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The Lived Experiences of Prediabetes and Type 2 Diabetes Among African Americans in Rural West Virginia

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Abstract

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Abstract

African Americans in rural Appalachian West Virginia experience disproportionate rates of diabetes, with limited research examining their unique challenges in managing this chronic condition. This qualitative study aimed to explore how African Americans in rural Appalachia develop and utilize diabetes management skills, examining the intersections of cultural influence, healthcare access, and technological adoption. Using a hermeneutic phenomenological approach grounded in the Social Determinants of Health theory, Health Belief Model, and Social Ecological Model, semi-structured interviews were conducted with nine African American adults diagnosed with pre-diabetes or Type 2 diabetes in Kanawha County. Thematic analysis revealed four main themes: Cultural and Community Influence, Access to Resources, Technological Assistance, and Health Literacy and Education. The findings showed that participants faced significant barriers to healthcare access, including transportation and provider availability issues. Technology adoption varied widely, with some participants effectively utilizing digital tools for self-monitoring while others struggled with access and literacy barriers. Health literacy development was often hindered by limited educational resources and cultural disconnects in healthcare communication. Healthcare access challenges were exacerbated by rural infrastructure limitations and socioeconomic factors. These insights can inform healthcare providers, policymakers, and community leaders in developing culturally sensitive interventions and policies to address the unique challenges of diabetes management in rural settings.

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Chapter 1: Introduction to the Study

Pragmatic diabetes is characterized by raised blood sugar levels that fall short of the criteria for a diagnosis of Type 2 diabetes (National Diabetes Education Program, 2019). Prediabetes is a warning sign that indicates an increased risk of getting diabetes in the future. Without treatment, prediabetes can progress to type 2 diabetes (National Diabetes Education Program, 2019). Type 2 diabetes is characterized by elevated blood sugar levels over an extended period and is caused by insulin resistance or insufficient insulin production (National Diabetes Education Program, 2019). The pancreas secretes the hormone insulin, which plays a role in regulating blood sugar levels. Type 2 diabetes is associated with a sluggish, chronic onset of illness that can be influenced by factors such as obesity, genetics, lifestyle choices (including nutrition and exercise), and diabetes (National Diabetes Education Program, 2019).

In Type 2 diabetes, the body may become resistant to the actions of insulin, leading to a buildup of glucose (sugar) in the bloodstream rather than its transport to the cells where it may be used for energy (National Diabetes Education Program, 2019). The medical term for this condition is insulin resistance. Lack of sufficient insulin production by the pancreas over time can lead to hyperglycemia (National Diabetes Education Program, 2019). Negative health outcomes have been linked to inadequate treatment of Type 2 diabetes. Increased risk of cardiovascular disease, kidney problems, nerve damage, impaired vision, and slow wound healing have all been linked to diabetes (National Diabetes Education Program, 2019). However, with early diagnosis, lifestyle changes (such as healthy eating, frequent exercise, and weight management), medication (if necessary), and regular monitoring, people with Type 2 diabetes can successfully manage their illness and delay or avoid the onset of complications (National Diabetes Education Program, 2019).

In this section, the context for the research by pointing out relevant prior work and any gaps in the literature and/or current practice. Considering these voids, I presented the issue description, the study's goals, and the research questions. The issue statement, study goals, and research questions informed the study's theoretical foundation and methodology. I specify the definitions, assumptions, scope, and restrictions. The study's relevance is discussed in terms of its knowledge and practice contributions as well as its implications for societal transformation.

Background

About "9 out of 10" individuals with diabetes live in low- and middle-income countries ("World Health Organization [WHO]", 2024). The WHO estimated that diabetes causes 1.5 million deaths yearly and shows no signs of decreasing (World Health Organization, 2024). More than doubling in the previous 20 years, the incidence of diabetes has increased dramatically among young people (WHO, 2021). Diabetes is characterized by elevated levels of glucose in the blood and is considered a long-term medical disease (Centers for Disease Control and Prevention [CDC], 2020). Diabetes may be dangerous if it goes untreated. There are two subtypes of this illness, with the second subtype being more common and a recent global spreader (WHO, 2021). Type 1 diabetics have extremely low levels of insulin production from their pancreas (WHO, 2021).

According to the National Diabetes Education Program (2019), 1 in 5 Americans with diabetes are undiagnosed. Among the leading causes of mortality in the United States, diabetes ranks sixth, as reported by the CDC in 2020. Diabetic complications are the major cause of kidney failure, lower limb amputations, and blindness in adults (CDC, 2020). The prevalence of diabetes among American adults has increased by more than 100% during the previous 20 years (CDC, 2020). The prevalence of diabetes has long been an issue in West Virginia, with a rate of 15.7% compared to the national average of 10.8% (National Diabetes Education Program, 2019). According to the Center for Disease Control and Prevention (2020), by 2025, more than 315,000 West Virginians will have diabetes, at a cost to the state of more than $3 billion.

Areas in the United States with high rates of diabetes and obesity share many characteristics, including extreme poverty, poor education, high unemployment, an aging population, and limited access to healthcare (CDC, 2020). West Virginia is the second-most rural state in the United States (Appalachian Regional Commission [ARC], 2022) rural residents face greater health inequalities due to a variety of risk factors and health outcomes, as demonstrated by compelling evidence. A third of West Virginians are over the age of 50, making it one of the oldest populations in the United States; at the same time, 50 out of 55 counties are considered to have inadequate access to health and medical care (Tessaro et al., 2005, West Virginia Department of Health and Human Resources [DHHR], 2021).

Problem Statement

Statistics showed that the prevalence of diabetes in West Virginia is increasing at an alarming rate, raising social concerns. The U.S. Department of Health and Human Services estimated that by 2025, the number of West Virginians with diabetes will exceed 315,000, costing the state more than $3 billion annually in health care expenditures (National Diabetes Education Program, 2019). When compared to the national average of 10.8% (National Diabetes Education Program, 2019), the current prevalence rate is 15.7%. Type 2 diabetes has increased by 33% since 2011 and accounts for 90%-95% of all cases (WVDHHR, 2024). Technology has the potential to ease the burden of everyday diabetes self-management tasks such as monitoring blood sugar levels, exercising, eating healthily, taking medications, monitoring for problems, and problem resolution (Hunt, 2015).

According to WVDHHR (2024), African Americans are 60% more likely to have a diabetes diagnosis than non-Hispanic Whites. West Virginia has the highest prevalence of diabetes in the United States, despite the presence of educational programs dedicated to the disease and funding from the CDC. There are fewer accredited programs and fewer certified diabetes educators in West Virginia than in any other state.

West Virginia is rural, and Type 2 diabetes is more common there than in more populous places (Dugani et al., 2021). A rural state has low population densities (less than 500 per square mile) and expansive farmland. West Virginia is the only U.S. state entirely contained inside the Appalachian Mountains. Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia are the other states that have Appalachian Mountain ranges in them (ARC, 2022). The enormous expanse of the mountain range creates distinct zones in the north, center, and south regions. Isolation is due to the location of West Virginia in the middle of this mountain range.

The high rate of diabetes in West Virginia is due to several factors, not the least of which is the state's rurality. Lack of industry and low-paying jobs are problems in West Virginia. The major employers in the state are the government, the West Virginia University Health Systems, Walmart, and the Vandalia Health System, and the median household income is $44,000. The state of West Virginia has a high percentage of high school completion (85.6%) and a low rate of poverty (19.4%; WVDHHR, 2024). These factors lead to the increasing prevalence of diabetes with obesity and other chronic diseases. The Appalachian culture of skepticism of the health care system is another concern, along with an aging population, access to health care, the use of technology for self-care, physical inactivity, obesity, and inactivity (Misra et al, 2021).

Innovative technology includes fitness trackers, which allow users to track their every move. To enhance existing human health management abilities, wearable activity trackers are often affixed to the body, most commonly the wrist (Shan, et al., 2019). These applications make it easier for users to track their health by monitoring metrics such as their step count, calorie burn, heart rate, and sleep pattern. Activity trackers, which are worn on the body, collect data on the user's health and habits and transmit that information wirelessly to a user's computer or mobile device. Individuals with lifestyle illnesses such as diabetes and obesity have found the data collected by wearable activity trackers particularly helpful in clinical settings for controlling their health (Shan, et al., 2019).

West Virginia’s inhabitants and medical professionals may benefit from a closer look at health literacy as they choose how to further their education. An individual’s health literacy is described as their ability to seek out, understand, and make use of health-related information and services to make informed decisions about their own and others’ health (CDC, 2022). People’s ability to put health knowledge to use should be emphasized in addition to their comprehension of it. People should also recognize organizations’ responsibilities to promote health literacy and prioritize the ability to make informed choices over acceptable ones (CDC, 2022). Healthcare management involves more than medical appointments; it requires daily attention to self-care. Maintaining a healthy lifestyle, avoiding illness, and dealing with health issues when they arise are all outcomes of health literacy.

It is not enough to know how to read and count; health literacy also requires an understanding of medical language and the human body. Information must be understood to weigh advantages against hazards that may affect people’s well-being (CDC, 2022). Self-reported responses in a single survey or census and the use of technology to track physical activity and access to health care are two ways to gauge health literacy. This current study explored the ways in which African Americans in West Virginia’s Appalachian region might utilize activity trackers to better control their physical activity and, by extension, their Type 2 diabetes. People in the Appalachian region of West Virginia may be wearing these devices without realizing they have tracking capabilities.

Although studies on African Americans with diabetes exist, they have tended to focus on the development of self-management programs or on the identification of causes for the epidemic of diabetes in the United States (Campbell et al., 2020). Studies on self-management programs and the causes of the epidemic of diabetes in the United States have not addressed the perspectives or lived experiences of African Americans living in the Appalachian Region of West Virginia who are at risk for or living with prediabetes or Type 2 diabetes.

Previous research has not provided a comprehensive description of the unique risk factors for prediabetes and Type 2 diabetes among African Americans in West Virginia's Appalachian Region. According to the WVDHHR (2024), African Americans made up 31.2% of the state's diagnosed diabetes in 2017, although making up only 16.4% of the entire population. Rural inhabitants in West Virginia are 1.3 times more likely to have diabetes than urban residents, while non-Hispanic Whites are 1.9 times more likely to have diabetes than African Americans (CDC, 2023). The rate of diabetes in West Virginia is 16%, which is much higher than the national average of 11.3% (CDC, 2023). The rate is twice as high in rural parts of West Virginia (17.6%; CDC, 2023). The percentage of African Americans in West Virginia is high, at 18.2% (CDC, 2022). West Virginia has significant cities despite its reputation as a rural state.

The word "rural" can mean several different things, depending on the context in which it is used. Grants, funders, program administrators, and academic study are all potential application domains. Purpose of the study, data availability, and appropriateness and availability of the definition were all factors in selecting a research method for the current study (see Hart et al., 2005). I used a qualitative phenomenological design to explore the lived experiences of African Americans living in the Appalachian Region of West Virginia.

The term is defined, rurality is under- or overstated. In terms of local economy, environment, and quality of services, for example, large cities and less inhabited areas in certain large counties may be considered rural. However, the presence of a significant urban core might lead some to classify the county as urban. Some areas that are technically rural are misclassified as cities in this context. Although this is happening, the limits of the word “urban” are being pushed too far. When comparing data on the rural and urban components, the researcher must be aware that any definition of rurality will have some over- and under bounding (Hart et al., 2005). West Virginia, with its urban or city-like places and its rural areas around these metropolitan centers, would fall into this nebulous realm of being both over- and under bound.

Counties without a major city and with a micropolitan population of 10,000 to 50,000 falls within the definition of rural by the Office of Management and Budget (Harrington et al., 2020). About 15% to 20% of the population and the entire country’s landmass are rural under this definition (Health Resources & Services Administration [HRSA], 2022). The Federal Office of Rural Health Policy advocated for a more specific definition based on U.S. Census tracts rather than counties. Many definitions have been used for purposes such as determining program eligibility, enforcing laws, conducting research, and collecting data at the state and federal levels (Harrington et al., 2020).

Research conducted with West Virginia as a case study has the potential to influence how scientists think about or collect data for rural health research.

The dispersed nature of Kanawha County's rural population makes it difficult for its residents, especially those living in outlying or underserved regions, to obtain quality health care. It may be difficult for individuals to obtain health care due to a lack of reliable transportation, long journey distances, or physical obstacles such as mountains or rivers. There is a scarcity of doctors, specialists, and other health care workers in Kanawha County, as is the case in many rural locations. There may be longer wait times for appointments, fewer available resources, and more difficulty gaining access to specialist treatment because of this scarcity. Health care access is strongly influenced by socioeconomic status (WVDHHR, 2024).

Due to a higher poverty percentage than the national average, people in Kanawha County may have trouble obtaining and paying for critical medical care (Kona et al., 2023). People may have trouble accessing care, including preventive measures and ongoing treatment, due to high health care expenditures, a lack of health insurance, or restricted coverage. To detect health problems at an earlier stage and slow their progression, regular checkups, tests, and health education are essential. However, it may be difficult for Kanawha County people to locate general practitioners. Without proper preventive care, people are at risk for developing serious health problems that will require more extensive and costly treatment Cultural traditions, shame, and a lack of health information may serve as barriers to receiving care. People may have trouble locating and making effective use of health care resources due to language barriers, low health literacy, and unfamiliarity with available services or health promotion programs (Caldwell et al., 2016).

The current study sought to fill a knowledge gap by exploring the lived experiences of African Americans in the Appalachian Region of West Virginia who are coping with prediabetes and Type 2 diabetes and the use of innovative technology for self-management and wearing tracking devices for physical activity, health literacy, and obtaining access to health care. The purpose of this study was to gain a comprehensive understanding of African Americans in the Appalachian Region of West Virginia, a rural state, by exploring lived experience with those with prediabetes and type 2 diabetes. The state's isolation is a problem when dealing with diabetes, whether in major centers such Charleston or Huntington or in rural areas such as Logan or McDowell Counties.

Purpose of the Study

The primary objective of this qualitative phenomenological study was to gain a comprehensive understanding of the lived experiences of African Americans with prediabetes and Type 2 diabetes residing in the rural Appalachian Region of West Virginia. This study explored the challenges, strategies, and perceptions experienced by participants in managing diabetes, bridging the gap between clinical diabetes management guidelines and real-world application within the unique cultural and geographical context of rural Appalachia. The research encompassed several key aspects of diabetes management. First, it examined the concept of health literacy and how individuals cultivate their abilities to comprehend health-related information specific to their medical condition. Second, the investigation of how patients used technology for managing their diabetes and physical activity in a rural setting. Third, I explored the challenges and strategies related to accessing health care services within the rural context of Appalachian West Virginia. Finally, the research sought to understand how the unique cultural and geographical aspects of rural Appalachia influence diabetes management practices and perceptions.

By focusing on these areas, I aimed to provide a comprehensive understanding of the complex factors affecting diabetes management among African Americans in rural Appalachia. I aimed to provide rich, contextual insights into the daily realities of diabetes management among African Americans in rural Appalachia. The findings may inform health care providers, policymakers, and community leaders on how to better tailor diabetes prevention and management strategies to the specific needs of this population, thereby contributing to the reduction of health disparities and improvement of diabetes outcomes in one of the nation's most vulnerable communities.

Research Questions

The primary question was the following: Why do African Americans in Appalachian Region of Kanawha County, West Virginia have high rates of prediabetes and Type 2 diabetes? The research questions were addressed:

RQ1: What are the lived experiences that African Americans with prediabetes or Type 2 diabetes mellitus encounter in rural West Virginia's Appalachian Region?

RQ2: What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitor for Type 2 diabetes and physical activity?

RQ3: What are the lived experiences of learning health literacy skills in African Americans who have been recently diagnosed with prediabetes/Type 2 diabetes in the Appalachian Region of West Virginia?

RQ4: What are the lived experiences of accessing health care for African Americans with Type 2 diabetes living in Appalachian Region of West Virginia?

Interviews with patients were done with those who had been diagnosed with prediabetes and Type 2 diabetes, which also covered the selection of educational materials, use of technology to track fitness and condition, access to health care, and use of technology to develop knowledge and health literacy skills. I investigated whether information was obtained online or at a medical institution, as well as the type and style of the information, including video, audio, print, or face-to-face. Participants' gender, age, ethnicity, level of education, and prior knowledge of the disease were considered when searching for answers to the research questions. Health literacy, access to care, and technology were considered when interviewing African Americans about their experiences. The use of technology by patients, particularly their use of digital and mobile tools, was investigated. Finally, discrepancies between patients' learning tactics and health care personnel's teaching methods were investigated.

Theoretical Framework

The theories, concepts, and/or behavioral models that grounded this study included the health belief model (HBM) and social ecological model (SEM). By using both models I was able to have a more comprehensive study on the lived experiences of African Americans living with prediabetes and with Type 2 diabetes in the Appalachian

Region of West Virginia. The HBM, which was created in the 1950s by social psychologists, served as the study's theoretical foundation (Glanz et al., 2015, Skinner et al., 2015). The HBM is widely used in social science studies to forecast behaviors related to seeking out health (Jones et al., 2015). The fundamental HBM constructs of self-efficacy, perceived benefits, perceived barriers, perceived susceptibility, perceived severity, and cues to action served as a framework for developing interview questions, analyzing interview data, and describing the lived experiences of African Americans in the Appalachian Region of West Virginia.

By applying these theories, I sought to have a better understanding of how African Americans in West Virginia's Appalachian Region view the severity or susceptibility of Type 2 diabetes. The HBM's notion of self-efficacy may represent confidence and motivated behavior of the employment of self-monitoring programs using innovative technology and wearing tracking devices for physical activity and obtaining access to health care for African Americans in the Appalachian Region of West Virginia. The perceived benefits and perceived risk of African Americans using self-monitoring using innovative technology and wearing tracking devices for physical activity and obtaining access to health care in the Appalachian Region of West Virginia may offer insight into developing a successful programs/intervention for the health challenges affecting African Americans in the Appalachian Region of West Virginia. Studies on physical activity have revealed that positive feedback and self-monitoring are powerful predictors of effective behavior changes (Payne et al., 2015); as a result, the HBM was important for this study.

The HBM, which is based on psychological and behavioral theory and holds that two elements of health-related actions are the desire to avoid disease or, conversely, to recover from illness, and the conviction that a particular health activity would prevent or cure illness, serves as the theoretical underpinning for the current study (see Creswell & Creswell, 2017). The five HBM components—perceived vulnerability, perceived severity, perceived advantages, perceived obstacles, signals to action, and self-efficacy—were used in this study. This model is based on the hypothesis that health-related behavior is influenced by a variety of variables (Misra, et al., 2016).

Like the HBM, the SEM is a theoretical framework that addresses alterations in behavior. According to this theory, people's actions are influenced by a combination of personal characteristics, social ties, cultural norms, and institutional regulations (Golden & Earp, 2012). According to the SEM, it is necessary to comprehend the complex interplay at many levels to effectively promote behavior change (Stokols, 1996). Personal ideas and motives, as well as societal norms and support from one's family, workplace, and community, all play a role in shaping an individual's decision to embrace a certain health activity. These decisions are also influenced by social factors such as cultural norms and public health policy (Hill-Briggs et al., 2020).

The HBM and the SEM might be used to better understand behavior change mechanisms and create more efficient treatments (Rimer & Glanz, 2005). The theories provide a solid theoretical framework for designing treatments that put an emphasis on people's thoughts and feelings while also considering the larger social and environmental contexts in which those thoughts and feelings are formed and acted upon (Shaw et al., 2012). This all-encompassing method could promote positive and permanent changes in individuals and communities, which would improve health outcomes and general welfare.

The HBM and SEM frameworks have been shown to be useful for understanding health behaviors and encouraging behavior change, and innovative studies continue to add to this body of data. Extensive research undertaken by Thomas et al. (2023) during the COVID-19 pandemic showed that the HBM accurately indicated preventive action. The study indicated that people's beliefs about the severity of the illness and their own vulnerability to it were major determinants of how cautious they were. Using the SEM, Al-Nuaim and Safi (2023) looked at the effect of many factors on young people's exercise habits in Saudi Arabia. Their research illuminated the dynamic interaction between private motivation, social pressure, and environmental influences.

Using the HBM and SEM, researchers have analyzed how people's beliefs, the attitudes of others, and the limitations of their environment affect their diabetic self-management. Rajkumar et al. (2023) used the HBM to analyze the relationship between self-efficacy and signals to action in relation to glycemic management. To obtain a thorough comprehension of blood glucose regulation, Djonor et al. (2021) conducted a study in Ghana using SEM. Several determinants, including medical accessibility, were examined at the community and health care system levels (Djonor et al., 2021). Successful treatments and policy reforms to improve public health outcomes continue to be shaped by the incorporation of behavior modification ideas.

Nature of the Study

To answer my research questions in this qualitative study, I used the qualitative phenomenological approach. By engaging in adaptable activities that were described and aided in understanding complex phenomena, such as the use of technology for self-monitoring, health literacy, and access to health care in a rural state, I gained a deeper insight into the lived experiences of African Americans in the rural Appalachian Region of West Virginia who are prediabetic or who have Type 2 diabetes. The qualitative phenomenological method is a useful design for studies in the field of education.

To be thorough in my investigation, I employed hermeneutic phenomenology. This approach combined empirical (gathering experiences) and reflective (analyzing their meanings) activities to study the health beliefs and practices of African Americans in West Virginia's Appalachian Region regarding self-management of Type 2 diabetes (see Korsah & Agyeman-Yeboah, 2023). To make sense of one's own life, many people turn to hermeneutic phenomenology. The idea behind this is that everyone has a unique biography. In the current phenomenological study, I sought to understand the significance and breadth of African American patients' perspectives on living with Type 2 diabetes in the Appalachian Region of West Virginia. To accomplish this, I conducted in-depth interviews with African American patients diagnosed with prediabetes and Type 2 diabetes about their firsthand experiences.

Kanawha County, West Virginia is in the Appalachian Region, and patients from that county's federal qualified health center (FQHC) took part in the study. Diabetic program participants at the health center were asked to participate and were informed of any potential risks involved. These patients were offered the option to participate if their health care provider approved the study and they were at ease with answering the questions being asked. The sample size ranged from nine to fifteen or until saturation. The participants were rural African Americans from West Virginia's Charleston, Cross Lanes, Dunbar, and Marmet regions who had prediabetes or Type 2 diabetes. In-person, semi structured interviews with open-ended questions were used to gather data about the research subjects. After the interviews were complete, I transcribed the recorded material, sorted it into categories, and compared key terms and phrases that were used in the data analysis to uncover inductive and emergent themes.

Definitions

Communities of Care: The social ecology paradigm recognizes the power of relationships to shape individual behaviors. Knowing the barriers to self-care in rural areas can aid in the design of solutions that use existing social support networks and encourage community participation. Establishing peer mentoring programs, community-based initiatives, and support groups for persons with diabetes is one way to accomplish this goal (CDC, 2022).

Community health worker: Frontline public health workers who are trusted members of and/or have an unusually close understanding of the community served (American Public Health Association, 2009). These individuals play a crucial role in diabetes education and support in rural communities.

Cultural competence in health care: The ability of health systems to provide care to patients with diverse values, beliefs, and behaviors, including tailoring delivery to meet patients' social, cultural, and linguistic needs (Betancourt et al., 2003).

Diabetes self-management: The ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care, including informed decision making, problem solving, and collaboration with health care providers (Powers et al., 2016).

Federal qualified health centers (FQHC): The Health Resources and Services Administration (HRSA), a division of the U.S. Department of Health and Human Services, provides money to community-based health care organizations. FQHC's are created to give underprivileged communities complete primary care services regardless of the organization's financial situation. FQHC's are essential in boosting health care access in places with limited medical resources (Pourat et al., 2021).

Food desert: Areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up a full and healthy diet (U.S. Department of Agriculture, 2021). This concept is particularly relevant in understanding nutritional challenges in rural Appalachia.

Health belief model (HBM): A framework that suggests that people are more likely to adopt health-promoting behaviors if they perceive themselves to be vulnerable to the health condition, perceive it to be severe, believe that acting is beneficial, perceive few barriers, receive cues to act, and have faith in their ability to succeed. To inform treatments and encourage healthy behaviors, the model has been used in a variety of health behavior situations including vaccine uptake, cancer screenings, and chronic illness management (Glanz et al., 2015; Skinner et al., 2015).

Health disparities: Preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations (CDC, 2020. In the current study, health disparities referred to disparities in diabetes outcomes among rural African Americans.

Health literacy: The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Nutbeam, 2000). In the study, health literacy related to understanding diabetes-related information and management strategies.

Rural: In the context of this study, “rural” lacked a universal definition. as cited in Harrington et al., 2020) defined rural areas as counties without a major city and with a micropolitan population of 10,000 to 50,000. However, the current study acknowledged that West Virginia has both urban-like areas and rural areas surrounding metropolitan centers.

Rural Appalachia: Nonmetropolitan counties within the Appalachian Region, characterized by lower population density, limited access to health care services, and distinct cultural attributes (ARC, 2022).

Self-Determination: The health belief model gives people a lot of credit for their own thoughts and actions when it comes to their health. Treatments aimed at increasing self-efficacy, improving understanding of controlling diabetes, and encouraging a sense of personal control over one’s health can be informed by an awareness of the unique challenges faced by African Americans in rural areas like West Virginia. This enables individuals to engage in preventative health care and make well-informed decisions (Creswell, 2017).

Social determinants of health: The conditions in which people are born, grow, live, work, and age, including factors such as socioeconomic status, education, neighborhood and physical environment, employment, and social support networks (WHO, 2021). Social determinants of health are critical in understanding the broader context of diabetes management in rural Appalachia.

Social ecological model (SEM): A theoretical framework used to comprehend the intricate interactions that people have with their larger social and environmental surroundings when it comes to influencing their health practices. The SEM acknowledges that conduct is impacted at many diverse levels, from personal traits to interpersonal connections, local influences, and larger social institutions. According to the SEM, interventions should target these levels in a complete and coordinated manner to encourage positive behavior change and healthy outcomes. Health behaviors are impacted by influences at several levels. The concept has been widely used in public health research and treatments, targeting a variety of health behaviors including exercise, eating well, quitting smoking, and managing chronic diseases (Ho et al., 2023).

Telehealth: The use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration (HRSA, 2019). In the current study, telehealth referred to remote diabetes management and education services.

Assumptions

Conducting this research on the lived experiences of African Americans with prediabetes and type 2 diabetes in rural Appalachian West Virginia, I made several critical assumptions that were essential to the meaningfulness of the research. My assumptions were that the participants would be honest in their answers and would be able to correctly explain their experiences. I assumed that participants would provide accurate accounts of their experiences with diabetes management, which was crucial for gaining genuine insights into the challenges and strategies of diabetes management in this context. Although the sample size was small, the assumption is that participants' experiences would provide meaningful insights that would be broadly representative of African Americans with diabetes in rural Appalachian West Virginia. This assumption allowed for the generation of in-depth, contextual understanding that may inform broader applications. I assumed that the findings from this study would demonstrate some level of transferability to similar rural, racial minority populations managing diabetes.

I also assumed that participants would have a basic understanding of their diabetes diagnosis and management requirements, which was necessary to ensure that the conversations during interviews would be meaningful and relevant to the research questions. I assumed that the broader social, economic, and health care context in rural Appalachian West Virginia would remain relatively stable during the study period. The patients' health care providers were assumed to have correctly identified them as having Type 2 diabetes and prediabetes, and it was assumed that the medical experts had access to reliable and comprehensive information in making these diagnoses. These assumptions were critical to the study’s meaningfulness because they provided a foundation for interpreting the data and drawing conclusions that may inform practice and policy.

The aspects of the research problem addressed in this study focused on the lived experiences of African Americans with prediabetes and Type 2 diabetes in rural Appalachian West Virginia, particularly their challenges in diabetes management, utilization of health care resources, use of technology for self-monitoring, and health literacy development. This focus was chosen due to the unique intersection of racial health disparities, rural health care challenges, and the cultural context of Appalachia, which presented a complex and understudied area in diabetes research. By concentrating on these aspects, the study sought to uncover nuanced insights that may inform targeted interventions and policies for this vulnerable population.

Scope and Delimitations

This study focused on the lived experiences of African Americans with Type 2 diabetes and prediabetes in rural Appalachian West Virginia, specifically in the Kanawha County region. These chronic conditions were chosen due to their complexity, requiring numerical manipulation and decisive action (see Smith, 2011). The research examined challenges in diabetes management, health care resource utilization, technology adoption for self-monitoring, and health literacy development. This focus was selected because it represented a unique intersection of racial health disparities, rural health care challenges, and the cultural context of Appalachia, presenting a complex and understudied area in diabetes research. The study included African American adults (18 years and older) diagnosed with prediabetes or Type 2 diabetes for 1 year or more, who are residents of rural Appalachian areas in West Virginia. Participants varied in terms of education level and gender. Excluded populations included non-African Americans, individuals with Type 1 diabetes, residents of urban areas or regions outside Appalachian West Virginia, and minors under eighteen.

Regarding transferability, the findings may be relevant to other rural, racial minority populations managing diabetes, health care providers serving similar demographics in rural settings, and policymakers addressing rural health disparities. However, Appalachia's unique cultural and geographical context and the small sample size (nine participants) may limit direct transferability to different settings. The study's focus on lived experiences provided rich, contextual data to inform targeted interventions and policies. Although not broadly generalizable, these insights may serve as a foundation for understanding similar challenges in comparable rural, racial minority communities and guide further research. This approach allowed for a deep exploration of nuanced experiences and challenges, potentially revealing unique insights that might be overlooked in more generalized studies.

Limitations

This study had several limitations related to its design and methodological approach. The qualitative phenomenological design, while providing rich, in-depth data, limited the generalizability of findings to broader populations. The small sample size (nine participants) from Kanawha County, West Virginia may not fully capture the diversity of experiences within the broader African American community in rural Appalachia, affecting the transferability of results to other settings or populations (see

Patton, 2002). The reliance on self-reported data through interviews may introduce potential recall bias, in which participants may not accurately remember or may selectively report their experiences (Aschengrau & Seague, 2008).

Another drawback was the inability to objectively measure participants' levels of technical proficiency, health care access, or health literacy. Therefore, it was not known if the procedures reported by patients improved these aspects or self-management abilities. Both participants and I may have had preconceived notions about how these skill areas should develop, potentially influencing the findings. The cross-sectional nature of the study provided only a snapshot of participants' experiences at a single point in time, potentially missing long-term trends, or changes in diabetes management practices.

Potential biases that could have influenced study outcomes included selection bias because volunteers for the study may have had distinctive characteristics or experiences than nonparticipants. Social desirability bias was another concern, in which participants might have provided responses they believed were more socially acceptable or were aligned with my expectations. Researcher bias was also a consideration because firsthand experiences and preconceptions about diabetes management in rural settings may have influenced data interpretation.

To address these limitations and biases, several measures were implemented. These included using thick description, member checking, peer debriefing, triangulation, and maintaining an audit trail. The study's limitations were clearly stated in the final report to ensure that readers understood the scope and constraints of the findings. Although these measures may mitigate some limitations, it is important to recognize that the findings should be interpreted within the context of these constraints. Future research could build on this study by incorporating larger sample sizes, a mixed-methods approach, or longitudinal designs to address some of these limitations and provide a more comprehensive understanding of diabetes management in rural African American communities.

Significance

The findings of this research may have important implications for the prevention and management of chronic diseases including prediabetes and Type 2 diabetes among African Americans living in West Virginia's Appalachian Region. In the last 10 years, there has been a lot of focus on the importance of diabetes self-management (Misra et al., 2021). Type 2 diabetes has been studied extensively to determine its impact on African American health in many contexts (Dugani et al., 2021). Using the SEM and the HBM, I gained a multifaceted understanding of the barriers to self-care faced by African Americans in the rural Appalachian Region of West Virginia who were diagnosed with prediabetes or Type 2 diabetes.

By learning about the specific challenges faced by this population, health care providers and policymakers may create services and initiatives that are tailored to meet the needs of the community and consider cultural and contextual factors. This targeted approach increases the likelihood of successful self-care management and improved health outcomes (Wadi et al., 2022). Understanding the challenges faced by African Americans in rural areas may reveal the injustices and health inequities faced by this population. The social and environmental factors that contribute to self-care concerns must be understood to recognize and overcome systemic hurdles to ensuring fair access to health care resources and services (Randall et al., 2023).

Care that takes cultural factors into account is essential for managing diabetes successfully. Health care providers who have an appreciation for the unique challenges faced by African Americans in rural areas are better equipped to provide services that consider patients' cultural beliefs, habits, and socioeconomic status. Adherence to self-care strategies, as well as improved communication and interactions with health care providers, are all made feasible as a result (Fulton et al., 2022).

The development of effective policies might benefit from an increased awareness of the challenges faced by African Americans in rural areas. Hill-Briggs et al. (2020) suggested that policy initiatives might be taken to improve the health care system, increase access to diabetes education and self-care materials, and address socioeconomic determinants of health that impede self-care practices. Interventions and policies that promote effective, culturally appropriate, and contextually relevant self-care practices for African Americans in rural areas of West Virginia's Appalachian Region with prediabetes or Type 2 diabetes may be developed through a thorough understanding of the problems faced by this population within the frameworks of the SEM and HBM. Better health outcomes, reduced disparities, and enhanced well-being might result from these efforts for this population.

Summary

This chapter highlighted the significant challenges faced by African Americans with prediabetes and Type 2 diabetes in rural Appalachian West Virginia, emphasizing the complex interplay of cultural, socioeconomic, and environmental factors influencing diabetes management in this underserved population. The research's potential contributions to knowledge, practice, and policy were discussed, stressing the importance of culturally tailored interventions and community-based approaches in addressing health disparities. The research sought to provide a comprehensive understanding of the barriers to self-care, the role of health literacy, and the potential of technology in improving diabetes outcomes.

Diabetes is a public health priority that has resulted in extensive research on its chronic condition and health impact on African Americans. Although this research has led to strategies and policies focused on improving diabetes management, current policies, system, and environmental changes have not proven effective in combating this epidemic. Notably, little research had been conducted on African Americans in the Appalachian Region of West Virginia. The current study applied a qualitative approach using the HBM and SEM to better understand the learning process and inform more effective, culturally sensitive strategies for diabetes prevention and management in rural, racial minority communities.

In Chapter 2, I explore the existing literature that formed the foundation for this research. The literature review addresses current knowledge on diabetes management among African Americans, rural health disparities, and the application of theoretical frameworks in understanding health behaviors. I critically examine studies on health literacy, technology use in health care, and culturally competent interventions for chronic disease management. This comprehensive review not only contextualizes the present study within the broader field of public health research but also highlights the gaps in current understanding that this study aimed to address. By reviewing existing knowledge and identifying areas for further investigation, Chapter 2 provides a robust theoretical and empirical foundation for the research methodology, which is detailed in Chapter 3.

Chapter 2: Literature Review

The problem addressed in this study was the persistently high prevalence and poor management of diabetes among African Americans in rural Appalachian West Virginia, despite advancements in diabetes care and interventions. This population faces disproportionate challenges in accessing quality health care, adopting effective self-management practices, and navigating the complex interplay of cultural, socioeconomic, and environmental factors that influence diabetes outcomes. The purpose of this qualitative phenomenological study was to explore and understand the lived experiences of African Americans with prediabetes and Type 2 diabetes in rural Appalachian West Virginia, focusing on their challenges, strategies, and perceptions in managing their condition.

Current literature consistently highlighted the urgency of addressing diabetes management among African Americans in rural settings. The CDC (2023) reported that diabetes prevalence in rural Appalachia significantly exceeds national averages, with African Americans bearing a disproportionate burden. Misra et al., (2021) found that West Virginia has the highest diabetes prevalence among adults aged 45–64 in the nation, with racial disparities particularly pronounced. Misra et al., (2021) explored challenges in implementing diabetes self-management education in rural settings, emphasizing the need for culturally tailored interventions. Dugani et al., (2021) examined the potential of technology in diabetes care, though its application in rural Appalachia remained understudied. Hill-Briggs et al., (2020) highlighted the complex interplay of socioeconomic factors, cultural beliefs, and limited health care access that contribute to poor diabetes outcomes in rural minority communities. These findings underscore the relevance and timeliness of this research within the public health discipline.

This chapter is organized into several major sections. It begins with an in-depth discussion of the theoretical framework, focusing on the HBM and SEM and their application to diabetes management in rural minority populations. The chapter then provides an overview of diabetes in rural Appalachia, followed by a review of African American health disparities. The chapter addresses the role of health literacy in diabetes self-management, examines the use of technology in diabetes care, and discusses culturally competent approaches to diabetes care and education. Finally, the chapter identifies gaps in recent research, particularly in understanding the lived experiences of African Americans with diabetes in rural Appalachia. This comprehensive literature review provides a solid foundation for understanding the context of the study and highlights the need for this research to address existing gaps in knowledge.

The SEM (Gleeson-Kreig, 2008) and the HBM (Glanz et al., 2015) are often employed theoretical frameworks in the field of behavior change. These models center around the concepts of self-efficacy, readiness for change, and motivation. However, neither of the theories provides an explanation for the acquisition of knowledge and abilities. This literature review focuses on the examination of the lived experiences of African Americans residing in rural West Virginia who are affected by prediabetes and Type 2 diabetes.

The research places particular attention on the interplay between technology usage, access to healthcare, and health literacy. The American Diabetes Association

(2022) highlights the significant public health concern posed by the high incidence of diabetes and its consequential impacts, particularly within the African American population. To develop targeted interventions and improve health outcomes, it is important to have a comprehensive understanding of the lived experiences of those residing in rural areas. The utilization of these ideas and insights has the potential to facilitate the development of innovative treatments, policies, and strategies aimed at enhancing the knowledge, health literacy, healthcare accessibility, and utilization of technology for self-management among those diagnosed with prediabetes and type 2 diabetes.

This chapter has provided a comprehensive discussion of the methodology employed in literature searches, the theoretical foundations that inform these approaches, and the conceptual framework that guides the analysis. Subsequently, a comprehensive examination will be conducted on the body of scholarly work pertaining to health literacy, healthcare accessibility, and the utilization of technology for the purpose of managing and monitoring patients' diseases and physical well-being. This study has encompassed an examination of the conceptualization, assessment, and physiological ramifications of diabetes within the Appalachian region of West Virginia.

Literature Search Strategy

To conduct a comprehensive literature review for this study, several library databases and search engines were utilized, including PubMed/MEDLINE, CINAHL, Cochrane Library, Google Scholar, ProQuest Dissertations & Theses Global, Web of Science, Scopus, PsycINFO, and the Rural Health Information Hub. Key search terms and combinations included phrases such as "Diabetes, African American, Rural," "Type 2 diabetes, Appalachia, West Virginia," "Health literacy, Diabetes self-management, Rural," and "Technology, Diabetes care, Rural communities," among others. The iterative search process began with broad terms in PubMed and Google Scholar, such as "Diabetes African American Rural." Based on the initial results, more specific terms were added, like "Appalachia" and "West Virginia." As relevant articles were identified, their reference lists were reviewed for additional sources. The search was then expanded to other databases using these refined terms.

Given the specific focus on African Americans with diabetes in rural Appalachian West Virginia, there was limited current research directly addressing this population. To address this challenge, several strategies were employed. The search was broadened to include studies on rural African American populations in other regions, which were then critically examined for transferability to the Appalachian context. Conference proceedings from organizations like the American Diabetes Association and the Rural Health Association were reviewed for recent presentations on related topics. Dissertations and theses were searched using ProQuest to identify unpublished research on similar populations or geographical areas. Local health department reports and community health assessments for West Virginia were consulted to gather region-specific data. This multi-faceted approach ensured a comprehensive review of available literature while addressing the challenges posed by the specific focus of the study.

Theoretical Foundation

Behavior Change Theory

Behavior Change theories and models often serve as guiding frameworks in diabetes research for the development and evaluation of interventions that seek to improve self-management behaviors and health outcomes. Behavior Change theories offer frameworks for understanding the factors that influence engagement in diabetes self-care activities. The Health Belief Model, Transtheoretical Model, and Social Cognitive Theory are commonly employed in diabetes research (Shigaki et al., 2010; Chrvala et al., 2016). These theoretical frameworks examine the impact of social, emotional, cognitive, and environmental factors on the process of behavior modification. Behavior modification approaches are often included into interventions for diabetes self-management education and support. Collaborative goal setting, self-monitoring with feedback, problem-solving, motivational interviewing, peer support, and cognitive-behavioral approaches have been found to enhance medication adherence, glucose monitoring, dietary patterns, physical activity, and other self-care behaviors (Powers et al., 2016; Chrvala et al., 2020). The utilization of behavior modification theories and strategies enhances the efficacy of diabetic therapies. In a thorough study conducted by Presseau et al. (2019), it was shown that theory-based treatments incorporating elements such as goal setting and problem solving demonstrated a twofold increase in effectiveness compared to interventions lacking a theoretical foundation in reducing A1C levels.

Health Belief Model

Culturally adapted interventions have been found to enhance outcomes by specifically targeting obstacles faced by priority populations such as African Americans, Hispanics, and those residing in rural regions (Hill-Briggs et al., 2020; Spencer et al., 2011). In diabetes research, the application of behavior change theory facilitates the development of personalized treatment approaches that yield favorable outcomes in terms of self-management behaviors and overall health. The basic theoretical framework employed in this study encompassed the health belief and social-ecological models. Theoretical foundations play a crucial role in comprehending and promoting behavior modification, particularly within the realm of health and wellness. The Health Belief Model (HBM) is a widely recognized theoretical framework that has garnered significant scholarly interest. Based on the theoretical framework proposed by Rosenstock (1974), an individual's health-related behaviors are influenced by several elements. These factors encompass the individual's perception of their susceptibility to a health issue, the severity of the problem, the perceived benefits of taking action to address it, and the perceived barriers that hinder such activities. Based on the Health Belief Model (HBM), individuals are more inclined to engage in activities that promote health when they perceive themselves to be at risk, perceive the situation as being serious, acknowledge the benefits of acting, and possess confidence in their ability to overcome barriers (Shigaki et al., 2010).

Social Ecological Model

The Social Ecological Model (SEM) is a theoretical framework that exerts effect on behavior modification, alongside the Human Behavior Model (HBM). Based on this theoretical framework, behavior is subject to the effect of several factors, including individual attributes, interpersonal relationships, societal and communal standards, as well as governmental policies and laws (Golden & Earp, 2012). The Social-Ecological Model (SEM) emphasizes the need of understanding the complex interplay at many levels to effectively promote behavior change (Stokols, 1996). The decision of an individual to adopt a specific health behavior is shaped by several factors, including personal beliefs and motivations, as well as social norms and support from their familial, occupational, and communal environments. Additionally, broader societal influences such as cultural norms and public health policies play a role in shaping these choices (Hill-Briggs et al., 2020).

The integration of the Health Belief Model (HBM) with the Social Ecological Model (SEM) might enhance the comprehension of behavior change mechanisms and facilitate the development of more effective interventions, benefiting both practitioners and academics (Rimer & Glanz, 2005). The theories provide a robust theoretical foundation for the development of interventions that prioritize individuals’ attitudes, beliefs, and intentions, while also considering broader social and environmental factors that influence behavior (Shaw et al., 2012). This comprehensive approach has the potential to facilitate the promotion of constructive and long-lasting modifications in individuals and communities, therefore enhancing health outcomes and overall welfare.

Recent research continues to provide evidence for the significance of utilizing the Health Belief Model (HBM) and Structural Equation Modeling (SEM) frameworks in understanding health behaviors and promoting behavior change. During the COVID-19 pandemic, an extensive investigation conducted by Thomas et al. (2023) revealed that the Health Belief Model (HBM) effectively elucidated preventative behavior. Specifically, the study found that individuals' perception of their susceptibility to and the severity of the virus were significant predictors of their adoption of cautious measures. Al-Nuaim and Safi (2023) employed structural equation modeling (SEM) to investigate the impact of multi-level variables on juvenile physical activity in Saudi Arabia. Their study unveiled the interplay between individual determinants and cultural norms and environmental factors.

Research conducted on the management of diabetes has utilized the Health Belief Model (HBM) and Structural Equation Modeling (SEM) to examine the impact of individual perceptions, social factors, and structural restrictions on self-care behaviors and results. The study conducted by Rajkumar et al. (2023) in India examined the influence of self-efficacy and signals to action on glycemic management, with a focus on factors affecting diabetes control from the perspective of the Health Belief Model (HBM). The utilization of structural equation modeling (SEM) was applied in a research study conducted in Ghana to get a comprehensive understanding of blood glucose control. The study focused on several factors operating at both the community and healthcare system levels, including the accessibility of medicine (Djonor et al., 2021).

The integration of behavior modification theories remains influential in shaping successful interventions and policy changes aimed at improving public health outcomes.

Literature Review

Scope of Diabetes

Diabetes is a prevalent chronic metabolic condition that has substantial health implications on a worldwide scale. The incidence of diabetes in the United States has reached epidemic proportions, affecting a sizable number of persons across various demographic groups and age ranges. The objective of this research was to conduct a thorough examination of the prevalence and impact of diabetes in the United States, with a specific emphasis on the state of West Virginia. Furthermore, this analysis has gone deeper into the specific circumstances surrounding diabetes in Kanawha County. This study aimed to investigate the frequency, determinants, adverse outcomes, and significance of health literacy and healthcare accessibility in the management of diabetes.

The incidence of diabetes has exhibited a consistent upward trend in the United States in recent decades. According to the Centers for Disease Control and Prevention (CDC) in 2017, the latest statistical data indicates that the prevalence of diabetes in the United States exceeds thirty million individuals. Additionally, there is a substantial population of eighty-eight million adults who have prediabetes and are at a heightened susceptibility for the development of diabetes.

The incidence of diabetes in the United States has experienced a significant increase, reaching concerning proportions. Based on data from the Centers for Disease Control and Prevention (CDC), it was estimated that over 34.2 million persons, accounting for 13.3% of the adult population, were affected by diabetes in the year 2020. Furthermore, a considerable proportion of individuals with diabetes remained undiagnosed (CDC, 2020). The circumstance imposes a substantial strain on the healthcare system, necessitating the implementation of efficacious preventative measures and improved management systems for disease control.

The prevalence of diabetes has escalated to epidemic levels on a worldwide scale, including inside the United States. As of 2021, it has been estimated by the International Diabetes Federation that there are around 537 million persons between the ages of 20 and 79 who have been diagnosed with diabetes globally (Saeedi et al., 2022). According to Saeedi et al. (2022), it is projected that the amount would experience an increase to 643 million by the year 2030, and further climb to 783 million by 2045, based on prevailing patterns and tendencies. 90-95% of cases are attributed to type 2 diabetes, while the other cases are classified as type 1 diabetes or less common variants (Wu et al., 2022). According to the latest data provided by the Centers for Disease Control and Prevention (CDC) 2023 in the United States, it is estimated that around 37.3 million individuals are affected with diabetes, while an additional ninety-six million individuals are classified as having prediabetes, which signifies a heightened susceptibility to developing diabetes (CDC, 2023).

According to the Centers for Disease Control and Prevention (CDC, 2023), diabetes emerged as the seventh most prevalent cause of mortality in the United States during the year 2020. This chronic condition was shown to significantly contribute to the development of cardiovascular ailments and several other problems. According to the

American Diabetes Association (2022), the aggregate projected spending for diagnosed diabetes in 2017 encompassed both direct healthcare costs and the economic impact resulting from reduced productivity, amounting to a sum of $327 billion. According to Drayton et al. (2022), there exists a disproportionate burden of diabetes and its associated consequences among racial and ethnic minority groups in the United States.

The increase in the prevalence of diabetes over time has been correlated with demographic shifts, including the aging population, as well as escalating rates of obesity, physical inactivity, and related risk factors (Bhupathiraju & Hu, 2016). Although diabetes is now an incurable condition, there is substantial evidence to suggest that treatments aimed at promoting weight reduction, adopting a healthy diet, engaging in regular physical exercise, adhering to medication regimens, and quitting smoking can effectively prevent the onset of diabetes and mitigate problems in individuals who have already been diagnosed (Davies et al., 2018). Telehealth, mobile health, peer support models, and community health professionals have demonstrated potential in addressing the obstacles associated with achieving optimal diabetes control, particularly among groups that have limited access to healthcare services (Greenwood et al., 2020). However, a sizable proportion of patients, as indicated by Sugandh et al., (2023), face challenges in effectively managing their diabetes in accordance with established therapeutic standards. There is a pressing need for continuous research, policy modifications, and customized treatments to effectively address the global diabetes epidemic.

This study presented a comprehensive analysis of recent statistics and research findings that shed light on the significant impact of diabetes in West Virginia, specifically in terms of its prevalence, complications, economic implications, and death rates. West Virginia has a disproportionate impact, as it possesses the greatest prevalence of diabetes among states, standing at 16.2%, in contrast to the national average of 11.3% (United Health Foundation, 2022). According to recent projections from the Centers for Disease Control and Prevention (CDC), the prevalence of diagnosed diabetes among adults in West Virginia is around 15.2%, which corresponds to a population of 382,000 individuals (CDC, 2020). The observed diabetes prevalence is notably higher compared to the national average of 11.3%.

Kanawha County, located in West Virginia, has a notably elevated incidence of diabetes, estimated at around 16.2%. This heightened prevalence may be attributed to several factors, including elevated rates of obesity, the presence of food swamps, and socioeconomic disadvantages experienced within the region (Tackett et al., 2019). According to the West Virginia Department of Health and Human Resources (2024), the rates of diabetes mortality and complications in West Virginia and Kanawha County are higher than the national norms. This suggests that there are deficiencies in the prevention and management of this illness in these areas.

West Virginia, being among the states within the United States characterized by a notable incidence of chronic ailments, encounters substantial obstacles pertaining to the issue of diabetes. Based on the findings of the IDF Diabetes Atlas 10th edition, the anticipated prevalence of diabetes in West Virginia in 2019 was recorded at 13.4%, above the national average (Magliano & Boyko, 2021). The elevated prevalence of these high rates can be attributed to the distinctive socioeconomic and environmental conditions within the state, such as obesity, insufficient physical exercise, and restricted availability of healthcare facilities.

In addition to the high prevalence of diabetes, prediabetes affects a sizable proportion of individuals in West Virginia, with up to 38% being affected. This suggests the possibility of future rises in the incidence of diabetes (American Diabetes Association, 2021). The prevalence of undiagnosed diabetes is likewise significant. According to Downer et al., (2016), the results of a screening research conducted within a community revealed a prevalence of undiagnosed diabetes in 6.3% of the participants. These findings imply that the true rates of diabetes could surpass the estimations given thus far. The prevalence of diabetes in West Virginia results in a significant strain on healthcare resources. According to the West Virginia Department of Health and Human Resources (2021), diabetes ranked as the seventh most prevalent cause of hospitalization in the year 2020. Moreover, the age-adjusted rates of hospitalization for diabetes were found to be much higher than the national benchmarks. According to Misra et al., (2021), diabetes was identified as the primary or secondary cause of death for more than 1,300 individuals in West Virginia during the year 2020.

The presence of uncontrolled diabetes leads to increased healthcare expenses and use due to the development of various complications. According to Minc et al., (2020), West Virginia exhibits elevated prevalence rates of cardiovascular disease, retinopathy, nephropathy, and lower limb amputations in connection with diabetes. According to a study conducted by Minc et al. (2020), West Virginia exhibited the highest hospitalization rate for lower extremity amputations among patients diagnosed with diabetes in the year 2013, surpassing all other states in the United States. According to estimates provided by the American Diabetes Association (2018), the economic ramifications linked to the diabetes pandemic in West Virginia amount to $3 billion. The figures encompass $2.3 billion in direct medical expenses and $690 million in costs associated with lost productivity. According to a study conducted by West Virginia University in 2020, the average yearly healthcare expenditures for those with diabetes were $16,658 per capita, but individuals without diabetes had average costs of $8,034 per capita.

There are several interconnected variables that contribute to the disproportionately elevated prevalence of diabetes in the state of West Virginia. Obesity is a significant risk factor, as seen by the obesity rate in West Virginia, which stands at 33%, above the national norm of 26% (United Health Foundation, 2022). According to Guan et al., (2022), there is a higher prevalence of physical inactivity and lower levels of fruit and vegetable intake compared to national norms. The lifestyle characteristics have a synergistic relationship with elevated smoking prevalence and reduced income levels, hence amplifying the susceptibility to diabetes.

The presence of healthcare access problems contributes to the existence of disparities in diabetes outcomes. The scarcity of healthcare providers intensifies the disparities in preventative and treatment services, particularly in rural regions. According to a study conducted by Minc et al., (2020), West Virginia exhibits a low ranking in terms of national access to endocrinologists and recognized diabetes education programs. The growth of telehealth services has resulted in improved accessibility; nonetheless, it is worth noting that a sizable proportion of rural residents in West Virginia, namely 36%, continue to face a lack of home internet connectivity as of 2021, as reported by the West Virginia University, 2024.

Furthermore, there is a correlation between low levels of educational attainment and health literacy and a decrease in diabetes awareness and self-efficacy. According to Carpenter et al. (2018), individuals residing in West Virginia who have diabetes expressed difficulties related to nutrition labeling, glucose monitoring, and insulin titration during focus group discussions. These challenges were indicative of a poor level of health literacy among the participants. Cultural elements, such as familial dietary habits and fatalistic perspectives on chronic illness, present further obstacles to the promotion of preventive and self-management (Mudd-Martin et al., 2021). West Virginia's decision to not expand Medicaid under the Affordable Care Act at the policy level has resulted in a sizable number of low-income citizens being without health insurance coverage, so diminishing their ability to obtain preventative treatments and adequate diabetic care (The Commonwealth Fund, 2023). According to the Center for Connected Health Policy (2022), the telehealth rules in certain states exhibit a greater degree of restrictiveness in comparison to policies implemented in other districts.

West Virginia is confronted with a significant burden of diabetes that ranks among the highest in the nation. This burden can be attributed to a combination of several risk factors, limited access to healthcare services, deficiencies in infrastructure, and socioeconomic issues. A comprehensive public health response is justified, encompassing cooperation between clinical and community sectors to execute evidence-based treatments that are specifically targeted to the people and environs of West Virginia. Although the magnitude of the pandemic is formidable, targeted initiatives that address modifiable risk factors, enhance healthcare accessibility and quality, and empower individuals and communities to self-manage their condition offer a viable approach to reverse the prevailing trends of diabetes.

Prevalence of Diabetes in the United States

The incidence of diabetes has exhibited a consistent upward trend in the United States in recent decades. According to the Centers for Disease Control and Prevention (CDC) in 2017, the latest statistical data indicates that the prevalence of diabetes in the United States exceeds thirty million individuals. Additionally, there is a substantial population of eighty-eight million adults who have prediabetes and are at a heightened susceptibility for the development of diabetes.

The incidence of diabetes in the United States has experienced a significant increase, reaching concerning proportions. Based on data from the Centers for Disease Control and Prevention (CDC), it was estimated that over 34.2 million persons, accounting for 13.3% of the adult population, were affected by diabetes in the year 2020. Furthermore, a considerable proportion of individuals with diabetes remained undiagnosed (CDC, 2021). The circumstance imposes a substantial strain on the healthcare system, necessitating the implementation of efficacious preventative measures and improved management systems for disease control.

The prevalence of diabetes has escalated to epidemic levels on a worldwide scale, including inside the United States. As of 2021, it has been estimated by the International

Diabetes Federation that there are around 537 million persons between the ages of 20 and 79 who have been diagnosed with diabetes globally (Saeedi et al., 2022). According to Saeedi et al. (2022), it is projected that the amount would experience an increase to 643 million by the year 2030, and further climb to 783 million by 2045, based on prevailing patterns and tendencies. 90-95% of cases are attributed to type 2 diabetes, while the other cases are classified as type 1 diabetes or less common variants (Wu et al., 2022). According to the latest data provided by the Centers for Disease Control and Prevention (CDC) in the United States, it is estimated that around 37.3 million individuals are affected with diabetes, while an additional ninety-six million individuals are classified as having prediabetes, which signifies a heightened susceptibility to developing diabetes (CDC, 2022).

The presence of uncontrolled diabetes leads to increased healthcare expenses and use due to the development of various complications. There are several interconnected variables that contribute to the disproportionately elevated prevalence of diabetes in the state of West Virginia. Obesity is a significant risk factor, as seen by the obesity rate in West Virginia, which stands at 33%, above the national norm of 26% (United Health Foundation, 2022).

The presence of healthcare access problems contributes to the existence of disparities in diabetes outcomes. The scarcity of healthcare providers intensifies the disparities in preventative and treatment services, particularly in rural regions.

Prevalence of Diabetes in Kanawha County

The high incidence of diabetes in Kanawha County, West Virginia, is a significant public health concern. Kanawha County, situated in the middle region of West Virginia, has a populace of around 178,124 residents. The county in question includes both the state capital and a significant urban center, namely Charleston (United States Census Bureau, 2021). Kanawha County is confronted with the task of addressing elevated rates of diabetes prevalence, complications, healthcare costs, and mortality rates that above national averages. Through a comprehensive examination of current statistical data and academic literature, one may get useful insights on the extent of the diabetes epidemic in Kanawha County, as well as discern prospective strategies for implementing targeted therapeutic interventions.

Based on recent estimations, the prevalence of diagnosed diabetes within the population of Kanawha County is around 15%, surpassing the national average of 10.5% as documented by the Centers for Disease Control and Prevention in the year 2020. According to the West Virginia Department of Health and Human Resources (2024), there has been a constant increase trend in the prevalence of diabetes in the county over the past two decades. This trend is in line with observations made at both the state and national levels. However, it is important to acknowledge that Kanawha County has demonstrated a higher rate of growth, reaching 62%, in contrast to the overall statewide increase of 55%, across the period from 2004 to 2015 (Tackett et al., 2019).

Kanawha County, located in West Virginia, is widely recognized for its urban setting and diverse population makeup. Although there may be discrepancies in the specific data regarding the prevalence of diabetes in Kanawha County, a study conducted by Drayton et al. (2022) provides insights into the disparities in diabetes rates within the Pacific Islander population, which represents a significant ethnic minority in the area. The findings highlight the need of understanding and addressing the influence of socioeconomic factors on health outcomes related to diabetes in this specific region.

Given the significant prevalence of diabetes, it is noteworthy that Kanawha County also exhibits elevated rates of prediabetes, indicating a possibility for the further escalation of diabetes occurrences. The American Diabetes Association (2021) reports that the incidence of prediabetes among individuals in West Virginia is significant, with rates reaching up to 38%. Nevertheless, it is important to acknowledge that the accessibility of prediabetes statistics at the county level is limited. Given that West Virginia has the highest frequency of prediabetes in the United States, it is likely that the proportions of prediabetes in Kanawha County either meet or exceed this number. The analysis of diabetic self-management and care quality metrics in Kanawha County reveals the existence of additional prospects for improvement.

Based on data provided by the Health Resources and Services Administration (2022), it has been observed that around 62% of Medicare beneficiaries with diabetes residing in the county had undergone HbA1c testing in the recent past. Moreover, a mere 21% of these recipients can attain the targeted levels of glycemic control, blood pressure regulation, and cholesterol management. Furthermore, an examination revealed that around 15% of adult adults who received a diagnosis of diabetes in Kanawha County sought medical care in the emergency room in 2020 because of complications stemming from uncontrolled diabetes. The percentage was discovered to exceed the mean rate recorded throughout the entirety of the state, as documented by the West Virginia Health Statistics Center in the year 2022.

Kanawha County demonstrates notable rates of preventable hospitalizations and mortality linked to diabetes, aligning with recognized shortcomings in healthcare delivery. Based on data from the West Virginia Health Statistics Center (2022), the age-adjusted hospitalization rate for diabetes in the county was 249 per 100,000 individuals in the year 2020, whereas the corresponding rate for the entire state was 209. Based on the statistics presented by the West Virginia Department of Health and Human Resources (2021), it is evident that diabetes ranked as the fifth leading cause of mortality in the county. The ranking was established based on a mortality rate of thirty-five fatalities per 100,000 persons, positioning it lower than the fourth most prevalent cause of death at the state level. The heightened occurrence of diabetes and its associated repercussions in Kanawha County have substantial cost ramifications.

Based on data from the American Diabetes Association (2018), it was projected that the total medical costs associated with diabetes in the county will surpass $200 million in the year 2017. In 2020, West Virginia University did research that examined healthcare claims from 2016. The findings of this study indicated that persons residing in Kanawha County who were diagnosed with diabetes had an average annual per capita healthcare cost of $16,841. The observed quantity exhibited a 69% increase when compared to the population without diabetes.

The high prevalence of diabetes in Kanawha County is influenced by a multitude of interrelated variables. According to the United Health Foundation (2022), Kanawha County demonstrates a greater incidence of obesity, specifically at a rate of 40%, in contrast to the overall obesity rates seen in West Virginia (33%) and the United States (32%). This suggests that Kanawha County faces more challenges in treating obesity as a substantial risk factor for diabetes. Tackett et al. (2019) posit that food swamps may be defined as certain geographic areas where there is a disproportionate concentration of fast-food businesses and unhealthy food retailers relative to the presence of better food options. These surroundings have been identified as factors that lead to the emergence of detrimental eating habits, which have a significant correlation with the high rates of obesity and diabetes in the population.

The issue of restricted healthcare access in medically underserved populations in Kanawha County exacerbates the dangers and challenges associated with diabetes. The presence of inadequate numbers of primary care physicians, endocrinologists, and diabetes educators has been identified as a significant contributing factor to the presence of deficits in the domains of prevention, screening, and specialized management (Health Resources and Services Administration, 2022). Despite the metropolitan nature of Kanawha County, it nevertheless has ongoing challenges in mobility that negatively impact the accessibility of healthcare facilities and residents’ capacity to successfully manage their health (Hong et al., 2019).

In addition, the high incidence of poverty and the presence of low health literacy have a substantial role in exacerbating the challenges associated with diabetes management. Based on data from the United States Census Bureau (2021), it is observed that the poverty rate in Kanawha County surpasses the average poverty rate of the state, with a value of 18% in comparison to the statewide average of 16%. Monnat & Chandler, (2015) have demonstrated an association between persons of lower socioeconomic status and a reduction in adherence to medical treatment, as well as a loss in glycemic control. According to Mudd-Martin et al. (2021), there is a correlation between lower educational attainment and heightened difficulties in health literacy, resulting in additional barriers to successful self-care. The lack of sufficient social support and a limited comprehension of risk factors provide obstacles to the successful execution of preventive measures and the control of illnesses. The results of qualitative research carried out among residents of Kanawha County suggest the existence of restricted social support networks and fatalistic attitudes towards chronic disease risk factors, specifically obesity, which are linked to inadequate diabetes management (Mudd-Martin et al., 2021, Kadirvelu et al., 2012). The use of culturally relevant instructional approaches is crucial to effectively support the assimilation of health behavior adjustments.

Kanawha County is currently facing a substantial diabetes epidemic, evident by its much higher rates of diabetes prevalence, complications, healthcare costs, and mortality when compared to national benchmarks. To effectively tackle the complex issue of several causes contributing to the problem, it is imperative to adopt a well-coordinated and evidence-based strategy. These variables include but are not limited to high rates of obesity, insufficient dietary habits, restricted healthcare accessibility, poor socioeconomic status, difficulties in health literacy, and prevalent social norms. The adoption of treatments targeting risk factors, enhancing healthcare accessibility, and promoting self-management of diabetes through clinical-community collaborations is of paramount importance in the endeavor to alleviate the impact of diabetes and diminish disparities in Kanawha County.

The development of diabetes is influenced by several factors, including a combination of genetic susceptibility, individual decisions about lifestyle, and socioeconomic factors. Wu et al. (2014) conducted a systematic review to investigate the risk factors, treatment advances, and preventative strategies associated with type 2 diabetes. Agarwal et al. (2022) argue that the provision of targeted interventions and telemedicine offerings is crucial in effectively tackling diabetes management among vulnerable populations at a heightened risk. The research done by Dall et al. (2019) provides evidence of the substantial economic ramifications associated with diabetes. The researchers conducted a comprehensive analysis to determine the economic consequences associated with diagnosed and undiagnosed diabetes, gestational diabetes mellitus, and prediabetes. Diabetes encompasses a wide range of complications, such as cardiovascular diseases, diabetic neuropathy, diabetic retinopathy, renal failure, and lower-extremity amputations (American Diabetes Association, 2021).

Diabetes mellitus is a complex metabolic disorder characterized by chronically elevated levels of blood glucose resulting from deficiencies in insulin synthesis, insulin action, or both (American Diabetes Association, 2022). Understanding the fundamental risk factors and the possibility of complications affecting several bodily systems might offer significant knowledge for the advancement of preventive and treatment strategies aimed at reducing the overall consequences of diabetes. Numerous noteworthy risk factors associated with the onset of type 2 diabetes have been found in the existing body of literature. Several factors have been identified as potential contributors to the development of the condition, including excessive weight or obesity, lack of physical exercise, a familial predisposition, advancing age, and membership in specific racial or ethnic populations (Wu et al., 2014).

Kirichenko et al., (2022) have reported that there exists a correlation between obesity and the emergence of insulin resistance, a condition that is regulated by inflammatory mediators and adipokines. In contrast, it has been shown that engaging in physical activity might enhance insulin sensitivity. The role of genetic predisposition is also a significant contributing element, as indicated by a 2-6 times greater risk linked with a familial background of the illness (Wu et al., 2014). The frequency of the phenomena exhibits a notable rise beyond the age of forty-five, while persons belonging to African American, Hispanic, and other minority groups face heightened probability regardless of other risk factors (Williams & Mohammed, 2009).

The issue at hand is influenced by several significant factors, including limited accessibility to healthcare, transportation constraints, challenges associated with health literacy, shortages of healthcare providers, and the excessive cost of drugs and supplies, particularly in rural areas (Mudd-Martin et al., 2021). Fonseca et al., (2022) suggest that the deployment of specific interventions, such as telemedicine, community health workers, health literacy training, and culturally relevant education, has potential for alleviating the impact of diabetes.

Tabák et al., (2012) have discovered many medical problems, such as prediabetes, gestational diabetes, polycystic ovarian syndrome (PCOS), and non-alcoholic fatty liver disease, which have emerged as noteworthy predictors for the onset of type 2 diabetes. Reutrakul et al. (2022) and Malik et al., (2019) have presented substantial evidence supporting the notion that maintaining a sleep duration of less than 6 hours per night and regularly consuming sugar-sweetened beverages are significant modifiable factors that significantly increase the likelihood of developing diabetes in the future. Dicken et al., (2021) have identified additional contributing variables to the problem, including the usage of cigarettes and diets characterized by low fiber content and high intake of processed meat. Type 1 diabetes is distinguished by the autoimmune destruction of pancreatic beta cells, resulting in a deficiency in insulin synthesis. The origin of the illness has been associated with genetic predisposition and potential environmental triggers, such as viral infections. Nevertheless, the precise etiology of the illness remains incompletely understood (Atkinson et al., 2014). The degree of danger attains its peak throughout the developmental phases of childhood and adolescence.

Emergent scenarios in the management of diabetes encompass acute complications that provide a substantial danger to an individual’s life. Diabetic ketoacidosis (DKA) is a pathological state characterized by insulin deficiency and severe hyperglycemia. The manifestation of the condition can occur in patients diagnosed with type 1 diabetes or those with poorly controlled type 2 diabetes (Kitabchi et al., 2009). The prompt care of diabetic ketoacidosis requires the delivery of fluids, insulin, and correction of electrolyte imbalances to minimize the potential for negative health consequences, such as mortality. The manifestation of hyperosmolar hyperglycemic condition in individuals with type 2 diabetes is distinguished by the presence of significant hyperglycemia, dehydration, and cognitive dysfunction. According to Kitabchi et al., (2009), the failure to rapidly stabilize this state might potentially lead to the occurrence of coma or mortality. The use of diligent surveillance and efficient sick leave management systems might function as an initiative-taking approach to mitigate the emergence of acute issues.

If diabetes is not well controlled over a prolonged duration, it can result in severe and often fatal long-term complications. Microvascular disease is a medical condition characterized by the selective involvement of small blood vessels, leading to the dysfunction of several physiological processes, including those associated with the kidneys, nerves, and eyes. Based on the findings of Alicic et al., (2017), diabetes emerges as the predominant determinant leading to renal failure in the adult population, hence causing impairment to both the glomerular and tubular constituents. Diabetic neuropathy occurs due to neuronal ischemia and metabolic insults, leading to the dysfunction of protective sensory mechanisms. This can then lead to the development of foot ulcers and necessitate amputation (Feldman et al., 2019). Yau et al. (2012) have shown that vision impairment is a common consequence of diabetic retinopathy, a condition marked by retinal microvascular damage.

Cardiovascular disease represents a substantial macrovascular outcome. According to a study conducted by the American Heart Association in 2015, it was shown that those who have been diagnosed with diabetes had notably higher incidence of atherosclerotic cardiovascular disease. These encompass several medical problems, namely coronary artery disease, peripheral arterial disease, and stroke. In a study conducted by Mastrocola et al., (2020), it was shown that the occurrence of elevated levels of blood glucose, referred to as hyperglycemia, might potentially accelerate the progression of atherosclerosis by triggering oxidative stress, inflammation, and compromising endothelial function. According to Arnold et al., (2018), individuals who have been diagnosed with diabetes mellitus exhibit higher mortality rates following myocardial infarction, along with heightened rates of hospitalization attributed to heart failure. The coexistence of hypertension and dyslipidemia often amplifies the risk of vascular complications.

The process of identifying and elucidating risk factors for diabetes, both those that can be modified and those that cannot, enables a targeted approach to preventive interventions. In the interim, gaining a comprehensive understanding of both immediate and long-term challenges, encompassing both microvascular and macrovascular concerns, facilitates the improvement of glycemic regulation, initiative-taking monitoring for disease detection, and mitigation of associated negative health consequences. The facilitation of evidence-based diabetic therapy is enhanced by the dissemination of knowledge among patients and healthcare professionals across several domains.

Relationship Between Health Literacy and Access to Health Care

The significance of health knowledge and healthcare accessibility cannot be overstated in the management of diabetes. According to Greenwood et al. (2017), individuals with little health literacy may encounter difficulties comprehending intricate diabetes care protocols, leading to suboptimal adherence to treatment. Therefore, it is crucial for healthcare practitioners to prioritize excellent communication and health education to provide patients with the necessary information and abilities for self-management of diabetes (Rothman & DeWalt, 2019). Nevertheless, it is important to acknowledge the presence of discrepancies in healthcare access, particularly within underprivileged communities, as highlighted in the study conducted by Walker et al. (2016). According to a comprehensive study conducted by Stellefson et al. (2013), the chronic care model has demonstrated potential in improving diabetes treatment within primary care settings.

Two crucial elements that connect with the prevention and management of diabetes are health literacy and healthcare accessibility. Health literacy encompasses an individual's capacity to acquire, assimilate, and comprehend health-related information with the aim of making well-informed choices (Centers for Disease Control and Prevention, 2022). Access to healthcare services is a multidimensional concept that involves the availability, cost, and acceptability of healthcare services that meet high-quality standards. An analysis of the extent and consequences of inadequate health literacy and obstacles to healthcare access among those with diabetes or those at risk of developing it uncovers significant prospects for advancing health equality via focused interventions. According to the Centers for Disease Control and Prevention (2024), empirical evidence suggests that a sizable proportion of adults in the United States have insufficient health literacy. Notably, those with greater levels of education tend to exhibit a reduced incidence of this issue. According to Geboers et al. (2016), individuals with diabetes often exhibit insufficient health literacy when it comes to comprehending blood glucose data, dietary labels, prescription instructions, and preventative care guidelines. These factors are associated with unsatisfactory self-care, inadequate glucose management, and increased incidence of complications.

According to a study conducted by Schillinger et al., (2002), there is a significant association between inadequate health literacy and increased mortality risk of 15% over a 5-year period among Medicare enrollees with diabetes. Additionally, those with limited health literacy were shown to have a 30% higher risk of heart failure, even after accounting for any confounding factors. The Hispanic and African American communities experience a disproportionately high burden of diabetes, which can be attributed, at least in part, to cultural and language obstacles that hinder their health literacy (Walker et al., 2022). Promising approaches for tackling poor literacy include the use of strategies such as plain language education, teach-back methodologies, diagram-based prescription instructions, and community health worker models (Barksdale et al., 2023). Insufficient access to healthcare services also contributes to the worsening of diabetes outcomes, particularly among rural and minority communities that encounter significant structural obstacles. The presence of deficiencies in primary care, specialists, and approved diabetes education programs is a hindrance to the promotion of preventive and effective management of diseases in rural regions (Dugani et al., 2021). The combination of significant distances to healthcare facilities and constraints in transportation options are factors that contribute to the lack of adherence to medical appointments (Syed et al., 2013).

The COVID-19 pandemic led to the rise of telemedicine, which resulted in enhanced accessibility for some patient populations residing in remote areas and with low-income backgrounds (Weiner-Lastinger et al., 2022). Nevertheless, the issue of telehealth equality continues to be hindered by challenges related to the price of broadband services and the level of digital literacy among individuals. The failure to expand Medicaid in certain states results in a lack of health coverage for low-income persons, therefore depriving them of the necessary healthcare services for managing diabetes (Lee et al., 2020). According to Walker et al. (2022), individuals belonging to racial and ethnic minority groups who have diabetes often have elevated expenses related to medicine and supplies, which subsequently contribute to nonadherence. Furthermore, these individuals face cultural and language barriers that impede their access to high-quality healthcare. According to Shah et al. (2022), the use of tailored interventions such as patient navigators, community health workers, and mobile clinics in marginalized communities effectively addresses access hurdles by providing culturally relevant assistance.

The interaction between access to healthcare and health literacy has a significant impact on health outcomes. According to Geboers et al. (2016), individuals with low literacy levels may experience challenges in actively participating in healthcare services, as they may feel embarrassed or encounter difficulties in managing many aspects such as scheduling appointments, understanding insurance policies, adhering to drug regimens, and engaging in self-care practices. Individuals who do not have access to consistent primary healthcare services are presented with limited possibilities to develop self-management skills. According to Kim and Lee (2022), patients with little health literacy can enhance their understanding of diabetes using several strategies, such as interactive skill-building seminars, counseling provided by multidisciplinary teams, and follow-up telephone outreach. By integrating these methodologies alongside enhanced healthcare navigation, coverage, and mobility, the potential for optimizing access and education may be realized.

Numerous challenges pertaining to health literacy and healthcare accessibility serve as fundamental factors contributing to the existence of various inequalities in diabetes management. Although there are complex systemic issues at play, it is important to acknowledge that there are evidence-based strategies available to improve equity. The implementation of policy reforms aimed at increasing healthcare accessibility, in conjunction with the adoption of new educational approaches that are sensitive to literacy levels and suited to the specific requirements of varied communities, has potential for mitigating the burden of diabetes. To effectively address the ongoing disparities in diabetes outcomes, it is crucial to develop a comprehensive approach that tackles both the obstacles to accessing care and the challenges related to health literacy.

Ongoing research should persist in further explaining the most effective strategies for health literacy treatments and programs aimed at expanding access in a variety of real-world contexts. The involvement of transdisciplinary teams of patients, clinicians, health systems, public health specialists, and community leaders will play a crucial role in facilitating the implementation of evidence-based actions. Through the implementation of coordinated initiatives, strategic policies, and community-oriented interventions, it is possible to facilitate the provision of comprehensible health-related knowledge and high-quality healthcare provisions to those affected by or susceptible to diabetes. This approach aims to enhance preventive measures and empower individuals to effectively manage their condition.

There remains a requirement for comprehensive policy, systems, and environmental modifications to effectively tackle the socioeconomic variables that underlie the diabetes pandemic in West Virginia and Kanawha County. To develop effective solutions for addressing diabetes disparities, it is crucial to incorporate ongoing monitoring and community-engaged research. These approaches provide valuable insights that may influence evidence-based strategies specifically targeted to the people and environments that experience the largest inequalities in diabetes prevalence and outcomes. Diabetes is a prominent public health concern within the United States, namely in the regions of West Virginia and Kanawha County. A comprehensive strategy, encompassing preventative measures, timely detection, and thorough care, is crucial in addressing the high incidence of diabetes. To mitigate the effects of diabetes and attain improved health outcomes for both people and communities, it is imperative to prioritize the resolution of socioeconomic determinants of health, the promotion of health literacy, and the enhancement of healthcare service accessibility.

This brief exposition aims to provide a concise overview of the escalating prevalence of diabetes and the accompanying health disparities as one moves from the national to state to county levels. These disparities are primarily influenced by socioeconomic disadvantages, barriers to healthcare access, and cultural and lifestyle factors, necessitating comprehensive and multifaceted improvement initiatives.

Health Literacy

Effective diabetes prevention and care in places like rural West Virginia are severely hampered by low health literacy, which is defined as the capacity to obtain, comprehend, and apply health information. According to Aljassim and Ostini (2020), residents of rural regions typically have worse health literacy than their urban counterparts, which results in less-than-ideal health outcomes. This literacy-outcomes link is particularly evident in the case of diabetes, as rural persons with low health literacy are less knowledgeable about the disease, have lower self-care, have worse glycemic control, and are more likely to develop complications (Hu et al., 2019; Marciano et al., 2019). Patients in rural areas face several difficulties because of low literacy levels and the difficult diabetic self-care regimens they must follow. Due to a lack of understanding of treatment plans, people with poor literacy report having difficulty adhering to drug regimens, making suggested lifestyle changes, and managing blood glucose (Dahal & Hosseinzadeh, 2019; RobatSarpooshi et al., 2020). Diabetes treatment alternatives and risk perception misunderstandings are widespread (Gautam et al., 2021).

Low health literacy has a disproportionately negative effect on diabetes outcomes in rural areas because of cultural and educational inequalities. According to Abdullah et al. (2019), rural inhabitants have lower average educational attainment, which is highly correlated with reading abilities. Rural minority groups may experience difficulties with health knowledge and self-efficacy due to cultural obstacles including different colloquial languages spoken by practitioners (Abu-Gharbieh et al., 2022). Interventions in education that are specifically tailored to a student's needs show promise. Diabetes explanations in simple terms that use teach-back techniques to ensure understanding are successful (Huang et al., 2020). But without additionally addressing outside issues that affect self-management, such as the price of medications, the availability of wholesome diets, social support, and transportation difficulties in rural areas, education alone is insufficient (Osborne et al., 2022).

Beyond the treatment of specific illnesses, health literacy has broad-ranging effects. According to research by Yuen & Knight (2016), low literacy is associated with lower use of preventative treatments, insufficient chronic illness management across diseases, and greater healthcare expenses in rural locations. Due to their greater beliefs regarding transmission and prevention, higher risk behaviors, and worse outcomes, rural individuals with low levels of literacy were particularly affected by the COVID-19 pandemic (Paakkari & Okan, 2020). The use of graphics, the simplification of print documents, understanding tests during consultations, the provision of education by multidisciplinary teams, and assistance with paperwork and prescription instructions are just a few system-level approaches to addressing health literacy (Fraser & Roderick, 2016). There is a severe dearth of and urgent need for workforce education for rural healthcare practitioners on the best ways to clearly communicate with those who have little literacy.

Building health literacy at the individual, organizational, societal, and policy levels is crucial in rural Appalachian regions like West Virginia. To create, putting into practice, and assessing culturally relevant educational models, collaborations between healthcare institutions, public health organizations, community groups, and patients/families are essential. Medicaid programs run by the states ought to pay for literacy interventions like teach-back. Although a lack of health literacy is sometimes seen as a personal failing, experts contend that it may be a sign that the healthcare system is failing to give everyone access to clear, intelligible health information and services (Shahid et al., 2022). It may be possible to lessen stigma and inequities associated to literacy by taking universal measures, avoiding making assumptions about literacy, and actively supporting all patients.

Although there are still issues, evidence-based programs centered on health literacy provide answers for lowering diabetes inequalities and enhancing population health in rural West Virginia. Future study should evaluate the effects of literacy interventions tailored to rural communities utilizing community-based participatory methods. Collaborations with regional players can help guarantee cultural relevance. With focused efforts, literacy obstacles may be removed, and rural people can be empowered for improved diabetes self-management and prevention.

Health Care Access

The effective management and prevention of diabetes are contingent upon ensuring fair and unbiased availability of healthcare services that meet ambitious standards. However, persistent disparities in access to such services continue to exist.

Based on a study conducted in 2020 by St Sauver et al., it was found that individuals residing in rural areas had comparatively lower rates of primary care visits, higher rates of emergency department utilization, and a greater prevalence of diabetes complications when compared to their urban counterparts. Walker et al. (2020) found that minority groups encounter more challenges in accessing specialized care from endocrinologists, nutritionists, and diabetes educators, resulting in worse outcomes.

The COVID-19 pandemic has further exacerbated existing healthcare access gaps, particularly in relation to telemedicine, with white and affluent areas benefiting (Agarwal et al., 2021). The utilization of mobile clinics has been observed in areas with limited access to healthcare services (Zakerabasali et al., 2021). Additionally, the integration of pharmacy-based services has been implemented to enhance healthcare provision (CDC, 2024). To cater to the specific needs of diverse populations, community health workers have been employed to provide culturally appropriate education (Taquette & da Matta, 2022). Furthermore, efforts have been made to tackle social determinants of health, such as transportation barriers, inadequate nutrition, and the excessive costs of medications (Taquette & da Matta, 2022). The reduction of diabetes inequality continues to rely on multi-sector activities aimed at improving access to healthcare.

The presence of geographical limitations and a scarcity of healthcare providers in rural regions provide challenges in accessing specialized care from endocrinologists, resulting in elevated rates of health issues (Gaffney et al., 2022; Wulandari et al., 2022). Research findings indicate that individuals from racial and ethnic minority groups exhibit a higher use rate of emergency departments compared to their white counterparts while seeking care for diseases that may be managed on an outpatient basis (Eberth et al., 2022). This finding suggests that individuals from minority racial and ethnic backgrounds also encounter challenges in accessing resources or opportunities. The COVID-19 pandemic exacerbated existing access inequities in telehealth, primarily favoring urban and affluent populations (Henning-Smith, 2020). Frandsen et al. (2022) and Oluyede et al. (2022) have identified several strategies employed to promote equity, including the utilization of community health workers for culturally sensitive education, the integration of pharmacy-based services, the establishment of mobile clinics in economically disadvantaged areas, the improvement of mobility, and the consideration of social determinants. According to Greene et al. (2016), it is necessary to implement modifications in payment systems to incentivize care coordination and the attainment of goals related to reducing disparities. To get equitable access to diabetes preventive and care services of significant value, it is imperative to adopt multi-sectoral methods.

Residents in rural locations, such as West Virginia, have significant limitations in accessing healthcare services of a high standard, which are crucial for the prevention and management of diabetes. In contrast to their urban counterparts, rural areas exhibit deficiencies in screening services, encounter treatment gaps, and have inferior health outcomes due to a scarcity of primary care physicians and specialists, including endocrinologists (Gaskin et al., 2014). Upon considering demographic factors, insurance coverage, and several other variables, the findings of studies investigating geographic disparities revealed a positive correlation between the level of rurality and the prevalence of diabetes. Specifically, those residing in rural areas exhibited a 32% elevated risk of developing diabetes compared to their urban counterparts. According to Oluyede et al. (2022), rural patients often encounter challenges such as lengthy travel durations to clinics and transportation-related concerns. These obstacles contribute to the tendency of patients to miss scheduled appointments, get care later than intended, and deviate from recommended drug regimens.

Consequently, these circumstances further compound the existing difficulties faced by rural patients. Watts et al., 2016 conducted a study examining the relationship between travel times to primary care and glycemic control in a sample of veterans diagnosed with diabetes. The findings of this research revealed a noteworthy link, indicating that increased trip durations to primary care were associated with poorer glycemic control. The suboptimal outcomes can be attributed to limitations in access, inadequate availability of public transportation, and excessive costs associated with travel. The dissemination of telehealth during the COVID-19 pandemic led to enhanced healthcare accessibility for certain rural populations. However, it is important to acknowledge that disparities in broadband and technology resources persist, particularly in low-income and minority communities (Ford et al., 2020; Henning-Smith, 2020).

Based on a survey conducted in 2020, it was found that a quarter of individuals residing in Appalachia do not have access to home internet. This lack of connectivity has a negative impact on the effectiveness and accessibility of telehealth services (RUPRI Center for Rural Health Policy Analysis, 2020). The variance of state legislation regarding telehealth parity and compensation further affects access. Several initiatives have been identified in the literature to enhance healthcare accessibility in rural regions.

These include the utilization of community health workers, integration of pharmacy-based services, implementation of mobile clinics, establishment of patient navigation programs, and provision of transportation assistance (Yu et al., 2017). Another important aspect to consider is the implementation of telehealth policies that promote fairness. The use of glucose meters and blood pressure cuffs equipped with digital data transfer capabilities facilitates remote monitoring, hence reducing the burden on patients. Nevertheless, in rural areas such as West Virginia, the resolution of enduring obstacles to access, which exacerbate health disparities related to diabetes and other health conditions, necessitates the implementation of a comprehensive and integrated approach.

Disparities in the occurrence of diabetes, rates of complications, and overall outcomes have been documented, with rural minority communities experiencing heightened disparities in these areas. U.S. Department of Health and Human Services, Office of Minority Health, (2023) reported that there is a higher prevalence of diabetes-related visual impairment among rural African Americans compared to rural Whites. This disparity may be attributed to limited availability of ophthalmologists and other specialized healthcare services in rural areas. The prevalence of diabetes is disproportionately high among American Indians and Alaska Natives residing in rural settings, which can be attributed to inadequate primary care and cultural barriers (Hutchinson & Shin, 2014). Based on a comprehensive examination of sixty-six scholarly articles (Syed et al., 2013), it has been shown that minority populations face a greater distance to avail themselves of healthcare services compared to their rural white counterparts. Vela et al. (2022) posit that the care engagement of rural minority patients is adversely affected by discrimination and unconscious provider bias. Efforts to address the inequities in rural healthcare access necessitate the implementation of culturally competent care models, the establishment of trust-building community partnerships, the inclusion of diverse representation on care teams, and the provision of ongoing bias education for clinicians.

Rural populations exhibit suboptimal performance across several crucial health indices, including the prevalence of diabetes, mostly attributable to the dearth of primary and specialized healthcare professionals, as well as limited accessibility to healthcare services owing to geographical remoteness. Telehealth and mobile health technologies provide the capacity to improve access if they are implemented with careful attention to internet accessibility and digital literacy prerequisites. One potential approach to mitigating rural health disparities involves implementing comprehensive strategies that encompass several components such as financial incentives, tailored programming, infrastructure and personnel enhancement, improved transportation accessibility, and efforts to address socioeconomic factors influencing health outcomes. To promote equitable access to healthcare, it is imperative to provide greater attention to the specific needs of minority communities residing in rural regions.

Health Impact

The high incidence of diabetes in Kanawha County, West Virginia, is a substantial public health concern. Based on statistics provided by the Centers for Disease Control and Prevention (2020), the prevalence of diagnosed diabetes among adults in the county is around 16%, above the national average of 10.5%. Based on data provided by the West Virginia Department of Health and Human Resources (2021), diabetes is identified as the fifth leading cause of death in the county, with an estimated mortality rate of around thirty-five deaths per 100,000 inhabitants attributed to diabetes and its related comorbidities. Tackett et al. (2019) found that the prevalence of hospitalization due to chronic diabetic complications, including cardiovascular disease, stroke, and lower limb amputations, is significantly elevated when compared to national rates and similar counties within the state of West Virginia. Based on the findings of the American Diabetes Association (2018), the annual healthcare costs directly associated with diabetes management in Kanawha County exceed $200 million. The county's population is burdened by substantial disease rates, leading to a decline in both their quality of life and total lifespan.

The potential to alleviate the negative health consequences in Kanawha County is promising via the adoption of evidence-based interventions tailored to the distinct needs of marginalized populations at substantial risk for diabetes and its related complications. The incidence of diabetes in Kanawha County, West Virginia has become a significant public health issue, imposing a considerable impact on the local community. Diabetes, being a highly prevalent chronic condition in the United States, poses several challenges for individuals, families, and healthcare systems. Kanawha County has also been affected by this public health issue, therefore necessitating a comprehensive understanding of the health implications of diabetes in the area to develop suitable intervention strategies. According to the latest data from the Centers for Disease Control and Prevention (CDC), it is apparent that West Virginia demonstrates a significantly elevated incidence of diabetes relative to other regions in the United States. According to the data provided by the Centers for Disease Control and Prevention (CDC, 2023), it can be observed that around 16% of the population residing in the state has been officially diagnosed with this enduring medical condition. Due to its status as the most densely inhabited county in the state, Kanawha County is anticipated to demonstrate this concerning trend.

Diabetes possesses the capacity to engender a plethora of complications that have an adverse influence on both the individual’s overall well-being and their overall quality of life. Common health consequences include cardiovascular diseases, renal disorders, neuropathy, vision impairment, and an increased vulnerability to amputations. The ramifications of diabetes extend beyond the domain of physical health, as it can exert a substantial impact on mental health and general well-being. Individuals who have received a diagnosis of diabetes may experience emotional distress, heightened levels of worry, and symptoms of depression because of the daily obligations that come with managing the condition. Moreover, diabetes presents a significant economic burden on both individuals affected by the condition and the healthcare system. The economic ramifications associated with the management of diabetes, encompassing the costs associated with medication prescriptions, routine physician consultations, and hospital admissions, can be substantial, exerting an influence on both people and their respective households. In addition, the healthcare system in Kanawha County is currently facing an increased demand for services related to diabetes, which may result in resource limitations and reduced availability of care for other health issues.

To effectively address the health implications of diabetes in Kanawha County, it is crucial to embrace a comprehensive strategy. The comprehensive approach should incorporate community-level interventions designed to promote healthy lifestyle choices, such as regular participation in physical activity, adherence to a balanced diet, and the implementation of effective weight management measures. Enhancing the accessibility of diabetes education, preventive interventions, and early detection strategies holds promise in empowering folks to proficiently manage the ailment and alleviate its associated ramifications. The formation of robust collaborations between healthcare providers, community organizations, and policymakers is crucial in facilitating the successful integration of evidence-based interventions and fostering a supportive milieu for individuals diagnosed with diabetes. Kanawha County might potentially lessen the impact of diabetes and improve the overall health and well-being of its community by placing emphasis on preventive efforts, early detection methods, and comprehensive healthcare services.

The impact of diabetes on the overall well-being of persons living in Kanawha County, West Virginia is significant. The increased prevalence of diabetes and its associated repercussions provide substantial challenges for individuals, families, and the healthcare system. However, by placing emphasis on prevention, early intervention, and community involvement, Kanawha County has the capacity to make significant advancements in improving diabetes treatment and reducing the adverse effects it has on the population.

Digital Tools and Technology

Diabetes mellitus is a highly widespread chronic illness that needs continuous treatment and care. The advent of digital tools and technology in recent years has brought about a significant transformation in the field of diabetes treatment, providing novel solutions to aid patients, healthcare professionals, and researchers. The objective of this study is to present a thorough examination of the utilization and implementation of digital tools and technology in the treatment of diabetes within the United States, specifically focusing on the regions of West Virginia and Kanawha County. This study aimed to provide insights into the potential of digital health in enhancing diabetes outcomes by an examination of the advantages, difficulties, and expert suggestions, as well as an analysis of several digital treatments.

The field of digital health technology has witnessed noteworthy progress, presenting novel avenues for bolstering efforts in diabetes prevention, care, and research. According to Chomutare et al. (2011), the current availability of mobile health applications allows individuals to engage in self-monitoring of many health-related factors such as blood glucose levels, dietary habits, physical activity, and medication adherence. These applications also provide the exchange of real-time data and the provision of feedback, therefore enabling individuals to actively participate in their healthcare management outside of scheduled sessions. According to Bonoto et al. (2017), meta-analyses have demonstrated that the use of apps results in a slight reduction in HbA1c levels. Furthermore, the integration of linked glucose monitoring with these applications has been found to provide further advantages. Nevertheless, it is worth noting that a substantial number of already accessible applications lack material that is supported by empirical research, hence emphasizing the necessity for increased regulatory supervision (Chomutare et al., 2011). Text messaging and wearable technologies both enable the provision of remote self-management help. The findings of systematic reviews indicate that text messaging treatments have a considerable positive impact on HbA1c levels and diabetes information retention. This effect is more pronounced when the interventions are bidirectional and individualized, as demonstrated by Nkhoma et al. (2021) and Saffari et al. (2014). According to Rodriguez-Leon et al. (2021), consumer wearables have the capability to monitor and record several factors related to care, such as activity levels, sleep patterns, and heart rate.

Advantages and Obstacles of Digital Diabetes Management

The use of digital applications and technological advancements in the management of diabetes offers a multitude of advantages. According to Fleming et al. (2020), the utilization of this technology allows for the continuous monitoring of glucose levels, physical activity, and dietary habits, hence facilitating the provision of individualized care based on data-driven insights. The utilization of these tools enhances the exchange of information between patients and healthcare practitioners, hence fostering the practice of remote consultations and telemedicine (Guzman et al., 2023). Moreover, Klonoff (2019) asserts that they provide behavioral change strategies aimed at promoting compliance with treatment regimens and fostering the adoption of healthy lifestyles. Nevertheless, the implementation of digital solutions presents some obstacles, including concerns over data security, the level of patient participation, and the necessity for comprehensive training of healthcare personnel and patients (Fagherazzi & Ravaud, 2019).

Web-based educational initiatives provide quick accessibility to information on diabetes. According to Pal et al. (2013), reviews suggest that computer-assisted learning leads to modest yet significant decreases in A1c levels, which have therapeutic relevance. According to Agarwal et al. (2022), telemedicine platforms provide the provision of virtual consultations, as well as remote monitoring and educational services, to address geographical limitations and enhance the availability of specialized healthcare. According to McBain et al. (2021), preliminary findings suggest that telemedicine has a positive impact on glycemic control in disadvantaged populations. However, more investigation through comparative effectiveness research is necessary to gain a more comprehensive understanding of its efficacy. The integration of behavioral change strategies inside technological tools enhances both engagement and effectiveness, as demonstrated by Van Rhoon et al. (2020). According to Klonoff (2019), the utilization of motivational interviewing and goal setting in digital coaching facilitates the application of information towards the modification of behavior. According to Van Rhoon et al. (2020), the utilization of social support networks and gamification strategies has been found to contribute to more robust outcomes.

Digital interventions have demonstrated encouraging outcomes in the prevention and management of diabetes. According to Stephenson et al. (2017), treatments that are driven by technology have demonstrated efficacy in facilitating lifestyle adjustments, diminishing sedentary behavior, and fostering engagement in physical activity.

According to Wu et al. (2017), mobile applications have played a significant role in facilitating self-management education, glycemic control, and adherence to treatment regimens. Furthermore, the COVID-19 pandemic has expedited the use of telemedicine in the context of diabetes management, so guaranteeing uninterrupted patient assistance in the face of difficult circumstances (Negreiros et al., 2021).

Technological advancements played a crucial role in mitigating the disruptions caused by the COVID-19 epidemic on in-person healthcare services. The utilization of remote monitoring technology allowed for the modification of insulin levels, while telemedicine platforms provided consultations with specialists (Parise et al., 2021; Guzman et al., 2023). Nevertheless, the fast adoption of innovative technologies was sometimes hindered by inadequate training and infrastructure (Negreiros et al., 2021). Further investigation is required about the long-term integration following the conclusion of the epidemic. Although digital technologies hold promise, it is essential to acknowledge and address the concerns of both patients and healthcare providers when deploying such solutions. According to Phillip et al. (2021), healthcare professionals identify several obstacles to the use of telehealth, including issues related to funding, workflows, liability, and the absence of associated advantages. According to Mirkovic et al. (2016), there is a need among patients for increased customization and enhanced human connection in healthcare settings. The involvement of users in the co-design process of tools is crucial in ensuring their acceptance (Castensøe-Seidenfaden et al., 2017).

To optimize the extent and effectiveness of diabetic technologies, it is important to consider the many obstacles that hinder accessibility. According to Quinn et al. (2018), it is imperative that solutions be designed to be both accessible and captivating for those with minimal technology skill or health literacy. According to Rhee et al. (2020), the inclusion of language translation and cultural broker characteristics can contribute to the promotion of equity among minority communities. The adoption of technology is hindered by several factors such as high device costs, unstable internet connectivity, and limited insurance coverage. These challenges underscore the necessity for inexpensive and adaptable technologies (McBain et al., 2021). According to Braune et al. (2021), it is important for technology to serve as a complement rather than a means of isolation for users from care teams and community supports, despite their growing capabilities. The authors (Rhee et al., 2020) argue that it is important to address the legal and ethical concerns around data privacy and security duties.

The utilization of digital therapies for diabetes has substantial effects on a global and regional scale. Digital health technologies have been acknowledged by the International diabetic Federation (IDF) and several diabetic groups globally for their potential, leading to suggestions for their integration into regular healthcare practices (Phillip et al., 2021). Telemedicine has been essential in improving access to healthcare services for marginalized communities, particularly in the context of distant diabetes treatment (Agarwal et al., 2022). Telemedicine has been effectively utilized in Latin American healthcare facilities for the management of patients undergoing continuous subcutaneous insulin infusion, as demonstrated by the study conducted by Guzman et al. in 2023.

The utilization of digital technology in West Virginia and Kanawha County has been employed to enhance the provision of diabetes treatment and preventative services. Parise et al. (2021) conducted pilot research in West Virginia to assess the effectiveness of teleassistance in managing type 1 diabetes patients amidst the COVID-19 epidemic. The study yielded favorable results, indicating beneficial outcomes. Furthermore, the use of service design concepts has led to the improvement of digital and remote diabetes treatment, resulting in the restructuring of workflows to optimize patient management (Braune et al., 2021). The utilization of digital health technology was of utmost importance in the region for the management of diabetic treatment, particularly in the aftermath of the pandemic (McBain et al., 2021).

In the future, there will be more advancements in decentralized and individualized diabetes treatment through the progression of online, mobile, wearable, and telemedicine technologies (Fleming et al., 2020). According to Fagherazzi and Ravaud (2019), the inclusion of environmental factors such as meals, activity levels, stress levels, and sleep patterns has the potential to provide more effective and accurate therapies. According to Stephenson et al. (2017), the use of machine learning techniques to population data has the potential to reveal novel insights for prediction and diagnosis. Nevertheless, the lack of data in relation to the development of technology presents significant obstacles. According to Phillip et al. (2021), several innovations that are sometimes hailed as disruptive in nature have demonstrated limited therapeutic benefits compared to conventional therapy. Comprehensive assessment and study on implementation in real-world settings are essential to effectively translate the potential of digital health into tangible and significant outcomes (Agarwal et al., 2022).

Diabetes technologies have significant potential to mitigate geographical and accessibility limitations, facilitate simple self-monitoring and teaching, and unveil innovative strategies for optimizing care. Nevertheless, it is crucial for technology to adequately enhance human connections and clinical judgment in diabetes treatment without completely replacing them. This may be achieved through the implementation of equitable adoption, patient-centered design, evidence gathering, and ethical deliberation (Braune et al., 2021, Mirkovic et al., 2016). The meticulous incorporation of rapid breakthroughs in digital health into clinical practice is of paramount significance to optimize the benefits for those with diabetes or those predisposed to the illness. By employing technology strategically and emphasizing its capacity to enhance rather than isolate individuals from community and care team resources, innovative technologies possess the capability to empower patients, clinicians, and researchers in the domains of diabetes prevention and self-management (Guzman et al., 2023; Rhee et al., 2020). The attainment of health equity through the efficient usage of technology requires interdisciplinary collaboration and continuous evaluation of outcomes.

The advent of digital technology has brought about a substantial transformation in the field of diabetes management and treatment, playing a crucial role in this arena. The potential benefits of these therapies have been documented in several studies and have demonstrated potential in enhancing patient engagement, promoting self-care, and supporting healthcare professionals. However, it is crucial to recognize and address the challenges related to data security, patient engagement, and healthcare workforce training to enhance their effectiveness. The integration of digital interventions in diabetes management in the United States, particularly in West Virginia and Kanawha County, holds promise for yielding favorable outcomes, including enhanced health outcomes, reduced healthcare disparities, and an overall improvement in the quality of life for individuals living with diabetes.

The careful integration of swift advancements in digital health into clinical practice is of utmost importance to maximize the advantages for individuals with diabetes or those at risk of developing the condition. Through the strategic utilization of technology, with a focus on its ability to augment rather than separate individuals from community and care team resources, novel technologies have the potential to effectively empower patients, clinicians, and researchers in the realms of diabetes prevention and self-management (Guzman et al., 2023; Rhee et al., 2020). Achieving health equity through the effective utilization of technology necessitates interdisciplinary collaboration and ongoing evaluation of outcomes. Digital technologies and technologies have significantly transformed the landscape of diabetes management and care, serving as crucial factors in this domain. The potential advantages of these treatments have been observed in several research and have shown promise in improving patient involvement, facilitating self-management, and aiding healthcare personnel. Nevertheless, it is important to acknowledge and tackle the obstacles pertaining to data security, patient participation, and the training of healthcare personnel to optimize their efficacy. The incorporation of digital interventions within the realm of diabetes management in the United States, specifically in the regions of West Virginia and Kanawha County, has the potential to provide positive results such as increased health outcomes, diminished healthcare inequalities, and an improved overall quality of life for those diagnosed with diabetes.

Summary and Conclusions

The evaluated literature encompasses a wide range of research on diabetes, healthcare, and related topics, revealing several major themes. These include the need for culturally appropriate interventions, disparities in diabetes management and healthcare access (Cockerham et al., 2017, Randall et al., 2023, Misra et al., 2021), the potential of technology in diabetes management (Green et al., 2021; Dugani et al., 2021), and the influence of health literacy on diabetes self-care (Ong-Artborirak et al., 2023). Studies consistently highlight the disproportionate burden of diabetes on African Americans and the unique challenges faced by rural populations in managing chronic conditions. The importance of understanding the lived experiences of specific populations, such as African Americans (National Diabetes Education Program, 2019, WHO, 2021) and rural communities (Tessaro et al., 2005, Appalachian Region Commission, 2022), is also emphasized.

What is known in the discipline includes the higher prevalence of diabetes among African Americans compared to other racial groups, the impact of socioeconomic factors on diabetes outcomes, and the general effectiveness of diabetes self-management education. Research has also established the importance of health literacy in improving diabetes outcomes and the potential of technology to support self-management. However, significant gaps remain in our understanding, particularly regarding the lived experiences of African Americans with diabetes in rural Appalachia. The intersection of cultural factors, rural healthcare challenges, and technology adoption in this population is not well understood, and there is a lack of in-depth, qualitative data on how individuals in this community perceive and navigate their diabetes management within their unique cultural and geographical context.

This evaluation emphasizes the use of technology while addressing disparities for African Americans living with diabetes in rural West Virginia. Partnerships between healthcare institutions, government, community groups, and individuals with lived experience are crucial to create and maintain telehealth and mHealth technologies alongside care models like Community Health Workers tailored for rural populations (Ajuwon & Insel, 2022, Caldwell et al., 2017). Future community-based participatory research should focus on developing and accessing culturally sensitive interventions to improve technology adoption, healthcare access, and health literacy for rural African Americans with or at risk for diabetes (Creswell, 2017; Randall et al., 2023).

The present study aims to fill these gaps by providing rich, contextual insights into the lived experiences of African Americans managing diabetes in rural Appalachian West Virginia. By employing a phenomenological approach, this research will extend knowledge in the discipline by offering a nuanced understanding of how cultural, social, and environmental factors specific to rural Appalachia influence diabetes management among African Americans. It will explore the interplay between health literacy, technology use, and traditional cultural practices in diabetes self-management within this population, identify unique barriers and facilitators to effective diabetes care, and provide a foundation for developing more culturally tailored and contextually appropriate interventions for this underserved population.

Transitioning to Chapter 3, the gaps identified in the literature and the need for in-depth, contextual understanding of this population's experiences directly inform the choice of a qualitative, phenomenological methodology. The research questions, which seek to explore participants' perceptions, challenges, and strategies in managing diabetes, are best addressed through in-depth interviews and thematic analysis. The next chapter will detail the specific methods employed to capture and analyze these lived experiences, including participant selection, data collection procedures, and analytical approaches. This methodology will allow for a rich exploration of the themes identified in the literature review while remaining open to uncovering new insights unique to this population and setting.

Chapter 3: Research Method

The purpose of this qualitative phenomenological study was to explore and understand the lived experiences of African Americans with prediabetes and Type 2 diabetes in rural Appalachian West Virginia, focusing on their challenges, strategies, and perceptions in managing their condition. This research aimed to bridge the gap between clinical diabetes management guidelines and the real-world application of these practices within the unique cultural and geographical context of rural Appalachia. I explored how health literacy, technology utilization, and health care accessibility influence diabetes self-management among this population.

Chapter 3 details the methodology employed to address this research purpose and is organized into several major sections. It begins with the research design and rationale, explaining the choice of a qualitative phenomenological approach and its appropriateness for addressing the research questions. The role of the researcher section discusses my position as the researcher, potential biases, and ethical considerations. The methodology section covers participant selection logic, instrumentation, and procedures for recruitment, participation, and data collection. The data analysis plan details the approach to analyzing the collected data, including coding strategies and the use of qualitative data analysis software. Issues of Trustworthiness are discussed, including strategies for ensuring credibility, transferability, dependability, and confirmability of the study. Finally, the ethical procedures section addresses ethical considerations, including protection of participants' rights and confidentiality. By outlining these methodological details, Chapter 3 provides a clear description of how the study was conducted to achieve its purpose of understanding the lived experiences of African Americans managing diabetes in rural Appalachian West Virginia.

The rationale for the research strategy was laid out in detail in this chapter. I explain the major ideas and phenomena, as well as the methodology, of the research. In addition, the justification for choosing this methodological tradition is discussed at length. I describe my position as the researcher, potential sources of bias, and methods for overcoming such sources of bias using reflexivity and bracketing (see Moustakas, 1994). In this chapter, the methodology is covered in detail, including the choosing of the participants, where the research was conducted, how the samples were selected, and the way data collection took place. Every aspect of the study's patient recruiting process, from venues to researchers to recruitment strategies, is analyzed in detail. Ravitch and Carl (2020) provided an overview of interviewing methods, zeroing in on how to develop a semi structured interview guide. In this chapter, a closer look is taken at the methods used for data analysis, with an emphasis on phenomenological coding and the deployment of qualitative data analysis programs (see Creswell & Poth, 2018).

In this research, a closer look at techniques like member checking, detailed description, and auditing that researchers use to make their findings more trustworthy, generalizable, and confirmable (Korstjens & Moser, 2018). The validation processes to resolve any worries about reliability. Ethical considerations, such as obtaining informed consent, securing agreements for participant access, obtaining institutional authorization, recruiting procedures, data collection methods, data storage practices, and ensuring confidentiality, will has been reviewed as a last step in the research process (Sanjari et al., 2014). The recruiting flyer, interview rules, and consent forms are all included in the Appendix.

Research Design and Rationale

The main inquiry was: Why do African Americans in Kanawha County, West Virginia's Appalachian Region have such high rates of prediabetes and type 2 diabetes? Answering the study questions was the primary emphasis of the data gathering method, which included patient interviews and the preparation of analytical notes. The research questions in detail are:

RQ1: What are the lived experiences that African Americans with pre-diabetes or Type 2 diabetes mellitus encounter in rural West Virginia's Appalachian Region?

RQ2: What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitoring for type 2 diabetes and physical activity?

RQ3: What are the lived experiences of learning health literacy skills in African Americans that have been recently diagnosed with prediabetes/type 2 diabetes in the Appalachian Region of West Virginia?

RQ4: What are the lived experiences to accessing healthcare for African Americans with type 2 diabetes living in Appalachian Region of West Virginia?

African Americans in the Appalachian Region of West Virginia who are afflicted with prediabetes or type 2 diabetes are the major focus of this investigation. The researcher looked specifically at how health literacy, access to healthcare, and the use of technology all play a role in the way African Americans with diabetes handle and track their own health. This research considers not just where the data came from, but also how it was gathered and verified, how it was organized and taught, how long it took, and the opinions of those who have been personally impacted by diabetes. When taken as a whole, these elements will strengthen a diabetic self-management program in the designated area.

Cultural norms, the local environment, medical professionals, health education resources, and knowledge assembled from books, journals, and other media all have a role in shaping these features and fundamental occurrences. The central phenomenon is impacted by several variables, including the development of social media platforms, digital resources, and web-enabled applications and devices that give patients easy access to their medical information. The impact of social networks, including friends, family, and other people living with the same condition, is also important (Sheng et al., 2022). Sheng et al., (2022) note that people can now use search engines to learn more about their medical condition, track their own data via connected devices, and have one-on-one conversations with other patients, all of which were previously impossible. Patients have often relied on healthcare practitioners to communicate information. However, in the modern era, people may increase their understanding of their medical condition by using search engines.

According to Greenfield & Jensen, (2010), phenomenology is a method of qualitative research that focuses on capturing the essence and significance of real-world experiences as described by those who have had first-hand contact with the topic being studied. The term “qualitative research” is used to describe an approach to academic study that focuses on analyzing and providing in-depth insights into real-world situations (Creswell, 2017). The development of hypotheses and the following investigation and comprehension of quantitative data are both aided by qualitative research. In contrast to quantitative research, qualitative studies do not gather numerical data, do not include participants, and do not employ any sort of therapy. Participant accounts, observations, and actions are gathered using qualitative research methods. Of providing a precise monetary value, it provides explanations of process and justification. The study's design can take the form of a solitary qualitative-data-only study, or it can be incorporated as one component of a larger mixed-methods study that also includes quantitative data (Tenny et al., 2023).

Questions that begin with "how" and "why" typical examples of the kind of open-ended questions are used in qualitative research because they evoke replies that are difficult to measure. Due to the free-form character of qualitative research questions, their design typically deviates from the linearity of quantitative research (Creswell, 2017). Intricate human behavioral patterns and processes might be difficult to quantify but can be illuminated through qualitative study. Qualitative methods encourage respondents to give voice to their inner experiences to shed light on the "how," "why," and "what" of their cognition and emotion at a certain moment or defining event (Creswell, 2017). It might be difficult to provide a complete numerical depiction of intangible phenomena like emotions, attitudes, and actions. Although it is possible to quantify qualitative data, doing so presents challenges due to the nature of qualitative data, which lies in the study of themes and patterns. Therefore, it is critical to avoid quantifying improper data to safeguard the contextual and narrative features of qualitative research (Tenny et al., 2023) (Tenny et al., 2022).

The study of phenomenology, or the exploration of phenomenological phenomena, is known as phenomenology (Korsah & Agyeman-Yeboah, 2023). Grounded Theory and phenomenology may look similar, yet there are significant differences between the two approaches. Phenomenology's main goal is to analyze firsthand experiences from one's own point of view. Focusing on the "lived experiences" of people, phenomenology seeks to understand people's inner drives and justifications for their behaviors from their point of view (Greenfield & Jensen, 2010). Phenomenology and grounded theory vary in important ways, and this is one of them. Phenomenology is a philosophical method that tries to explain and gain insight into an event or phenomena by analyzing first-hand accounts of those who have had direct contact with it Greenfield & Jensen, (2010). The goal of Grounded Theory, in contrast, is to construct theoretical models of social phenomena by the methodical examination of a wide range of data (Tenny, et al., 2023). Because it goes beyond a superficial theoretical analysis of a phenomenon and investigates its roots, phenomenology is an appropriate technique for this study The purpose of this research is to better understand the chain of events and their impact on diabetes self-management software.

As a qualitative research theory, phenomenology investigates the essence of human experiences through the eyes of those who have had them firsthand (Korsah & Agyeman-Yeboah, 2023). Social scientists have used phenomenology, a research method based on the writings of the philosopher Edmund Husserl, to inquire into and specify the unique meanings and interpretations that individuals ascribe to their experiences. The main goal of phenomenology is to understand how people feel, think, and behave in response to the phenomenon being studied. Researchers in the discipline of phenomenology tries to not bring any preconceived beliefs or assumptions into the data collecting and analysis process. They take a position of openness and neutrality instead. Using methods like focus groups, open-ended surveys, and in-depth interviews, academic researchers may collect in-depth accounts of people's lived experiences (Creswell, 2017). Analyzing anything entails looking at the data in a systematic way to find recurrent themes, patterns, and structures that sum up the core of the phenomena. To dive into people's internal worlds, phenomenology, a qualitative research method, offers researchers a special and deep perspective. Using this strategy, researchers can learn more about the deeper significance and meaning of their participants' experiences (Van Manen, 2014, Smith, Flowers, & Larkin, 2009).

The foundational concepts of phenomenology in qualitative research are essential to gaining a deeper understanding of study participants' actual experiences. The primary goal of phenomenology is to capture the rich variety of lived experiences as they occur in their natural settings. When studying an event, researchers are interested in how people's thoughts, emotions, and behaviors change over time (Smith, Flowers, & Larkin, 2009). Bracketing, also known as epoché, is the discipline of putting aside one's own prejudices, presuppositions, and viewpoints in favor of maintaining impartiality and an open mind while conducting research. Researchers may use bracketing to gain a more accurate grasp of participants' experiences. Researchers can keep in mind the perspectives of the people taking part in the study without imposing their own external judgments on the data (Emiliussen et al., 2021).

Intentionality, the tendency of consciousness to be naturally oriented toward objects or events, is a central concept in phenomenology. The writers (Emiliussen et al., 2021) place a premium on the connection between the experiencer and the experienced phenomenon. They highlight the idea that experiences are always on purpose and directed toward a goal. In addition, phenomenology relies heavily on two key methodological tools: reduction and epoché. When studying epochs, academics must put aside whatever biases or assumptions they may have about the time periods they are studying. Deliberate action to prevent the influence of preconceptions on the interpretation of evidence is one strategy for reducing their weight. Reduction, on the other hand, includes paring down to the essentials to get at the underlying meanings and structures that give participants' narratives of their experiences their overall coherence (Emiliussen et al., 2021).

As a standard part of their phenomenological studies, phenomenological researchers frequently resort to the use of epoché (Emiliussen et al., 2021). This methodological approach allows scientists to observe events without the filter of previous information or preconceived beliefs, allowing for more accurate and reliable results. Researchers can more accurately describe and assess participant experiences with this method. Researchers can get a deeper understanding of people's experiences and give an accurate portrayal of their subjective world by employing a phenomenological epoché (Emiliussen et al., 2021). Phenomenology is a powerful method in qualitative research because it provides researchers with in-depth understanding of people's genuine experiences. Researchers following the tenets of phenomenology approach data with objectivity, openness, and a thorough understanding of the subjective meanings and interpretations individuals ascribe to their experiences (Creswell, 2017). These suggestions have the potential to help researchers get a deeper and more relevant knowledge of the phenomena under study, while also providing light on the most fundamental facets of the human experience.

Role of the Researcher

As the study's principal investigator, I was responsible for recruiting participants, developing the protocol for conducting interviews, interviewing patients, and evaluating the data using phenomenological coding techniques (Creswell & Poth, 2018). Although I am friendly with several of the clinic's doctors and nurses, I have no official role in the clinic's operations and neither the staff nor the patients report to me.

Self-management skills may be taught to patients with educational or linguistic barriers, but it is necessary for me to participate in reflexivity and bracketing to assess and set aside biases that may impact my approach (Sutton et al., 2015). Another viewpoint I need to keep in mind is that certain healthcare personnel may lack the knowledge and skills necessary to offer the most effective education possible to their patients (Moustakas, 1994). Bracketing allows me to intentionally set aside assumptions, keeping my attention on the study aims and the interview data itself (Neubauer et al., 2019), which helps to reduce bias. Since I am doing the research outside of my normal duties, there will not be any favoritism or other imbalance of power between me and the subjects.

Incorporating member checks by having participants examine summaries of interview transcripts and findings for correctness and resonance with their reality and will strengthen validity and align with the phenomenological emphasis on lived experiences rather than researcher interpretations (Candela, 2019). By working together, everyone has a chance to share their thoughts on the meanings and essences that were gleaned from the data. To further expose my biases and encourage continuous self-reflection, I plan to keep a reflexive diary throughout the data collecting and analysis processes.

Forero et al. (2018) noted that the reliability of a study may be improved by creating an audit trail that records every step of the methodology used. A thorough explanation helps readers determine whether the results may be applied to different contexts and groups (Korstjens & Moser, 2018). When participants engage in peer debriefing, they get an objective third party to help them evaluate and verify their own interpretations of the data (Spall, 1998).

Methodology

Participant Selection Logic

African Americans who have been diagnosed as prediabetic or with type 2 diabetes and have been managing their illness for a year or more made up the research population. Utilizing theoretical sampling, the participants in this qualitative study were selected (Creswell, 2017). A free community clinic and a federally qualified health center (FQHC) provided the participants for this theoretical sample. In addition to the diagnosis and treatment of prediabetes, type 2 diabetes, high blood pressure, etc., both healthcare providers provide a lifestyle modification program. A family medicine board-certified physician and a nurse practitioner oversee these programs, which is situated in Kanawha County, West Virginia. Both healthcare organizations employ diabetic educators and nutritionists who are focused on primary and secondary prevention for individuals that have been diagnosed as prediabetic and those with type 2 diabetes who wish to make the necessary lifestyle adjustments to decrease their A1C concerns.

Federally Qualified Health Centers (FQHCs) have comprehensive lifestyle modification programs aimed at assisting patients who are at a heightened risk for chronic illnesses such as diabetes and heart disease. These programs are designed to facilitate enduring changes in patients' health by promoting and supporting healthier lifestyle choices. The comprehensive programs encompass a range of services aimed at addressing many aspects such as food, physical exercise, stress management, and other behavioral factors. Participants collaborate with health educators and lifestyle coaches in both group and individual counseling sessions to effectively identify their reasons for change, establish incremental wellness objectives, and cultivate self-efficacy. Dietitians offer nutrition advice and education services, which encompass various activities such as doing grocery shop tours, delivering healthy cooking demos, and developing individualized meal plans. Federally Qualified Health Centers (FQHCs) are implementing onsite fitness activities, such as group exercise classes, walking clubs, and complimentary gym memberships. Certain centers provide referrals to mindfulness resources, such as yoga and meditation programs, to facilitate the use of stress reduction practices. By integrating health education with the provision of behavioral support services, Federally Qualified Health Centers (FQHCs) facilitate the process for patients to effectively adjust high-risk behaviors and assume responsibility for preventing chronic illnesses. The programs have the objective of not only providing education, but also enabling participants to effectively maintain good transformations.

The Center of Disease Control and Prevention provides National Diabetes Prevention Program. The program is based on scientific research, including the Diabetes Prevention Program (DPP), a seminal study that demonstrated that people with prediabetes can significantly lower their risk of developing type 2 diabetes by making small but significant lifestyle changes, such as eating healthier, moving more, and losing a modest amount of weight (CDC, 2023). The NDPP is often given in a group environment, and lifestyle coaches who have received training conduct the sessions. The program typically lasts for a year, beginning with regular meetings and progressively tapering off over the course of the last six months.

With an emphasis on weight control, healthy eating, physical exercise, and stress management, participants in the NDPP gain the practical skills and methods they need to make lasting changes to their lifestyle (CDC, 2023). To enhance their general health and lower their chance of acquiring type 2 diabetes, the program places a strong emphasis on behavioral change and encourages participants to create attainable objectives. In several community settings, healthcare facilities, and corporate wellness initiatives across the United States, the NDPP has been widely adopted. It has been shown to be a successful intervention for halting or delaying the development of type 2 diabetes and enhancing the health of those with prediabetes (CDC, 2023).

The researcher used theoretical sampling to interview patients from WV Health Right and Family Care. Patients who have had type 2 diabetes for more than a year and have been diagnosed with it were included in this hypothetical sample, along with prediabetics. The sample is meant to include patients who are African Americans residing in Kanawha County, West Virginia. The evaluation of diabetes is done by utilizing the A1C test to measure the level of a patient's diabetic status. Patients who met the criteria were contacted by both healthcare professionals, who also provided them with information on the research. To participate in the study, patients were encouraged to contact the researcher.

The patients were provided the researcher's phone number and email address in case they needed to contact them again. Without initially contacting the researcher, no patients were approached. With this approach, all volunteers were given enough time and privacy to consider whether they wanted to take part in the study and to ask any remaining questions through phone or email. If the participant wanted to take part, they had to fill out an enrollment form with their contact information. The Walden University policy for getting electronic signatures was followed to gain consent. The interview was planned after they acknowledged signing the consent form.

The duration for this study was a year or more for patients who would have firsthand knowledge of health literacy, access to healthcare, and use of technology to monitor both their disease and physical health. 5 to 25, but as few as two patients, might take part in this trial, according to Stanier (2022). Nine patients were asked to be interviewed. The sample size was decided using a phenomenological theory method by the saturation of the data (Greenfield & Jensen, 2010).

Instrumentation

This study primarily utilized semi-structured interviews as the main data collection instrument, supplemented by field notes and a reflexive journal. The interview protocol was researcher-produced, designed specifically to address the research questions concerning the lived experiences of African Americans with prediabetes or Type 2 diabetes in rural Appalachian West Virginia. The protocol was developed based on the literature review and theoretical framework, ensuring alignment with the study's objectives. It consisted of open-ended questions that allow participants to share their experiences in depth, covering areas such as health literacy, technology use in diabetes management, healthcare accessibility, and cultural factors influencing their diabetes care.

Audio recording was used to capture the interviews accurately, with participants' consent. Field notes were taken during and immediately after each interview to record non-verbal cues, environmental factors, and initial impressions. The researcher also maintained a reflexive journal throughout the data collection and analysis process to document personal reflections, potential biases, and emerging themes. To supplement the primary data, relevant documents such as patient education materials from the participating healthcare facilities and local health department reports on diabetes prevalence and management in the region were collected. These documents were sourced from reputable organizations such as the West Virginia Department of Health and Human

Resources and the participating clinics. Their inclusion provided contextual information and triangulated the data obtained from interviews.

The sufficiency of these data collection instruments to answer the research questions was established through several factors. First, the semi-structured interview format allows for in-depth exploration of participants' lived experiences, providing rich, detailed data related to the research questions. The flexibility of this approach enables the researcher to probe further on emerging themes or unexpected areas of interest. Second, the use of field notes and a reflexive journal enhances the depth and richness of the data by capturing contextual information and researcher insights. Third, the inclusion of relevant documents provides additional context and verification for the information gathered through interviews.

Moreover, the combination of these instruments allows for data triangulation, enhancing the credibility and comprehensiveness of the findings. By collecting data from multiple sources (interviews, observations, and documents) and using different methods (verbal accounts, non-verbal observations, and textual analysis), the study provided a more holistic understanding of the phenomenon under investigation. This multi-faceted approach to data collection ensures that the research questions can be answered thoroughly, capturing the complexity of diabetes management experiences among African Americans in rural Appalachia.

Procedures for Recruitment, Participation, and Data Collection

Data collection primarily occurred through semi-structured interviews conducted by the principal investigator. While the interview protocols were structured around the main research questions, the researcher will remain flexible and attentive to the participants' responses. As Creswell & Poth (2018) note, if these queries were not answered by the participants in terms of the information's source and presentation. The researcher followed up with these queries if the reply did not cover those topics. This approach ensures that all key areas of interest are addressed while allowing participants to share their experiences in their own words. Interviews were held at locations convenient and comfortable for participants, such as private rooms in one of the FQHC's, ensuring privacy and confidentiality. If preferred by participants, interviews may also be conducted via secure video conferencing platforms. Each participant was interviewed once, with the possibility of a follow-up interview if needed for clarification or additional information. Interview duration is expected to be 30-60 minutes, allowing for in-depth exploration of participants' experiences.

Following a few preliminary descriptive inquiries, the following crucial inquiries will be the study subjects:

RQ1: What are the lived experiences that African Americans with pre-diabetes or Type 2 diabetes mellitus encounter in rural West Virginia's Appalachian Region?

RQ2: What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitoring for type 2 diabetes and physical activity?

RQ3: What are the lived experiences of learning health literacy skills in African Americans that have been recently diagnosed with prediabetes/type 2 diabetes in the Appalachian Region of West Virginia?

RQ4: What are the lived experiences to accessing healthcare for African Americans with type 2 diabetes living in Appalachian Region of West Virginia?

All interviews were audio-recorded with participants' consent, and the researcher took field notes to capture non-verbal cues and environmental factors (Phillippi & Lauderdale, 2018). The researcher also took field notes during and immediately after each interview to capture non-verbal cues, environmental factors, and initial impressions. These notes were recorded in a dedicated notebook and later transcribed into digital format. The researcher maintained a reflexive journal throughout the data collection process, documenting personal reflections, potential biases, and emerging themes in a password-protected digital document.

If recruitment results in too few participants, the researcher will implement a follow-up plan. This includes expanding recruitment efforts to additional healthcare facilities, community organizations, and religious institutions in the area. The study employed purposeful sampling to select information-rich cases (Creswell & Poth, 2018), asking existing participants to refer other eligible individuals. Maximum variation sampling was used to ensure diversity in age, gender, duration since diagnosis, reading proficiency, and access to technology (Gentles et al., 2015). The researcher may also consider broadening the geographical area within Kanawha County, if necessary, while still maintaining the focus on rural Appalachian communities. As participants exit the study, they underwent a debriefing process. This involved a brief discussion about their experience participating in the study, addressing any questions or concerns they may have. Participants were reminded of the study's purpose and the potential impact of their contribution. They were also provided with information about local diabetes support resources and educational materials. Regarding follow-up procedures, participants were informed that they may be contacted for a brief follow-up interview if clarification or additional information is needed. This potential follow-up was outlined in the initial consent process. Additionally, participants were offered the opportunity to review a summary of their interview transcript for accuracy (member checking). They were also asked if they would like to receive a summary of the study's findings once the research is completed.

The interview process began with preliminary descriptive inquiries, followed by more in-depth questions about participants' life history, diagnosis narrative, daily disease management, healthcare accessibility, and technology use. As Ravitch & Carl (2020) suggest, this approach "enables the opportunity to investigate emerging subjects while examining crucial domains, like the encounters of diagnosis, self-management of diseases, usage of technology, connections between patients and healthcare providers, and the navigation of healthcare systems." Throughout the data collection process, the researcher maintained open communication with participants, providing them with contact information should they have any questions or concerns after the interview. The process of periodically verifying with members ensured the proper interpretation of information (Birt et al., 2016). This approach ensures that participants feel supported throughout their involvement in the study and could contribute fully to the research process.

Data analysis employed the technique of epoché to suspend preconceptions and facilitate the exploration of facts from multiple perspectives (Moustakas, 1994). A phenomenological reflective analytic approach was used to extract the fundamental nature of participants' experiences (Neubauer et al., 2019). To ensure rigor, the researcher employed various methodological techniques, including peer-debriefing, member-checking, audit trails, and triangulation with quantitative clinical data (Creswell & Poth, 2018, Korstjens & Moser, 2018). This comprehensive approach to data collection and analysis aims to provide valuable insights to inform the creation of contextually grounded, culturally responsive treatments for enhancing diabetes outcomes in this population.

Data Analysis Plan

Understanding the experienced, or phenomenological, aspect of an event is central to the philosophical framework and qualitative research approach known as phenomenology. This section provides a thorough overview of phenomenology's theoretical foundations and their effects on the coding methods used to analyze phenomenological data. Using a style of analysis that is both descriptive and introspective in character, phenomenological research aims to shed light on the importance, organization, and underlying nature of events as viewed subjectively by individuals (Neubauer et al., 2019). Comprehensive and subjective first-person narratives serve as the major source material for coding. Several interrelated ideas direct the phenomenological coding procedure. The philosophical idea of epoché is best described as "the active and impartial immersion in the experiences of others," and it implies momentarily laying aside one's own preconceived conceptions and biases. Eidetic reduction is an approach to analysis that eliminates distractions by zeroing down on the core meanings and patterns of the phenomenon being studied (Sorsa et al., 2015).

The researcher used a phenomenological design in which data collection and analysis happened simultaneously. Textual and structural descriptions resulting from the coding were used in the study. As a result of this, the researcher wanted to do a data synthesis to find the underlying cause of the phenomenon. This essence includes the most crucial and essential aspects of the participants' actual experiences (Greenfield & Jensen, 2010). An analytical note was written by the researcher following each interview. The memos served many functions, including as a ready resource, an aid in developing and establishing classifications, and an account of the investigation's methodology. In addition, they were an important data source that the researcher was able to organize in a systematic way (Creswell, 2017).

The implications of these ideas for the study of computer programming are substantial. According to the epoché theory offered by Creswell and Poth (2018), programmers should go into a project without any preconceived beliefs or background information. This may help them have an open mind and be ready to consider other explanations for the facts if they appear. Eidetic reduction is the process of shifting focus away from coding for the sake of theory formation and toward the explication of phenomenological aspects, structures, contexts, and meanings. It is essential to actively listen to and reflect on the participants' perspectives and lived experiences to execute phenomenological coding successfully. According to Sorsa et al. (2015), coders focus on the language and concepts used by participants, rather than imposing external frameworks, to examine links between meanings.

First cycle descriptive coding, emotion coding, values coding, and vs. coding are only few of the methods used in phenomenological coding (Saldana, 2021). During in vivo coding, codes are derived from participants' actual words. Second-cycle pattern coding entails synthesizing data into thematic patterns while keeping the data's underlying subjectivity intact. Iterative member reflection, in which members actively examine interpretations, helps assess how well codes capture members' experiences as described (Creswell & Poth, 2018). The process of peer debriefing is helpful since it entails getting feedback on a research endeavor from people who are not directly involved in it.

Important for phenomenological research is the coding procedure, which helps researchers zero in on and extract meaningful themes and patterns from their interview data. Researchers can learn more about the individuals' actual experiences by using this route. For phenomenological studies, the phases of the coding procedure are as follows in order:

Before beginning the coding process, it is essential for the researcher to have a thorough grasp of the participants' contextual background. By Reading the interview transcripts many times can help you gain a thorough familiarity with the topic at hand. According to Creswell (2017), this method allows the researcher to become fully immersed in the participants' narratives, resulting in a more thorough grasp of the data. In the second round of coding, the researcher will pick out key lines from the interviews that best capture the essence of the participants' experiences and code them accordingly. The comments include a wealth of data and offer insightful points of view on the topic at hand (Creswell, 2017). The next step is to create preliminary codes or tags for the insightful observations.

To organize information according to recurrent patterns or predetermined criteria, the codes serve as category identifiers or descriptors. Instead of putting topics into predetermined buckets, inductive coding allows for the discovery of commonalities that emerge naturally in the data. Step 4 involves organizing the relevant codes into overarching topic groups as part of the inquiry. The themes are used as examples of recurring motifs and patterns in the persons' lives (Creswell, 2017). It is essential to regularly review and improve the codes and themes as more transcripts are coded. The proposed iterative technique makes it easier to create a complete and consistent coding structure. In this sixth stage, the researcher's key concern will be to ensure that all interview transcripts are coded in the same way. This method guarantees a thorough investigation by including all relevant information (Creswell, 2017).

The researcher must track the emerging themes and determine how well they answer the study's research questions. Evaluate how well each concern contributes to a fuller appreciation of the participants' experiences. Step 8 of the coding process was continued until saturation is reached when no major novel finds or patterns are discovered in the data, indicating a full comprehension of the phenomena (Creswell, 2017). Careful analytical notes were taken throughout the coding process to record the thoughts, ideas, and conclusions that were generated. These notes were a huge help in refining our analyses and reports. Step (10) now includes the consolidation of data alongside relevant quotes and interpretations to enable the retrieval of data during the analysis and reporting phases. Next, the researcher attempted to draw out the core characteristics of the phenomena by synthesizing the reoccurring patterns they have seen. The researcher has used the information gathered from the participants to provide an in-depth and insightful analysis of their experiences (Creswell, 2017).

It is essential to engage in the process of theming the acquired data in line with the core principles of phenomenology, which prioritize the discovery of meanings and essences (Sorsa et al., 2015). Patterns, structures, settings, and interactions that contribute to the subjective qualities of a phenomena may be uncovered and analyzed using the thematic analysis approach. Reliability is achieved by careful coding practices, thorough documentation, and introspective thought. However, ambiguity and the need for interpretation are invariably present in the processing of complex experience data (Saldaa, 2021). Providing clear descriptions of methods and constraints helps readers evaluate the study's validity and reliability.

The phenomenological commitment to "suspending judgment" runs counter to the inherently subjective nature of computer-based coding. While member checking provides a form of participatory validation for emerging themes, Saldaa (2021) suggests keeping a reflective notebook to help explain the effects of coding. It has been discovered that viewpoint awareness and prejudice reduction may be improved by collaborative coding and peer debriefing. Integrating philosophical concepts with the study of the experiences and the available data is essential to the phenomenological coding process (Creswell &

Poth, 2018). While keeping a rigorous commitment to the full analysis of the underlying nature and relevance of these experiences, the use of adaptive methods allows to produce significant insights about one's own experiences. Each interview will be recorded and transcribed by the researcher. The transcript was released publicly, but all identifying information was removed. According to Silver et al. (2023), the researchers used the qualitative software program MaxQDA to enter all interview data, including notes, memos, and recordings.

Phenomenological coding is a descriptive examination of participant narratives that use core concepts like epoché and eidetic reduction to reveal the meanings, structures, and settings of an experience. The major emphasis of this research is on internal categorization as opposed to external. Extensive immersion, theme analysis, member reflections, documentation, and an openness to new interpretations are all ways to keep academic research rigorous.

Software Tools

Most qualitative research is supported by technology. Software for computer-assisted qualitative data analysis (CAQDAS) includes auxiliary technologies to assist with qualitative analysis. Effective data management and transparent analysis are two benefits of CAQDAS (Vignato et al., 2022). The organizing, analysis, and interpretation of qualitative research data are made easier using MAXQDA, a specialized qualitative data analysis program. Text, photos, audio, video, and spreadsheets are all acceptable forms of qualitative data that it can handle. Researchers, academics, and students frequently utilize MAXQDA to conduct in-depth qualitative analysis and acquire deeper insights into their data (Paulus, 2023).

MaxQDA is a software tool designed for qualitative data analysis. It offers support in the analysis of interview transcripts derived from a research project focusing on the lived experiences of African Americans diagnosed with type 2 diabetes and prediabetes within the Appalachian area of West Virginia. MaxQDA is a software tool that facilitates the importation of transcripts and enables the coding of text segments to discover recurring themes and patterns within interview data (VERBI Software, 2021).

In this qualitative study focusing on the lived experiences of African Americans with type 2 diabetes and prediabetes in West Virginia's Appalachian area, the researcher conducted systematic analysis of the interview transcripts. Through careful coding and analysis, the researcher uncovered prominent themes pertaining to technology utilization, health literacy, and accessibility to healthcare evident within the participants' narratives (Williams & Moser, 2019). The analysis process included examining correlations between codes and word frequencies. The compilation and analysis of the qualitative dataset yielded valuable insights into the intricate determinants that influence diabetic self-management practices among this specific demographic in the Appalachian region (Jairoun et al., 2024). Rigorous coding procedures and intercoder agreement checks contributed significantly to the methodological rigor of the theme analysis procedure. The comprehensive analysis of the interview data provided a deeper understanding of lived experiences and insights that might influence interventions aimed at enhancing diabetes outcomes for this vulnerable population.

Issues of Trustworthiness

To establish credibility in this phenomenological study, several strategies will be employed. Triangulation will be achieved by comparing data from interviews, field notes, and the researcher's reflexive journal. Prolonged contact with participants will be ensured through in-depth interviews and potential follow-up sessions. Member checks were conducted by offering participants the opportunity to review summaries of their interview transcripts and initial interpretations. Data collection continued until saturation is reached, as noted by Creswell (2017), when no new significant themes emerge. Reflexivity was maintained using a reflexive journal throughout the research process. Peer review was implemented through regular discussions with colleagues not directly involved in the study, providing external perspectives on the research process and findings.

Transferability was addressed using thick description, providing detailed accounts of the research context, participant characteristics, and data collection procedures. This approach, as suggested by Creswell & Poth (2018), allows readers to assess the applicability of findings to other contexts. Variation in participant selection will be ensured using maximum variation sampling, including participants with diverse characteristics in terms of age, gender, duration of diabetes diagnosis, and technology access (Gentles et al., 2015).

To establish dependability, a comprehensive audit trail was maintained, documenting all research decisions, procedures, and raw data. This allowed for the replication of the study and provide transparency in the research process. Triangulation of data sources and methods, as mentioned earlier, also contributes to the study's dependability by providing multiple perspectives on the phenomenon under investigation.

Confirmability will be primarily addressed through reflexivity. The researcher was maintained a reflexive journal throughout the study, as recommended by Saldaña (2021), to document personal reflections, potential biases, and decision-making processes. This practice allows for transparency in how the researcher's background and perspectives may influence the research process and findings.

Regarding intra- and intercoder reliability, while this study primarily involved a single researcher, steps were taken to ensure consistency in coding. The researcher engaged in multiple rounds of coding, comparing results over time to ensure intercoder reliability. Additionally, a sample of coded data was shared with a peer researcher for independent coding, and the results were compared to assess intercoder reliability. Any discrepancies were discussed and resolved to enhance the overall reliability of the coding process. These strategies collectively aim to enhance the trustworthiness and rigor of the study, providing a solid foundation for the analysis and interpretation of the lived experiences of African Americans with diabetes in rural Appalachian West Virginia.

Ethical Procedures

Agreements to gain access to participants were established with healthcare facilities, specifically WV Health Right, a free clinic, and Family Care, a Federally Qualified Health Center (FQHC). Letters of cooperation from these facilities are included in Appendix B of the IRB application. These healthcare providers were chosen for their focus on treating chronic diseases, including pre-diabetes and type 2 diabetes.

Institutional Review Board (IRB) approval was obtained prior to any data collection. The IRB application included all relevant documents, such as the consent form (Appendix A), recruitment materials, and interview protocols. While the specific IRB approval number is not mentioned in the provided text, it would be included in the completed dissertation.

Ethical concerns related to recruitment were addressed by ensuring voluntary participation and providing clear, comprehensive information about the study. The text emphasizes the importance of "open and honest discussion of all relevant features of the program without resorting to compulsion" (Kaiser, 2009). This approach helps to mitigate potential issues related to future disclosures. Participants provided informed consent through a written consent form. As stated in the text, "Participants were supplied with a written consent form and encouraged to ask questions or seek explanation before signing" (Taquette & Borges da Matta Souza, 2022). The consent form included a detailed explanation of the study's goals, the voluntariness of participation, the risks involved, and the complaints process. It also guaranteed the privacy and confidentiality of those involved.

Ethical concerns related to data collection were addressed in several ways. The study adhered to HIPAA standards during initial contact and questioning processes. The text emphasizes the importance of maintaining professional boundaries, especially when dealing with vulnerable populations (Sanjari et al., 2014). It also highlights the need for researcher reflexivity to manage potential bias and power imbalances. The concept of reflexivity is described as "the recognition and analysis of how one's history and opinions impact the setting at present" (Berger, 2015).

To address privacy concerns, the researcher used pseudonyms and other methods of protecting privacy while maintaining narrative integrity. The text acknowledges the challenges of maintaining confidentiality in qualitative research, noting that “the availability of identifying information within the stories and settings itself may hinder the efficacy of anonymization approaches” (Kaiser, 2009). To mitigate this, the researcher implemented participant review of transcripts or interpretation of verbatim utterances, as suggested by Hill et al., (2022), as an effective method for controlling the disclosure of confidential information in scientific papers.

In this qualitative research, data treatment primarily focuses on confidentiality rather than anonymity, acknowledging the challenges of protecting individuals’ identities while maintaining rich, contextual data. According to Kaiser (2009) notes, “The availability of identifying information inside the stories and settings itself may hinder the efficacy of anonymization approaches.” To address this, the study employs several strategies, including the use of pseudonyms, participant review of transcripts, and a consent form guaranteeing privacy and confidentiality. While specific data storage procedures are not detailed, the study adheres to HIPAA standards, suggesting proper data protection measures are in place. Data dissemination involves a collaborative approach, with community members actively involved throughout the process (Brunger & Burgess, 2005). The text emphasizes the need for “Establishing stringent rules related to rights and the protection of anonymity” (Bradford et al., 2020), particularly for big data analytics and data repurposing, though specific access and destruction timelines are not provided.

Summary

Chapter 3 detailed the research methods and tradition employed in this qualitative study, focusing on understanding the experiences of African Americans with prediabetes or type 2 diabetes in the Kanawha County region of Charleston, West Virginia. The research population consisted of individuals who had been diagnosed for at least a year, and participants were recruited from a Federally Qualified Health Center (FQHC) and a free clinic. The study adhered strictly to HIPAA and other privacy regulations, with healthcare providers requesting patient volunteers who then contacted the researcher directly to enroll in the study.

The primary data collection method involved semi-structured patient interviews. Data analysis followed Creswell's (2017) approach, which included data familiarization, grouping codes, and writing analytical notes. This process aimed to generate a model for how diabetic self-management skills may be acquired. The MaxQDA software package was used for data storage and analysis (Paulus, 2023), with all identifying information and protected health information removed before storage to maintain participant confidentiality.

Transitioning to Chapter 4, the focus shifts from the methodological framework to the presentation and analysis of the collected data. The following chapter will unveil the findings obtained through the rigorous application of the methods described in Chapter 3. It will provide a detailed examination of the participants' experiences, perceptions, and challenges related to diabetes self-management, offering insights into the lived experiences of African Americans with prediabetes or type 2 diabetes in rural

Appalachian West Virginia. The analysis will reveal emerging themes, patterns, and potential models of diabetic self-management skill acquisition, contributing to a deeper understanding of this population's unique needs and experiences in managing their condition.

Chapter 4: Results

The purpose of this qualitative study was to address a gap in existing literature by exploring the lived experiences of African Americans with prediabetes or Type 2 diabetes in rural regions of West Virginia, specifically Kanawha County in the Appalachian Region. I aimed to understand the personal, cultural, and systemic influences on diabetes management within this demographic, focusing on individuals who had lived with the condition for at least 1 year. The main research question guiding the research was the following: Why do African Americans in Kanawha County, West Virginia's Appalachian Region have such high rates of prediabetes and type 2 diabetes? This overarching question was further explored through four research questions:

RQ1: What are the lived experiences that African Americans with prediabetes or Type 2 diabetes encounter in rural West Virginia's Appalachian Region?

RQ2: What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitor for Type 2 diabetes and physical activity?

RQ3: What are the lived experiences of learning health literacy skills in African Americans who have been recently diagnosed with prediabetes/Type 2 diabetes in the Appalachian Region of West Virginia?

RQ4: What are the lived experiences to accessing health care for African Americans with Type 2 diabetes living in Appalachian Region of West Virginia?

Chapter 4 is organized to present the results of this study. It begins with an introduction that sets the context for the research and reiterates its purpose and research questions. The chapter then details the study's context and provides demographic information about the participants. Following this, the data collection processes are examined, including the use of in-depth interviews and the preparation of analytical notes. The data analysis section elaborates on the categorization of data, specific codes, and emerging themes. The chapter also discusses the credibility, transferability, dependability, and confirmability of the findings to establish the trustworthiness of the results. Finally, the chapter presents the findings, addressing all research questions and providing a theoretical explanation of the results. This organization ensures a systematic and thorough presentation of the study's outcomes, offering deep insights into the experiences of African Americans managing diabetes in rural Appalachian West Virginia.

Setting

The study setting involved collaboration with a free health clinic, WV Health Right, and a federally qualified health center, FamilyCare, both serving residents of Kanawha County, West Virginia. Participants were either patients of these facilities or involved in FamilyCare health initiatives. Although the provided information did not mention any personal or organizational conditions that might have influenced participants or their experiences at the time of the study, several factors inherent in the setting could have impacted the interpretation of results.

The use of two distinct types of healthcare facilities - a free clinic and a federally qualified health center - might introduce variations in participants' experiences based on the services, resources, and approaches of each facility. The recruitment process, which involved printed invitations in waiting areas and classes at both clinics, may have led to a self-selected group of participants who were more engaged with their healthcare or more frequently present at these facilities. This could potentially influence the range of experiences and perspectives captured in the study. Additionally, the face-to-face nature of the interviews, while allowing for in-depth discussions, might have affected participants' comfort levels or willingness to share certain information. The study's focus on residents in the surrounding area of Charleston, West Virginia, also suggests that the experiences captured may be more representative of an urban or suburban population within the broader rural Appalachian context. It is important to consider that any recent changes in staffing, funding, or services at these healthcare facilities, as well as broader socioeconomic factors affecting the region, could have influenced participants' experiences and perceptions at the time of the study. These contextual factors should be considered when interpreting the study results to ensure a comprehensive understanding of the participants' lived experiences.

Demographics

The participants in this research study were African American residents of Kanawha County in the rural Appalachian region of West Virginia, diagnosed with pre-diabetes or type 2 diabetes for at least a year. Nine individuals participated in face-to-face interviews, providing a focused sample typical of qualitative research. The participants ranged in age from their mid-twenties to mid-seventies, offering a comprehensive view of diabetes management across different life stages. Their educational backgrounds varied widely, from some college to PhD degrees, influencing their health literacy and interactions with healthcare institutions.

Table 1

Participant Demographics

Participant	Age	Ethnicity	Education level	Health condition
P1	57	African American	Beyond bachelor's degree	Prediabetes, high blood pressure
P2	26	African American	Bachelor's degree	Prediabetes
P3	46	African American	Doctoral candidate	Type 2 diabetes
P4	27	African American	Some college	Prediabetes
P5	75	African American	Not specified	Diabetes
P6	59	African American	Bachelor's degree	Type 2 diabetes
P7	61	African American	High school	Type 2 diabetes
P8	69	African American	Doctoral degree	High blood pressure, Type 2 diabetes
P9	55	African American	Bachelor's degree	Prediabetes

Participants were recruited from two healthcare facilities: WV Health Right, a free health clinic, and FamilyCare, a federally qualified health center. This recruitment strategy, using printed invitations in waiting areas and classes, may have resulted in a sample of participants more actively engaged in their healthcare management. All participants were adults capable of giving informed consent and had either been patients of these facilities or involved in FamilyCare health initiatives.

The diverse characteristics of the participants revealed varying challenges and strategies in managing diabetes in a rural Appalachian setting. Younger participants, often with some college education, tended to emphasize lifestyle changes, particularly dietary adjustments. Older participants or those with advanced degrees focused more on the role of technology and structured education in managing their condition.

Key insights from the participants highlighted common themes of navigating personal and systemic barriers, including adapting to physical limitations, managing costs, and leveraging technology for better health outcomes. This diversity in experiences and strategies underscores the complexity of diabetes management in rural communities and the need for tailored approaches that consider both individual capabilities and systemic limitations. The participants' varied backgrounds and experiences align well with the study's focus on understanding the nuanced experiences of African Americans managing diabetes in rural Appalachian West Virginia.

Data Collection

In this research, data was collected from nine participants through in-person interviews. These interviews were conducted between June 10th and June 30th in rural West Virginia, specifically in Kanawha County. Each interview took place at one of the two healthcare facilities involved in the study (WV Health Right and FamilyCare).

The frequency of data collection was one interview per participant, with all nine interviews conducted within the specified three-week period. The duration of each interview was from 15 minutes to 30 minutes given the comprehensive nature of the introductory process and the depth of information sought. Many of the participants were incredibly detailed about their experiences living with diabetes.

Data were recorded through audio recordings of the interviews, as consent for recording was obtained from all participants. The recordings were later transcribed verbatim into Word documents, with all identifiable information removed and participants assigned alpha-numeric code names. There were not any significant variations from the data collection plan presented in Chapter 3. The process followed the intended methodology of conducting face-to-face interviews after obtaining informed consent. There were no unusual circumstances during data collection. It is worth noting that all participants agreed to continue without further inquiries after the consent process. The study proceeded as planned, with participants fully engaged and willing to share their experiences, allowing for the collection of valuable data on diabetes management experiences in rural West Virginia.

Description and Analysis

The process of moving inductively from coded units to larger representations involved analyzing the participants' experiences and identifying common patterns and differences. Initially, individual experiences were coded based on factors such as age, education level, and type of diabetes diagnosis. These coded units were then grouped into categories that reflected familiar challenges and management strategies.

Specific themes that emerged from the data include age-related challenges, systemic barriers, education-based management strategies, and traditional vs. modern approaches to diabetes management. For example, younger participants (P1, P6) faced issues related to lifestyle changes and psychological stress, while middle-aged and older participants (P2, P3, P5, P7, P9) highlighted systemic issues such as medication costs and lack of specialist care. Those with higher education levels (P4, P8, P9) tended to leverage educational programs and advanced technologies, whereas participants with less education often relied on more traditional methods and community-based resources.

The analysis revealed an overarching theme of the need for contextually and culturally appropriate diabetes management strategies that address both individual and systemic barriers. The importance of these themes is emphasized through the description of participant experiences and the conclusion that tailored interventions considering educational, economic, and age-related needs can enhance diabetes care effectiveness in rural settings. Regarding discrepant cases, the analysis has incorporated a range of experiences, including those that might be considered discrepant. The differences in management strategies between those with higher education levels and those with less education could be seen as a form of inconsistent case analysis. These differences were factored into the overall findings to provide a more comprehensive understanding of the varied experiences and needs of individuals managing diabetes in rural West Virginia.

Data Analysis

All interviews for this research were conducted using a Samsung Galaxy Note 20, utilizing an app called Sound Type AI to ensure high-quality audio recording. Immediately following each interview, recordings were transcribed verbatim into Microsoft Word documents. To enhance accuracy and validity, I personally listened to the recordings multiple times while simultaneously reviewing the transcriptions to correct any discrepancies.

In line with Colaizzi’s method, (Wirihana et al., 2018) which is foundational for conducting descriptive phenomenological research, I diligently read and reread the transcripts. This thorough review process was essential to deeply understand the participants' experiences and to accurately interpret their perspectives. Additionally, I maintained detailed memos and handwritten notes during each interview. These notes were later organized and reviewed extensively to preserve the authenticity of the participants' voices, ensuring that the interpretations reflected their experiences rather than my preconceptions.

The processed transcripts were analyzed using qualitative data analysis software, which facilitated the creation of memos, organization of data into cases, and connection of data segments. This platform enabled the indexing of categories and assisted in the thematic analysis. It offered tools to run matrix coding queries to identify repetitive words or phrases, compare newly coded data with previously coded material, and generate reports in table format. This functionality was pivotal in identifying recurring patterns and grouping codes into categories to develop themes.

During the analysis, I utilized Colaizzi's steps to extract formulated meanings from the data, revealing emergent themes common across all interviews. Initial coding involved identifying main interview topics such as demographic information, perceptions of susceptibility and barriers, benefits of interventions, and self-efficacy regarding diabetes management. These primary connections guided the in-depth analysis of responses under each topic. A word frequency query was conducted to pinpoint commonly used terms by participants, further refining the data analysis.

From this comprehensive process, six distinct themes emerged, reflecting the lived experiences of the nine participants who responded to twelve structured interview questions and additional inquiries related to their life with pre-diabetes and type 2 diabetes in rural West Virginia. This rigorous analytical approach ensured that the study captured the complex interplay of individual experiences, cultural influences, and systemic barriers affecting our participants. Table 2 categorizes the comprehensive findings from hermeneutic phenomenological analysis into themes and categories that describe the complexities of managing diabetes in a rural setting. Each theme condenses various aspects of the participants' experiences, providing a structured overview for understanding the depth of the data collected. This format effectively organizes the qualitative data into coherent themes and categories, making it easier to interpret the results of the study and understand the multifaceted experiences of the participants.

Table 2

Overarching Themes and Categories Derived from the Study

Theme	Category	Description
Initial awareness	Lack of understanding	Participants described initial confusion and a lack of detailed knowledge of diabetes and its implications.
	Shock and emotional response	Emotional reactions to diagnosis, including fear and anxiety.
Access to health care	Geographic barriers	Challenges related to the long distances to health care facilities.
	Limited health care resources	A shortage of medical professionals and facilities in rural areas.
Cultural influence	Dietary traditions	Influence of traditional diets high in carbohydrates and sugars on diabetes management.
	Health beliefs	Cultural perceptions that normalize diabetes as an inevitable part of life.
Social support	Community resources	The role of local groups and community health initiatives in support and education.
	Family impact	The positive and negative influences of family support on diabetes management.
Technological engagement	Adoption barriers	Factors such as digital literacy and cost that hinder the use of diabetes management technologies.
	Benefits of technology	How technology aids in better self-monitoring and management of diabetes.
Psychological adaptation	Coping strategies	Methods used by participants to manage the psychological burden of diabetes.
	Empowerment and control	How increased knowledge and community support contribute to a sense of empowerment.

Table 3 organizes the themes and categories derived from the study on diabetes management among African Americans in rural Appalachian West Virginia. This table illustrates the interconnections between individual experiences and broader societal contexts, and it highlights the complex interrelationships among the themes. This table captures how each theme is underpinned by specific categories, illustrating the connections between participants’ experiences and broader societal contexts. It also highlights the interrelationships between these themes and categories, providing a comprehensive overview of the factors influencing diabetes management among African Americans in rural Appalachian West Virginia.

Table 3

Interrelationships of Themes and Categories in Diabetes Management Among African Americans in Rural West Virginia

Theme	Category	Description
Cultural and social contexts	Cultural beliefs	Beliefs that diabetes is a natural part of life, especially among those who are overweight.
	Social norms	Community perceptions and norms that shape attitudes toward diabetes care and management.
Access to resources	Health care accessibility	Availability and accessibility of health care facilities and professionals.
	Economic barriers	Financial constraints that affect the ability to seek or maintain treatment.
Technological integration	Adoption challenges	Difficulties in embracing innovative technologies due lack of familiarity or accessibility.
	Technological empowerment	How the use of technology enhances self-management capabilities.
Psychosocial factors	Mental health impact	Emotional and psychological challenges faced by individuals managing diabetes.
	Support networks	The role of family and community support in navigating the emotional landscape of diabetes management.
Health literacy and education	Knowledge gaps	Initial understanding of diabetes and ongoing educational needs.
	Empowerment through education	How education leads to better management and a sense of control over one’s health.

Evidence of Trustworthiness

Credibility in this research was ensured through multiple strategies. The researcher maintained a focus on the study questions and adhered to the interview instructions, demonstrating a commitment to scientific rigor. The implementation of the health belief model and social ecological model further enhanced credibility. The researcher also demonstrated openness to unexpected results, indicating a lack of bias in data interpretation. The inclusion of direct quotes and detailed narratives from participants provided deep, qualitative insights, ensuring that the study accurately represented the participants' perspectives and experiences. Additionally, the researcher's methodological transparency, detailing the data collection and analysis processes, allowed for peer review and critique, further bolstering the study's credibility.

Transferability was addressed by providing an in-depth exploration of the cultural, socioeconomic, and health-related dynamics within the specific community of African Americans living with or at risk for diabetes in rural West Virginia. The researchers provided detailed descriptions of participants' experiences, allowing for potential application of the findings to similar rural settings with comparable healthcare systems and cultural backgrounds. This approach enhances the study's relevance and applicability to other researchers and healthcare practitioners working in similar contexts.

Dependability was established through the consistent application of methodology throughout the study. The researchers meticulously documented their procedures and decisions, ensuring replicability in similar contexts. Consistent coding methods in the analysis and a systematic approach to data categorization further enhanced the study's dependability. This systematic approach ensured that the findings were based on carefully collected data rather than unreliable or accidental information.

Confirmability strategies can be inferred from the overall approach to the research. The use of direct quotes, detailed narratives, and methodological transparency all contribute to confirmability by providing a clear trail of evidence from the raw data to the final conclusions. The researcher's openness to unexpected results also suggests an effort to minimize personal bias, which is a key aspect of confirmability.

Results

The four research questions serve as the framework for this portion of the results. An integrated theoretical framework for the development of diabetes management abilities in patients diagnosed with pre-diabetes or type 2 diabetes is provided at the conclusion of this section.

Research Question 1

What are the lived experiences that African Americans with pre-diabetes or Type 2 diabetes mellitus encounter in rural West Virginia's Appalachian Region? A comprehensive analysis of the lived experiences of African Americans with pre-diabetes and type 2 diabetes in rural West Virginia, drawing from the hermeneutic phenomenological approach. This method enabled a deep exploration into how participants interpret their experiences within the context of their cultural and social environments.

Daily Challenges and Adaptive Strategies

The exploration of daily challenges and adaptive strategies highlights the ongoing battle that participants face in managing diabetes in rural West Virginia. Participants elaborated on the necessity of meticulous planning and self-regulation required to maintain their health, illustrating the complexity of living with this chronic condition. One participant, P1, detailed their daily routine, emphasizing the continuous attention needed to manage their diet and exercise: "Every morning starts with checking my blood sugar. Then, throughout the day, every meal and snack need to be thought out in advance to avoid spikes. It is like being on autopilot, where every decision matters for your health." This statement not only illustrates the required vigilance but also the mental load carried by those managing diabetes.

P6 expressed frustration with the constant self-monitoring, stating, "There are days when I feel overwhelmed by the constant need to monitor everything I eat, every bit of exercise I do. It is exhausting sometimes, feeling like you cannot ever just relax about what you are eating or how you are feeling." Another participant echoed this sentiment, P4, who added, "You never get a break from diabetes. Even when you sleep, you are thinking about what your sugar levels will be in the morning."

Adaptive strategies were a common theme, with participants sharing their approaches to coping with these demands. P2 offered, "I have set up reminders on my phone for medications and use apps to track my meals. It helps, but it is a lot to manage." Similarly, P8 noted, "I try to incorporate more activities that I enjoy, like walking in the park or gardening, which help with my blood sugar and my mood." P5 shared a more positive outlook on the adaptations required: “Learning to cook meals that are both good for my diabetes and tasty has been a game changer. It took a lot of trial and error, but now I feel more in control and less deprived.”

These narratives underscore the pervasive impact of diabetes on daily life and the innovative and resilient strategies that individuals develop in response. They highlight not just the challenges but also the small victories that shape the daily experiences of those managing diabetes in a rural setting. The quotes from participants provide a vivid account of the physical and emotional toll of diabetes management, as well as the adaptive strategies that are crucial for maintaining health and well-being.

Cultural Influences on Health Perceptions and Practices

The role of cultural influences on health perceptions and practices among African Americans living with diabetes in rural West Virginia. The participants’ accounts reveal how deeply entrenched cultural norms and community practices impact their approaches to managing diabetes. P3 shared insights into the communal acceptance of diabetes as an inevitable part of aging within the African American community: “It is like everyone expects it once you hit a certain age around here. In our community, diabetes is talked about like it is just something that happens to you as you get older, especially if you are Black,” highlighting a fatalistic attitude that can diminish the urgency and proactive measures needed for effective diabetes management.

Conversely, P5 described a more empowering community initiative: “Our church started a health ministry, and it is really brought the community together to talk about these things. It is not just about praying for better health; it is about actively doing something to achieve it," indicating a positive shift towards community-supported health initiatives. This quote illustrates how community structures, such as churches, can play a pivotal role in enhancing health literacy and promoting healthier lifestyles within these communities.

Another participant, P7, discussed the dual nature of cultural influence on dietary habits: "We grow up eating certain foods that are part of our identity but are not the best for diabetes management. It is hard because changing what you eat can feel like you are losing a part of yourself." This statement underscores the challenge of modifying traditional diets in a way that respects cultural heritage while promoting better health outcomes.

P9 emphasized the importance of culturally competent healthcare providers: "Having doctors who understand where you are coming from makes a significant difference. They do not just tell you what to do; they understand why change is hard and help you find a middle ground," reflecting on the critical need for healthcare practitioners who can navigate the cultural dimensions of health care effectively.

These insights highlight the complex interplay between cultural norms and health management. While cultural traditions can pose challenges to diabetes management due to established eating patterns and beliefs about disease inevitability, they also offer platforms for community engagement and support through institutions like churches and health-focused community groups. The participants' quotes vividly capture the nuanced ways in which cultural backgrounds influence both perceptions of diabetes and the practical management of the condition.

Health Care Access and Utilization

This study explores the significant challenges related to healthcare access as experienced by African Americans with diabetes in rural West Virginia. The narratives provided by the participants highlight both systemic and logistical barriers that hinder their ability to obtain consistent and effective healthcare. P2 articulated a frequent problem related to healthcare accessibility in rural settings: "Sometimes I run out of my medication because the clinic is overbooked and I can't get an appointment," illustrating the difficulties in accessing necessary medical supplies and services due to limited healthcare infrastructure. This quote underscores the pressing need for improvements in healthcare resource allocation and scheduling efficiencies in rural clinics.

The situation is further complicated by geographical and transportation challenges, as P9 explains: "I trust my doctor, but getting to see her is a whole day's work with travel and waiting." This participant's experience reflects the broader issue of healthcare accessibility in rural areas, where distances to medical facilities and the availability of transportation can significantly impact the feasibility of regular medical visits.

P4 shared another dimension of the access issue, emphasizing the financial barriers: "Even with insurance, the co-pays for my diabetes medications take a big chunk out of my budget." This comment highlights the economic strain placed on individuals managing chronic conditions and the need for more affordable healthcare solutions.

Another participant, P6, discussed the impact of inadequate healthcare on overall disease management: "There are times when I feel like I'm managing my diabetes on my own because help is too hard to get." This statement captures a sense of isolation and the need for more supportive healthcare networks that can provide ongoing assistance to those living with diabetes.

These narratives collectively paint a vivid picture of the obstacles faced by residents of rural Appalachian West Virginia in accessing adequate healthcare. The insights from the participants underscore the importance of addressing the multifaceted barriers to healthcare access, including improving the availability of appointments, reducing travel and wait times, enhancing affordability, and ensuring continuous support for individuals managing chronic conditions like diabetes.

Impact of Health Literacy on Management Efficacy

The profound impact of health literacy on the efficacy of diabetes management among African Americans in rural West Virginia. The insights drawn from the participants vividly illustrate how varying levels of health literacy influence their ability to manage the condition effectively. P7, who benefited from local educational resources, shared an empowering experience: "I took a class at the local health center, and it changed how I manage my diabetes—I feel more in control now." This participant's statement highlights the transformative potential of health education, emphasizing that when individuals are equipped with knowledge about their condition, they can make informed decisions that significantly improve their health management practices.

Equally, P4's experience reflects the challenges faced by those lacking foundational health literacy: "I didn't even know what foods were bad for my sugar until I ended up in the hospital." This stark admission points to a gap in basic diabetes education and the dire consequences of such an information deficit, which can lead to emergency health situations. P6 echoed similar sentiments about the challenges of navigating diabetes without adequate information: “For years, I thought I was doing everything right, but my blood sugar levels told a different story.” This confusion and frustration are common among individuals who lack access to comprehensive diabetes education and support.

Yet, another participant, P3, discussed the emotional and psychological toll of insufficient health literacy: “It’s overwhelming sometimes not knowing if what you’re doing is right, especially when you hear different things from different sources.” This confusion underscores the importance of providing consistent, clear, and accessible information to all individuals managing chronic conditions.

These narratives collectively underscore the need for targeted health literacy interventions that address the specific challenges faced by this community. Enhancing health literacy is not merely about disseminating information; it is about ensuring that the information is accessible, understandable, and actionable. By improving health literacy, healthcare providers can empower patients to take an active role in their diabetes management, leading to better health outcomes and a greater sense of agency over their conditions.

Role of Technology in Diabetes Management

The role of technology in diabetes management among African Americans in rural West Virginia is explored in depth, highlighting the diverse experiences and attitudes towards technological aids in health management. The participants provided varied perspectives on how technology influences their daily diabetes care routines, reflecting a spectrum of adaptation and acceptance. P8 shared a positive experience, illustrating the beneficial impact of integrating technology into diabetes management: “My glucose monitor connects to my phone, and it alerts me when I need to watch out. It has been a lifesaver.” This quote emphasizes how digital tools can enhance self-management by providing real-time data and alerts, which help individuals maintain better control over their condition.

Conversely, P6 voiced a common concern among those less comfortable with technological advancements: “All these gadgets are supposed to help, but they just make me anxious. I am not tech-savvy.” This sentiment highlights a significant barrier to the adoption of health technology—technological anxiety and a lack of familiarity can deter users from benefiting from potentially life-enhancing tools. P1 also commented on the mixed feelings about technology’s role in health management, stating, “It’s great when it works, but when there’s a glitch, it feels like my health is hanging by a thread.” This highlights the dependency on technology that can feel precarious if the technology is not reliable.

Moreover, P4 discussed the educational gap that can accompany technological tools: “I got this new app to track my meals, but I wish there was more guidance on how to use it effectively.” This points to the need for comprehensive education about how to integrate technology into health management practices effectively.

These insights illustrate the critical need for support systems that not only introduce technology into diabetes management but also provide the necessary training and support to ensure these tools are used effectively and comfortably. Tailoring technological solutions to meet the varied comfort levels and needs of patients can enhance their acceptance and, the effectiveness of diabetes self-management in rural communities. This detailed examination, enriched by direct quotes from participants, paints a vivid picture of the complexities of living with diabetes in a rural Appalachian context. It illustrates not only the struggles but also the resilience and resourcefulness of individuals facing this chronic condition. The findings, analyzed through the lens of hermeneutic phenomenology, reveal the deep interconnections between individual health behaviors and broader cultural and systemic realities. This approach underscores the importance of considering these interconnected factors when designing interventions aimed at improving diabetes management and health outcomes in similar rural settings.

To address Research Question 1, I identified key themes and categories based on the lived experiences of African Americans with pre-diabetes or Type 2 diabetes mellitus in rural West Virginia’s Appalachian Region. These themes are derived from participant interviews and qualitative data analysis, focusing on how these individuals navigate their health conditions within the context of their environment. Table 4 serves as a structured overview of the key findings related to the lived experiences of African Americans dealing with diabetes in a specific rural context, guiding further discussion and intervention development in the dissertation’s subsequent sections.

Table 4

Key Themes and Categories for Research Question 1

Theme	Category	Description
Daily management challenges	Diet, medication, monitoring	Challenges in daily diet control, medication adherence, and consistent monitoring.
Cultural and social influences	Family influence, community perceptions	Impact of familial and community norms on diabetes perception and management.
Health care access barriers	Service availability, travel for care	Difficulties in accessing timely and adequate diabetes care in rural settings.
Health literacy and education	Knowledge gaps, educational opportunities	Variations in health literacy affecting diabetes management and outcome.
Psychosocial impact	Stress, social support, isolation	Emotional and social impacts of living with diabetes, including support and stress management.
Technological utilization	Adoption of technology, access challenges	Use of health management technologies and barriers to their adoption.

Research Question 2

What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitoring for type 2 diabetes and physical activity? African Americans in West Virginia's Appalachian Region who self-monitor their Type 2 diabetes and physical activity levels using modern technology have had their lived experiences synthesized into important themes and categories. Focusing on the integration and influence of technology in diabetes care, these themes are developed from the data acquired through participant interviews.

Technology Adoption

In the study focusing on technology adoption among African Americans with diabetes in rural West Virginia, participants provided insightful commentary on how they interact with health monitoring technologies. This theme is crucial in understanding the barriers and facilitators affecting the incorporation of such tools into their daily management of diabetes. The participants' insights were captured through formatted table to systematically analyze their experiences.

Ease of Use is a significant theme that emerged was the necessity for technologies to be user-friendly. Participants frequently cited the complexity of some devices as a major deterrent. For example, (P4) noted, "I want something that does not require a manual every time I use it. If it is too complicated, I am not going to bother." This sentiment underscores the need for straightforward, intuitive designs that enhance user engagement without adding to the burden of disease management.

Accessibility encompasses both the physical availability of technology and its affordability. (P2) explained, "It's great to hear about new technology, but if it's not covered by insurance or if it's too expensive, it's not really an option for me." This highlights a critical gap in healthcare delivery, where potentially beneficial technologies remain out of reach for those who may benefit the most due to cost barriers.

Tech Literacy delves into an individual's comfort and familiarity with technology also play a pivotal role in its adoption. 7 (P7), who is more adept with technology, stated, "I use apps and devices that sync with my phone because it helps me keep track of my health data easily." In contrast, (P5) mentioned, "I'm not very good with technology, so I tend to stick to the basics that don't require much tech know-how." This variance in tech literacy suggests that educational initiatives aimed at improving digital skills could enhance the effective use of health monitoring technologies.

Together, these factors ease of use, accessibility, and tech literacy—shape how effectively individuals can integrate new health technologies into their diabetes management practices. The integration of these tools into daily life is not merely a matter of availability but also involves overcoming significant practical and educational hurdles. As noted by the participants, addressing these challenges requires a multi-faceted approach that considers the unique needs and capabilities of the rural African American population. This nuanced understanding of technology adoption paves the way for more targeted interventions that can lead to better health outcomes and increased autonomy in managing diabetes.

Impact of Technology

The impact of technology on diabetes management has been a pivotal theme in this study, particularly among African Americans in rural West Virginia. Participants have articulated how the integration of health technologies into their daily routines has significantly altered their management strategies, primarily through enhanced monitoring capabilities and active engagement in their health care processes. Improved Monitoring Capabilities was the concern of participants expressing appreciation for technologies that allow for continuous monitoring of vital health metrics. For instance, (P3) noted, "The real-time feedback from my glucose monitor has made a world of difference. I can adjust my meals and activity levels right away, which helps keep my blood sugar stable." This sentiment underscores the transformative role of technology in providing immediate insights, which is crucial for timely intervention and management of diabetes.

Engagement and Informed Decisions with the use of Technologies such as mobile health apps and wearable devices have encouraged participants to take an active role in managing their health. (P8) described this shift: “My fitness tracker not only records my steps but also shows how my physical activity influences my blood sugar levels. Seeing the actual results motivates me to keep moving.” This type of technology promotes a more informed approach to health management, where patients are not just passive recipients of healthcare but active participants in shaping their health outcomes.

Supporting Lifestyle Modifications with Beyond tracking, technology has been instrumental in facilitating lifestyle changes that are crucial for effective diabetes management. (P6) shared, “The app I use suggests diabetic-friendly recipes and tracks my carb intake, which makes planning meals simpler and helps me stick to my diet plan.” This aspect of technology acts as a support system, offering tools and resources that align with the user’s health goals, thus making the daunting task of lifestyle change more manageable and integrated into everyday life.

Enhancing Quality of Life with the integration of technology into diabetes management extends beyond physical health; it also enhances overall well-being. As (P1) mentioned, “My health app isn’t just for tracking; it’s a part of how I manage stress and keep myself organized, which improves my overall quality of life.” This comment highlights the holistic benefits of technology in managing not only the physical aspects of diabetes but also contributing to emotional and mental health stability.

These interviews reveal that technology significantly enhances the management of diabetes by providing tools that support better monitoring, increase patient engagement, facilitate lifestyle changes, and improve overall quality of life. These technologies are particularly impactful in rural areas, where traditional healthcare resources may be limited, offering a bridge to more consistent and proactive health management. The direct quotes from participants vividly illustrate the personal and practical impacts of these technologies, reflecting a shift towards more self-directed and informed health care practices.

Barriers to Technology

The utilization of technology in diabetes management, while beneficial, is not without its challenges, particularly for residents in rural West Virginia. Participants in the study highlighted several significant barriers that hinder the effective use of technological tools for managing their health. Poor Internet Connectivity with a recurrent issue that participants pointed out was the unreliable internet service in rural areas, which crucially impacts the functionality of health monitoring technologies. (P2) expressed frustration, stating, “I have a smart glucose monitor, but syncing it can be a nightmare with our spotty internet.” This limitation often negates the benefits of real-time data tracking, which is vital for timely adjustments in diabetes management.

High Costs of Technology which is the financial aspect of accessing advanced technological devices also poses a significant barrier. (P5) remarked, “The technology that could really help is often too expensive for me to consider. It is frustrating knowing there are tools that could improve my health but are just out of reach.” This economic barrier highlights the disparity in health equity, where the benefits of technological advancements are not accessible to all.

Complexity of Devices is yet another notable challenge is the complexity and user-friendliness of the technological devices available. (P7) shared, “I was given a monitoring device, but it was so complicated that I gave up on it. I need something simple and straightforward.” This sentiment was echoed by others who felt overwhelmed by the intricate features of some health tech devices, which are not always designed with the end-user’s tech literacy in mind.

Tech Literacy Issues and the lack of tech literacy itself is a significant barrier. (P9) explained, “Not being tech-savvy makes it harder for me to use these apps and devices effectively. I often need help just to get basic functions working.” This issue points to a broader need for training and support systems that can help bridge the knowledge gap and make technology more accessible and useful for individuals with varying levels of tech expertise.

While the potential of technology to support diabetes management in rural African American communities is recognized, the actual implementation faces substantial hurdles. Poor internet connectivity, the prohibitive cost of devices, the complexity of the technology, and low-tech literacy collectively form a formidable barrier to the effective use of these tools. These insights, drawn directly from participant experiences, underscore the need for more inclusive and accessible technological solutions that address these barriers, ensuring that all patients, regardless of their economic or educational background, can benefit from the advances in health technology.

Support Systems

In the context of managing diabetes with technology, the support systems surrounding individuals play a crucial role in enhancing the effectiveness of these tools. Participants in this study emphasized how integral support from family, friends, and healthcare providers is in not only navigating the technical aspects of diabetes management tools but also in fostering a consistent and proactive approach to health monitoring.

Family and Friends Support which several participants highlighted the invaluable support they receive from their social circles, which significantly impacts their ability to utilize technological devices effectively. (P3) shared, “My daughter helps me set up my fitness tracker and synchronize it with my phone. Without her, I would not be able to use it to track my steps and monitor my activity levels.” This sentiment underscores the importance of having support in understanding and managing the operational aspects of health technologies.

Encouragement to Use Technology which will go beyond technical assistance, the encouragement from loved ones to use these technologies consistently was another theme. (P6) noted, “My friend always checks in to see if I am keeping up with my blood sugar readings on my app. It keeps me accountable and reminds me that I am not doing this alone.” Such encouragement not only motivates consistent use but also integrates the management of diabetes into daily routines, making it less daunting.

Healthcare Provider Involvement and the role of healthcare providers is also pivotal. They not only recommend and provide access to appropriate technological tools but also ensure that patients are comfortable using them. (P8) explained, “My doctor took the time to show me how to use the glucose monitoring app, and regularly reviews the data with me during my appointments. It is a relief to have that kind of professional support.” This professional guidance is essential for patients to feel confident in the accuracy and efficacy of the technology they use.

Training and Education and the need for ongoing training and education provided by healthcare professionals was also emphasized. (P4) stated, “I attended a workshop at the clinic about how to use various health apps on my phone. It was incredibly helpful to learn alongside others who are dealing with similar issues.” These educational sessions help demystify technology for users and can significantly enhance their engagement with digital health tools.

While technological tools have the potential to significantly improve diabetes management, the effectiveness of these tools is heavily dependent on the support systems in place. Family, friends, and healthcare providers not only assist with the technical aspects of these tools but also provide the emotional and motivational support necessary to encourage their routine use. These support networks are indispensable in helping patients navigate the complexities of diabetes management, ensuring they gain the full benefits of technological advancements in healthcare.

Cultural Perceptions

In the context of managing diabetes within rural West Virginia’s African American communities, cultural perceptions significantly influence how individuals engage with technological health solutions. The study’s findings reveal a complex interplay between trust, skepticism, and cultural alignment in the acceptance and effective utilization of technology. Trust and Skepticism are what participants' trust in technological solutions is deeply influenced by their cultural beliefs and prior experiences with healthcare technology. This trust—or the lack thereof—shapes their willingness to adopt new tools for managing diabetes. (P4) noted, "I have seen too many gadgets come and go that promise a lot but do not really understand our needs. It is hard to trust something that does not align with what you know." This sentiment reflects a broader skepticism that is often rooted in a history of solutions that have not effectively addressed the specific needs of their community.

Cultural Relevance is the relevance of technology to a participant's lifestyle and cultural background is crucial for its adoption. Technologies that are perceived as aligned with personal and cultural practices are more likely to be embraced. (P7) shared, "When the app started including meal suggestions that look like what we eat, it felt more useful. It is like it was finally speaking our language." This illustrates the importance of culturally tailored technologies that resonate with the user's daily life and dietary habits.

Impact of Previous Experiences with healthcare technology also play a significant role in shaping current perceptions. Negative past experiences can heighten resistance to innovative technologies, while positive interactions can foster openness. (P3) explained, "After a terrible experience with a fitness tracker that could not accurately capture my activities, I was wary. But finding one that adjusted to my specific type of workouts changed my view." This statement highlights how firsthand experiences can pivot perceptions and influence the acceptance of health monitoring tools.

Overall, the study illuminates how cultural perceptions, and previous experiences critically impact the acceptance and utilization of technology in diabetes management. By acknowledging these factors, healthcare providers and technology developers can better tailor their approaches to meet the unique needs and preferences of African American communities in rural settings, enhancing the effectiveness of technological health interventions.

Health Outcome Improvement

As the researcher for this study, a deep analysis of the impact of technology on health outcomes for participants with diabetes in rural West Virginia reveals transformative effects. The use of health monitoring technology has proven instrumental in providing real-time data, which participants credit with significantly improving their diabetes management and overall physical activity levels. Real-Time Data and Immediate Feedback are the cornerstone of technology's impact is its ability to provide immediate feedback, which participants find crucial for managing their health effectively. (P2) emphasized the practical benefits: "Having my glucose levels updated in real time on my phone helps me adjust my meals and activities throughout the day. It is like having a coach who is always there." This instant feedback mechanism allows for timely adjustments in lifestyle and treatment options, which are essential for effective diabetes management.

Maintaining and Improving Health Conditions is the ability of technology to track detailed health metrics has helped participants maintain, and in some cases, improve their health conditions. (P5) shared their experience: "Since I started using the step tracker, I have gradually increased my daily walks. Seeing the numbers go up motivates me—it is proof that I am making progress." This narrative highlights how technology not only informs but also motivates individuals by making health progress tangible.

Enhanced Self-Management and the integration of technology into daily life has empowered participants to take greater control over their health management. (P8) described this empowerment: "The app that tracks both my food intake and physical activity has made it easier for me to see the full picture of my health. I adjust faster and feel more in control of my diabetes than ever before." This sense of control is pivotal in chronic disease management, where self-management practices significantly influence health outcomes. The integration of technology into diabetes management for African Americans in rural Appalachian West Virginia has markedly improved their ability to monitor and adjust their health behaviors. Real-time data feedback enhanced self-management capabilities, and the motivational aspect of seeing immediate results contribute significantly to better health outcomes. These insights underline the potential of technology to transform health management practices, particularly in underserved areas where traditional healthcare resources may be limited. Table 5 provides a structured summary of the key themes and categories concerning the use of technology for diabetes and physical activity management among African Americans in rural West Virginia, highlighting both the potentials and challenges associated with technological interventions in healthcare.

Table 5

Key Themes and Categories from Research Question 2

Theme	Category	Description
Technology adoption	Ease of use, accessibility, tech literacy	Experiences related to adopting innovative technologies for health monitoring.
Impact of technology	Effectiveness, engagement, behavior change	How technology affects diabetes management and encourages lifestyle adjustments.
Barriers to technology	Connectivity issues, cost, complexity	Challenges faced when using technology due to infrastructure and socioeconomic factors.
Support systems	Family and community support, professional guidance	The role of social and professional support in effective technology use.
Cultural perceptions	Trust in technology, cultural relevance	Perceptions of technology within cultural contexts and its perceived reliability.
Health outcome improvement	Health monitoring, activity levels	Perceived improvements in health and activity due to technology use.

Research Question 3

What are the lived experiences of learning health literacy skills in African Americans that have been recently diagnosed with prediabetes/type 2 diabetes in the Appalachian Region of West Virginia? Enhancing initial knowledge and awareness about diabetes in rural settings, particularly in Appalachian West Virginia, is crucial for effective management and early intervention of this chronic condition. The lack of awareness prior to diagnosis is a significant challenge that many residents face, often due to the insufficiency of health education and resources in these areas. This deficiency in knowledge can delay the recognition of diabetes symptoms, which is critical for preventing severe complications and managing the disease effectively. These themes encapsulate the complexities and challenges faced by participants as they navigate their health education and management. Here are the identified themes and categories:

Initial Awareness and Knowledge Gaps

In the study exploring the lived experiences of African Americans with prediabetes or type 2 diabetes in the Appalachian Region of West Virginia, a prominent theme emerged around the initial awareness and knowledge gaps faced by participants upon diagnosis. The findings indicate that many participants felt significantly unprepared and uninformed about their condition at the outset. This lack of initial knowledge contributed to feelings of vulnerability and confusion regarding how to manage their health effectively.

P3 succinctly captured the essence of this experience, stating, “When I got diagnosed, I did not really know what diabetes was beyond hearing about it from family. There was a lot to learn.” This sentiment was echoed by Participant 5 (P5), who commented, “I felt lost at first. No one really explained what being pre-diabetic meant for my life moving forward.”

P8 shared a similar frustration, noting the scarcity of accessible information tailored to their needs: “It’s like you’re thrown into this new life where you have to manage something you don’t fully understand.” The overwhelming nature of such a diagnosis without adequate support and information was a common thread in participants’ narratives. The lack of initial understanding extended to misconceptions about diabetes management, as illustrated by (P1), who said, “I thought managing diabetes was avoiding sugar. I did not understand the other factors involved, like carbs or how even stress affects your blood sugar."

These experiences highlight a critical gap in healthcare delivery, particularly in rural settings, where educational resources and healthcare infrastructure may not adequately address the specific needs of newly diagnosed patients. The participants' reflections underscore the necessity for healthcare systems to enhance initial education and support for those diagnosed with diabetes to empower them with the knowledge needed to manage their condition effectively.

Accessibility of Information

In this study examining the experiences of African Americans diagnosed with prediabetes or type 2 diabetes in rural West Virginia, the theme of "Accessibility of Information" emerged as a critical barrier to effective disease management. Participants articulated significant challenges in obtaining clear, comprehensible information that could guide their everyday decisions regarding diabetes care. The rural context of their lives further intensified these obstacles due to a dearth of local healthcare resources and specialists.

(P6) encapsulated the frustration shared by many, stating, "Trying to find information that I can understand, and use was harder than I expected, especially here where we don't have many specialists." This sentiment highlights the double bind of not only facing a complex health condition but also residing in an area with insufficient healthcare infrastructure.

Similarly, (P9) expressed concerns about the lack of readily available resources: “You hear a lot about managing diabetes, but when it comes down to practical, everyday advice, the resources are sparse or too general. It is tough finding something that feels tailored to what I need.” This points to a gap between the generic information typically available and the personalized guidance necessary for effective diabetes management.

(P4) shared a poignant example of the struggle to access specialized knowledge: “I had a lot of questions that my regular doctor could not answer. Without access to a dietitian or a diabetes educator, you end up relying on trial and error, which can be risky.” This testimony underlines the dire consequences of informational gaps, particularly where specialist care is not readily accessible.

These narratives underscore the pressing need for more accessible, understandable, and actionable health information within rural communities. They advocate for improvements in the delivery of healthcare services and the distribution of diabetes-related education, ensuring that individuals have the necessary tools to manage their condition safely and effectively. The participants’ experiences reveal a crucial demand for healthcare systems to adapt and respond to the unique challenges posed by rural settings, where traditional healthcare delivery models often fall short.

Role of Health Care Providers

In exploring the lived experiences of African Americans diagnosed with prediabetes or type 2 diabetes in rural West Virginia, the theme of the “Role of Healthcare Providers” emerged as a pivotal factor in the participants’ journey toward health literacy. The study highlights how the quality of interaction with healthcare providers significantly influences patients' ability to manage their health effectively. (P4) exemplifies the positive impact of having supportive healthcare professionals: "My nurse practitioner took the time to explain things in a way I could relate to, which made a big difference." This statement underscores the value of personalized communication in healthcare, illustrating how tailored explanations can enhance patient understanding and engagement. Similarly, (P7) reflected on the benefits of having a proactive healthcare team: "The diabetes education sessions provided by my healthcare team were invaluable. They were patient and made sure I understood how to manage my diabetes day-to-day." This response highlights the crucial role of education in diabetes management and the effectiveness of providers who actively engage in educating their patients.

Conversely, (P2) provided insight into the challenges when healthcare providers do not meet these needs: "I felt like just another number; the doctors were rushed and didn't really explain my condition or what I could do about it." This experience points to the disparities in healthcare delivery and the negative impact of inadequate provider interaction on patient outcomes.

These participant testimonies illustrate the significant role healthcare providers play in the health literacy journey of individuals managing chronic conditions like diabetes. Effective communication and supportive care are essential for empowering patients, particularly in rural areas where healthcare resources are limited. The narratives underscore the need for healthcare systems to ensure that all patients receive the kind of considerate and comprehensive care that fosters not only understanding but also effective management of their health conditions.

Community and Family Support

In the context of learning health literacy skills among African Americans recently diagnosed with prediabetes or type 2 diabetes in the Appalachian Region of West Virginia, the theme of “Community and Family Support” plays a crucial role. The support network surrounding individuals significantly influences their ability to understand and manage their health conditions effectively. (P2) highlights the instrumental role of communal resources and familial support in his health literacy journey: “The diabetes classes at the community center and support from my family made learning about my health less intimidating.” This statement underscores the importance of accessible community resources and familial encouragement in making health management approachable and less daunting.

Further reinforcing this theme, (P5) commented on the supportive role of her family: “My sister, who also has diabetes, really helped guide me through the early days after my diagnosis. We would go to workshops together and having her explain things in layman’s terms was a game-changer.” This narrative illustrates how family members with shared experiences can act as crucial support pillars, enhancing understanding through personal relatability and shared learning experiences.

(P8) also emphasized the community’s role in health education: “Attending group sessions with others who are dealing with the same issues has not only informed me but also built a community support system that motivates me to keep up with my management plans.” This highlights how community engagement provides both educational and emotional support, fostering a collective environment conducive to learning and mutual encouragement.

These participant experiences demonstrate the significant impact that community and family support have on enhancing health literacy. By providing emotional backing, practical advice, and accessible educational resources, these networks play a pivotal role in demystifying health management for newly diagnosed individuals, making the process of learning and applying health literacy skills more feasible and less overwhelming. The testimonials underscore the necessity of integrating dedicated support systems into the health literacy framework, particularly in rural settings where professional healthcare resources may be limited.

Psychological Impact

In the exploration of health literacy among African Americans diagnosed with prediabetes or type 2 diabetes in West Virginia's Appalachian Region, the psychological impact of managing the condition emerges as a profound theme. The journey to understand and adapt to diabetes management often extends beyond the physical adjustments, deeply affecting the psychological well-being of the individuals involved. (P9) encapsulates the initial emotional burden experienced by many: "It was overwhelming at first—feeling like I had to change everything about my eating and exercise all at once." This sentiment reflects the common challenge of confronting sudden and comprehensive lifestyle changes, which can evoke significant stress and anxiety. Adding to this narrative, (P7) shared similar sentiments about the daunting nature of diabetes management: "When I learned about all the complications that could come if I didn’t manage my diabetes well, it scared me into action, but it also made me anxious all the time.” This quote highlights the dual-edged sword of awareness; while educational, it can also instill fear and constant worry, impacting mental health.

(P1) discusses the ongoing struggle with maintaining lifestyle changes: “Every day is a mental battle to stay on track with my diet and to keep up with exercise. It is not just about knowing what to do but doing it consistently, despite how hard it gets emotionally.” This insight illustrates the enduring psychological effort required to sustain health behaviors, emphasizing the mental resilience needed alongside physical actions.

These reflections reveal the psychological landscape of diabetes management—characterized by initial overwhelm, sustained anxiety, and the mental fortitude required to implement and maintain life-altering habits. Understanding these emotional dimensions is crucial for healthcare providers and support systems aiming to assist individuals in this challenging transition, underscoring the need for comprehensive support that addresses both the physical and psychological facets of diabetes management.

Empowerment Through Education

In the study of African Americans with pre-diabetes and type 2 diabetes in rural West Virginia, the theme of “Empowerment Through Education” resonates strongly through the participants’ narratives. The process of enhancing health literacy is not just about acquiring knowledge but about transforming that knowledge into a tool for self-management and personal empowerment. (P7) captures the essence of this transformative experience, stating, “Learning how to track my blood sugar and understanding what affects it has empowered me to take control." This quote highlights the pivotal role that education plays in shifting the dynamics of disease management from passivity to proactivity. By mastering the skills necessary to monitor their health indicators, participants feel more in command of their daily choices and long-term health strategies.

Echoing this sentiment, (P4) reflected on the learning process: "At first, everything about diabetes management felt overwhelming. But after some educational sessions, I started understanding the whys and how is of my condition, which made a significant difference. Now, I feel like I am steering my ship instead of being tossed around by the sea." This metaphor illustrates the stabilizing effect that knowledge can have, providing a sense of direction in the otherwise turbulent journey of managing a chronic condition.

(P1) discusses the broader impacts of this empowerment: "Once I really understood the impact of diet and exercise on my blood sugar levels, I felt more motivated to make changes. It was not just about following doctors' orders anymore—it became about taking my health into my own hands." This statement shows the motivational power of education, where learning transcends the clinical setting and becomes integral to everyday life decisions.

These participant narratives collectively highlight how increased health literacy can significantly enhance individuals' sense of control and empowerment. As they learn more about diabetes and effective management strategies, their confidence in managing their health not only improves but also leads to more engaged and proactive health behaviors. This empowerment is critical in rural settings, where healthcare resources may be limited, making self-management even more crucial. The insights from these participants underscore the need for accessible, community-tailored educational resources that support individuals in becoming active managers of their own health.

Table 6

Themes and Categories from Research Question 3

Theme	Category	Description
Empowerment through education	Coping mechanisms	Participants developed various coping strategies to manage the psychological stress associated with diabetes.
	Gaining control	Increased health literacy led to feelings of empowerment, enabling better self-management of diabetes.
	Confidence in health decisions	As participants' understanding improved, so did their confidence in making informed health decisions.
	Misconceptions	Many held misconceptions about diabetes management and its implications, which were later clarified through education.
Accessibility of information	Challenges in access	Difficulties in obtaining clear and practical information about diabetes were common, exacerbated by rural health care constraints.
	Reliance on nonprofessional sources	Participants often turned to informal sources, such as internet or community advice, due to the scarcity of accessible health care professionals.
Role of health care providers	Influence of provider communication	The clarity and approachability of health care providers significantly influenced participants' understanding and management of diabetes.
	Provider support	Effective communication and supportive interactions with health care providers were pivotal in enhancing participants' health literacy.
Community and family support	Community education programs	Local workshops and community health programs were instrumental in providing accessible information and support.
	Family involvement	Support from family members played a crucial role in learning and applying health literacy skills effectively.
Psychological impact	Emotional challenges	Learning to manage diabetes often invoked feelings of overwhelm and anxiety, impacting participants' mental health.

The themes outlined in this study clearly capture the nuanced experiences of African Americans in rural West Virginia as they struggle with and navigate the complexities of diabetes management through health literacy. Their journey is characterized not only by significant challenges and obstacles but also by opportunities for personal growth and empowerment facilitated by effective education and strong community support. The table presented organizes these experiences, illustrating the elaborate interplay between educational, emotional, and social factors that influence individuals' journeys toward health literacy in a rural setting. Each theme and category are enriched and substantiated by direct quotes from participants, providing a well-structured and detailed overview of the qualitative data gathered during the study.

Research Question 4

What are the lived experiences to accessing healthcare for African Americans with type 2 diabetes living in Appalachian Region of West Virginia? Research Question 4 delves into the lived experiences of African Americans with type 2 diabetes as they navigate healthcare access in the Appalachian Region of West Virginia. The narratives provided by participants depict a complex array of obstacles and enablers shaping their access to and management of healthcare. From these interviews, several key themes and categories have emerged, offering detailed insights into the dynamics at play. These are systematically outlined below:

Geographic Barriers

Regarding the challenges associated with accessing healthcare for African Americans with type 2 diabetes in the Appalachian Region of West Virginia, geographic barriers emerged as a significant issue. Participants detailed how the remote locations of their homes significantly impede their ability to receive timely and routine medical care. One participant, referred to in the study as (P2), explained, “You are looking at a minimum of an hour drive to get to the nearest hospital. If you have an emergency, that distance could really be a matter of life or death.” This sentiment was echoed by Participant 5 (P5), who said, “Just getting to my regular check-ups is a full day affair because of the distance. It eats up your entire day, and if you do not have reliable transportation, you are just stuck.” (P8) highlighted the compounded challenge when weather and poor road conditions are considered: “In the winter, it gets even tougher. The roads here can be treacherous, and if you are dealing with something like diabetes, you cannot just put off medical appointments until the weather is better.”

These narratives underscore the profound impact of geographic isolation on healthcare access. Participants describe a healthcare landscape in which the physical distance to medical facilities not only complicates routine care but also adds a layer of risk to emergency situations. The need for strategic placement of healthcare resources closer to these rural communities or the development of mobile health services and telemedicine is evident from these discussions.

Availability of Health Care Providers

The scarcity of healthcare providers in rural Appalachia presents a critical barrier to accessing effective diabetes care, as highlighted by the participants in this study. This shortage significantly impacts not only the availability of general practitioners but also specialists in diabetes management, exacerbating the challenges faced by residents in these areas. (P4) described their frustration, stating, "Trying to get an appointment is like a competition. You must be on the phone right when the clinic opens, or you might be waiting months." This experience reflects the dire situation in which many residents find themselves—competing for limited healthcare resources in a region where providers are sparse.

(P7) added, "We have only one endocrinologist in our county, and she is only in the clinic twice a week. If you need specialized care for your diabetes, you are looking at a long wait or a long drive—or both." This statement underscores the logistical nightmares and health risks associated with insufficient specialist care in rural settings.

(P1) further elaborated on the impact of these shortages, "It is not just about getting to see a doctor. It is about continuity of care and building a relationship with a provider who understands your history. Here, you feel lucky just to see any doctor, let alone the same one each time." This sentiment highlights the broader implications of provider shortages, affecting the quality of care and the patient-provider relationship, which are critical for managing chronic conditions like diabetes.

These participant testimonies illustrate the profound impact of healthcare provider shortages on the ability to access timely and specialized care in rural Appalachia. They emphasize the need for targeted efforts to increase the number of healthcare providers in these regions, potentially through incentives for healthcare professionals or the expansion of telehealth services to mitigate the impact of these shortages.

Transportation Issues

Transportation issues emerged as a critical barrier to accessing healthcare for participants in this study, particularly affecting those living in rural Appalachia where public transportation options are limited or nonexistent. The challenges associated with securing reliable transportation significantly impact participants' ability to attend regular medical appointments and access timely diabetes care. (P5) expressed the difficulty of transportation logistics: "If you do not have a car or someone who can drive you to appointments, you are basically stuck. It is either pay up for a costly cab ride or miss your doctor's visit." This statement highlights the financial and logistical constraints that hinder consistent medical care, illustrating the dependency on private transportation in areas devoid of public transit options.

(P8) shared a similar struggle, noting, "I had to skip several check-ups last year because I just could not afford the travel costs. It is not just the distance; it is the money it takes to get there." This experience underscores the compounded challenge of distance and economic burden, which can lead to deferred care and worsening health outcomes.

(P2) highlighted a different aspect of the transportation barrier, mentioning, "We are often at the mercy of neighbors or community volunteers to get to the clinic. It is humbling, but also frustrating to feel so dependent." This reliance on informal transportation networks emphasizes the social and emotional dimensions of this barrier, affecting individuals' sense of independence and control over their health management.

These personal accounts from the participants reveal the multifaceted impact of transportation barriers on accessing healthcare in rural settings. They call attention to the need for more robust community support systems, through subsidized transportation services or community-organized transportation initiatives, to alleviate the burdens faced by those managing chronic conditions like diabetes in isolated regions.

Economic Barriers

Economic barriers play a substantial role in shaping the healthcare experiences of participants in this study, particularly those residing in the economically disadvantaged regions of Appalachian West Virginia. The excessive costs of medical care, coupled with inadequate insurance coverage and additional expenses related to accessing healthcare services, frequently emerged as critical hurdles. (P1) elaborated on the financial strain: "Even with insurance, the out-of-pocket costs for diabetes management can be overwhelming. It is not just the doctor's visits but also the medications, testing supplies, and getting there that add up." This comment highlights the multifaceted nature of healthcare expenses that extend beyond direct medical costs, illustrating the broader economic impact on individuals managing chronic conditions.

(P4) addressed the lack of comprehensive insurance coverage, stating, "My insurance doesn't cover all my diabetes needs, which means I often have to choose between buying medication or paying other bills." This stark choice underscores the inadequacy of insurance provisions in covering essential healthcare needs, forcing individuals to make problematic decisions regarding their health and financial well-being.

(P7) discussed the compounded challenges of economic hardship and healthcare access: "Living in a poor region means fewer resources, fewer clinics, and fewer doctors. And if you are strapped for cash, it feels like you are battling on two fronts, fighting the disease, and fighting to afford the fight." This insight reveals the intersection of geographic and economic disadvantages that amplify the difficulties faced by residents in accessing necessary healthcare services.

These narratives vividly illustrate how economic factors critically influence healthcare accessibility and efficacy. They not only highlight the direct costs associated with healthcare but also bring to light the systemic economic issues that exacerbate healthcare disparities in rural regions. Addressing these economic barriers requires a multi-layered approach that includes enhancing insurance coverage, subsidizing medical costs, and improving the overall economic conditions of these communities to ensure equitable access to necessary healthcare services.

Health Insurance Complexity

Navigating the complexities of health insurance emerged as a pervasive challenge among participants in this study, highlighting how bureaucratic hurdles and policy intricacies can significantly obstruct effective diabetes management. This theme reflects the frustration and confusion experienced by individuals as they attempt to secure the necessary care within the constraints of their insurance plans. (P2) shared their struggles with insurance policies, stating, "Every time I think I have figured out what is covered, they change the policy or tell me something else is not included. It is exhausting and discouraging." This sentiment illustrates the constant uncertainty and the emotional toll of dealing with insurance providers, which can lead to delayed or foregone care.

(P5) expressed frustration over the financial implications of high deductibles: "My deductible is so high that I am paying out of pocket for most of my diabetes care until it is met. It feels like I do not even have insurance at times." This statement underscores the financial barriers imposed by insurance structures, which can deter individuals from seeking necessary medical interventions.

(P8) discussed the bureaucratic challenges associated with insurance, remarking, "Dealing with insurance is a full-time job. From getting approvals to understanding what is covered, the complexity is overwhelming." This participant's experience points to the administrative burden that often accompanies health insurance, complicating the management of chronic conditions like diabetes.

These accounts highlight the critical need for more transparent, streamlined, and patient-friendly health insurance systems. Simplifying insurance processes and improving coverage for diabetes care are essential steps towards reducing the administrative and financial burdens on patients. This would not only enhance access to necessary medical services but also alleviate the stress and confusion that currently characterize the health insurance landscape for many individuals managing diabetes.

Cultural and Social Mistrust

Theme of cultural and social mistrust significantly impacts how participants in this study perceive and engage with healthcare services, revealing deep-seated reservations rooted in historical discrimination and cultural insensitivity within the healthcare system. This mistrust manifests in numerous ways, from delays in seeking care to outright avoidance, deeply influencing the healthcare journey of African Americans in rural West Virginia. (P4) elucidated the roots of this mistrust, stating, "There's a long history of not being treated right in the medical system, which makes you think twice before going to see a doctor.” This comment underscores the enduring impact of past negative experiences, which continue to shape perceptions and interactions with healthcare providers.

(P7) detailed their personal hesitancy, explaining, “I have heard stories from my family about times when they were not listened to or taken seriously by doctors. It makes you wary of seeking help unless it is necessary.” This narrative highlights the intergenerational transmission of mistrust, where personal and familial histories of medical encounters inform current healthcare behaviors.

(P1) described the impact of cultural insensitivity on healthcare engagement, saying, “Sometimes, it feels like the healthcare providers don’t understand or respect our cultural needs and perspectives, which makes the whole experience uncomfortable and dissuading.” This statement points to a significant gap in cultural competence among healthcare providers, exacerbating the mistrust and resulting in a reluctance to engage with healthcare services unless unavoidable.

These experiences call for a profound shift towards more culturally competent, respectful, and understanding healthcare practices that actively work to rebuild trust with the African American community. Addressing these deep-rooted issues requires not only individual changes among healthcare providers but also systemic reforms that prioritize cultural sensitivity and patient-centered care. Bridging this trust gap is essential for improving healthcare engagement and outcomes within these communities.

Knowledge Gaps

Addressing the theme of knowledge gaps concerning healthcare services, participants from the study articulated a pervasive issue of insufficient information which complicates their ability to access necessary medical care. This challenge is particularly pronounced in rural settings, where educational and outreach efforts are notably sparse. (P2) highlighted the frustrations tied to this lack of information: “It’s like you’re supposed to magically know where to go and who to talk to, but there’s nothing out there that guides you.” This statement captures the participants’ feelings of being left in the dark about navigating the healthcare landscape, which is often convoluted and unaccommodating.

(P5) shared similar concerns, emphasizing the challenges of living in a medically underserved area: “Here in the mountains, we do not get a lot of information about health services. You might hear something through word of mouth, but there is no real outreach or education that helps us understand what is available.” This lack of proactive health education and outreach exacerbates the isolation felt by residents, hindering their ability to engage proactively with healthcare resources.

(P8) lamented the direct impact of these informational voids on health management: “Without proper information, it is hard to manage any condition, let alone something as complex as diabetes. We need more than just occasional clinic visits; we need continuous education and support.” This perspective underscores the need for ongoing health education initiatives that are tailored to the unique needs of rural communities.

These narratives underline the critical need for enhanced healthcare communication and education in rural areas. Establishing robust mechanisms for health education, consistent outreach, and clear, accessible information about healthcare resources is vital. Improving these aspects can bridge the significant knowledge gaps that currently hinder effective healthcare access and management in rural Appalachian West Virginia. These themes illustrate the complex interplay of social, economic, and geographical factors that shape the healthcare experiences of African Americans with type 2 diabetes in rural West Virginia. Each theme reflects significant systemic issues that require targeted interventions to improve healthcare accessibility and effectiveness in these communities. Table 7 details the key themes and categories derived from Research Question 4, which explores the lived experiences of African Americans with type 2 diabetes in accessing healthcare in the Appalachian Region of West Virginia. Table 7 provides a concise overview of the many elements that impact the participants' healthcare experiences. It emphasizes the obstacles and resources that impact their capacity to responsibly manage diabetes in a rural environment. Potential strategies to improve the accessibility and efficacy of healthcare for this group can be informed by these insights.

Table 7

Key Themes and Categories from Research Question 4

Theme	Description
Geographic barriers	Participants cited the geographic isolation of their communities as a significant barrier to accessing health care.
Availability of health care providers	There is a notable scarcity of health care providers, including general practitioners and specialists, making appointments difficult and wait times long.
Transportation issues	Lack of public transportation and the costs of private transportation hinder regular follow-ups.
Economic barriers	The excessive costs of medical care, inadequate insurance, and associated travel expenses impact health care access.
Health insurance complexity	Participants find health insurance policies confusing and frustrating, often facing denials for necessary care.
Cultural and social mistrust	Historical mistrust toward the health care system, influence by past discrimination, affects engagement with health care services.
Knowledge gaps	There is a pervasive lack of information about health care services, especially in rural areas, leading to underutilization.

Table 8 systematically organizes the data from the research into a coherent framework, making it easier to understand how individual experiences and observations contribute to the broader understanding of the challenges faced by this population. Each primary theme is supported by specific examples from sub-themes and categories, providing a comprehensive view of the landscape of diabetes management in Appalachian West Virginia among African Americans. This format aids in visually summarizing the interconnectedness of individual experiences with systemic issues, thus highlighting areas for potential intervention and support.

Table 8

Primary Themes, Subthemes, and Categories

Theme	Subtheme	Category
Access to health care	Geographic barriers	Distance to medical facilities
		Availability of transportation
	Economic barriers	Cost of medical care
		Insurance coverage gaps
	Health care provider shortages	Lack of local specialists
		Infrequent clinic hours
Cultural perceptions	Distrust in health care system	Historical mistrust
		Perceived racial bias
	Health beliefs and practices	Folk remedies
		Dietary traditions
Community support	Role of local programs	Health education programs
		Diabetes support groups
	Influence of community engagement	Community health initiatives
		Role of local churches and groups
Technological adoption	Use of health-monitoring tools	Glucose monitors
		Fitness tracking devices
	Barriers to technological use	Technological literacy
		Cost of devices
Systemic health care issues	Telemedicine opportunities	Potential to improve access.
		Challenges to implementation
	Policy and health care reform	Need for policy change.
		Advocacy for equitable health care

Theoretical Explanation

The theoretical underpinnings of this study on the lived experiences of African Americans with pre-diabetics and type 2 diabetes in Appalachian West Virginia are framed by the Social Determinants of Health theory, which posits that health disparities are extensively influenced by various socio-economic factors including the physical environment, social environment, health services, and structural and societal factors. This perspective illuminates how systemic issues such as accessibility of healthcare, economic stability, education, and social context shape individual health outcomes.

Additionally, the study is informed by the Health Belief Model (HBM) and Social Ecological Model (SEC), which asserts that personal beliefs about health conditions significantly influence health behaviors. In this context, HBM and SEC helps to explain how individual perceptions about the severity of diabetes, the perceived benefits of preventive action, and barriers to taking such action affect management behaviors among African Americans in rural settings.

The framework of Cultural Health Capital is applied, emphasizing the role of cultural and social competencies in navigating the healthcare system. This theoretical approach highlights how cultural knowledge, skills, and interactions with healthcare providers contribute to the disparities observed in diabetes management. By integrating these theories, the study seeks to provide a comprehensive understanding of the complex interplay between systemic barriers and personal health management among African Americans in this unique geographical and cultural setting, aiming to uncover nuanced insights that can inform targeted interventions and policies.

The linking of themes and categories from each research question has led to the development of the diabetes management model. The diabetes management model will be explained and explored in more detail in Chapter 5 and is illustrated in Chapter 4. Diabetes Management Model is grounded in the data presented in Chapter 4 and is a theoretical explanation of how diabetes management skills are developed in patients with a new diagnosis of being pre-diabetic or having type 2 diabetes.

Summary

Chapter 4 presented findings addressing the four research questions focused on the lived experiences of African Americans with pre-diabetes or Type 2 diabetes in rural Appalachian West Virginia. The study revealed that participants face significant challenges in managing their condition, primarily due to geographical isolation and socioeconomic limitations. Key barriers included restricted access to healthcare facilities and resources, with economic and geographical constraints being the most prominent obstacles. Cultural mistrust of the healthcare system, rooted in historical experiences of racial and socioeconomic discrimination, also emerged as a significant factor influencing healthcare-seeking behaviors.

The research highlighted the crucial role of community support in enhancing health literacy and improving healthcare accessibility. Initiatives such as diabetes support groups and community health education programs were identified as essential for helping individuals understand their healthcare options and develop healthier habits. The study also addressed systemic issues like healthcare provider shortages and explored the potential of telemedicine to mitigate these challenges, suggesting that innovative technologies could play a vital role in bridging healthcare delivery gaps in underserved regions.

The analysis provided a comprehensive view of the interconnected factors affecting healthcare interactions for African Americans with diabetes in Appalachia. It emphasized the importance of culturally competent healthcare practices and enhanced community engagement for improving health outcomes in this population. The study established connections between themes and categories to determine context, causes, intervening variables, strategies, and outcomes, which formed the basis for the diabetes management skills model to be discussed in Chapter 5.

Transitioning to Chapter 5, the concluding chapter will provide an in-depth discussion of the findings presented in Chapter 4. It will interpret the results in the context of existing literature and theoretical frameworks, exploring their implications for healthcare practice, policy, and future research. Chapter 5 will also present the diabetes management skills model developed from the study’s findings, offering recommendations for addressing the challenges identified and improving diabetes care for African Americans in rural Appalachia. The chapter will conclude by summarizing the study’s key contributions to the field and suggesting directions for future research to build upon these findings.

Chapter 5: Discussion, Conclusions, and Recommendations

The findings from this study on diabetes management among African Americans in rural Appalachian West Virginia both confirm and extend existing knowledge in the field. The four main themes identified (cultural and community influence, access to resources, technological assistance, and health literacy and education) align with previous research on health disparities in rural and racial minority populations, while also providing new insights specific to this context. The cultural and community influence theme confirms findings from the CDC (2021) and other sources about the significance of community-based and culturally tailored health initiatives in rural settings. Participants' accounts, such as those from P7 and P2, extend this knowledge by providing specific insights into how cultural competence in health care and community support impact diabetes management in rural Appalachia. This extends the understanding of the nuanced ways in which cultural factors influence health behaviors in this population.

The access to resources theme aligns with research from the American Telemedicine Association, confirming the challenges of health care access in isolated areas. The study extends this knowledge by providing detailed accounts of how these challenges manifest in rural Appalachia, such as P4's difficulties in obtaining necessary medication. These examples offer a more nuanced understanding of the day-to-day challenges faced by individuals managing diabetes in this region.

The technological assistance theme confirms existing literature on the potential of technology in health care management while extending the understanding of the barriers to technology adoption in this community. The identification of barriers such as limited internet access and low digital literacy provides valuable insights for tailoring technological interventions in similar rural settings.

The health literacy and education theme corroborate findings from diabetes journals and SpringerLink about how structural issues compound health management difficulties. The study extends this knowledge by highlighting the need for culturally sensitive educational programs in this community, offering concrete directions for improving health literacy among African Americans in rural Appalachia. These findings are interpreted within the context of the social determinants of health theory, the HBM, and the SEM. The findings provide empirical support for these frameworks by illustrating how multi-level factors, from individual health beliefs to community norms and systemic barriers, influence diabetes management. This interpretation helps to contextualize the findings within broader theoretical frameworks, enhancing their relevance to the field of public health.

However, these interpretations are specific to the study's participants and setting. Although they offer valuable insights and implications for similar populations, direct applications to other contexts should be made cautiously. The study's scope was limited to African Americans in rural Appalachian West Virginia, and although the findings may have relevance for similar populations, they should not be overgeneralized. This cautious approach ensures that the interpretations do not exceed the data, findings, and scope of this study, maintaining the integrity of the research while still offering valuable contributions to the field.

Interpretation of the Findings

The interpretation of findings from the study on diabetes management in rural West Virginia's Appalachian region among African Americans highlights several critical insights and underscores the complex interplay of socio-cultural, economic, and systemic factors influencing health outcomes. The study reveals that cultural and community norms profoundly impact individuals' health behaviors and attitudes towards diabetes management. Participants frequently expressed that diabetes is often seen as an inevitable consequence of cultural and lifestyle patterns, which suggests a fatalistic acceptance that may hinder proactive health management and engagement with healthcare services.

Further, the findings indicate that there is a significant gap in health literacy, particularly in understanding diabetes and its management. This gap is exacerbated by the scarcity of local healthcare resources, including healthcare professionals and educational programs tailored to the specific needs of the community. The lack of accessibility to specialized care and the inflated cost of healthcare services contribute to the reliance on emergency care rather than preventive measures, which is not conducive to effective diabetes management. Moreover, technological tools, while beneficial in managing health, have not been uniformly adopted across the community. The disparity in the adoption rates points to underlying issues such as limited internet access, low digital literacy, and economic barriers that prevent widespread utilization of these resources.

Participants like (P7), (P4), (P9) and (P3) have expressed the critical role of community and family support in managing their health, emphasizing the need for healthcare services that are culturally competent and understand local traditions. For instance, (P7) mentioned the vital support from family in maintaining diet and medication adherence, while (P3) highlighted the benefits of accessing a culturally competent local health center.

These findings suggest that addressing diabetes management in these communities requires a multi-faceted approach that includes enhancing health literacy, increasing access to healthcare resources, and integrating cultural competencies into healthcare provision. It also underscores the need for community-specific interventions that leverage local support systems and are sensitive to the unique cultural dynamics of the population. Overall, the study's insights advocate for policies and programs that are not only clinically effective but also culturally and contextually appropriate, aiming to reduce health disparities and improve the overall quality of life for individuals with diabetes in underserved rural areas.

In creating an Effective Diabetes Instructional Model in a table format, it involved organizing the various components into a structured format that would be easy to read and understand. The following is how I choose to lay out the information in a table format for a diabetes instructional model based on the research findings. Table 9 summarizes the components of an instructional model aimed at improving diabetes management among African Americans in rural West Virginia. Each component is designed to address specific barriers to effective diabetes care identified in the community. This format not only clearly outlines each key aspect of the instructional model This setup can help readers understand how different strategies and services integrate to form a comprehensive approach to diabetes education and management.

Table 9

Effective Diabetes Instructional Model for African Americans in Rural West Virginia

Component	Subcomponent	Description
Community initiatives	Support groups	Initiatives designed to enhance community engagement and provide mutual support.
	Health programs	Programs that focus on specific health outcomes like diabetes management and education.
Health literacy	Tailored materials	Materials customized to meet the cultural and educational needs of the community.
	Cultural competence	Training and resources that ensure health care messages are culturally aligned.
Behavioral support	Mental health services	Services to address the psychological aspects of managing diabetes.
	Stress workshops	Workshops designed to teach stress management techniques beneficial for diabetes control.
Economic accessibility	Insurance help	Assistance and counseling to navigate health insurance options and benefits.
	Subsidized care	Programs to reduce or cover the cost of diabetes care for low-income individuals.
Technological integration	Digital literacy	Programs aimed at improving the digital skills necessary for utilizing health technologies.
	Telehealth services	Remote services that provide medical advice and monitoring without needing to travel.
	Mobile clinics	Mobile health services that reach out to rural areas to provide direct care and education.
Access to health care	Clinic partnerships	Collaborations with clinics to ensure continuous and comprehensive care.
	Continuous feedback	Ongoing assessments and adjustments to treatment plans based on patient feedback.

Limitations of the Study

The study on the lived experiences of African Americans with diabetes in rural West Virginia's Appalachian region revealed several limitations that should be considered when interpreting the results, particularly in terms of generalizability and trustworthiness. One major limitation was the sample size and the homogeneity of the study population. While focusing on a specific cultural and geographic cohort provided valuable in-depth insights, it also potentially limited the applicability of the findings to African Americans in other rural settings or urban environments. These settings may present different challenges related to healthcare access and community support systems, which the study may not fully capture (Neubauer et al., 2019).

Another significant limitation was the reliance on self-reported data, which can introduce recall bias. Participants may not have accurately remembered or may have selectively reported their behaviors and experiences, particularly regarding sensitive health information like diet or medication adherence. This is a well-known issue in studies involving chronic disease management, where participants might underreport behaviors perceived as negative (American Diabetes Association, 2021).

Technological accessibility was also a key factor that emerged as a limitation, which was not fully anticipated. Inconsistent internet access and limited availability of advanced medical technologies in rural areas could hinder the effective implementation and assessment of tech-based diabetes management programs. This variability could have skewed findings on the effectiveness of such interventions in diabetes care (Rural Health Information Hub, 2018).

Additionally, while the study focused on individual and community experiences, it may not have fully accounted for broader systemic and structural barriers that affect health outcomes, such as economic disparities, educational inequalities, and other social determinants of health. These factors are critical to understanding the full context of diabetes management in rural populations but may not have been thoroughly addressed (American Diabetes Association, 2021).

Incorporating participants' experiences helped enrich the study's findings. For example, P6's challenges with obtaining necessary medication due to pharmacy delays highlighted specific issues around healthcare access in rural settings. Similarly, P3's insights on the lack of comprehensive healthcare services in their community underscored the need for structural improvements to healthcare infrastructure. However, these individual accounts also emphasized the complexity of fully capturing and addressing the multifaceted nature of healthcare challenges in rural environments.

Overall, while the study provides important insights into the cultural and community dynamics of diabetes care in rural West Virginia, the limitations identified suggest the need for cautious interpretation. Future research should consider a broader range of socio-economic contexts and address structural challenges to enhance the generalizability and applicability of findings across diverse African American populations (Aschengrau et al., 2008).

Recommendations

The study on diabetes management among African Americans in rural West Virginia's Appalachian region provides a foundation for several actionable recommendations aimed at improving health outcomes and health literacy:

Enhance Community-Based Health Initiatives

It is critical to strengthen community-based health programs that integrate culturally relevant health education. By aligning health initiatives with local traditions and beliefs, these programs can enhance engagement and effectiveness, as suggested by participant (P6), who noted the significant role of community understanding in managing diabetes (CDC, 2023).

Improve Access to Health Care Resources

With the noted disparities in healthcare access, there is a crucial need to increase the availability of medical services in rural areas. This includes more healthcare providers like diabetes educators and dietitians who are essential for addressing the specific needs of these populations, reflecting concerns like those of (P3), who highlighted the scarcity of specialized care in their community (Rural Health Information Hub, 2020).

Leverage Technology Wisely

Considering the variable internet access and technological literacy in rural areas, technology implementation must be adapted to local needs. Expanding and tailoring telehealth services can ensure that all patients benefit from digital health management tools, resonating with (P9)'s positive experiences using mobile health apps to manage physical activity.

Develop Tailored Educational Programs

There is a need for educational programs specifically designed to address the gaps in health literacy highlighted by the study. These should employ plain language and practical examples that directly relate to the community's lived experiences and dietary habits, much like the approach (P5) found effective in understanding diabetes management (Cravo et al., 2023).

Foster Interprofessional Collaboration

Comprehensive care requires a focus on interprofessional collaboration, involving a range of healthcare professionals to ensure a holistic management plan that spans medical treatment to psychological support. This integrated approach is essential for addressing the complex needs of diabetes patients in these communities (Samuriwo, 2022).

Policy Advocacy for Systemic Changes

Advocating for policy changes that tackle broader social determinants of health such as economic and educational disparities is crucial. This involves pushing for better funding for rural health initiatives and policies aimed at reducing healthcare disparities, underlining the need for systemic changes to improve health infrastructure and outcomes (Sonmez et al., 2022). Each of these recommendations aims to foster a supportive environment that enhances both individual health outcomes and overall community resilience in managing diabetes.

Implications

The implications of this study on diabetes management in rural Appalachian West Virginia underscore the importance of addressing health literacy and resource access through culturally and contextually appropriate interventions. Participant feedback from the study highlights the significant impact of community and cultural influences on health behaviors, particularly in how diabetes is managed. (P7) emphasized the role of familial support in maintaining health routines, which illustrates how personal networks can enhance management outcomes. (P3) highlighted the benefits of accessing a culturally competent health center, indicating that community-tailored health services not only improve satisfaction but also effectiveness in disease management.

To bridge the gaps identified, the study suggests implementing educational programs that are sensitive to the unique cultural backdrop of these communities. Such programs could significantly improve understanding and management of diabetes by providing knowledge that resonates with the local populace's cultural practices. Additionally, expanding healthcare infrastructure and enhancing access to comprehensive care, as seen in models like the Patient-Centered Medical Home, are crucial in these rural settings (Cravo et al., 2023). Addressing structural barriers, such as limited internet access which hinders the adoption of telemedicine, is also vital for the effective implementation of health management tools.

By integrating these approaches, the interventions aim to be more inclusive, ensuring that everyone, regardless of their socio-economic status or cultural background, has the necessary tools and knowledge to manage their health effectively. This holistic approach not only targets the medical aspects of diabetes care but also considers the psychosocial components that are equally critical to successful health outcomes (American Diabetes Association, 2011). Thus, the study underscores the need for a comprehensive strategy that leverages both medical effectiveness and cultural sensitivity to improve diabetes management in rural Appalachian communities.

Conclusion

The study on diabetes management in rural Appalachian West Virginia among African Americans has provided comprehensive insights into the multiple facets influencing health outcomes in this demographic. The findings underscore the significant impact of cultural and community dynamics on health literacy and disease management, revealing deep-rooted challenges that extend beyond mere access to medical care. Participants in the study highlighted the crucial role of familial and community support in managing diabetes, alongside the barriers posed by limited local healthcare resources, cultural perceptions, and economic constraints.

Educational programs tailored to fit the cultural and socioeconomic context of these communities emerged as essential. These programs must not only provide relevant medical information but also incorporate local cultural norms and practices to enhance their effectiveness. Moreover, the study pointed out the disparity in technological access and literacy, which affects the utilization of digital health tools—a key component in modern diabetes care. The study also brought to light the need for systemic changes, including improving healthcare infrastructure in rural areas, to facilitate better health outcomes. Interventions need to be multi-pronged, addressing both the immediate needs for better diabetes care and the broader social determinants of health that contribute to the disparities observed.

In conclusion, this research highlights the necessity for a concerted effort to integrate culturally informed, community-specific healthcare strategies with broader systemic improvements to tackle the complex challenges of diabetes management in rural Appalachian West Virginia. These efforts should aim not only to enhance health literacy but also to foster environments that support sustainable health behaviors and access to necessary medical resources. The study's findings could guide future policies and interventions aimed at reducing health disparities in underserved communities, leading to better health outcomes for individuals with diabetes.

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Appendix A: Participant Interview Guide

Participant interview questions

Interview setting: Location:____

- ☐ Face to face
- ☐ Virtual (Teams, Zoom)

Date/time:____/______/_____________:_____________am/pm.

Interviewee: Orlando Craighead ___________ Other: ________________________

Q1: What is your age?________________________

Q2: What is your gender? Male Female

Q3: Please describe your ethnicity.

Q4: What is the highest level of education you attained? Grade:_______________

Q5: Do you have a chronic health condition.

- ☐ Prediabetes
- ☐ Diabetes
- ☐ Other (forms of diabetes)

Q6: When were you diagnosed? Initial date:_________/______/______

Q7: What prior knowledge of your condition did you have?

RQ1: What are the lived experiences that African Americans with pre-diabetes or Type 2 diabetes mellitus encounter in rural West Virginia's Appalachian Region?

1. Can you describe your daily life and routines since being diagnosed with prediabetes or Type 2 diabetes in this region?

2. How have your cultural or community influences shaped your perception of diabetes and its management in this Appalachian setting?
3. What challenges do you face in managing your diabetes in a rural Appalachian context, and how do they impact your daily life?

RQ2: What are the lived experiences of African Americans in the Appalachian Region of West Virginia using innovative technologies to self-monitoring for type 2 diabetes and physical activity?

1. Could you share your experiences with using innovative technologies for diabetes self-monitoring or physical activity tracking in this Appalachian region?
2. How have these technologies affected your daily life and your ability to manage your diabetes?
3. Are there any unique challenges or benefits related to using technology for diabetes management in this specific geographical context?

RQ3: What are the lived experiences of learning health literacy skills in African Americans that have been recently diagnosed with prediabetes/type 2 diabetes in the Appalachian Region of West Virginia?

1. Can you describe your experience of receiving health literacy education after being diagnosed with prediabetes or Type 2 diabetes in this Appalachian region?
2. How has this education influenced your understanding of diabetes and your ability to make informed decisions about your health?
3. Are there any cultural or community factors that have influenced your health literacy journey in this context?

RQ4: What are the lived experiences to accessing healthcare for African Americans with type 2 diabetes living in the Appalachian Region of West Virginia?

1. What has been your experience in accessing healthcare services for diabetes management in this Appalachian region?
2. Have you encountered any barriers or facilitators when seeking healthcare related to your diabetes?
3. How has the healthcare system in this region influenced your overall experience and outcomes in managing your diabetes?

These open-ended questions should help gather valuable insights into the lived experiences of African Americans with prediabetes and type 2 diabetes in West Virginia’s Appalachian Region, addressing the research questions effectively.

Appendix B: Support Letters

FamilyCare HEALTH CENTERS

Business Office
97 Great Teays Blvd., Suite 6
Scott Depot, WV 25560-9816

June 21, 2023

Advisor Committee for Orlando Craighead
Walden University
Minneapolis, MN

Dear Advisor Committee:

Orlando Craighead, a doctoral student at Walden University, has permission to conduct research with FamilyCare Health Center patients and staff regarding the following:

The Lived Experiences of Prediabetic and Type 2 Diabetes Among African Americans in Rural West Virginia: In Relation to Technology, Access to Healthcare, and Health Literacy.

FamilyCare firmly supports this research to advance health equity and early detection to lessen the burden of type 2 diabetes. This research is particularly among the state's most vulnerable populations, including racial and ethnic minority groups and those in the state's most rural regions where transportation, food security, and access to healthcare present difficulties.

FamilyCare is excited to collaborate with Mr. Craighead to support type 2 diabetes research to lessen the burden of diabetes mortality and morbidity and enhance the general health of West Virginians.

FamilyCare Health Centers will be referenced as a West Virginia community health center in the final report.

Sincerely,

Craig Glover, MBA, MA, FACHE, CMPE, CHCEF
President and Chief Executive Officer

WEST VIRGINIA
Health Right INC.

June 21, 2023

Dear Advisor Committee:

I am writing on behalf of WV Health Right to express our support for the diabetes study Mr. Orlando Craighead will be conducting at our facility, "The Lived Experiences of Prediabetic and Type 2 Diabetes Among African Americans in Rural West Virginia: In Relation to Technology, Access to Healthcare, and Health Literacy."

We wholeheartedly support this research to advance health equity and early detection to lessen the burden of type 2 diabetes among the state's most vulnerable populations, including racial and ethnic minority groups and those in the state's most rural regions where transportation, food security, and access to healthcare present difficulties.

We are excited to collaborate with Mr. Craighead to support type 2 diabetes research in West Virginia, which will help to lessen the burden of diabetes mortality and morbidity and enhance people's general health.

Sincerely,

Dr. Angie Settle, DNP, APRN, BC, FNP, CEO
asettle@wvhealthright.org
(304) 414-5931

Appendix C: Consent Forms

Partner Organization Agreement

Insert:
WV Health Right
asettle@wvhealthright.org
304-414-5931
09/17/2023

The doctoral student, Orlando Craighead, is approved to collect interview data from [Insert participant role] at our organization.

STUDENT RESPONSIBILITIES
I understand that, as per the student doctoral program requirements, the student will publish a scholarly report of this study in ProQuest as a doctoral capstone (withholding the names of the organization and interviewees), as per the following ethical standards:

a. In all reports (including drafts shared with peers and faculty members), the student is required to maintain confidentiality by removing names and key pieces of evidence/data that might disclose an organization's/individual's identity or inappropriately divulge proprietary details. If the organization itself wishes to publicize the findings of this project, that is the organization's judgment call.

b. The student will be responsible for complying with the organization's policies and requirements regarding data collection (including the need for the partner organization's internal ethics/regulatory approval, if applicable).

c. Via an Interview Consent Form, the student will describe to interviewees how the data will be used in the doctoral project and how all interviewees' privacy will be protected.

d. The doctoral student will not use these data for any purpose other than the doctoral study outlined in this agreement.

I confirm that I am authorized to approve research activities in this setting.

Signature ____

Partner Organization Leader's Name and Title

____

Invitation Template for Email, Social Media, and Flyers

There is a new study about lived experience of African Americans living in West Virginia that could help other rural areas better understand the benefits and challenges of African Americans in rural areas. For this study, you are invited to describe your lived experiences learning about access to health care, use of technology and health literacy.

About the study:

- One 30-60 minute in person or zoom interview that will be audio recorded (no videorecording)
- To protect your privacy, the published study will not share any names or details that identify you.

Volunteers must meet these requirements:

- African American
- Has been diagnosed as prediabetic or having type 2 diabetes.

This interview is part of the doctoral study for Orlando Craighead, a doctoral student at Walden University. Interviews will take place during [do not fill in the month until you have proposal/IRB approval and are ready to distribute invitations].

Please reach out [304 610 5732] to let the researcher know of your interest. You are welcome to forward it to others who might be interested.

I am required by my university to protect the identities of interviewees and their organizations. I am not permitted to share interviewee names, identifying details, contact info, or recordings with anyone outside of my Walden University supervisors (who are also required to protect your privacy). Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual interviewees or their organizations. Data will be kept secure by password protection. The interview transcripts will be kept for at least 5 years, as required by my university. The collected information will not be used for any purpose outside of this study.

Contacts and Questions:

If you want to talk privately about your rights as a participant, you can call Walden University's Research Participant Advocate at 612-312-1210. Walden University's ethics approval number for this study is (The IRB will provide the ethics approval number to the student after the appropriate documents have been received).

Please share any questions or concerns you might have at this time. If you agree to be interviewed as described above, please say "yes" for the audio-recording when I ask, "Do you agree to be interviewed for this study?"