,

I feel like time management affects a lot of those things as, you know, life gets busy and you lose track of time or a lot mothers don't have enough time of the day, so they just stop by, pick up something, you know, probably has way too much sugar in and don't have a chance or the time to get their daily exercise in which leads to them consuming sugary stuff and then contracting diabetes.

Participant 12 saw the need to make time to benefit their health. Participant 12 stated, "By taking my health more serious, taking in watching what I eat, trying to eat healthier, and making time to exercise instead of making excuses for not doing it."

Analysis of the data also showed a possible economic barrier due to insurance and the cost of healthcare. Participants 01, 05, 06, and 07 labeled the insurance cost as a barrier towards diabetes prevention/management. Participant 05 detailed their experience dealing with this barrier, stating,

I know one was like not being able to afford a medication that I needed. Because at the time didn't have the proper insurance, but now I got the proper insurance, it's easier for me to get the medicine that I do need.

Participant 01 stated,

I feel like coming from an indigenous member of the Lumbee Tribe's standpoint you know Native Americans have a lot of unhealthy food choices as where their

income don't allow them to buy healthy food, or they don't have the income to attend Doctors visits.

Participant 01 expanded on this, stating, "As most health plans are not included in job titles whether it is fast food or retail."

Data showed some barriers participants felt were rooted within Lumbee culture, especially with the Lumbee diet. Participant 11 stated,

Lumbee's like to eat and cook and the food that we have. I mean cause, we still have a lot of food that we cook back in the day that's not really healthy. Fried foods and stuff like that. Fried foods and a lot of times I believe we tend to overeat. We associate food with family, so. And that can lead to us overeating.

Participant 08 believed the unhealthy Lumbee diet was partially influenced by other cultures. Participant 08 stated,

Yes, but not by their own doing, being introduced to different things, but different people with different cultures. But then they have, but then the Lumbee have their own to because look at the look at like Lumbee homecoming. All the funnel cakes, look Lord be so good so each culture has their own partake in type two diabetes every culture all over the world.

Outside of the cultural diet, participants believed that Lumbee tribal members do not take diabetes seriously. Participant 12 showed an instance of this, stating,

For my family, for instance, we just don't take it serious. Not only with that, like, um, heart issues run prominent in my family and it's you know, we just, we don't take it serous enough, not like we should.

Participant 01 felt that some barriers arise due to Lumbee individuals, “not wanting to listen, being very stubborn when it comes to health and our health.”

Participant 10 also shared this sentiment, often being held with older Lumbee individuals, stating, “Oh, that ain’t nothing. That’s just fever or something. They didn’t nobody couldn’t identify what it was and we would just count it off. We counted off. Oh, that ain’t nothing.” Participant 10 also believed that some barriers may arise due to past beliefs within the community. Participant 10 stated,

Just listening to people. Ole wives fables, listening to their remedy taking their home remedies and all that’s good. Home remedies work, but I mean, you, if you don’t you ain’t sure, that’s what you got, the home remedy ain’t doing no good.

Though some participants knew of cultural practices that can promote diabetes prevention, no participants participated in any.

### **Summary**

Section 3 included a description of the data collection and analysis, evidence of the data's trustworthiness, and key results. Themes identified included direct and indirect experiences with DB2, knowledge of DB2, and aspects related to the HBM: perceived susceptibility, perceived severity, disease management, and perceived barriers. Section 4 will include a discussion and interpretation of the findings, the study's application to professional practice, and implications for sustainable positive social change.

#### Section 4: Application to Professional Practice and Implications for Social Change

The purpose of this study was to explore the perceptions and beliefs of Lumbee tribal members regarding DB2 and its prevention using a descriptive phenomenological approach. This study was necessary due to the limited knowledge and research on Lumbee tribal members' perceptions and beliefs regarding DB2. Findings may be used to tailor public health program development due to differences among Native American tribes. Deductive thematic analysis with emphasis on the HBM revealed the following themes: (a) experience with disease, (b) DB2 knowledge, (c) perceived severity, (d) perceived susceptibility, (e) management, and (f) perceived barriers.

Section 4 focuses on the implications of the study and the potential impact of the findings on professional practice and social change. By addressing the knowledge, perceptions, and beliefs that Lumbee tribal members reported regarding DB2, this section highlights strategies for addressing the disease. Key findings from this study may be used to emphasize the need for increased culturally competent health education on the disease, increased tribal program involvement in combating the disease, a greater emphasis on a healthier cultural diet, and increased encouragement to engage in healthier behaviors to help participants achieve better outcomes regarding DB2.

#### **Interpretation of the Findings**

##### **PRQ**

The PRQ was the following: What are the lived experiences of Lumbee tribal members with respect to trying to partake in DB2 prevention? Though some experiences concerning DB2 may be similar among Native American tribes, there will also be

differences. It was essential to identify these differences within the Lumbee Tribe to better understand their challenges with DB2 and inform the development of efforts tailored to addressing the issue within the population. Analysis of the data revealed three themes that provided insight into the PRQ. The themes that emerged were experience with disease, prevention experiences, and management experiences.

### *Experience With Disease*

Experience with the disease can be divided into two categories: personal experience, which typically occurs among those diagnosed with DB2, and family diagnosis/indirect impact for those not diagnosed with the disease. For those diagnosed with the disease, there were six participants with varying experiences with the disease. Participants 04 and 05 had continually partaken in negative health behaviors, were told that they were at high risk for DB2/prediabetes, initially did not want to believe it, and then were diagnosed with DB2. This confirms the existing literature, indicating that a low perceived susceptibility toward DB2 can increase the likelihood of individuals developing the disease (Warren & Hixenbaugh, 2020). If these two participants had taken their warning of being prediabetic seriously, they may have been able to stop or lessen the disease's onset. This scenario contrasts with Participant 10, who was told that they were prediabetic but decided to make the needed changes in their diet to keep from fully developing DB2. Both scenarios illustrate instances involving members of the Lumbee Tribe and the outcomes that can occur when an individual decides to implement preventive strategies or not.

A shared experience amongst the diagnosed group was constant changes in blood sugar readings. Blood sugars can be influenced by several factors, including what you eat. Changes in these readings can negatively affect the individual and require DB2 meds to regulate them. This aligns with the literature and the general experience of individuals with DB2. Additionally, three of the participants who were diagnosed with DB2 mentioned having to try multiple medicines to determine which one worked best for them at the time. Those diagnosed with DB2 will each be affected differently, and their varying habits will further this. Trying different meds may be necessary to determine which works best for them. This may also not work forever, so at times, it may be a revolving cycle to find a medication that works well enough for the individual over an extended period.

For the six remaining participants without DB2, all six participants noted having a family member who had been affected by DB2. As mentioned before, these family members were affected in ways such as losing limbs, going blind, and requiring dialysis. Having a direct family member affected by DB2 could have possibly influenced the participants in two ways. Conforming to the literature, this connection may have increased the participants' perceived susceptibility to DB2 by leading them to believe that they could be genetically susceptible to the disease (Kwan et al., 2020). It could also have increased their perceived severity of DB2, by showing them that the disease can cause adverse health outcomes in their family member (Zhao et al., 2022). These instances align with the literature in showing how outward experiences with DB2 can shape beliefs towards the disease for individuals who do not have DB2.

Additionally, when comparing the experiences of those in the study diagnosed with DB2 to the experiences of the family members of those individuals not diagnosed with DB2, there were significant differences. Although the six study participants were negatively affected, they were not as drastically affected as the family members had been. This could have been related to study participants taking the disease more seriously, along with its management, in comparison to the experiences shared by family members. This aligns with the literature, suggesting that better outcomes result from continual involvement in DB2 management.

Examining the experiences of all participants, there is a high prevalence of DB2 among the Lumbee Tribe, which is supportive of claims that Native Americans hold the highest prevalence rates in terms of DB2. The experiences of those diagnosed with DB2 and those who are not diagnosed may vary, but having data from both groups helps build an overall picture of DB2 experiences within the Lumbee population. This data is important because it allows for major issues to be identified and addressed in relation to the lived experiences of Lumbee tribal members attempting to prevent or manage DB2. Expanding on this knowledge within the literature is important because it details the battles that Lumbee tribal members have faced in the pursuit of DB2 prevention and management efforts.

### ***Prevention***

I found the prevention strategies listed by participants to be straightforward. The two primary items listed were maintaining a proper diet and exercise as practical tools to prevent DB2. This concurs with current scientific literature and research as effective

ways to prevent DB2 (Taylor, 2021). However, it was important for the participants to understand that diet and exercise were practical tools; five of the six participants not diagnosed with DB2 admitted that they did not eat a healthy diet. The remaining participant differed from this by detailing that they almost always eat healthier foods. If these behaviors were to persist, then this participant would be the most likely to not develop DB2, given their healthier diet. In terms of exercise, all six participants admitted that they could exercise more often. Though it is good that these participants have not yet been diagnosed with DB2, it could be an issue as they grow older if they do not address their diet and exercise habits.

Outside of diet and exercise, participants 01, 03, and 04 mentioned that there are DB2 prevention programs through the Lumbee Tribe. In contrast, participant 02 mentioned that there were DB2 preventative services at the gym where she works. Although all participants had access to the DB2 preventive programs provided by the tribe, none of them utilized them. Though participant 02 had DB2 preventative services offered through their place of work, she did not utilize them. Though the scope of these services is unknown, it is good that there are options within the community for the population to utilize. If participants are aware of them, then they should be easily accessible to others within the population who may need to access them if needed.

### ***Management***

Like those individuals who did not have DB2, the participants who were diagnosed labeled proper diet and exercise as essential tools in managing their DB2. Participants who were diagnosed with DB2 experienced issues when they did not eat

correctly or avoided certain foods, such as those with high starch content. Once participants diagnosed with DB2 learned more about it, they began to limit certain foods, which enabled them to manage their blood sugar levels better. However, these diagnosed participants also noted that they do not always limit the foods that negatively affect their blood sugar levels, often reverting to bad habits, such as stress eating or unnecessary snacking.

Both groups noted diet and exercise as important factors for prevention/management. An interesting difference, though, is the emphasis on why a proper diet is important for management. The undiagnosed group often mentions only vaguely that greasy and sugary foods are bad. In comparison, those who were diagnosed with DB2 talked more about maintaining a proper diet while also detailing how certain foods affected them. This difference was related to the lived experiences of those within the diagnosed group who had to adjust their diet so that foods such as those high in sugar and starches would not negatively affect their blood sugar levels. The more detailed information about the DB2 participants' diets provided during the interviews helped increase insight into their experiences managing their DB2.

Of the six participants who had been diagnosed with DB2/prediabetes, five of them were on daily medication use. Participant #10 was not on DB2 meds due to adjusting their diet when they were diagnosed with prediabetes. The five diagnosed with DB2, mentioned having to check their blood sugars multiple times a day to make sure that they were at a reasonable level, or to determine if they needed their medicine or not. This comparison showed the difference that implementing prevention/management

towards DB2 can have on the full onset of the disease. This aligns with the literature, which indicates that if addressed early enough, the impact of DB2 can be mitigated (Taylor, 2021). Although participant #10 may exhibit some effects of the disease, they are not as prevalent as those of the remaining diagnosed participants. Many of these participants had learned how their bodies reacted as their blood sugar levels fluctuated, making it easier to determine if they needed their medication without taking a blood sugar test (Hosono & Tochikawa, 2022). Management has become just another daily part of their lives, though it is more intensive and monitored for some. Participants 04 and 05 mentioned troubles with finding the proper med to stay on initially, and participant 05 is beginning to have that trouble again. This illustrates the ongoing changes in management that some individuals must address when working with DB2. If not prevented, DB2 will become a lifelong disease that requires continual maintenance and management (Taylor, 2021).

Participants who had DB2 listed regular visits with their provider as an essential tool in DB2 management. This was different than the participants who did not have DB2 because none of them mentioned doctor visits as a method of prevention. These sessions would include wellness checks, monitoring for any adverse signs, assessing various DB2-related levels such as blood sugar, inspecting feet and other susceptible body parts, and verifying medication adherence. Several participants' doctors helped inform them about the issue of DB2 and assisted them in getting on track to manage the disease. These interactions with participants' doctors align with the literature, demonstrating the effectiveness of DB2 management (Davoodi et al., 2022). Participant #10 felt that their

interactions with the doctor were helpful, but they felt that they were just told to do things without being given the reasoning behind them. A strategy mentioned in the literature, utilizing culturally appropriate care to clarify the point of DB2 management, could have helped (Wilson et al., 2022). Additionally, the literature indicates that having a provider from the participants' background (Native American/member of the Lumbee Tribe) can also make them more comfortable and more likely to adhere to their advice better (Nahian & Jouk, 2023).

### ***PRQ Conclusion***

The experiences of the study participants provided insight into their battle with the disease and the reasoning behind some of their behavioral choices. Although some participants focused on prevention, and others focused on management, both groups provided meaningful insights into the problem. DB2 is a disease that you want to try to avoid through primary prevention. However, if you do not, management will be required to prevent any further major complications. It was helpful to have participants' experiences detailed from both the undiagnosed group (preventative) and the diagnosed group (management), as this illustrates the two possibilities that can occur when dealing with DB2. Within the Lumbee population, there will be individuals from both groups, and some of their experiences with the disease will be different. Learning about the experiences from both perspectives gives better insight into the issue of DB2 as a whole and can assist in identifying common problems that need to be addressed. Having perspectives from both groups adds to the literature by exploring what has worked and what has not with prevention/management within a specific geographic and cultural area.

It also adds to the literature by detailing the current experiences of Lumbee tribal members dealing with DB2 and their efforts towards prevention/management. This allows the rarely studied data to be up to date, reflecting experiences faced today.

### **SRQ1**

SRQ1 was, “What is the level of perceived susceptibility and severity in relation to DB2 for members of the Lumbee Tribe? An individual’s perceived susceptibility and severity are important for their participation in prevention/management practices (Lucero & Roubideaux, 2022).

#### ***Perceived Susceptibility***

Perceived susceptibility refers to an individual's belief about their susceptibility to developing a disease (Rosenstock, 1974). Of the six participants who were not diagnosed with DB2, four believed they were susceptible to developing DB2 due to various factors. Participants highlighted poor diet, lack of exercise, and genetics/family history as major influencers that may increase their chance of developing DB2. These participant narratives align with those of past research, which has detailed the beliefs associated with increased rates of DB2 within Native American populations (Wilson et al., 2022). On the opposite side of the spectrum, participant #11 felt less susceptible to developing DB2 due to a healthier diet and moderate exercise—this aligns with the standard knowledge of DB2 and its influencers (Sukeri et al., 2020).

Additionally, participant #08 believed that they were unlikely to develop the disease due to not developing it at their age, but they still believed it could happen. This aligns with the literature, which shows that DB2 often affects older individuals and can

develop at any time. These narratives show how partaking in more positive health-related behaviors and fostering lower perceived susceptibility can lead to a higher perceived susceptibility, while engaging in less positive health-related behaviors can also contribute to a higher perceived susceptibility.

In the case of those already diagnosed with DB2, two of the participants believed that the disease would never affect them until it did. This experience is shared with research on individuals across various diseases due to limited initial perceived susceptibility (Warren & Hixenbaugh, 2020). Individuals will continue to engage in behaviors that may lead to adverse outcomes, even if no initial dangers are present, thereby increasing the likelihood of the disease developing. This will circumvent primary and even secondary prevention if the disease becomes present, requiring tertiary prevention for any further management. Although this may not be the current story for individuals without DB2, it serves as a warning for them. They are living lives that make them highly susceptible to DB2, and if they do not make changes, they can also develop it.

### ***Perceived Severity***

Perceived severity refers to the extent to which a person believes a disease can affect them (Rosenstock, 1974). Both participants diagnosed with DB2 and those not diagnosed believed that DB2 was a severe issue on its own and was also a severe issue within the Lumbee community. Participants' beliefs about the severity of DB2 would foster the need/desire to participate in prevention/management efforts. This was especially apparent with the six individuals who were diagnosed with DB2. Once

diagnosed and better informed about the disease, their perception of severity changed, and partaking in management increased to prevent further complications.

Participants linked DB2 severity to issues such as influencing the loss of limbs, causing changes in vision/vision loss, aches and pain in feet, need for dialysis (shuts down kidneys), can cause hospitalization, and it can lead to death. These perceived severity cases were associated with the adverse possible outcomes for individuals diagnosed with DB2 mentioned throughout the published literature. The most severe cases, such as loss of limbs, vision loss, kidney failure, and death, were primarily noted by participants not diagnosed with DB2. These individuals focused on severity as the worst-case scenarios that may occur for someone diagnosed with DB2. This differed from participants who were diagnosed with DB2, who primarily noted severity issues related to aches and pains, having to take DB2 meds, changes in blood sugar, frequent urination, etc., showing severity linked to things that they have experienced.

Though the individuals without DB2 perceived the disease as severe, they still did not always partake in preventative measures for the disease. This information is important, as it suggests that perceived severity, on its own, may not be sufficient to influence behavior change in most people. Nevertheless, it was essential for this study to explore the participants' perceived severity of DB2 to gain a deeper understanding of how seriously the Lumbee people believe the disease can affect them, providing valuable knowledge that will contribute to a more comprehensive approach to combating the disease. Participants provided details on what aspects of DB2 make it a severe issue for them, which should also be present within the overall Lumbee population.

The prevention of DB2 is a continual process that is easier for younger individuals to manage (Taylor, 2021). However, more effort will need to be put towards it as individuals age and approach the ages when they are more susceptible. Participants reported that they had made some changes in their lives to help prevent the disease. These changes included trying to exercise more and adjusting their diet to be healthier, though they did not always maintain such changes. Some individuals experienced weight loss, which is beneficial in combating DB2 (NIDDK, 2023). Participants who had developed DB2 could be seen as perceiving the disease as more severe due to implementing DB2 management practices once they were diagnosed.

### ***SRQ1 Conclusion***

Participants demonstrated their perceived severity and susceptibility in relation to DB2. Most participants without DB2, 4 out of 6, viewed themselves as currently susceptible to DB2 due to their lifestyle. Believing oneself to be susceptible can be an initial step for an individual to make a change (Lucero & Roubideaux, 2022). Understanding why the participants are susceptible can direct them towards the help they need or the development of programs to address these issues.

All participants viewed DB2 as a severe issue, though participants had different focuses on the reasons. Those diagnosed with DB2 linked severity to the experiences that they had gone through, while those who were not diagnosed with DB2 focused more on the worst-case scenarios that they had either heard of or seen through their family members. Having this understanding can help determine how efforts can be made to address the issue based on its perceived severity. Focus can be directed towards

motivating individuals to prevent the worst-case scenarios for those who have not yet been diagnosed, in the hope that they adopt healthier behaviors. Additionally, even though participants who were not diagnosed with DB2 perceived the disease as severe, they did not consistently implement preventative strategies against it. Thus, it shows that an individual's perceived severity of a disease alone may not be enough to motivate them to implement changes to combat it.

### **SRQ2**

SRQ2 was, What are the perceived benefits to partaking in DB2 prevention practices for members of the Lumbee Tribe? The theme that emerged that best addressed this RQ was DB2 knowledge.

#### ***Correct DB2 Knowledge***

During the interview process, participants were asked questions that examined their views on the perceived benefits of participating in DB2 prevention/management. Their responses were labeled as correct or incorrect based on whether the information they provided was accurate DB2 knowledge or not. This link between perceived benefits and DB2 knowledge was established to gauge whether participants understood why someone might benefit from implementing prevention/management strategies in their lives. Looking back at the literature, research has shown that individuals who are more knowledgeable about DB2 are more likely to implement necessary changes to benefit their lives (Pakpour et al., 2024). The data showed that all participants believed that prevention practices related to consuming healthier foods and maintaining an active lifestyle were essential in the prevention and management of DB2 (Taylor, 2021).

Participants such as 04, 05, 06, 07, and 12 all experienced reductions in their overall weight after maintaining these changes. These were positive benefits to both prevention/management efforts that could be reflected within the literature.

Additionally, although worded differently, most participants understood how DB2 could affect them, which motivated some to seek healthier options. Another correct factor many participants noted is that DB2 can be hereditary. This was important because it allowed participants to identify family members who had DB2 and increased their perceived susceptibility, knowing they could develop it. Having accurate DB2 knowledge about what DB2 can do for you is important because it can increase the likelihood of an individual wanting to engage in preventive or management practices (Zhao et al., 2022). Some knowledge is better than none, and at least there was a foundation from which participants could start.

Those who had already been diagnosed with DB2 were slightly more educated about the issue and its potential impact on them. They knew from experience and through interactions with their provider how the disease was affecting them, how certain foods may affect them, and what signs to look for in case their DB2 was getting out of hand. This knowledge was gained through the need and desire to learn their body better so that they could better manage their disease. Though some participants felt that their provider did not take enough steps to teach them about DB2 adequately, they are actively seeking new knowledge to help them on their DB2 journey.

### ***Incorrect/Limited DB2 Knowledge***

Although there were not a high number of instances in which incorrect DB2 knowledge was provided, it is essential to identify them to correct misconceptions about the disease. Limited DB2 knowledge was reported when participants indicated they had little knowledge about the disease. In contrast, incorrect knowledge was coded when the participant gave incorrect information regarding DB2. Many of the cases of incorrect DB2 knowledge were given by participants who were not diagnosed with the disease. This was most likely due to their limited hands-on knowledge of the disease and limited experience with it. Additionally, though participants who knew about DB2 were mainly those who had already been diagnosed with the disease, those who were not diagnosed commonly noted having limited knowledge of it.

Common misconceptions arose because participants were not aware of the difference between Type 1 and DB2. Although there are similarities between diseases, it is best to educate not only on their similarities but also on their differences. Some prevention/management strategies may be interchanged between the two DB2 types, but that is not the case for all. Likewise, the manner in which both diseases are contracted differs, with one being contracted in most cases at birth (Type 1) and the other being developed (Type 2). Proper education on both diseases within the population would benefit better health outcomes.

Variances in DB2 knowledge are likely to occur when viewing the Lumbee Tribe. Likewise, the misconceptions held by the participants are likely to be like those held by the tribe. Additional research into the population may identify other instances of incorrect

DB2 knowledge and other misconceptions. Identifying this lack of knowledge and other misconceptions and making efforts to correct them would allow for better outcomes for the population (Misra & Fitch, 2020).

### ***SRQ2 Conclusion***

Participants demonstrated a good understanding of the disease, although this knowledge was more limited among those who had not been diagnosed with DB2. Additionally, participants who were not diagnosed with DB2 presented more instances of incorrect DB2 knowledge, while many of them reported knowing little about the disease. This would be accurate for individuals who have not yet manifested the disease and require changes in their lives, such as those already diagnosed with DB2. Limited knowledge of the disease among the group of participants could result in one of two outcomes in relation to DB2. Some individuals with limited knowledge of DB2 and how to prevent it may be more likely to develop the disease at a later age if they continue to partake in other negative health behaviors, such as living a sedentary lifestyle or regularly eating unhealthily. For individuals with limited health knowledge of DB2, they may not develop the disease at all due to naturally engaging in healthier behaviors. It would be ideal for those who are not diagnosed with DB2 to increase their health knowledge of the disease, especially as they get older and are more susceptible to it. In the current study, all participants diagnosed with DB2 demonstrated growth in knowledge and understanding of the disease through their collaboration with their provider. Disease progression for them appeared to be a reduction in its overall impact, although it could still result in some minor complications even with proper management. The population

needs to have accurate knowledge about the disease to be better equipped in combating it. Notably, members who were diagnosed with the disease were the ones who believed that education about the disease, especially at a younger age, is important, showing a belief not as prevalent in the non-diagnosed participants.

### **SRQ3**

SRQ3 was, What perceived barriers do members of the Lumbee Tribe have in relation to partaking in DB2 prevention practices? Barriers that can inhibit DB2 prevention/management can have multiple bases. These bases can include personal, environmental, economic, and social factors, among others.

#### ***Personal Barriers***

The basis through which a behavioral change must originate is through the individual themselves. Thus, this stimulates the possibility of barriers arising through the individual's beliefs and habits. Examples of such barriers within the data included behaviors such as not exercising, consuming more unhealthy foods, stress eating, and other similar scenarios related to engaging in poor dietary and exercise habits. These barriers are similar to those examined in the literature, indicating that individuals' negative behaviors are significant factors in the development of DB2 (Zhao et al., 2022). Changes in these behaviors may be necessary to achieve better health outcomes. Personal behaviors were noted for individuals who were diagnosed and for those who were not diagnosed, showing no difference between the two groups.

#### ***Economic Barriers***

The cost of DB2 management can be a driving factor in individuals' continual proper DB2 management. A lack of proper insurance can be a significant barrier for Lumbee participants in accessing proper DB2 care. Constant doctor visits to keep the disease in check, the high costs of DB2 meds, and the need to try different meds to find the right one can be heavy burdens that can be lessened with the presence of proper insurance, linked back to instances related to the literature (Parker et al., 2022). Some individuals noted that purchasing DB2 medications could put a financial strain on them without insurance. Issues arise when some jobs often held by Lumbee individuals either do not provide insurance or offer insurance that does not cover necessary medications. Such cases can lead to instances where members of the population may forgo or reduce needed care until it becomes drastically necessary to obtain other necessities. Participants within the diagnosed group primarily noted economic strains. However, one participant who was not diagnosed with DB2 provided insight into how some individuals without DB2 could be economically affected and be pushed towards developing it.

Though not as drastic as those who have DB2, individuals without the disease can still face some economic barriers. The primary economic barrier data showed this group would face is the cost of healthier foods. In most cases, healthier foods can be more expensive and require more investment in preparation. Additionally, within the primary areas where the Lumbee population resides, unhealthy fast foods are abundant and cheaper than their healthier alternatives. Although there are farmers' markets and other produce farms within the region, this option is not available to some individuals, either due to a lack of proper transportation to such resources, or because they are not receiving

payment through low-income supports such as SNAP, or for other reasons. Thus, some families will take the easier, more available route of unhealthy and fast foods.

Economic barriers would be a significant challenge to overcome within Lumbee communities, but efforts could be implemented to mitigate some of the barriers' impacts. One such possibility would be to develop a program that partners with local food banks, produce stands, farmers' markets, grocery stores, and other nutritional food providers to establish a delivery program for individuals with a specific income level or limited resources to access healthy foods. The partnership could allow those enrolled in the program to receive produce from these individuals at a reduced price, purchasable through SNAP or other assistance services, or free if the person's household income is below a certain threshold. Additionally, a produce delivery service could be established to provide more nutritious foods to those who lack adequate transportation. This would be beneficial because it addresses the issue of Lumbee tribal members not having access to healthy foods and makes them more affordable for those with limited incomes. Such a program would require a change at the individual level, where people understand that they can choose healthier options that are now more readily available, rather than unhealthy ones. At the community level, assistance will be needed from policymakers, farmers, grocery stores, and other entities to secure funding and be willing to accept more federally funded payments, such as SNAP, while possibly receiving less money from payments resulting from the program. It would be beneficial for the community in the long run because it could result in a community less affected by DB2, one that spends

more money on locally grown produce, requires fewer medical visits related to DB2, and is overall healthier.

### ***Cultural Influence/Beliefs***

One of the most significant cultural barriers that participants listed was an unhealthy Lumbee diet. This perspective was noted by all participants who were diagnosed with DB2 and those who were not. Participants noted the Lumbee diet as containing many foods that are fried, greasy, high in sugar, and not the “healthiest overall.” This aligned with the literature, through which it was noted that outside sources have influenced many Native American diets and made them unhealthier than the past traditional Native American diet (Zhao et al., 2022). This was also brought up by participant #08, who believed the Lumbee diet is not what it is on its own, but rather through external influences. Additionally, many Lumbee cultural celebrations revolve around the presence of such unhealthy foods to the point that they become a big part of the celebration, such as with the Lumbee homecoming.

The data also revealed a possible barrier related to Lumbee cultural beliefs. This barrier was more closely related to older members of the Lumbee Tribe than to younger members. Participants noted instances where older members of the Lumbee Tribe did not take DB2 seriously, and it was common for members of the tribe to forgo seeking medical attention. Many of these tribal members would instead partake in home remedies not only for what was believed to be DB2, but for other diseases as well. Although this approach could yield positive results in some cases, it would not always be effective or address the necessary issue due to its lack of a complete scientific foundation. This data

reflected what was shown in the literature, indicating that cultural health beliefs can lead to instances where needed care is not pursued (Wilson et al., 2022). Although such instances are not prevalent throughout the entire generation, it would be beneficial to ensure that some education is directed towards individuals within this realm. This would direct them towards obtaining the necessary care they may require.

### ***SRQ3 Conclusion***

Participants identified personal, economic, and cultural influences as potential barriers to participating in DB2 preventive and management practices. These barriers align with those identified in the literature, which indicate that many Native Americans experience similar challenges (Blue Bird Jernigan et al., 2020; CDC, 2020; Yracheta et al., 2015). The reported barriers represented some members' personal experiences, perceptions, and, for some members, experiences with family members. Understanding these perceived barriers is important in addressing the DB2 issue and developing methods to combat them (Wilson et al., 2022). These barriers should be representative of the Lumbee population, although some may be more prevalent within the population that were not represented in the sample.

### **Limitations of the Study**

The main limitation of this study was the small sample size. The Lumbee Tribe has around 55,000 enrolled tribal members, but only 12 participants were recruited. Participants were recruited through convenience purposive sampling, which allowed for various population experiences but may not account for every possible experience within the population. This instance limited the generalizability between the sample and the

population, but it revealed many possible experiences. Additionally, the data collected was analyzed through deductive reasoning, which can limit generalizability due to its focus on specific scenarios to draw generalized conclusions. This may lead to a conclusion that can only be generalized for some populations. Interviews were self-reported, relying on participants' ability to recall their experiences, resulting in bias.

### **Recommendations for Future Research**

This study examined the experiences of Lumbee Tribal members regarding DB2 and its prevention/management. Using a qualitative phenomenological approach enabled the in-depth analysis of participants' lived experiences when implementing DB2 prevention/management practices. These explorations provided important data detailing participants' knowledge, experiences, and beliefs towards DB2. Future studies could build upon this study by employing a longitudinal approach.

Although the findings from this study do not reflect every experience of Lumbee tribal members when trying to prevent/manage DB2, it allows for the generalization of some tribal members' experiences with DB2 prevention/management. A future study could address the limitations mentioned above by increasing sample size, recruiting participants from Robeson County and surrounding counties, and including data collection from healthcare providers detailing their experiences in providing DB2 knowledge to Lumbee tribal members. Recruiting more participants would allow for more experiences to be reported that may not have been present in the current study. Additionally, including the surrounding counties would allow for any varying experiences to be identified based on where Lumbee tribal members reside, even though

the majority reside within Robeson County. Including healthcare provider experiences in DB2 education can facilitate advances in DB2 education practices that may lead to further positive outcomes.

The current study included participants aged 21 to 64 years. The study primarily included participants over 45 who are most at risk of developing DB2. A future study could include younger participants under the age of 45 to examine how their beliefs, knowledge, and experiences may differ from those of older participants. Additionally, future studies can employ various recruitment methods to attract participants who do not use social media. This could include posting flyers in public places and partnering with the Lumbee Tribe to help spread information and increase study interest. Although the study was approved by the Lumbee Tribal IRB, partnering with the Lumbee Tribe would likely increase participants' trust in the study, demonstrating their support for it, and potentially make some participants more willing to participate. Implementing these recommendations should enable enhancements to the study in the areas of validity, reliability, generalizability, and scope of understanding of the problems facing tribal members. Furthermore, these findings should assist in developing tailored DB2 prevention/management practices, addressing DB2 educational needs, and making adjustments in healthcare interactions concerning DB2.

### **Public Health Practice and Field-Based Products**

DB2 can be a challenging issue to address due to the multiple factors that can influence it. Thus, it would be best to approach it from a multi-level approach. This multi-level approach would involve the individual, their family/community, healthcare

providers/organizations, the Lumbee Tribal Government, and Policymakers. Having interactions among these levels should provide adequate results towards combating the disease.

### **Policy Brief**

Policy briefs are important tools that can inform policymakers on specific issues. Though policymakers may know of the issues that individuals generally face with DB2, they may not know of those faced by Native Americans, and more specifically, the Lumbee people. Thus, I developed a policy brief, located in Appendix C, detailing the Lumbees' struggles with DB2.

### **Executive Summary: Considerations for Program Development and Implementation Strategies**

For my Field-Based Products, I have included the executive summary in Appendix D, the framework in Appendix E, and the fact sheet in Appendix F. Individuals' perceptions, beliefs, knowledge, and experiences towards a disease are driving factors in adopting prevention/management practices. Increasing an individual's knowledge of DB2, creating perceptions that they can be affected by it, and correcting any incorrect beliefs can lead them to adopt more positive prevention/management practices towards DB2. These changes need to occur at the personal level and can be helped through support from professional practice and social change. Building on the experiences detailed by participants like 08 and 10, changes are needed in the professional practice of DB2 education. Their experiences detailed instances where they were diagnosed with the disease, but not adequately educated on the disease. Changes

must be made within the healthcare field, where providers educate their patients more about the disease and its prevention/management, become more involved in teaching participants better practices, and possibly direct them towards needed services that they can utilize. Perhaps some providers are already doing such things for their patients, but having it become more of a norm would allow for greater overall outcomes.

Participants, such as 04 and 08, called for greater health education about DB2 at a younger age. Although not all children may be initially affected by DB2 and may never be educated at a younger age, they will build a foundation that they can utilize later when they are more likely to be affected by DB2. Health education regarding DB2 was shown to be an effective tool in combating the disease in the literature, and addressing it at a younger age could help some younger Lumbee tribal members adopt healthier behaviors. Further research focusing on younger members of the Lumbee Tribe and their impact on DB2 could aid in this effort.

An important conundrum identified within the study is that many participants understood the importance of diet and exercise in preventing or managing DB2, but they themselves often did not follow a proper diet or exercise regularly. Participants often linked this to either not choosing to eat healthily, not taking the time to exercise, or simply not being motivated to do so. To address this, a program could be developed in partnership with the Lumbee Tribe to promote proper diet and exercise. As shown by participants, tribal members may know what they need to do, but their own behaviors at times block them from doing it. Thus, it may be important for an outside force to encourage them to eat healthier and exercise. This could be accomplished by having a

program through the tribe that teaches participants how to eat healthier, ways to exercise at home or in a group, with the overall aim of encouraging them to eat healthier and move more. Outside of the Lumbee Tribe, the program could also take a similar approach with local churches, given the high importance of Christianity within the tribe. Such efforts could foster a community where participants encourage one another to live healthier lives, eat more healthily, and be more physically active. The success of similar programs has been demonstrated through literature and adapting it to the Lumbee Tribe should yield similar success.

This study also identified several perceived barriers that participants faced when dealing with DB2 prevention/management. Although it will not be easy to address every single barrier, their identification allows policymakers, healthcare entities, public health workforces, the Lumbee Tribe, and others to focus on possible solutions. This focus could lead to the development of new policies, practices, and programs to address these barriers, ultimately aiming for improved health outcomes. Any reductions in the overall issue would be a positive development for the population, allowing further issues to be addressed.

This study reveals a high prevalence of DB2 within the Lumbee population, with every participant either having been diagnosed with it or knowing someone who has been diagnosed with it. Your older Lumbee Tribal members may still hold beliefs that hinder DB2 prevention/management, as seen with participant 10. Pushing for social change that promotes education about the disease and adjustments in beliefs and perceptions would likely allow them to adopt positive behaviors more easily. Although it may not work for

the entire Lumbee population, everyone who engages in more positive behaviors and maintains them can contribute to generating better outcomes for future generations. It is not an instant solution, but rather steps toward solving the problem that can lead to a better and healthier future generation.

### **Positive Social Change**

As mentioned, professional practice and social change are the most effective options for addressing the issue. DB2 is a complex issue with varying factors that can increase its impact on the Lumbee population. Implementing changes towards culturally appropriate provider interactions, earlier health education on the disease, promotion of positive behaviors, and adjustments in the population's perceptions and beliefs should lead to better outcomes. Efforts towards these changes should be made, although immediate benefits may not occur. Over time, these changes are expected to lead to improved health outcomes for the Lumbee people.

### **Conclusion**

This study explored the lived experiences of Lumbee tribal members. Findings from the current study highlight some of the issues that members of the Lumbee Tribe face when trying to implement prevention/management efforts concerning DB2. Findings from this exemplify the impact that DB2 has had on members of the Lumbee Tribe, highlight some members' strengths and weaknesses in knowledge of the disease, detail some of their hardships towards prevention/management, and detail some members' thoughts and beliefs on what needs to change for a healthier Lumbee Tribe in relation to DB2. This study highlights the need to explore further the health beliefs of a Native

American tribe, where limited research has focused not only on DB2 but also on other health conditions. Exploring the key themes identified, such as experience with DB2, DB2 knowledge, perceived severity, perceived susceptibility, management, and perceived barriers, allows for a better understanding of the population's view of DB2 and the challenges they have faced in preventing or managing DB2.

Ultimately, this research underscores the need for concerted efforts to combat DB2 within the Lumbee community. These efforts include increasing culturally competent health education on DB2 to Lumbee tribal members, pushing education of the disease at a younger age, pushing programs that help promote healthier behaviors like eating healthier and exercising more, getting the Lumbee Tribe more involved in DB2 prevention/management initiatives, correcting incorrect beliefs of the disease often held by older individuals, and trying to combat the disease step by step. This study highlights that members of the Lumbee Tribe face various challenges concerning DB2, which stem from the adoption of negative behaviors, influenced by economic factors, the onset of the disease through family history, unhealthy cultural practices related to food, and other factors. Addressing these findings through professional practice, public health initiatives, tribal initiatives, and other community-based programs, the Lumbee people can have a brighter future and be less affected by the problems of DB2. DB2 is a generational curse that has affected the Lumbee people for many years. It will not be an easy problem to break, but through constant effort and little victories, the disease's impact on the population can be reduced, and future generations can be healthier. This study contributes to the literature by expanding on the limited research towards the Lumbee people and

their challenges and experiences dealing with DB2, providing a foundation that can be used by future research and the development of future initiatives in combating DB2.

## References

- Ard, D., Tettey, N. S., & Feresu, S. (2020). The influence of family history of Type 2 diabetes mellitus on positive health behavior changes among African Americans. *International Journal of Chronic Diseases*, 2020(1), 8016542. <https://doi.org/10.1155/2020/8016542>
- Beulens, J. W. J., Pinho, M. G. M., Abreu, T. C., den Braver, N. R., Lam, T. M., Huss, A., Vlaanderen, J., Sonnenschein, T., Siddiqui, N. Z., Yuan, Z., Kerckhoffs, J., Zhernakova, A., Brandao Gois, M. F., & Vermeulen, R. C. H. (2022). Environmental risk factors of Type 2 diabetes-an exposome approach. *Diabetologia*, 65(2), 263–274. <https://doi.org/10.1007/s00125-021-05618-w>
- Blue Bird Jernigan, V., D'Amico, E. J., Duran, B., & Buchwald, D. (2020). Multilevel and community-level interventions with Native Americans: Challenges and opportunities. *Prevention Science*, 21(Suppl 1), 65–73. <https://doi.org/10.1007/s11121-018-0916-3>
- Bossman, I. F., Dare, S., Bright, A. O., Prince, K. B., Thomas, K. H., & Nally, J. E. (2021). Patients' knowledge of diabetes foot complications and self-management practices in Ghana: A phenomenological study. *PLoS One*, 16(8). <https://doi.org/10.1371/journal.pone.0256417>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Carrier, M. A., & Beverly, E. A. (2021). Focus on the positive: A qualitative study of

positive experiences living with Type 1 or Type 2 diabetes. *Clinical Diabetes: A Publication of the American Diabetes Association*, 39(2), 176–187.

<https://doi.org/10.2337/cd20-0082>

Centers for Disease Control and Prevention. (n.d.). *Advancing health equity: Diabetes*.

<https://www.cdc.gov/diabetes/health-equity/index.html>

Centers for Disease Control and Prevention. (2020, June 23). *Nutrition, physical activity, and obesity within American Indian and Alaska Native (AI/AN) populations*.

<https://www.cdc.gov/diabetes/basics/risk-factors.html>

Centers for Disease Control and Prevention. (2022, April 5). *Diabetes risk factors*.

<https://www.cdc.gov/diabetes/basics/risk-factors.html>

Chopra, S., Lahiff, T. J., Franklin, R., Brown, A., & Rasalam, R. (2022). Effective primary care management of Type 2 diabetes for indigenous populations: A systematic review. *PloS One*, 17(11), e0276396–e0276396.

<https://doi.org/10.1371/journal.pone.0276396>

Coningsby, I., Ainsworth, B., & Dack, C. (2022). A qualitative study exploring the barriers to attending structured education programmes among adults with type 2 diabetes. *BMC Health Services Research*, 22(1), 584–584.

<https://doi.org/10.1186/s12913-022-07980-w>

Davoodi, M., Dindamal, B., Dargahi, H. *et al.* A phenomenological study on barriers of adherence to medical advice among type 2 diabetic patients. *BMC Endocr Disord* 22, 18 (2022).

<https://bmcendocrdisord.biomedcentral.com/articles/10.1186/s12902-021-00928->

[x#citeas](#)

- Deol, R. M., Thompson, L. M., Chun, K. M., & Chesla, C. (2022). Beliefs about the causes of type 2 diabetes among first-generation Asian Indians in the United States. *Journal of Transcultural Nursing*, 33(1), 65–71.  
<https://doi.org/10.1177/10436596211016518>
- Green, E. C., Murphy, E. M., & Gryboski, K. (2020). The health belief model. *The Wiley encyclopedia of health psychology*, 211-214. <https://onlinelibrary-wiley-com.libproxy.lib.unc.edu/doi/abs/10.1002/9781119057840.ch68>
- Hashim, J., Smith, H. E., Tai, E. S., & Yi, H. (2022). Lay perceptions of diabetes mellitus and prevention costs and benefits among adults undiagnosed with the condition in Singapore: A qualitative study. *BMC Public Health*, 22(1), 1–1582.  
<https://doi.org/10.1186/s12889-022-14020-z>
- Hernandez, L., Leutwyler, H., Cataldo, J., Kanaya, A., Swislocki, A., & Chesla, C. (2020/03//). The lived experience of older adults with type 2 diabetes mellitus and diabetes-related distress. *Journal of Gerontological Nursing*, 46(3), 37–44.  
[doi:https://doi.org/10.3928/00989134-20200129-05](https://doi.org/10.3928/00989134-20200129-05)
- Hosono, T., & Tochikawa, A. (2022). A meta-synthesis of phenomenological studies on experiences related to Diabetes in Sweden focusing on learning to live with Diabetes. *International Journal of Qualitative Studies on Health and Well-Being*, 17(1). <https://www.tandfonline.com/doi/full/10.1080/17482631.2022.2132640>
- Joiner, K. L., McEwen, L. N., Hurst, T. E., Adams, M. P., & Herman, W. H. (2022). Domains from the health belief model predict enrollment in the national diabetes

prevention program among insured adults with prediabetes. *Journal of Diabetes and its Complications*, 36(7) doi:<https://doi.org/10.1016/j.jdiacomp.2022.108220>.

Kubiak, T., Priesterroth, L., & Barnard-Kelly, K. D. (2020). Psychosocial aspects of diabetes technology. *Diabetic Medicine*, 37(3), 448-454. <https://onlinelibrary-wiley-com.libproxy.lib.unc.edu/doi/full/10.1111/dme.14234>

Kwan, Y. H., Cheng, T. Y., Yoon, S., Ho, L. Y. C., Huang, C. W., Chew, E. H., ... & Low, L. L. (2020). A systematic review of nudge theories and strategies used to influence adult health behaviour and outcome in diabetes management. *Diabetes & metabolism*, 46(6), 450-460.

<https://www.sciencedirect.com/science/article/pii/S1262363620300574>

Lakshmi, N., Anjana, R. M., Rhodes, E. C., Nora, V., Rakesh, H., Colin N A Palmer, Mohan, V., & Pradeepa, R. (2023). A qualitative study on perceptions and practices of diabetes prevention and management in rural south India. *Journal of Diabetology*, 14(4), 239-247. [https://doi.org/10.4103/jod.jod\\_77\\_23](https://doi.org/10.4103/jod.jod_77_23)

Lemire, M., (2023, December 28). The Dance of Perspectives: Navigating Objectivity and Subjectivity in Qualitative Research. *QRCA*. October 18, 2024,

<https://www.qrca.org/blogpost/1488356/496638/The-Dance-of-Perspectives-Navigating-Objectivity-and-Subjectivity-in-Qualitative-Research>

*LibGuides: Special Collections & Archives: Lumbee History & Culture*. (n.d.).

<https://libguides.uncp.edu/specialcollections/lumbee>

Lucero, J. E., & Roubideaux, Y. (2022). Advancing Diabetes Prevention and Control in American Indians and Alaska Natives. *Annual review of public health*, 43, 461–

475. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9924140/>

Lumbee Tribe of NC. (n.d.). Changing Lifestyles.

<https://www.lumbeetribe.com/changing-lifestyles>

Mayo Foundation for Medical Education and Research. (2023, March 14). *Type 2*

*diabetes*. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/symptoms-causes/syc-20351193>

Misra, R., & Fitch, C. (2020). A model exploring the relationship between nutrition knowledge, behavior, diabetes self-management, and outcomes from the dining with Diabetes program. *Preventive Medicine, 141*, 106296-106296.

<https://doi.org/10.1016/j.ypmed.2020.106296>

Morrow, R., Rodriguez, A. and King, N. (2015). Colaizzi's descriptive phenomenological method. *The Psychologist, 28*(8), 643-644.

[https://eprints.hud.ac.uk/id/eprint/26984/1/Morrow\\_et\\_al.pdf](https://eprints.hud.ac.uk/id/eprint/26984/1/Morrow_et_al.pdf)

Murphy, S. L., B. S., Xu, J., M. D., Kochanek, K. D., M. A., Arias, E., Ph. D., Tejada-Vera, B., M. S., & Division of Vital Statistics. (2021). Deaths: Final data for 2018. In *National Vital Statistics Reports* (Report No. 13; Vol. 69).

<https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-508.pdf>

Nahian, A., & Jouk N. (2023). Cultural Competence in Caring for American Indians and Alaskan Natives. *StatPearls*. <https://www.ncbi.nlm.nih.gov/books/NBK570619/>.

*National Diabetes Statistics Report | Diabetes | CDC*. (n.d.).

<https://www.cdc.gov/diabetes/data/statistics-report/index.html>

National Institute of Diabetes and Digestive and Kidney Diseases. (2023, February 2023).

*Symptoms & Causes of Diabetes*. <https://www.niddk.nih.gov/health-information/diabetes/overview/symptoms-causes>

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on medical education*, 8(2), 90–97. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6468135/>

*North Carolina | County Health Rankings & Roadmaps*. (n.d.).

Www.countyhealthrankings.org. Retrieved March 27, 2024, from <https://www.countyhealthrankings.org/health-data/north-carolina?year=2024&measure=Diabetes+Prevalence>

Pakpour, V., Molayi, F. & Nemati, H. Knowledge, attitude, and practice of pre-diabetic older people regarding pre-diabetes. *BMC Geriatr* **24**, 264 (2024). <https://doi.org/10.1186/s12877-024-04864-y>

Parker ED, Lin J, Mahoney T, Ume N, Yang G, Gabbay RA, ElSayed NA, Bannuru RR. Economic Costs of Diabetes in the U.S. in 2022. *Diabetes Care*. 2024 Jan 1;47(1):26-43. doi: 10.2337/dci23-0085. PMID: 37909353.

Robeson County Health Department, Southeastern Health, & University of NC at Pembroke (2020). Community Health Needs Assessment 2020. [https://www.unchealthsoutheastern.org/app/files/public/2a1ba70d-57a8-45f1-9e3c-23b010dd5d59/2020\\_CommunityHealthNeedsAssesment.pdf](https://www.unchealthsoutheastern.org/app/files/public/2a1ba70d-57a8-45f1-9e3c-23b010dd5d59/2020_CommunityHealthNeedsAssesment.pdf)

Rosenstock IM. The Health Belief Model and Preventive Health Behavior. *Health Education Monographs*. 1974;2(4):354-386. doi:[10.1177/109019817400200405](https://doi.org/10.1177/109019817400200405)

Shorey, S. & Ng, E. D. (2022). Examining characteristics of descriptive

- phenomenological nursing studies: A scoping review. *Journal of Advanced Nursing*, 78, 1968–1979. <https://doi-org.libproxy.lib.unc.edu/10.1111/jan.15244>
- Special Diabetes Program for Indians (SDPI) | Indian Health Service (IHS)*. (n.d.).  
Special Diabetes Program for Indians (SDPI). <https://www.ihs.gov/sdpi/>
- Statistics about Diabetes | ADA*. (n.d.). <https://diabetes.org/about-diabetes/diabetes-prevention>
- Sukeri, S., Zahiruddin, W. M., Shafei, M. N., Hamat, R. A., Osman, M., Jamaluddin, T. Z. M. T., & Daud, A. B. (2020). Perceived severity and susceptibility towards leptospirosis infection in Malaysia. *International journal of environmental research and public health*, 17(17), 6362.  
[https://journals.viamedica.pl/clinical\\_diabetology/article/view/72300](https://journals.viamedica.pl/clinical_diabetology/article/view/72300)
- Taylor, R. (2021). Type 2 diabetes and remission: practical management guided by pathophysiology. *Journal of internal medicine*, 289(6), 754–770.  
<https://onlinelibrary-wiley-com.libproxy.lib.unc.edu/doi/full/10.1111/joim.13214>
- UNC Health Southeastern (n.d.). UNC Health Southeastern Diabetes Community Center.  
<https://www.unchealthsoutheastern.org/locations/profile/?id=16>
- Understanding Type 1 Diabetes | ADA*. (n.d.). <https://diabetes.org/about-diabetes/type-1>
- Warren, L., & Hixenbaugh, P. (2020). Adherence and Diabetes. In *Adherence to Treatment in Medical Conditions* (pp. 423-453). CRC Press.  
<https://www.taylorfrancis.com/chapters/edit/10.1201/9781003072348-21/adherence-diabetes-laura-warren-paula-hixenbaugh>
- Wilson, J. Thomson, C., Sabo, S., Edleman, A., & Kahn-John, M. (2022). Development

of an American Indian Diabetes Education Cultural Supplement: a Qualitative Approach. *Frontiers in public health*, 10, 290015.

<https://doi.org/10.3389/fpubh.2022.790015>

Yaghootkar, H., Whitcher, B., Bell, J. D., & Thomas, E. L. (2020). Ethnic differences in adiposity and diabetes risk – insights from genetic studies. *Journal of Internal Medicine*, 288(3), 271-283. <https://doi.org/10.1111/joim.13082>

Yracheta, J. M., Lanaspá, M. A., Le, M. T., Abdelmalak, M. F., Alfonso, J., Sánchez-Lozada, L. G., & Johnson, R. J. (2015). Diabetes and Kidney Disease in American Indians: Potential Role of Sugar-Sweetened Beverages. *Mayo Clinic Proceedings*, 90(6), 813–823. <https://doi.org/10.1016/j.mayocp.2015.03.018>

Zhao, G., Hsia, J., Vigo-Valentín, A., Garvin, W. S., & Town, M. (2022). Health-related behavioral risk factors and obesity among american indians and alaska natives of the united states: Assessing variations by indian health service region. *Preventing Chronic Disease*, 19, E05-E05. <https://doi.org/10.5888/PCD19.210298>

## Appendix A: Research Flyer



**INTERVIEW  
STUDY  
SEEKING  
LUMBEE  
TRIBAL  
MEMBERS**

## Appendix B: Research Protocol

### DPH Capstone Interview Protocol

#### Participant Recruitment

- Once the recruitment period has begun, Facebook will be used as the primary tool social media platform for recruitment. A Facebook post will be made with the following flyer, and those interested will be asked to make contact through one of the listed methods.



Caption will include:

There is a new study focused on Lumbee tribal members' knowledge, perceptions, and beliefs towards Type II Diabetes that could help in the development of future diabetes prevention/management programs for the Lumbee. For this study, you are invited to describe your experiences in dealing with diabetes.

About the study:

- One 30-40 minute in-person interview that will be audio recorded (no videorecording).
- You would receive a \$5 Starbucks gift card as a thank you.
- To protect your privacy, the published study will not share any names or details that identify you.

Volunteers must meet these requirements:

- Be 18 years old or older.
- Be a member of the Lumbee Tribe.
- Reside within Robeson, Bladen, Hoke, Cumberland, or Scotland County.

This interview is part of the doctoral study for Jeremy Lowery, a DrPH student at Walden University.

Please message (910)785-4424 privately to let them know of your interest

- If there is a lack of participants within the sample who are of older age, then flyers will be posted at community centers where permitted.
- During this initial contact, the participant will be provided with some additional information about the study, which will include:
  - The purpose of the study: To explore the perceptions and beliefs of Lumbee Tribal members regarding Type II diabetes and its prevention using a descriptive phenomenological approach.
- The individual will be checked to ensure they meet the inclusion criteria.
  - The age range will include anyone over the age of 18 and will not have an age maximum.
  - Efforts will be made to ensure that older adults (over 45 years old) are included in the study due to them being most at risk of developing diabetes.
- Once both steps have been completed, an in-person interview will be set up.

### **In Person Meeting (Start)**

- At the beginning of the in-person session, the individual will be reminded again of the purpose and aim of the study, reminded that the interview section will be recorded on a tape recorder, and will be allowed to ask any questions they may have. Once completed, the participant will be walked through the informed consent process, be told that if at any time they want to terminate the session they can, be allowed time for questions they may have for the researcher, and be given a copy of the informed consent document.

- “If you don’t have any more questions, can you please sign your first and last name on the line and write today’s date. This copy will be for your records”.
- Once informed consent has been completed, a brief demographic survey will be administered.
  1. How old were you on your last birthday?
  2. What is your gender?
    - a. Male
    - b. Female
    - c. Non-binary
    - d. Prefer not to say
  3. From which of the listed counties do you live in?
    - a. Robeson
    - b. Bladen
    - c. Hoke
    - d. Cumberland
    - e. Scotland
  4. What is your highest level of education?
    - a. Less than High School Graduate
    - b. High school Graduate
    - c. Some College
    - d. Associate’ Degree

- e. Certificate
- f. Bachelor's Degree
- g. Graduate Degree or Above

5. What is your annual household income? What was your total household income in dollars in 2024?

Write in \_\_\_\_\_

- Once the demographic survey has been completed transitions will be made for the interview session.

#### **In-person meeting (Interview)**

- The participant will be told that the recorders will be turned on when the interview is ready to begin. They will be informed that there is no time limit for the interview and that they can take all the time needed, but the average time is 45 minutes. Once the participant is ready the recorders will be started, and the interview will begin. Participants will be given time to answer each question in as much detail as they care to provide. If all primary research questions have been asked and any time remains, additional questions may be asked if participants agree to obtain further detailed information.
- Primary questions that will be asked include:
- Begin with:
- Can you tell me about your experiences with DB2?
- If the participant says that they have not had any experiences with DB2 will say:
  - Can you tell me what you know about DB2?

- What do you believe can be done to keep from developing DB2?
- Do you believe with your current lifestyle you are likely to develop DB2?
  - Based on their response if more info is needed:
    - Why do you believe you are likely to develop DB2?
    - Why do you believe you are unlikely to develop DB2?
- How serious of an effect do you believe that DB2 can have on a person?
  - Based on response:
    - Since you think that DB2 can have serious effects does that motivate you to live healthier?
    - Since you think that DB2 does not have serious effects does that influence any of your health habits?
- Can you tell me about any barriers that you may have had to deal with in trying to prevent DB2 from developing?
  - Based on the response:
    - So, can you tell me about how you overcame these barriers?
    - You're saying that you are currently experiencing barriers. Have efforts been made to try and get past them?
    - Since you said you haven't experienced any barriers, can you think of why there were none?
    - Do you believe that any of these barriers may be related to your Lumbee culture? -or-

- I know you said you have not experienced any barriers, but do you believe your Lumbee culture has played any role in your diabetes prevention practices?
  - Are there any cultural practices that you partake in that can promote diabetes prevention?
- If the participant says that they do have diabetes, or has had any other experiences:
  - Can you tell me what you know about DB2?
  - Do you have any issues with your DB2?
    - Based on the response:
      - What steps have you taken to keep your DB2 in check?
        - Have you seen any benefits to your health with DB2 through doing things as exercising or maintaining a proper diet?
      - Can you tell me about the issues you've experienced with your DB2?
        - What if you would do things like exercise or change your diet do you believe there could be some benefits if you did things like that?
  - Can you tell me about any barriers that you may have had to deal with in trying to deal with your DB2?

- Based on response:
  - So, can you tell me about how you overcame these barriers?
  - You're saying that you are currently experiencing barriers. Have efforts been made to try and get past them?
  - Since you said you haven't experienced any barriers can you think of any reasons of why there were none?
  - Do you believe that any of these barriers may be related to your Lumbee culture? -or-
    - I know you said you have not experienced any barriers, but do you believe your Lumbee culture has played any role in your diabetes prevention practices?
  - Are there any cultural practices that you partake in that can promote diabetes prevention?
- Once all questions have been asked regarding RQs:
  - Is there anything else that you would like for me to know?
  - Is there anything that you may want to add that you forgot to mention or want to clarify before we end?
  - If that is everything, I will turn off the recorder now.
- Once all questions have been asked, and sufficient time has been given for answers the recorder will be stopped and the interview ended.

**Conclusion**

- Once the in-person interview is completed the recording device will be stopped. The participant will be reminded of how they can contact me in case of any questions/concerns that may arise.
- The participant will be asked if it is okay for me to contact them later if some more clarification is needed about what they said.
- The participant will be informed that if they wish they can receive a summary of the study findings once it has been completed.
- The participant will be thanked for their participation and be compensated a \$5 Starbuck's/Dunkin Donut gift card.

The session will conclude, and all forms, recordings, and other paperwork will be secured.

## Appendix C: Policy Brief

### **Standing Together Against Diabetes**

Type 2 diabetes is a major public health crisis among Native American populations, who experience some of the highest rates of the disease in the United States. The age adjusted prevalence of diagnosed diabetes among Native Americans is 14.5%, compared to 8% in the general U.S. population (CDC, 2023). Diabetes contributes significantly to premature death, kidney failure, blindness, and amputations within these communities. Within the Lumbee community there are many who are diagnosed with diabetes or they have a family member affected by it, many don't take diabetes seriously, and many Lumbee believe that they could do more to prevent its onset. Though there are some existing programs to try and combat diabetes within the Lumbee community, they have had limited success. Thus, a new approach needs to be developed to target various aspects of this deadly disease.

Due to the complex nature of diabetes, it will require the cooperation of the Lumbee tribe and their supporters to achieve success. Thus, a multi-level/organizational approach would be the best option to combat the disease. This approach will require cooperation from Lumbee tribal members, their families/communities, healthcare providers/organizations, the Lumbee Tribal government, policymakers, and other supporters to be effective. This method will call for the support from all levels to foster adoption of health behaviors, increases in health education, encouragement to live better, and the pursuit of funding for programs to combat diabetes. Together the Lumbee community can make a change one step at a time.

## Appendix D: Executive Summary

### **Stronger Together**

Diabetes, over the years, has remained a serious public health issue among Native American populations within the United States. Native Americans experience some of the highest rates of diabetes of any racial group, with prevalence rates nearly twice as high as their non-Hispanic white counterparts.

Diabetes within Native American communities has contributed to various disparities in health outcomes, including increased risk for cardiovascular disease, kidney failure, limb amputations, and, in some cases, death. These factors can especially be amplified within the Lumbee tribe due to their lack of access to HIS funded diabetes prevention/management programs, rural environment, and, for many members, their socioeconomic disadvantages. Several factors, such as high poverty rates, poor nutrition, lack of exercise, limited access to healthcare, negative beliefs towards healthcare, and genetics, have influenced diabetes within the Lumbee community. With so many different influences, it can be hard to gain a foothold against diabetes.

Interactions with tribal members found that most Lumbee are either diagnosed with diabetes or have a family member who is diagnosed, don't take the disease as a serious problem, and believe that they could do more to prevent the disease from developing in their lives. Though not easy, these findings can be addressed, but it will take some effort from not only tribal members but the community as a whole. Thus, a multi-level approach must be taken to see the most widespread success.

A multi-level approach targeting diabetes within the Lumbee tribe will require participation from various aspects, including the individual, their family/community, healthcare providers/organizations, Lumbee tribal government, and policymakers. Each level will have its own role, with the primary goals being promoting healthier behaviors such as eating right and exercising, increasing health education on diabetes, fostering support for prevention/management programs, and obtaining funding for prevention/management programs.

As mentioned, each level will have its own role to play. Policymakers will be tasked with developing policies that can assist in program development and funding acquisition. The Lumbee tribal government will act as the glue, seeking funding, implementing programs, spreading health information, and providing resources. Healthcare providers will work to educate their patients on diabetes, direct them towards their prevention/management needs, and provide culturally appropriate care for the disease. The family/community aspect will support individuals seeking prevention/management and passing down positive behaviors to combat the disease. Finally, at the individual level, tribal members will partake in the programs, increase their health education, and adjust their behaviors to be healthier.

The Lumbee tribe is a Native American tribe rich in history, culture, and beliefs. Thus, they must be considered and implemented into the program to ensure it is culturally appropriate. Linking with the Lumbee tribe will also be beneficial as they can support the program and spread it to their members.

Diabetes may be a complex issue, but we can make an impact together.

## Appendix E: Intervention Plan Framework

Lumbee Tribal Government	Healthcare providers/ Organizations	Policymakers	Interpersonal/ Family/ Community	Individual
Promote/provide health education efforts	Educate patients on disease	Implement policy to make prevention/management accessible	Support those seeking prevention/management	Partake in prevention/management programs
Provide prevention/management programs	Increase patients' health education	Work with the Lumbee tribe to assist them in gaining funding	Promote healthier behaviors	Increase education on diabetes
Seek funding for programs	Implement culturally appropriate care		Hold events to promote exercise	Adopt a healthier diet
Promote positive behavior change	Correct patient's incorrect health beliefs		Promote generational positive health change	Increase daily activity
Form partnerships to foster programs/ acquire funding	Direct towards needed services (dietitian, nutritionist, etc.)		Push for a healthier community	Motivate others to do better
Provide tribal based activities that promote healthy behaviors	Assist with prevention/management efforts		Have community leaders check in on individuals	

## Appendix F: Fact Sheet

### Diabetes in Native American Populations

Diabetes is a significant health concern within Native American populations, with prevalence rates much higher than the general U.S. population. Currently Native Americans have the highest diagnosed diabetes prevalence rates at 18%. Diabetes can have several influencers making it a difficult disease to combat especially for Native American communities. This is especially true for the Lumbee tribe who do not have access to the different programs allotted by the Indian Health Services (IHS). Efforts to address diabetes requires an understanding of its impact, contributing factors, and effective interventions. Here are some things that you should know regarding diabetes and its effects among Native American populations.

#### Problem

Diabetes among Native American populations is influenced by a combination of genetic, environmental, and lifestyle factors. Historical trauma, socioeconomic disparities, and limited access to healthcare services exacerbate the issue, contributing to higher incidence and mortality rates.

#### Contributing Factors

- Poor diet characterized by high-calorie, high sugar, low-nutrient foods
- Lack of access to preventive healthcare and diabetes management resources
- Family history of diabetes
- High rates of obesity
- Physical inactivity
- Socioeconomic barriers (poverty, underfunded healthcare, lack of insurance)

#### Key Facts

- Type 2 diabetes is the most common form found in Native American communities
- The prevalence rate is almost three times higher in these populations compared to non-Hispanic white Americans
- Diabetes related complications such as kidney failure, heart disease, and lower extremity amputations are more common in Native Americans
- Lower life expectancy in some tribal communities due to complications

#### Solutions

Efforts to combat diabetes in Native American communities should focus on culturally tailored interventions, improved healthcare access, and community – based programs

#### Community – Based Interventions

- Development of culturally relevant educational programs
- Promotion of healthier and more nutritious diets
- Encouragement of physical activities that respect cultural preferences

#### Healthcare Improvements

- Promoting health education on diabetes
- Training healthcare providers on culturally competent care
- Enhancing funding for diabetes prevention and management programs