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An Evidenced-Based Project: Decreasing Fasting Glucose Levels Within Mississippi African Americans Through Accountability Groups

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AN EVIDENCED-BASED PROJECT: DECREASING FASTING GLUCOSE LEVELS WITHIN MISSISSIPPI AFRICAN AMERICANS THROUGH ACCOUNTABILITY GROUPS

by

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ABSTRACT

African Americans have the highest population with prediabetes diagnoses (Centers for Disease Control [CDC], 2020). In order to effectively address the lack of assistance needed to break health disparities related to prediabetes, it is crucial to understand why those barriers exist. Experts project that more than 470 million people will have prediabetes by 2030 (Tabak et al., 2012). Educating African Americans who have been previously diagnosed with prediabetes is vital in decreasing the stigma that surrounds communities in rural Central Mississippi. By maintaining accountability groups, fasting blood glucose can decrease and participants can increase their knowledge by understanding how to change their lifestyle and attain resources to live a sustainable and healthy life.

Ten African American patients who reside in Rural Central Mississippi, are between the ages of 18-50, and have been diagnosed with prediabetes or are undiagnosed but meet the A1C requirements were a part of a study conducted by a principal investigator at a healthcare facility. Each participant would be monitored on their food intake, their exercising, glucose levels, and weight changes for three weeks. Additionally, the participants would answer pre-test questions related to their prediabetes and after three weeks, they would take the test again to see if their knowledge has increased. This evidence-based project aided in identifying if accountability groups were effective in decreasing fasting glucose levels and increasing knowledge of diabetes.

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DEDICATION

I would like to thank God for giving me the strength to move forward, despite all of the trials and tribulations I have faced, and for giving me the desire and passion to continue pressing forward. To my mama – Cassandra Williams, my Daddy – Curley Linson Jr., and my Stepdaddy (my 2nd dad) – Willie Williams for always believing in me when I did not believe in myself. You all have supported me in all of my dreams and aspirations. Anything I have wanted to do, y'all simply said go for it you can do it. My parents helped make it happen for me to be successful.

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In loving memory of Deloise Y. Sinclair (5/29/1959 – 8/9/2022) a class act and the epitome of representing strength, courage, style, and grace. I learned by watching her to never give up when faced with adversaries in life. She fought a good fight to the very end with dignity and no complaints. Rest well – you will never be forgotten and will be forever in our hearts.

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ADA	American Diabetes Association
BMI	Body Mass Index
DFM	Diabetes Foundation of Mississippi
DNP	Doctor of Nursing Practice
FBS	Fasting Blood Sugar
IRB	Institutional Review Board
MSDH	Mississippi State Department of Health
T2DM	Type 2 Diabetes Mellitus
USM	The University of Southern Mississippi

CHAPTER I – INTRODUCTION

Currently, the United States (U.S.) has approximately 88 million American adults living with prediabetes (CDC, 2020). Prediabetes is defined as a condition in which individuals have higher than normal blood glucose levels but are not considered high enough for a diabetes diagnosis (Tuso, 2014). As the diagnosis of prediabetes becomes more prevalent, many researchers indicate the increased risk of developing Type 2 Diabetes Mellitus (T2DM), heart disease, and stroke (Andes et al., 2019). To avoid the incidence and prevalence of T2DM and other health-debilitating disorders, one must be monitored accordingly to assess the future risk of these issues within the population (Andes et al., 2019). Researchers indicate that lifestyle risks are essential in being diagnosed with prediabetes. These risks, such as obesity and physical inactivity, are two leading factors (Tuso, 2014).

One of the most common factors related to prediabetes is decreasing its risk of progressing to diabetes. During this time, an intervention occurs, and new lifestyle changes are implemented. According to Tuso (2014), long-term data suggests that lifestyle intervention may decrease the risk of prediabetes progressing to diabetes for as long as ten years. This data factored from the U.S. National Health and Nutrition Examination Board suggests that this action can be more preventable in population-based areas across the U.S. The Centers for Disease Control and Prevention (CDC)'s National Diabetes Prevention Program helps implement structured lifestyle changes that can prevent or delay the development of T2DM (American Diabetes Association [ADA], 2021). Some cost-effective changes include exercising regularly to lose weight and increase physical activity, eating a healthy diet, and smoking cessation [if applicable]

(ADA, 2019). Unfortunately, many individuals with prediabetes struggle to accept their diagnosis and ultimately fail to make the needed lifestyle changes. While some lifestyle changes cost little to no money, some can be substantially high and force individuals to decide not to follow through with the decision—thus causing the increased risk of T2DM.

Background

According to Tabak et al., (2012), prediabetes (also known as intermediate hyperglycemia) is a high-risk state for diabetes that makes the variables higher than average. While it can be associated with insulin resistance and cell dysfunction, the body's inability to maintain appropriate insulin production and glucose levels can impact inflammatory and metabolic stressors (Tabak et al., 2012). The American Diabetes Association (ADA, 2021) has released recommendations to screen and diagnose prediabetes to identify more individuals who have prediabetes. These screening opportunities reflect prediabetes when diagnosed, and its elevations in blood glucose have not met the diagnostic criteria for diabetes but could be viewed as borderline. A part of the screening process includes a method that aids in fasting the plasma glucose levels; however, data has shown that this method of screening would not be detected within a population of at-risk African Americans due to their "ethically inhabited" low triglycerides and high-density lipoprotein (HDL) that are normally found in African Americans (Kaylani et al., 2017).

Significance

According to the Centers for Disease Control and Prevention (CDC), 10.5% of the population within the U.S. had diabetes in 2018. Within that same report, 11.7% were non-Hispanic Black people. While these numbers reflect a vast amount among the African American community, many of these individuals are impacted by several roadblocks that hinder them from receiving or engaging in the lifestyle checkups needed to avoid being diagnosed with T2DM. Galavis et al., (2018) argue that these roadblocks relate to socioeconomic barriers, such as being paid less than White Americans and hindering African Americans from having health insurance.

Another hindrance relates to residential segregation, which defines African Americans as living in less wealthy residential neighborhoods with fewer healthcare centers than White Americans (Galavis et al., 2018). In addition, African American patients who struggle with diabetes are also inclined to live in rural communities, which researchers state have populations at an increased risk of developing T2DM (Rural Health Information Hub, 2021). Because of the need to address the absence of lifestyle change opportunities available for African Americans in rural communities, the comprehensive data among African Americans and prediabetes will need to be explored further to understand how the inequalities contribute to the overall issue.

Problem Statement

African Americans are historically underrepresented in clinical trials created to treat prediabetes and other health debilitating issues caused by prediabetes (Miller, 2011). According to Ferdinand and Nasser (2015), most clinical trials of diabetes treatments were focused on White American participants. This diabetes treatment caused doctors

who treated African Americans for diabetes to base their treatment recommendations on information relevant to the White population. This method disrupts the appropriate treatment plans and what African Americans need to fulfill their diabetic treatment plan. To address the lack of assistance needed to break health disparities related to prediabetes, it is crucial to understand why those barriers even exist when data shows African Americans are the population with prediabetes diagnoses (CDC, 2020). The purpose of implementing this evidence-based project was to determine if accountability groups decrease fasting blood glucose and increase knowledge of prediabetes among African American patients in Rural Central Mississippi.

While the U.S. suffers from providing substantial support for African Americans related to prediabetic treatment plans (CDC, 2020), the rural communities, specifically in Central Mississippi, struggle the most. The spokesperson for the Diabetes Foundation of Mississippi acknowledges that over 90% of the clinic's intake are African American men and women between 18 and 50 (Diabetes Foundation of Mississippi [DFM], 2021). Unfortunately, out of that 90%, majority of them lack health insurance and are in between receiving Medicaid or have been denied due to Mississippi's ability to deny services within the state under Medicaid rights (DFM, 2021). Thus, the problem is left to African American patients to figure out their next step to prevent the progression of diabetes. Establishing prediabetic support groups with food tracking (highlighting good, better, and best options), a point tracking system, exercise tracking, and fasting glucose monitoring was hoped to be a positive start needed to support the problem within Rural Central Mississippi.

Question Guiding Inquiry

Population. African American patients between the ages of 18-50 years of age who have been diagnosed with prediabetes or are undiagnosed but meet the A1C prediabetic requirements of 5.7-6.4. The participants are required to be in Rural Central Mississippi. This population aligns with the study and lack of resources, which has now implemented opportunities for improvement.

Intervention. The intervention will include patients between the ages of 18-50 and provide them with educational opportunities to support their prediabetes diagnoses. Prediabetes programs will be available, and screening tools will help patients determine if they meet prediabetic criteria. To obtain proper intervention, information will be established through surveys to evaluate test knowledge and compile demographics. The demographics will support the theory and group interaction. Educational fundamentals within the company will be completed weekly; and referral sources will be hands-on expertise from dieticians, who can assist with food and exercise tracking.

Comparison. Increasing knowledge before and after treatments and fasting glucose before and after the intervention. The pre-test and post-test questions will be utilized to help compare the knowledge obtained before the accountability groups and afterward. Each question will be noted and documented to understand the results and the percentage of participants that found the accountability groups helpful.

Outcome. To increase knowledge related to prediabetes and see a decrease in FSBS. This project sought to also decrease health disparities and the diagnosis of prediabetes that can ultimately progress to diabetes. Understanding the opportunities to

improve identified additional resources in Rural Central Mississippi and heightened the knowledge of participants who were diagnosed with prediabetes.

Time. The prediabetic support group was established for three (3) weeks. During this time, accountability and group interactions were integral to the overall outcome of the support group. Various patients will hold others accountable to ensure they manage their needs and have acquired the support necessary to maintain their health by dieting, exercising, etc.

Available Knowledge

The U.S. Department of Health and Human Services (MSDH) has an initiative called "Eliminating Racial and Ethnic Disparities in Health" that helps destigmatize the health disparities in rural communities and focus on overall improvements (Black, 2002). While doctors may refer a patient to a diabetes prevention program, that does not always help. Diabetic support groups are lifestyle changes in program form curated to provide practical training from physicians and are generally supported by many healthcare organizations (Black, 2002).

Prediabetic support groups hold patients accountable and provide them with resources to help them engage with the problem and decrease the patient's chance of having T2DM or any other debilitating issue caused by prediabetes. Additional resources from prediabetes support groups highlight culturally competent programs that are cohesive with the culture and upbringing of the patient. Because prediabetes is formed in numerous ways, support groups help identify its significance and offer hands-on engagement that diversifies an entire class.

Prediabetes can be reversed with healthier lifestyle changes (CDC, 2020). According to Gaskin et al., (2014), researchers investigated the link between poverty and diabetes prevalence in African American communities, and the results concluded an increased number of African Americans having diabetes—explicitly stating that "living in a poor neighborhood increased the odds of having diabetes for African Americans" (Gaskin et al., 2014, para. 4).

Needs Assessment

In 2016, Mississippi ranked first in the nation for overall diabetes prevalence (Mississippi State Department of Health [MSDH] 2018). Mississippi physicians partnered with the MS State Department of Health to uphold diabetes education, prevention, and management to prevent prediabetes within the state and decrease the risk. According to the Mississippi Diabetes Action Plan (MSDH, 2018), Mississippi's diabetes prevalence is significantly higher than the national average of 10.5%, and the state's diabetes prevalence continues to rise. The studies throughout the Diabetic Action Plan signified African Americans (concerning sociodemographic) group suffered from prediabetes at higher proportions; however, they were noted even higher when highlighting factors such as if the patient was a high school graduate, college graduate, or if their annual household income fell below the poverty income level (MSDH, 2018).

With these results in mind, various healthcare physicians are developing plans to change those rates and decrease the prevalence in the African American community. In addition, some programs throughout Mississippi are put in place to decrease the A1C levels of patients who identify as African Americans. These opportunities show a need to

provide support and knowledge to patients, and through this project, they can be even more supportive of the community.

Synthesis of Evidence

The synthesis of evidence was conducted to acknowledge statistical data outlining African Americans, prediabetes, and rural central Mississippi. These identifiers were concluded by utilizing national data from the American Diabetes Association (ADA, 2021), local data from the Mississippi State Department of Health (MSDH, 2018), and the Diabetes Foundation of Mississippi (2021).

The American Diabetes Association (ADA, 2021) released their most recent *Standards of Medical Care in Diabetes* which are obligated guidelines structured by researchers and health organizations. Within the standard, population health is defined as expressing the health outcome of a group of individuals and the distribution of health that comes within the group (ADA, 2021). Their belief supports providing all screening protocols, documentation, and behavioral and metabolic factors to support all populations with prediabetes diagnoses.

The ADA (2021) posed that a diagnosis of prediabetes/diabetes creates a significant financial burden to individuals and society. As of 2017, the annual cost of diagnosed prediabetes was $327 billion and was highly attributed to the increased prevalence of diabetes and the increased cost per person who suffered from prediabetes (ADA, 2021). The ADA (2021) also discusses food insecurity and its role in African Americans living in populations such as low-income households. Studies show that over 18% of the U.S. population reported food insecurity between 2005 and 2014. Within that number, the risk for type 2 diabetes caused by a lack of prediabetes screening has

doubled that percentage (ADA, 2021). Patients who suffer from prediabetes and are trying to maintain a healthy diet must choose whether or not to eat or go without—which does not help the need for obtaining a balanced diet.

Mississippi ranked first in the Nation for overall diabetes prevalence, with an estimated 308K adult Mississippians living with diabetes (MSDH, 2021). With these statistics in mind, Mississippi has restructured the way they provide resources to patients who have prediabetes and are in the stages of transitioning to Type 2 Diabetes or any other health debilitating disorder. For Mississippi, the cost of diabetes has skyrocketed since 2012. With data from the American Diabetes Association, Mississippi has exceeded its budget by $2.74 billion, equating to $10,000 per Mississippian with diabetes (MSDH, 2021). These rates continue to increase, although the benefits for Mississippi are more complex to receive than other states.

Outside of the cost of diabetes in Mississippi, the Diabetic Action Plan has been a significant addition to the MSDH training program. This program has provided prediabetic patients with the resources needed to reverse the diagnosis. While the goal of the Diabetic Action Plan focuses on all patients with prediabetes or diabetes, the target population is particularly embraced by Mississippi residents who have the highest prevalence of diabetes plus additional health issues. Their goals also focus on the underserved populations within the state that are often overlooked and desire change and assistance. This plan, created under the National Diabetes Prevention Program (MSDH, 2021), is promoted by ADA state and certified educators and shares the purposes of implementing worksite awareness programs, clinical practice sites, and healthcare systems to administer evidenced-based diabetes risk tests.

The Diabetes Foundation of Mississippi is the state's nonprofit health organization that partners with organizations and state and national officials to prevent diabetes and provide prediabetes screenings needed to revert any diagnoses (DFM, 2021). In addition, this organization provides education, support, advocacy, medical assistance, and research—all from a Mississippi perspective. This localized perspective is beneficial when inquiring for help for a patient who needs proper resources but understands that all states are different. What makes this organization so prolific in establishing the study is that all resources, services, and funding stays in the state of Mississippi to help those living with prediabetes or diabetes get the programs, services, and assistance they need without too many restrictions.

Some of the DFM's resources are provided through their Medical Education Conferences, which express the need for healthcare professionals to help Mississippi grow and establish updated rules and regulations that may have changed throughout the previous years. This goal benefits the health professionals and the patients and the health professionals who are receiving continuing education to ensure every need is met.

Specific Aim of Project

This project focused on whether establishing a prediabetic support group to prevent progression to diabetes be beneficial for African Americans in Rural Central Mississippi. Initiating the accountability support group showed that more African Americans were resourceful and knowledgeable about their prediabetes diagnosis and were able to correctly test and secure ways to reverse the diagnosis. This project utilized methods of food tracking, highlighting good, better, and best option point tracking systems, exercise tracking, and testing fasting glucose.

Theoretical Framework

Nola Pender's Health Promotion Model was used to help guide the project. Pender's theory focused on health promotion and disease prevention, which was vital to the research within this doctoral project. Modifications to the participant's current lifestyle to help decrease fasting glucose levels to stop the development of T2DM was the desired outcome for this project. The health promotion model emphasized the background and included characteristics, knowledge, and experiences. It focused on predicting behaviors that influence health promotion and the desired outcome. The outcome reflected the patient's compliance and willingness to learn about decreasing their fasting glucose levels. Self-management for some can often be very challenging, so helping others to strive for health-promoting outcomes was empowering for them.

DNP Essentials

Essential 1: Scientific Underpinnings for Practice

This DNP essential highlighted the importance of using science-based concepts to help evaluate early diabetes screening and treatment to improve patient outcomes. This theory was supported by identifying the scientific foundations of nursing practices based on natural and social sciences. It also aided in preparing a proper foundation that was beneficial for engaging and advancing the practices of a nursing professional. The accountability and support groups outlined in this project, along with screening tools for the patients, helped determine risk factors. The current guidelines and recommendations were added with the mandated directions within the support group criteria (American Association of Colleges of Nursing [AACN], 2006).

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

This theory helped emphasize organizational priorities related to quality care. Nursing professionals developed skills that were assessed through interventions and practices. This element provided readiness prior to initiating any part of the project and developed additional avenues that could be utilized to complete the healthcare approach (AACN, 2006).

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Nursing professionals utilized this element by promoting the use of research and investigations. This evidence-based project exemplified numerous online databases that were essential in researching information and identifying solutions to align with the study through proper preparation. Further, the information found could be associated with holding nursing professionals accountable for the quality of care of the patients through healthcare organizations and research (AACN, 2006).

Essential IV: Information Systems-Technology and Patient-Care Technology for the Improvement and Transformation of Healthcare

The utilization of technology helped with adequate data processing and properly analyzing information and results. In addition, by documenting the information into logs, technology was later used to properly transcribe or convert to a potentially created mobile application that helped store data that was obtained (AACN, 2006).

Essential VIII: Advanced Nursing Practice

As a healthcare professional, the role of advancing and providing comprehensive information to individuals was important. By identifying deliverables, healthcare

professionals used evidence-based care and maintained assessments, and mentorships, and supported patients through various transitions. Additionally, continued programs and maintained the deliverables needed for the patient to get healthy and stay healthy (AACN, 2006).

Summary

The emphasis of this project was to focus on the prevention of diabetes. Helping the patients learn about screening and avoiding the disease allows them to hand in their health journey. Well-being is essential for chronic illness, population health, health maintenance, and preventative measures.

The diabetes epidemic has continued to increase in significantly higher numbers over the last ten years. Unfortunately, it has increased even more for Mississippi, accounting for over 13.6% of the adult population living with prediabetes. While researchers review the numbers and out-of-pocket expenses from tax and business officials, a small healthcare facility in Rural Central Mississippi is doing something about the numbers increase—they are creating a prediabetics program curated for those who are not able to afford the proper testing, resources, and education needed to reverse their prediabetes diagnosis. Sponsored by the Centers for Disease Control and Prevention, this program aims to attract 18–50-year-old African American individuals who fall under a sociodemographic and have an A1C of 5.7% to 6.4%.

Understanding that to ultimately help the African American communities, physicians must be able to utilize health data that supports their demographic in hopes of receiving adequate and effective treatment plans. Doing so gives African Americans an advantage to get the help they need to reverse the prediabetes diagnosis and also switch

their lifestyle changes by reviewing appropriate treatment plans curated for African Americans. As these resources become available to the community, patients were encouraged to explore their opportunities themselves, and the results would give them the willpower needed to relay the information to their family members and become a part of the solution.

CHAPTER II - METHODS

Context

Previous interventions, programs, and supportive literature aided in gathering evidence associated with implementing prediabetes knowledge throughout the African American community. Through the data found, support came from various organizations throughout Mississippi that aligned with the mission sought out for the evidence-based project. The facility provided all information to the investigator to ensure that patients were following meal guidelines, properly logging weigh-ins, and utilizing the accountability groups. Separate documentation was noted for those who met the criteria for prediabetes by having additional health issues but had not yet been diagnosed. Those who were diagnosed with prediabetes and had an A1C of 5.7 – 6.4 logged their intake as well, and members documented any improvement over the three to three-week period. The project helped implement proper standards and held patients accountable for their results. Continuing factors were also noted to aid in helping patients continue the steps following the project's completion.

Intervention

The proposed intervention consisted of properly educating patients to prevent the progression of diabetes through established support and accountability groups. The patients met the criteria and were willing to participate fully in the 3–4-week program. Each patient was provided a screening tool that aided in identifying at-risk individuals and if they met the criteria to move further with the project. For the patients that met the criteria, they were provided with a log that consisted of fasting glucose, a tracker to track food intake and exercise times, weigh-ins, and an opportunity to check in with the PI and

additional accountability partners. To ensure that all patients maintained a healthy diet during the project, they were provided with a list of food options and were given educational material.

Study of the Intervention

The intervention study reviewed information logged into the system by the patient participants. The investigator correlated and established policies and criteria to ensure that all patients followed them accordingly. It was noted to allow the patients the opportunity to provide feedback with their current knowledge (before the program) and later knowledge (after the program had been completed) of prediabetes and their FBS level. Close attention was focused on the food choices within the log to ensure that the patients were maintaining foods from the choices provided, and if not, principal investigators documented the intake of all additional food.

Population of Interest & Setting

The setting for the evidence-based project was a private African-American-owned healthcare center, Quinn Healthcare, which focused on family medicine. This healthcare center serviced a large number of patients with commonly known health issues in the African American community. The patient population included a high number of patients with prediabetes and diabetes. The clinic, located in Rural Central Mississippi, which was the target area for the patients as part of the project. There was one (1) doctor and four (4) nurse practitioners located at this facility. This setting was chosen due to the support of past prediabetes programs in the area and the belief that this evidence-based project and their past interventions shared the same goal while focusing on similar target audiences. Patients a part of this program had a body mass index (BMI) greater than 30 and an A1C

of 5.7-6.4, which was considered a marker for identifying prediabetes. In addition, these patients will consist of African Americans, and these patients also had additional health issues such as hypertension, insulin resistance, or high cholesterol.

Measures

By fulfilling proper measures and following the criteria within the accountability groups, the participants were able to see changes within days. These measures focused on education on diabetes, tracking fasting glucose, and learning how to prevent diabetes and other health issues in the future. The documentation provided additional research to assist participants with their diagnoses after the project was completed.

Analysis

To properly assess patient data, an analysis of qualitative and quantitative data was collected. The quantitative analysis focused on the numbers highlighting the patients' weigh-ins, their A1C levels, and other numerical data; however, the qualitative data focused on the less tangible information such as the food intake, feedback from the patients, and their logs related to their health throughout the day.

Ethical Considerations

These considerations were made based on the Institutional Review Board (IRB) to maintain proper ethical standards. The project started immediately after the IRB was approved (Protocol #22-897). All patients' private health information remained confidential, and no patients were harmed during the study. No patients were identified by their names but were provided with a significant number of their logs. The facility obtained permission from the patients to divulge information to the investigator.

Project Timeline

The timeline for the project was three weeks. Before the start of the project, all participants were chosen to ensure that the project was produced appropriately. Patients were provided with their consent forms and proceeded on the same day. All education and guidelines were noted related to the accountability groups and the anticipated outcome at the end of the project.

Summary

The methods discussed the rationale and narrative approach to qualitative and quantitative analysis. This utilization helped research if accountability groups decreased fasting blood glucose and increase knowledge of prediabetes among African American patients in Rural Central Mississippi. This section also outlined all ethics-related and privacy-concerning issues that could surface as this project develops. Context, intervention, study, population, setting, and measures were discussed. I further concluded with additional data analysis, ethical considerations, and an overview of the project timeline.

CHAPTER III - RESULTS

This chapter considers the outcomes and analyses after the evidence-based project was completed. African American patients between the ages of 18-50 who have been diagnosed with prediabetes or are undiagnosed but currently meet the A1C prediabetic requirements and reside in Rural Central Mississippi were chosen to participate in accountability groups. All participants were provided a screening test to identify if the tools proved prediabetes or conditions that could lead to prediabetes. After the results of each screening tool, the participants were then separated into accountability groups. The accountability group was conditioned for two weeks and assisted each participant with interventions of education, a food diary, and an exercise log. Some participants received a log to note their fasting glucose and weight. The evidence-based project proved to be effective in determining that accountability groups decrease fasting blood glucose and also increased the knowledge of prediabetes among African American patients in Rural Central Mississippi.

Results, Process, Measures, and Outcome

The principal investigator identified African American patients were much more knowledgeable about fasting glucose levels and prediabetes after the three weeks of being associated with accountability groups. In three weeks, 97% of each participant showed improvement with the additional 3% show inconsistent results which could be a result of not following accountability strategies (e.g., food intake, weighing in, etc.). The ten-question diabetes pre-test asked participants questions related to diabetes. This process was significant in understanding the knowledge of each participant and identifying which method would be most prominent. If a participant had more trouble with information

related to food intake, then one of the supporting documents that a participant would be given is a food diary. With this food diary, a participant would understand their current eating habits, and this information can be utilized to take to the doctor for results and improvement resources. The PI also considered the logged information in addition to the knowledge check answers –this would differentiate participants who were knowledgeable about diabetes and fasting glucose, but unable to make changes in their current lifestyle to deter common differences.

Steps and Details

The healthcare facility provided a list of patients that met the criteria for the project. The principal investigator then contacted the potential participants for consent to participate, ensuring that all consent forms were acknowledged and read thoroughly. A recruitment letter was noted which identified details about the project and how the participant could benefit over the three weeks. Out of the twenty participants that met the requirements, ten participants were willing to participate and met the investigator for their initial fasting finger stick glucose reading. Participants were then given a diabetes pre-test which asked questions related to their overall knowledge of diabetes. Additionally, participants were provided with a food diary to log their intake over the three weeks, a weekly exercise log, and a fasting glucose weight record that would enable the PI to see improvement throughout each week. Surveys were also administered to test knowledge of diabetes *after* the accountability groups were completed.

Context

The project was implemented based on a data concept of knowledge and feasibility for individuals with prediabetes. According to Borek et al. (2019), many health

interventions are unclear on how group context can be used to promote health-related behavior change; however, the processes noted in each prevention and management program identify perceptions that can influence the participants' diet and physical activity. This information can all be conducive to the status change and results related to the evidence-based project.

Results

According to Shiyanbola et al., (2020), African Americans' perceptions of sociocultural factors influence their representations of diabetes. Some reasons could relate to racial discrimination by healthcare providers and the stigma associated with diabetes in the African American community. It was important that through this process, participants identified how representation was important, and effectively enhanced the sociocultural context of African Americans and their viewpoints on their knowledge and historical circumstances. With this in mind, all results have coincided with an African-American-owned healthcare facility that specializes in diabetes in African American individuals.

The participant data showed that out of seven females and three males, all between the ages of 29 and 48, results were similar in comparison to improvement. 62% of the participants struggled with their food intake in the evenings or late at night due to schedule changes, inability to eat, or other issues. 3% of the participants showed little to no improvement and voiced no concern in furthering their results to decrease their glucose levels. The following table showed participant data conducted before, during, and after the accountability group testing. Question 1 referred to the glucose level, Question 2 referred to the minutes of exercise logged within a week, Question 3 referred to the Pre-

Test questions (with the first number being the correct number), and Question 4 referred to the Post-Test question scores (with the first number being the correct number).

Table 1

Participant Data

Name	Starting	Week 1	Week 2	Week 3	Current
Participant #1: Female, 43 years	**128lbs** 1. 101 2. 120 mins/wk 3. 4/10 4. 4/6	**127lbs** 1. 95 2. 120 mins/wk	**127lbs** 1. 93 2. 60 mins/wk	**130lbs** 1. 96 2. 30 mins/wk	**128lbs** 1. 96 2. 90 mins/wk 3. 5/6 Post
Participant #2: Female, 48 years	**149lbs** 1. 88 2. N/A 3. 5/10 4. 3/6	**152lbs** 1. 86 2. 30 mins/wk	**145lbs** 1. 89 2. 120 mins/wk	**142lbs** 1. 189 2. 90 mins/wk	**146lbs** 1. 102 2. 60 mins/wk 3. 5/6 Post
Participant #3: Male, 37 years	**225lbs** 1. 156 2. N/A 3. 6/10 4. 4/7	**228lbs** 1. 178 2. 60 mins/wk	**227lbs** 1. 163 2. 30 mins/wk	**225lbs** 1. 150 2. 60 mins/wk	**222lbs** 1. 143 2. 30 mins/wk 3. 4/6 Post
Participant #4: Female, 29 years	**198lbs** 1. 98 2. N/A 3. 3/10 4. 5/6	**196lbs** 1. 95 2. N/A	**195lbs** 1. 96 2. 30 mins/wk	**196lbs** 1. 96 2. N/A	**198lbs** 1. 100 2. 30 mins/wk 3. 2/6 Post
Participant #5: Female, 44 years	**263lbs** 1. 134 2. N/A 3. 8/10 4. 5/6	**260lbs** 1. 148 2. 30 mins/wk	**260lbs** 1. 140 2. 60 mins/wk	**256lbs** 1. 138 2. 30 mins/wk	**251lbs** 1. 125 2. 60 mins/wk 3. 5/6 Post
Participant #6: Female, 35 years	**176.2lbs** 1. 145 2. N/A 3. 5/10 4. 3/6	**176lbs** 1. 143 2. 30 mins/wk	**177lbs** 1. 148 2. 15 mins/wk	**176lbs** 1. 151 2. 30 mins/wk	**175lbs** 1. 156 2. N/A 3. 4/6 Post

Table 1 (continued).

Name	Starting	Week 1	Week 2	Week 3	Current
Participant #7: Female, 39 years	**211lbs** 1. 179 2. N/A 3. 5/10 4. 4/6	**210lbs** 1. 185 2. 30 mins/wk	**212lbs** 1. 189 2. 60 mins/wk	**210lbs** 1. 154 2. N/A	**208lbs** 1. 166 2. 60 mins/wk 3. 3/6 Post
Participant #8: Female, 33 years	**190lbs** 1. 199 2. N/A 3. 5/10 4. 1/6	**189lbs** 1. 184 2. 60 mins/wk	**188lbs** 1. 148 2. 60 mins/wk	**186lbs** 1. 155 2. 60 mins/wk	**185lbs** 1. 161 2. 60 mins/wk 3. 5/6 Post
Participant #9: Male, 50 years	**206lbs** 1. 123 2. N/A 3. 7/10 4. 3/6	**205lbs** 1. 94 2. 90 mins/wk	**205lbs** 1. 101 2. 90 mins/wk	**204lbs** 1. 98 2. 60 mins/wk	**202lbs** 1. 87 2. 60 mins/wk 3. 6/6 Post
Participant #10: Male, 41 years	**186lbs** 1. 93 2. N/A 3. 9/10 4. 2/7	**186lbs** 1. 94 2. 90 mins/wk	**185lbs** 1. 98 2. 30 mins/wk	**186lbs** 1. 94 2. N/A	**186lbs** 1. 97 2. 30 mins/wk 3. 4/6 Post

Progression of prediabetes is also significant and was showcased in the chart below. Progression of prediabetes to diabetes and its reversal to normoglycemia after the intervention. Bright orange references interventions and dark orange represent placebos.

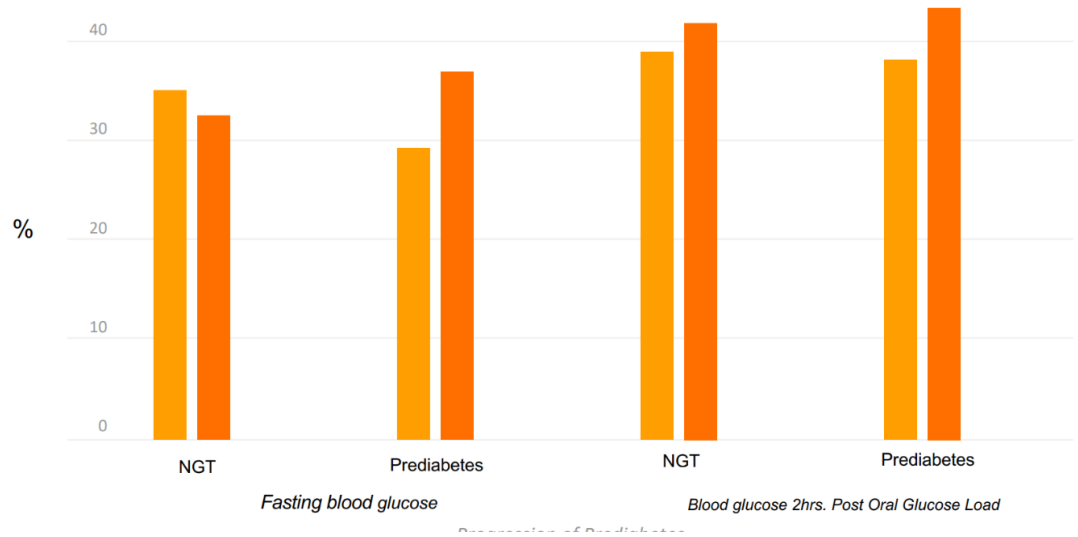

Figure 1. Progression of Prediabetes

Observed Association

The project sought to investigate if accountability groups created to decrease fasting blood glucose and increase knowledge of prediabetes over a few weeks would be effective. The results indicate that 97% of individuals showed consistent improvement and an additional 3% of the results were inconsistent and could be included due to conjunctive results. The outcomes also noted that 62% of the participants struggled with their food intake in the evenings and outside of the food intake, 88% of the participants were consistent in taking their fasting glucose levels, noting their exercise logs (even if they did not exercise that week) and also weighted themselves. These results did show significance in Post-test results compared to the results from the pre-test (before the accountability groups started).

Summary

Results differed in this chapter but were notably beneficial in deciding if accountability groups helped increase knowledge surrounding prediabetes. Additionally, the evidence proved that if participants were given a platform to receive the resources, they needed to take care of themselves, participants would do what was needed to decrease their blood glucose levels. Additional observations also noted that more participants were inclined to document their glucose levels, log their weight, and exercise than document their food intake. Results also noted that over three weeks, knowledge increased significantly (an overall 12% for the total amount of participants).

CHAPTER IV – DISCUSSION

This chapter will iterate the key findings and relevance to the evidence-based project. Some limitations were noted, but additional processes would need to be identified related to the locality of the healthcare facility. The principal investigator identified relevance and strengths, that could correlate with the pre-test and post-test prediabetes questions given at the beginning of the project.

Key Findings, Relevance, and Strengths

Findings within the evidence-based project proved that a collective 97% improved their knowledge of prediabetes and were successful in documenting their weekly logs in their accountability groups. Some participants who were not able to document their logs based their inconsistencies on food intake struggle, inability to eat or consume food, or schedule conflicts.

Continual accountability groups can be utilized in rural communities to help African Americans become more familiar with their diagnoses and how to change their lifestyle. Over 94% of the participants agreed that if resources were offered, they would continue to utilize the groups and change their lifestyles. Assistance is needed within the community to offer extensive services that can be deemed beneficial and support the way participants view diabetes. Understanding how to track fasting glucose, providing education on diabetes, and identifying ways to prevent diabetes and other health issues are all common factors in changing each viewpoint.

The relevance of this project was significant in rural central Mississippi, due to the current problems the area faces related to diabetes and prediabetes. According to the Mississippi State Department of Health, Mississippi is historically a medically

underserved state (MSDH, 2021). Having minimum access to quality preventive and primary care services is central to improving the health status of Mississippians. Understanding how to identify common ground and help the individuals who desire access to better healthcare and opportunities; as well as provide access to healthcare facilities who have a desire to implement procedures and identify areas that can be improved. Understanding that both are vital to the growth of the state and the knowledge of everyone can be very beneficial in the long run.

Limitations

There were some limitations identified within this evidence-based project. The time frame might have been more successful if there was more time. Also, the fact that the facility saw a particular population. If given the opportunity at a different clinic the population would have been broader. Some patients were hesitant to participate with no incentive being offered after completion. After reviewing log documents from each participant, 1 participant alluded to a lack of food choices due to finances, which made it impossible for her to follow the menu that was initially provided. Food insecurity increases the risk of complications for individuals who are at risk of diabetes or who have been previously diagnosed (Flint et al., 2019). The inability to consistently obtain nutritious food could affect individuals in socioeconomically disadvantaged households. As this project expands, understanding how to acknowledge food insecurity while still supporting knowledge of food intake is an important limitation.

Interpretation

Some participants had little desire to change their current habits due to the lack of consistent resources that are currently in place within their community. Accepting a

lifestyle change can be helpful if health professionals are there to guide participants through the process and identify areas of improvement. As an immediate fix, it is beneficial for each participant to migrate what they have learned from this project into everyday life and continue to move forward with checking fasting glucose levels, documenting weight and any inconsistencies, as well as documenting food intake (when feasible). Diabetes and prediabetes can affect an individual differently and understanding how each symptom progresses into daily life can be implemented for future views. The data conducted in this project can be shared with stakeholders who have access to additional African American patients in rural communities with a pre-diabetes diagnosis. Ideally, a significant improvement could be granted simply by understanding glucose level decreases and knowing the signs to look for when problems occur.

Conclusion

Understanding how to track fasting glucose, providing education on diabetes, and identifying ways to prevent diabetes are all common health issues that individuals with prediabetes or diabetes must face. This project sought to investigate if patients with a primary care clinic in Rural Central Mississippi ages 18-50 could decrease their fasting blood glucose level and increase their knowledge of prediabetes over a few weeks. Additionally, this project sought to answer some common questions associated with underrepresented individuals who needed to treat pre-diabetes. Treatments that were recommended helped caused a disconnect between health professionals initially, but by the end of the project, compromises were taken place to showcase better results. The expansion of this project should raise additional risks and issues related to food insecurity and the effect it could have on individuals with diabetes. Additionally, finding supporters

who could provide continual knowledge and support to those who desire to expand their research and support their goals.

APPENDIX A – Recruitment Flyer

AN EVIDENCE-BASED PROJECT:

DECREASING FASTING GLUCOSE LEVELS WITHIN MISSISSIPPI AFRICAN AMERICANS THROUGH ACCOUNTABILITY GROUPS

Approved by USM IRB Protocol 22-897

You may be eligible to participate if:

- You are between the ages of 18-50
- Have a fasting blood sugar between 100-150 or an A1C between 5.7-6.4

Do you want to increase your knowledge of fasting blood glucose?

Do want to decrease your fasting blood glucose?

If so then you may be eligible to participate in this project is conducting at Quinn Healthcare.

There is no cost to you or medication required to participate. For more information contact Whitley Linson, DNP student at whitley.linson@usm.edu.

Date and Time: TBA

APPENDIX B –IRB Approval Letter

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	22-897
PROJECT TITLE:	AN EVIDENCE-BASED PROJECT: DECREASING FASTING GLUCOSE LEVELS WITHIN MISSISSIPPI AFRICAN AMERICANS THROUGH ACCOUNTABILITY GROUPS
SCHOOL/PROGRAM	Leadership & Advanced Nursing
RESEARCHERS:	PI: Whitley Linson Investigators: Linson, Whitley~Baskin, LaWanda~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	02-Aug-2022 to 01-Aug-2023

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX C – Patient Consent Form

You are invited to participate in a research project about Decreasing Fasting Glucose Levels Within Mississippi African Americans Through Accountability Groups. The project will consist of 3-4 weeks. Meeting times will be at Quinn Healthcare. The survey should take about 2 minutes to complete. Participation is voluntary, and responses will be kept anonymous. Please do not place any identifying information on the survey.

Participants need to complete each question on the survey. Participation or nonparticipation will not impact your relationship with Quinn Healthcare. Submission of the survey will be interpreted as your informed consent to participate and that you affirm that you are at least 18 years of age and meet the requirements for participation.

By participating in this study, participants can possibly increase their knowledge regarding decreasing the risk for prediabetes and diabetes and treatment recommendations. There is no anticipated discomfort for those contributing to this study, and the risk to participants is minimal. Participation in this study is completely voluntary, and participants may withdraw from this study at any time with penalty and prejudice.

If you have any questions about the research, please contact the Principal Investigator, Whitley Linson, via email at Whitley.Linson@usm.edu or the faculty advisor, Dr. LaWanda.baskin@usm.edu. If you have any questions regarding your rights as a research subject, contact the USM Institutional Review Board (IRB) contact information (601) [redacted]. If you have any questions about participation at Quinn Healthcare, you may contact Melissa Quinn [redacted]

Sincerely,
Whitley Linson
DNP Student

APPENDIX D – Weekly Exercise Log

My Weekly Exercise Log

Date	Exercise	Duration	Calories Burned	Water
Sunday _____				
Monday _____				
Tuesday _____				
Wednesday _____				
Thursday _____				
Friday _____				
Saturday _____				

APPENDIX E – Fasting Glucose and Weight Record

Fasting Glucose & Weight Record

Pre-Diabetes Education Intervention	
Participant Identification: _____ Time ___:___ ☐ am ☐ pm	Meeting Date: __ __/__ __/ 2 0 __

Initial

Fasting Glucose_____

Weight _____ pounds

Week 1

Fasting Glucose_____

Weight _____ pounds

Week 2

Fasting Glucose_____

Weight _____ pounds

Week 3

Fasting Glucose_____

Weight _____ pounds

Week 4

Fasting Glucose_____

Weight _____ pounds

_____ pounds

APPENDIX F – Letter of Support

QUINN HEALTHCARE

Date: March 5, 2022

RE: Letter of Support for Whitley Linson, BSN, RN, DNP Student

Attn: Facility Nursing Research Council Application Process- BSN-DNP Student

To: Nursing Research Council Chair and Committee

This letter is in reference to WHITLEY LINSON, BSN, RN who is applying to the Nursing Research Council for application and approval of her Clinical Doctoral Project. The focus and title of her evidenced-based project is *An Evidence Based Project: Decreasing Fasting Glucose Levels Within Mississippi African Americans Through Accountability Groups.* The site is in the adult and pediatric outpatient clinic setting.

I have discussed this topic with Whitley Linson and support and recommend the need for implementing a screening tool to help at-risk diabetic African Americans identify their risk and make lifestyle changes to slow the progression of the disease and prevent adverse effects. I understand the screening tool will be provided with data reviewed weekly for 3 weeks. After data analysis, I understand that Whitley Linson will present her findings to myself and the outpatient clinical team.

I understand that following approval by the Nursing Research Council, she will seek approval from the to The University of Southern Mississippi Institutional Review Board (IRB) for final approval of her Clinical Doctoral Project proposal. At present, I understand that Whitley Linson is a full-time BSN-DNP (Family Nurse Practitioner) student in the Doctor of Nursing Practice Program at the University of Southern Mississippi, Hattiesburg campus.

I am Dr. Timothy Quinn at Quinn Healthcare in Ridgeland, MS. I am offering this letter of support of the doctoral student, Whitley Linson, in her doctoral project as titled above and look forward to hearing her findings.
I understand that participation by patients is completely anonymous and voluntary. There is no compensation for their participation.
I understand that this letter of support will be included in the University of Southern Mississippi Institutional Review Board (IRB) application.

Her Chair contact information is Dr. LaWanda Baskin, lawanda.baskin@usm.edu and office 601[redacted]

As Director/Chief of QUINN HEALTHCARE, PLLC at this proposed site, I would like to fully support Whitley Linson to achieve her academic endeavor in this clinical practice project. I look forward to hearing the results of this study and the implications on clinical practice.

If there is any other information you should need, please do not hesitate to contact me.

Sincerely,

Dr. Timothy Quinn
Owner/QUINN HEALTHCARE

Prediabetes Risk Test

NATIONAL DIABETES PREVENTION PROGRAM

1. How old are you?

Write your score in the boxes below

Younger than 40 years (0 points)
40–49 years (1 point)
50–59 years (2 points)
60 years or older (3 points)

2. Are you a man or a woman?

Man (1 point) Woman (0 points)

3. If you are a woman, have you ever been diagnosed with gestational diabetes?

Yes (1 point) No (0 points)

4. Do you have a mother, father, sister, or brother with diabetes?

Yes (1 point) No (0 points)

5. Have you ever been diagnosed with high blood pressure?

Yes (1 point) No (0 points)

6. Are you physically active?

Yes (0 points) No (1 point)

7. What is your weight category?

(See chart at right)

Total score:

Height	Weight (lbs.)		
4'10"	119-142	143-190	191+
4'11"	124-147	148-197	198+
5'0"	128-152	153-203	204+
5'1"	132-157	158-210	211+
5'2"	136-163	164-217	218+
5'3"	141-168	169-224	225+
5'4"	145-173	174-231	232+
5'5"	150-179	180-239	240+
5'6"	155-185	186-246	247+
5'7"	159-190	191-254	255+
5'8"	164-196	197-261	262+
5'9"	169-202	203-269	270+
5'10"	174-208	209-277	278+
5'11"	179-214	215-285	286+
6'0"	184-220	221-293	294+
6'1"	189-226	227-301	302+
6'2"	194-232	233-310	311+
6'3"	200-239	240-318	319+
6'4"	205-245	246-327	328+
	1 Point	2 Points	3 Points
	You weigh less than the 1 Point column (0 points)		

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009. Original algorithm was validated without gestational diabetes as part of the model.

If you scored 5 or higher

You are at increased risk for having prediabetes and are at high risk for type 2 diabetes. However, only your doctor can tell for sure if you have type 2 diabetes or prediabetes, a condition in which blood sugar levels are higher than normal but not high enough yet to be diagnosed as type 2 diabetes. **Talk to your doctor to see if additional testing is needed.**

If you are African American, Hispanic/Latino American, American Indian/Alaska Native, Asian American, or Pacific Islander, you are at higher risk for prediabetes and type 2 diabetes. Also, if you are Asian American, you are at increased risk for type 2 diabetes at a lower weight (about 15 pounds lower than weights in the 1 Point column). Talk to your doctor to see if you should have your blood sugar tested.

You can reduce your risk for type 2 diabetes

Find out how you can reverse prediabetes and prevent or delay type 2 diabetes through a **CDC-recognized lifestyle change program** at https://www.cdc.gov/diabetes/prevention/lifestyle-program.

Risk Test provided by the American Diabetes Association and the Centers for Disease Control and Prevention.

American Diabetes Association. CDC

APPENDIX H – Diabetes Pre-Test & Post Test

Diabetes Pre and Post Test
Answers are in **BOLD** (1=c, 2=c, 3=a, 4=d, 5=a, 6=a, 7=b, 8=d, 9=b, 10=b)

1. Diabetes is a condition that is a result of:
a. being overweight
b. too much insulin
c. not enough insulin or insulin isn't working effectively
d. eating too much sugar and drinking sweetened beverages
e. eating fast foods and processed foods
f. I don't know

2. Diabetes occurs due to problems in which organ?
a. intestines
b. stomach
c. pancreas
d. gallbladder
e. I don't know

3. High blood sugar levels can cause:
a. increased thirst and urination
b. increased energy levels
c. weight gain
d. improved vision
e. I don't know

4. Losing weight may have which benefits for people with diabetes?
a. help the body use insulin more effectively
b. lower blood sugar levels
c. decrease the risk of heart disease
d. All of the above
e. I don't know

5. Healthy eating for people with diabetes means:
a. spacing meals and snacks evenly throughout the day
b. never eating snacks
c. eating only lean meat and vegetables
d. following a set meal plan
e. I don't know

6. People with diabetes should NEVER eat or drink:
a. sweetened beverages like soda pop, sweetened iced tea, or juice drinks
b. any white-colored food
c. any type of fruit

d. pasta and rice
e. I don’t know

7. The nutrient that has the greatest effect on blood sugar levels is:
a. protein
b. carbohydrate
c. sugar
d. fat
e. salt
f. I don’t know

8. When grocery shopping, a person with diabetes should:
a. buy only special diabetic foods
b. buy only foods labeled ‘sugar-free’
c. avoid all foods that contain carbohydrate
d. read food labels to evaluate calorie, carbohydrate, and fat content of foods
e. I don’t know

9. Fiber is the part of food that:
a. causes blood sugar levels to rise higher
b. is incompletely digested and provides roughage
c. should be avoided by people with diabetes
d. can only be consumed in adequate amounts with supplements
e. I don’t know

10. Physical activity and exercise:
a. is never a good idea for people with diabetes
b. helps lower blood sugar levels
c. only counts when you exercise for at least 30 minutes at one time
d. has to hurt to be beneficial
e. I don’t know

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