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IMPROVING DIAGNOSIS AND TREATMENT OF PREDIABETES AMONG PRIMARY CARE PROVIDERS BY INCREASING AWARENESS OF PREDIABETES EDUCATION

by

Sonia Walker

A Doctoral Project
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice

Approved by:

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ABSTRACT

Prediabetes is a precursor to diabetes and requires treatment most of the time. Prediabetes is a health condition characterized by high blood sugar levels, but it has not developed into type 2 diabetes mellitus (T2DM). According to the Centers for Disease Control and Prevention (CDC) recent estimates, about 88 million Americans have prediabetes (CDC, 2020). This project's main aims were to determine the effectiveness of implementing a structured prediabetes education intervention in diagnosing and screening prediabetes among primary care providers caring for African American females (AA) aged 30 to 60 years. Moreover, to evaluate the outcomes of implementing the educational intervention on the prevention of T2DM through screening and diagnosis of prediabetes in a federally qualified health facility in Jackson, Mississippi.

Adult primary care providers (PCP) who treat AA females were sampled through a convenience sampling method. Clinical staff participated in the pre-survey baseline assessments, where a knowledge test was offered, and baseline understanding of prediabetes was recorded. A 20-minute education intervention with a PowerPoint presentation was offered, after which a post-survey knowledge test was offered to four participants who took the test. The pre-survey average score was 75%, while the post-survey average score was 83%. Therefore, the prediabetes education intervention increased adult PCPs' knowledge scores by 6%. Key improvements were observed in clinicians' knowledge about risk factors, screening, diagnosis, and treatment of prediabetes. Previous studies reported that when PCPs are aware of the risks and treatment of prediabetes, they can avert the disease's consequences during its early stages (Mainous et al., 2016). This project had a smaller sample size which would limit the

generalizability of the findings, but the overall findings are consistent with previous studies.

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DEDICATION

First and foremost, I want to express my gratitude to God for providing me with the chance to serve Him and my community. Thank you, Lord, for deeming me worthy of carrying out such a monumental task and for allowing me to start a new phase in my life in order to praise you through my submission to the call. I would like to express my gratitude to my family for their constant patience and support throughout this journey. Alex Walker, the love of my life, you quickly reminded me of my fiery desire and dedication to care for the sick. Thank you for being supportive and encouraging me throughout this whole process. Because of the Lord's Blessing, together anything is possible!

To my beautiful daughters, SeNiah, and Senecia, thank you for always being there for me, even when I had to miss out on your school activities due to my job and school. You've shown your devotion and dedication to go above and beyond to support one another by stepping in for me. As you can see, your own goals and ambitions are never out of reach. I encourage each of you to keep going until you triumphantly cross the finish line. Thank you for being understanding of my journey, my parents, and my siblings. I consider myself extremely privileged to have such a beautiful, caring family. Debra Leavy, Beverly Young, Lawanda Kirkland, Veronica Louis, and Celeste Larkins, my special group of angels, thank you for your daily prayers, support, and for bolstering my physical and emotional strength.

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LIST OF ABBREVIATIONS

AA	African American
AACN	American Association of Colleges of Nursing
ADA	American Diabetes Association
AIDS	Acquired Immunodeficiency Syndrome
BMI	Body Mass Index
BWHI	The Black Women's Health Imperative
CDC	Center for Disease Control and Prevention
CINAHL	Cumulative Index to Nursing and Allied Health Literature
DF	Degree of Freedom
DNP	Doctor of Nursing Practice
DPP	Diabetes Prevention Program
FQHC	Federally Qualified Health Center
$HgbA_1C$	Hemoglobin A_1C
HIPPAA	Health Insurance Portability and Accountability
HIV	Human Immunodeficiency Virus
HPM	Health Promotion Virus
ICD	International Classification of Disease
IRB	Instructional Review Board

M	Mean
MSDH	Mississippi State Department of Health
PICO	Population Intervention Compare Outcome
PCOS	Polycystic Ovarian Syndrome
PCP	Primary Care Provider
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta Analysis
SD	Standard Deviation
SDOH	Social Determinants of Health
SQUIRE	Standards for Quality Improvement Reporting Excellence
STD	Sexually Transmitted Disease
T2DM	Type 2 Diabetes Mellitus
U.S	United States
USCB	United States Census Bureau
USD	United States Dollar
USHHS	U.S Department of Human Services
USM	The University of Southern Mississippi
USPSTF	U.S Preventive Services Task Force
WHO	World's Health Organization

CHAPTER I - INTRODUCTION

Prediabetes is a state of intermediate hyperglycemia and glucose levels, having an above-normal state and a lower threshold for diabetes. People with prediabetes are prone to a higher risk of diabetes and related complications such as neuropathy, macrovascular complications, diabetic retinopathy, and other diseases (Hostalek, 2019). The risk factors associated with prediabetes are being obese, a rise in blood pressure, polycystic ovarian syndrome (PCOS), and other such problems. Prediabetes is diagnosed through a simple test of fasting plasma glucose.

One in every four AA females aged 30 years and older are considered prediabetic, as T2DM is of epidemic proportion. According to the 2017 CDC National Diabetes Statistics Report, AA people have the highest prevalence of prediabetes, with a prevalence of 36.3 percent between 2011 and 2014. (CDC, 2020). The report further indicates that only 10.5% of AA individuals with prediabetes reported an awareness of the condition, and numerous of them indicated that doctors never told them they had it. Studies suggest that AAs carry a gene that predisposes them to impaired glucose tolerance, a significant risk factor for prediabetes. Additionally, AA women experience higher rates of issues, including sedimentary lifestyles, obesity, and high blood pressure, which are risk factors. Research indicates that between the ages of 25 and 74, AA women are more overweight than Caucasian women of the same age group, thereby indicating the undue risks (O'Brien et al., 2016).

AA women are less active than Caucasian women, another contributing factor to higher prediabetes rates among AAs (Mainous et al., 2016). Aside from the physiological and genetic effects diabetes has on AA women, the disease's cultural context is

complicated. The approach to managing health and diabetes diagnosis among AA women is affected by various issues, including eating habits, behavior patterns, spirituality, relationships with healthcare providers, and diet and exercise. According to national data, with dietary patterns strongly linked to the risks of developing prediabetes, AA women are less likely to abide by nutritional guidelines (Tseng et al., 2017). Prediabetes disparities among AA women are enhanced by other factors, including healthcare provider bias and mistrust of the medical community.

Background

Improving prediabetes education is essential to reduce the prevalence of diabetic conditions in Mississippi. Offering this education to AA females and PCPs will help improve healthcare outcomes in the state. Enhancing awareness among healthcare providers can also help ensure quality care for prediabetic and diabetic patients. Prediabetes is a health issue that must be addressed immediately by providing opportunities such as quality education, access to clinical care, and healthy foods. Many AA females are prone to prediabetes based on genetic and socioeconomic factors (Okosun & Lyn, 2015). Inherently, genetic predispositions for AAs make their offspring more prone to prediabetes than their other ethnic counterparts. Some individuals in this population do not exercise regularly and eat healthy foods daily. Some of them also live in poor neighborhoods, where they cannot access healthcare services effectively.

In AAs genetic traits, obesity, and insulin resistance raise the likelihood of prediabetes (Okosun & Lyn, 2015). Owing to inadequate glycemic regulation and racial inequalities in health care in the United States, AAs are at a higher risk of diabetic complications. Culturally responsive approaches can improve prediabetes outcomes in

the AA community through standardized risk assessment strategies, and the support of nurses, diabetic educators, and other healthcare practitioners (Hopkins, 2017). Prediabetes is expected to impact almost 16 million individuals in the United States. T2DM affects 90% of diabetics in the United States, and the statistic is even higher among patients over 45 years of age (CDC, 2020). According to the American Diabetes Association (2018), AAs are a minority group with a high risk of prediabetes. The prevalence of reported prediabetes was 1.6 times higher among AAs than among Caucasian Americans (ADA, 2018).

Prediabetes is a health condition characterized by high blood sugar levels, but it has not developed into T2DM. Statistical evidence shows that almost 88 million American adults have the condition (CDC, 2020). The need emanates from the inability of the body to respond to insulin. Thus, the patient's pancreas secretes more insulin to respond to the condition. Eventually, the pancreas becomes burdened, and blood sugar levels rise, setting the stage for prediabetes.

Significance

Improvements in healthcare are made in a methodical manner. Through a comprehensive commitment to quality enhancement and health benefits, advancements have been made in healthcare improvement research. When it comes to dealing with health problems, there are frequently various alternatives (Ogrinc et al., 2016). For such a wide range of options, picking the optimal course is critical. Hence the need to determine the quickest reaction that best solves the problem. The importance of the consequence, the patient's need, and the availability of the product are all crucial. This significance represents how metformin has been compared to lifestyle changes in prediabetes in AAs

aged 30 to 60 (Ogrinc et al. 2016). Investigating different scenarios of the situation is crucial in identifying the best medical technique based on the data. (Ogrinc et al., 2016). Prediabetes education and prediabetes awareness play an integral part in promoting the quality of life for the population. Educating healthcare providers will help AA females change their behaviors to optimize their quality of life chances. In this regard, determining the risks, this population faces when prediabetes education is not offered will help identify improvement areas. They can start exercising regularly and observing healthy dietary practices. Healthcare providers will begin to comprehend the best practices and recommendations to educate this population (Zand et al., 2018).

Although there are various treatments and medication options for prediabetic patients, it is vital to continue researching this area and its state. The medical field is evolving, and advancements are being made every day, allowing healthcare professionals and researchers to find a cure for the disease or improve treatment options (Zand et al., 2018). Nurse practitioners will examine the patients' impaired glucose intolerance and impaired fasting glucose to determine predisposition levels. More importantly, providing prediabetes education and improving screening will create policy measures. The government can use the process's outcomes to determine what can promote access to healthcare services. For example, the authorities can develop more healthcare facilities in neighborhoods where prediabetes and diabetes are widespread.

The ADA sets arbitrary cutoffs for the impression of prediabetes but making a diagnosis of prediabetes in otherwise healthy people is unnecessary, considering it is only a 'risk' and not a disease condition. Therefore, the management of metformin may be considered an off-label use in 'healthy' people with prediabetes. However, prediabetes is a

billable condition with the International Classification of Disease (ICD) 10 codes included. The ADA defines prediabetes as random serum glucose levels between 5.6 and 6.9 mmol/L (100 and 125 mg/dL); 2-hour postprandial glucose levels between 7.8 and 11.0 mmol/L (140–199 mg/dL); or hemoglobin A1C (HgbA1c) levels between 5.7 and 6.4% (ADA, 2021).

Problem Statement

Management of chronic diseases in primary care requires adequate skills, knowledge, and attitudes that enable PCPs to identify, prevent, and treat the diseases. Such diseases require long-term engagement, and huge care costs are implicated. The knowledge of the competency of the adult PCPs in Mississippi does not differ significantly from other states. At the national and state level, efforts by the CDC and ADA are appreciated in preventing T2DM by improving the knowledge of healthy people and those at risk of developing T2DM (ADA, 2021). The input from PCPs in this prevention program is essential, and assessing its effectiveness and efficiency is a good quality indicator of its widespread impact in achieving the goals at the state and national levels.

The Focus of the Problem

The problem focuses significantly on the effectiveness of imparting education to the PCP in achieving the preventive goals of diabetes through increasing their awareness of screening, diagnosis, and treatment of prediabetes. The current practice in diabetes prevention is recommended by the ADA guidelines (ADA, n.d.). The ADA recommends that all practitioners should annually monitor the development of T2DM in patients with prediabetes (ADA, 2021). Screening of T2DM and prediabetes in the at-risk groups is

done at the point of contact with the patients using the prediabetes screening questionnaire (see Appendix A).

In the current guidelines, practitioners are guided by the chronic care model to decide whether to perform diagnostic tests on patients at risk of developing T2DM. In so doing, preventative services in the national prevention of T2DM are encouraged. Upon identifying and diagnosing prediabetes in the at-risk groups, the practitioner should refer these patients to an intensive lifestyle behavior change program. The program is steered by the Diabetes Prevention Program (DPP) aforementioned. Its principal aims are to promote weight loss and improve physical activity.

Parameters of the Problem

The need for educating PCPs was identified through deductive analysis of the current data provided by the CDC on the prevalence of prediabetes among AA females. Validating current practices in achieving the national goals of diabetes prevention was identified as the main driver of the project. There was a need to promote evidence-based practice through primary care delivery. To do so, the system's efficiency in enabling the incorporation of evidence into practice should be assessed.

The critical parameters in addressing the problem were identified. The population of interest is PCPs who treat AA females aged between 30 and 60 years in Mississippi. The system of primary care in the state of Mississippi would also be an essential parameter. Therefore, assessing the outcomes would identify the measurable outcomes in the critical parameters of addressing the problem. In the care provision system, patients and practitioners work together to achieve care objectives. The interaction between these

two key players would form the structural basis for the assessment of the effectiveness of the project. The measurable outcomes of the interaction will be evaluated.

PICO

The Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) Publication Guidelines provide a stepwise approach to handling this project. The fourth item in SQUIRE 2.0 requires that available knowledge about the problem should be identified and presented. The systematic approach to achieving this acquired knowledge will adopt the initial elements of the evidence-based practice guidelines. Evidence-based practice begins with the formulation of the research question. The project used a PICO question approach to form a clinical inquiry for the acquisition of relevant data.

The PICO question for this clinical inquiry stated, 'How does the implementation of a prediabetes screening protocol and a structured prediabetes education intervention (I) for adult primary care providers (P) improve diagnosis and screening among AA females aged 30-60 (O) compared to no education intervention (C)?" Even though the population of interest would include AA females, the population of interest in this PICO is the adult PCP. Their role in the functionality of the system structure and the achievement of the project is essential.

Past surveillance data has shown high prevalence and incidence rates of prediabetes and diabetes in this population (Woods-Giscombe et al., 2019). It is, therefore, a population health problem. This population can be accessed at the care centers across the state, including hospitals and community clinics, using the inclusion and exclusion of previously described participants. The primary topics for the evidence

synthesis will include prediabetes awareness among healthcare providers; screening for prediabetes in AA females aged 30–60; and prediabetes education in primary care. The topics and target population description will refine the literature search for a synthesis of evidence.

Needs Assessment

Prediabetes is considered a perilous disorder that occurs when the blood sugar levels increase more than usual. However, it is not enough to diagnose T2DM. There are approximately 88 million American adults who have prediabetes. More than 84% of people with prediabetes are unaware, and thus, it puts them at an increased risk of developing T2DM, stroke, and heart disease. Cowie et al. (2018) opined that people could have prediabetes; however, there are no clear signs and symptoms; thus, it goes undetected. Prediabetes risk factors include being overweight, being 45 years or older, family history, being physically inactive, having gestational diabetes, and having PCOS. Menke et al. (2018) stated that race and ethnicity are significant factors that state that AAs are at a higher risk of developing the condition.

The needs assessment refers to a snapshot of the population's current aspects, including health conditions, financial impact, morbidity and mortality data, cost, outcomes, and initiatives. The needs assessment also explores what is available and what may be impacting the population in the quality improvement project. The requirement to determine the quickest reaction that adequately solves the situation is important. The intensity of the result, the patient's demand, and the product's accessibility are all significant factors (Menke et al. 2018).

Prediabetes is a common condition globally and particularly in the United States (U.S.). A report published by the CDC reported that prediabetes affected nearly one-third of the adult population of the U.S., with a prevalence rate of 33.90%. The prevalence was more significant in older adults over sixty-five years of age, and only a fraction of those having prediabetes knew they suffered from the condition. Prediabetes is diagnosed when an individual persistently has impaired glucose tolerance. Impaired glucose tolerance is defined as a fasting blood sugar level of 100 mg/dl to 125 mg/dl or a blood sugar level between 140-190 mg/dl on a glucose tolerance test (Zand et al., 2018).

Within the U.S., the problem affects all the population groups, including whites and ethnic groups. AAs also suffer from prediabetes and diabetes in significant numbers. Early diagnosis and prompt treatment are essential in managing prediabetes in the community to ensure optimal patient outcomes and quality of care. To achieve this end, it is essential to ensure provider awareness of the condition and the importance of early diagnosis and prompt treatment. The Doctoral of Nursing Practice (DNP) quality improvement project, therefore, revolves around the topic discussed above.

Needs Assessment from the Literature

According to the study conducted by Elgart et al. (2021), it was stated that among women, when age and other examination variables were controlled, AA race was linked with a 76% excess of T2DM. Race and education were assessed, and the odds ratio in the case of AA race or ethnicity was reduced to 1.59. Thus, controlling for occupational status showed identical results. The excess incidence rate of T2DM among AA women has decreased to 42% in the poverty income ratio. When the study was conducted using ADA criteria based on fasting glucose, the excess in the prevalence of diabetes among

these populations was more significant than when it was analyzed using the World Health Organization (WHO) criteria. This criterion indicated the apparent risk linked with race or ethnicity, which was substantially greater in all cases.

T2DM is a preventable and chronic disease that, if not managed, can cause severe complications that can be life-threatening. The complications include heart disease, blindness, stroke, kidney disease, high-risk pregnancy, and amputation. These complications can have a severe impact on AA women as they experience a higher rate of T2DM due to issues such as high blood pressure, a sedentary lifestyle, and obesity (Elgart et al., 2021).

As per the review conducted by Dehkordi and Abdoli (2017), non-insulin-dependent diabetes mellitus is a metabolic disease affecting 16 million Americans. Among these AA women, the issue has reached an epidemic proportion where one in every four black women aged 55 or more has the disorder. In the last decade, research has been conducted to examine the impact of racial differences on the etiologic, long-term complications, and treatment options of diabetes (Collier, 2019). The project focuses on the significance of screening and early identification of diabetes among high-hazard AA women. Diabetes counteraction and general medical problems identified with diabetes and AA women are examined.

A literature review demonstrates that the prevalence of glucose intolerance, prediabetes, and T2DM is very high in the AA population compared to the Whites (Osei & Gaillard, 2017). The higher incidence and prevalence of prediabetes in the black population warrants interventions based on primary and secondary prevention strategies to mitigate the disease burden in such populations. The prevalence and distribution of

prediabetes are even higher in those in the adult age groups in the U.S. It is estimated that as many as 40% of adult Americans either have prediabetes or T2DM, which is a more than 50% increase in prevalence from the previous decade (Crawford et al., 2015). A greater prevalence of prediabetes and T2DM in AA women is attributable to the metabolic syndrome and metabolic peculiarities that predispose them to develop these conditions (Gaillard, 2018). Considering the reviewed literature, it makes the chosen group of individuals suitable for the intervention as those in the group are most susceptible to prediabetes development.

Needs Assessment from the Community/Population

The needs assessment of the problem can be done by the community of adult AA women aged 30 to 60 years. The needs assessment in this group can be done by identifying a group of AA females of the desired age group settled in a defined geographical region. A needs assessment should include determining the relevance of the need for the identified community, including the desires and opinions of those who are to be recruited for the study, and asking participants of the quality improvement project to self-identify their training and educational needs for the project. A participant assessment can also be undertaken using a structured questionnaire to collect pilot data from the participants and determine the feasibility of the quality improvement project.

Relevance of the Needs Assessment Information to the Quality Improvement Project

According to the U.S. Department of Health and Human Services, Office of Minority Health, the risk has been demonstrated to be 80% higher among AAs than their counterparts (U.S. Department of Health and Human Services[USHHS], 2019). Further, women with this condition are found to experience pregnancy-related issues and are at a

greater risk than men in cases of blindness and heart attacks. The Black Women's Health Imperative (BWHI) has been committed to offering people information to reduce their risks. The issue needs to be treated at the grassroots level, so screening for prediabetes can be one of the most effective strategies in this case. The clinical problem for the proposed DNP quality improvement project is prediabetes. Prediabetes is a condition preceding T2DM. The needs assessment information, as discussed above, is highly relevant to the quality improvement project.

Literature Search

The search for evidence from the literature is the first step of evidence-based practice. Sources of literature included databases, practice guidelines, and standards of practice in health care. Documented past research evidence was obtained from three primary databases: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINHAL), and the Cochrane Library database. These search engines are among the significant health-related databases (Smalheiser et al., 2021) and are available online.

The search only included full texts of previous studies. The articles that were not available as full texts would require the authors' contact for the original full texts. A response would be required from the authors within a specified time frame. Therefore, abstracts and summaries of research studies whose authors could not be reached or provided no feedback within a specified time would be excluded from the search's final count. Systematic reviews of previous studies were excluded from this search, and only articles providing first-hand evidence were included.

The search involved the use of filters, keywords, and Boolean operators. Boolean operators were used to improve the accuracy and increase the range of the search.

Keywords and keyword combinations included 'prediabetes education and healthcare providers,' prediabetes education and hemoglobin A1c, and 'prediabetes education and African American females.' The search was then subjected to filtering using ages, no systematic reviews, complete texts, and published studies in the last five years.

The preferred reporting items for systematic reviews and meta-analysis (PRISMA; see Appendix B) guidelines were followed in reporting the search results (Arya et al., 2021). The initial search with a five-year timeline limitation yielded 117 results. Among these results were books and practice guidelines that were ruled out, and the final number was brought down to 29. Twenty-seven articles were from the ProQuest library database and two from the PubMed databases. No similarities were identified among the articles from the two databases.

Synthesis of Evidence

The prevalence of prediabetes and diabetes in the U.S. is rapidly increasing, which constitutes a significant health hazard leading to financial and human losses. Preventing T2DM and delaying the onset of the disease by timely detecting pre-diabetic states among patients is critical. According to research targeting pre-diabetic diagnosis conducted at a national level, 33.6% of patients visiting healthcare facilities had prediabetes, and 11.9% had T2DM (Mainous et al., 2016).

A study by Falguera et al. (2020) conducted in one province in Spain showed that 3.4% of people had undiagnosed diabetes and 39.3% had prediabetes; in a year, only 0.6% of subjects with prediabetes developed diabetes, while the rest of the population (41.6%) returned to normoglycemia. The same study noticed that those in the prediabetes group who returned to normoglycemia were younger and had an overall lower body mass

index (BMI) (Falguera et al., 2020). In other words, prediabetes does not mean that patients will develop T2DM at some point in their life. The risk could be minimized, especially if an individual has a high BMI or their age is elevated.

In addition to body composition and age, racial background and gender could be risk factors in developing T2DM and pre-diabetic states. According to Crawford et al. (2015), women of diverse racial and ethnic backgrounds are more susceptible to the development of prediabetes and T2DM due to their specific dietary patterns, approach to physical activity, and existing hereditary risks. Spears et al. (2018) conducted a study among middle-class AAs concerning their T2DM, prediabetes, and dangers by revealing that socioeconomic status does not prevent this population group from developing T2DM. Significant gaps in knowledge, the prevalence of misconceptions, and lack of information about nutrition, physical activity, health risks, and their impact on health status explained this result (Spears et al., 2018). These results point to food, physical activity, and a lack of knowledge among people from diverse backgrounds.

The higher risk of developing T2DM stems from different causative factors, including limited access to healthcare services based on socioeconomic status and race. Bower et al. (2019) recognized that AA women had a 63% higher risk of diabetes development; Hispanic women and “other” racial/ethnic women had more than 50% risk of diabetes development than white women. Furthermore, women with prediabetes from diverse backgrounds were more likely than their white counterparts to not receive a T2DM diagnosis on me (Bower et al., 2019). The implications of these findings concern a variety of issues related to screening, diagnosis, and access to healthcare services among women of various races. Specifically, as Bower et al. (2019) acknowledged, due

to the lower level of access to quality healthcare services, the prevalence of misinformation and misconceptions about health among diverse groups, and a lack of proper education targeting diabetes, this problem could be concentrated in AA and Hispanic groups.

Engagement of population groups at risk of T2DM development in educational and health-related groups could be beneficial for preventing this disease among them. For example, as Blanks et al. (2016) showed, community-based education and lifestyle modification programs among AA women managed to improve their knowledge about nutrition and health, introduce strategies for the prevention of obesity and diabetes, intensify engagement in fitness activities, and reduce blood pressure, weight, and BMI. This education means that community-based programs targeting at-risk groups could solve growing diabetes and prediabetes among the U.S. population. Hurt et al. (2017) conducted a study involving AA women who shared their opinions regarding T2DM and its prevention among this population group.

The results showed that AA females would prefer that the local healthcare professionals could develop educational or lifestyle-changing programs that would attend to the needs of this community (Hurt et al., 2017). An overall improvement in access to lifestyle intervention programs and education targeting population groups at risk of prediabetes might improve both healthcare providers' and patients' engagement in diabetes prevention (Kandula et al., 2018). As previously stated, AA communities tend to lack attention from the healthcare system, which explains their limited knowledge about diabetes and prediabetes, the role of physical activity, and nutrition in it.

The implications of these results describe several problems connected to testing, medical diagnosis, and access to healthcare solutions among women of different racial descents. Specifically, as it was recognized, because of the reduced degree of accessibility to top-quality healthcare solutions, the frequency of false information as well as misconceptions about wellness among diverse groups, as well as the absence of proper education and learning targeting T2DM, might cause the concentration of this problem in AA and Hispanic groups.

Involvement of populations at risk of diabetes development in academic and health-related groups may benefit from preventing this disease amongst them. As an example, as Blanks et al. (2016) revealed, community-based education and a way of life modification program amongst AA females handled to improve their understanding of nourishment and health, introduce methods for avoidance of excessive weight and diabetic issues, increase engagement in fitness activities, and minimize high blood pressure, weight, as well as BMI. Hurt et al. (2017) did a study including AA women who shared their opinions relating to diabetes issues and their avoidance amongst this population group. This intervention suggests that community-based programs targeting at-risk groups could remedy expanding diabetes and prediabetes issues amongst the U.S. populace.

Strategic Agendas

Prediabetes management in the U.S. is included together with those for diabetes management strategies. The study aimed to identify more recent strategic agendas published in the last half-decade. Therefore, this study identified one strategic agenda for managing prediabetes. Evert et al. (2019), published by the ADA, described the

nutritional guidelines for preventing prediabetes and diabetes. In their report, the authors encouraged patient lifestyle and nutrition education to prevent prediabetes progression control. The CDC, through various educational platforms, has ensured patient education for primary prediabetes control among at-risk populations (CDC, 2019). This education has been done through the national DPP since its launch in 2010.

Clinical Practice Guidelines

The ADA set up strategies and guidelines for effective screening and follow-up for prediabetic patients in 2014. In their guidelines, suspected prediabetic patients with elevated glucose levels are educated by the PCP, and the measurements are repeated on a separate day (Jeem et al., 2020). According to these practice guidelines, prediabetes is not considered an independent disease entity by the risk of other medical conditions such as T2DM, stroke, and other cardiovascular conditions. The ADA guidelines give little room for misdiagnosis by using the SAFE protocol. This protocol explains that the first step is to Screen, Assess and Advise, Follow-up, and Evaluate (SAFE) outcomes.

Achieving evidence-based practice would require an appraisal of research and non-research studies and guidelines. Previous related studies were searched in this outline, and guidelines and strategic practice agendas to synthesize evidence were developed. Various organizations, including the CDC and ADA, are implicated in this clinical inquiry. Incorporating them into the execution of this study would be beneficial.

Purpose and Objectives

The project aimed to achieve two main objectives; the stated PICO question addressed the project's main elements. The project's first objective was to determine the effectiveness of implementing a structured prediabetes education intervention in

diagnosing and screening prediabetes among PCPs caring for African American females aged between 30 and 60 years. The second objective was to evaluate the outcomes of implementing the educational intervention on the prevention of diabetes through screening and diagnosis of prediabetes.

Primary care in every setting is characterized by diagnosing and treating common illnesses. The providers of care in Mississippi provide primary care services to AAs at various rural and community service clinics. However, Mississippi is one of the most medically underserved states in the U.S. (Mississippi State Department of Health, [MSDH], n.d.). Primary care services for T2DM include screening, diagnosis, and medical treatment. In Mississippi, the national guidelines and care organizations provide primary care as well. The programs by the CDC have been established in Mississippi. Various care centers, such as the Family Medical Clinic of North Mississippi, offer prevention services to patients with prediabetes (Family Medical Clinic of North Mississippi, 2017). There are established primary care facilities in the state, but the state and national data do not reflect excellent preventive care for T2DM and prediabetes.

According to the annual report by America's Health Rankings in 2019, Mississippi has a higher percentage of adults subjectively reporting being diagnosed with diabetes than the national average statistics in the U.S. This trend, up to 2019, has been rising, with the latest at 14.8%. The blacks in Mississippi have a higher percentage prevalence (17.4%) than the national average percentage (14.8%) (America's Health Rankings, n.d.). This data shows that more adults are likely to develop diabetes if no preventive measures are taken in Mississippi than in other states. AAs, sometimes referred to as blacks, are at more risk of developing diabetes in this state.

The burden of diabetes and prediabetes has been significant in Mississippi. According to the annual reports by America's Health Rankings, the state of Mississippi was ranked third last in preventive services in the U.S. in 2020. In 2016, this state was ranked first in the prevalence of diabetes and related conditions. More than a decade ago, the approximate care cost incurred by the American government in caring for each person with diabetes in Mississippi was about 10,000 United States dollars (USD) (MSDH, n.d.). Through this data, the need for preventative care through primordial stages is realized. The role of this project in evaluating structural and quality improvement would be essential at these times when the trends of T2DM are increasing.

Concepts

The central concepts of this project include primary care, quality improvement, prediabetes, diabetes, primary care providers, and prediabetes screening and diagnosis. In this project, primary care is defined as the first health service the patient receives before referral to specialist services. This project was a quality improvement project that aimed to improve care quality in primary care. Prediabetes is defined as a condition with an objectively assessed persistent elevation in plasma glucose and not necessarily with clinical symptoms. Diabetes mellitus is regarded as the outcome of prediabetes with clinical symptoms and clinical diagnosis. Primary care providers include doctors and nurse practitioners, providing first contact care to the target patients. Prediabetes screening in this project is regarded as an objective or subjective evaluation of patients per the national guidelines.

Conceptual Model

This project will be guided by Nola Pender's Health Promotion Model. (HPM; Appendix C) This nursing theory emphasizes the role of individual characteristics, experiences, and behaviors in health-seeking behavior. In this model, health-promoting behavior is the desired outcome of any health promotion program (Khodaveisi et al., 2017). Any action should strive to achieve health-promoting outcomes (Mohsenipouya et al., 2018; see Appendix C for the theory diagram). This action can be done through acting on the individual's behavior, attitude, knowledge, and attitudes because they have a positive motivational significance in achieving good nursing care outcomes.

In Nola Pender's HPM, the central concept is health-promoting behavior. This model will be applied to the project by identifying the appropriate antecedents in the primary care models and acting on them to achieve the desired outcomes. The antecedents include the person's characteristics, knowledge, and experiences. The significant outcome will be the PCPs' awareness of prediabetes screening and diagnosis. The measurable outcome variable will be reflected in the patients' HgbA1C levels by achieving this preliminary outcome. Therefore, significant actions will be to provide PCPs with an educational intervention to improve their knowledge, skills, and attitudes.

DNP Essentials

The American Association of Colleges of Nursing ([AACN], 2006) highlights the advanced practice nurse's role as a supporter of the patient on a level that extends beyond the specific care that the patient receives. DNP Essentials emphasizes the advanced practice nurse's role as a leader to help policymakers make good decisions about health care that will positively affect patient outcomes (AACN, 2006). These essentials are

reduced to eight fundamental principles that involve advocacy, education, and serving in an advisory role regarding healthcare policies.

DNP Essential I

The scientific underpinnings of practice for doctoral education focus on conceptual knowledge of nursing, emphasizing policies and decisions that regulate life processes, well-being, and optimal social functions. These scientific underpinnings support the utilization of theory to address current and future practice issues. Utilizing science-based theories and concepts to develop and evaluate new practice approaches supports the essentials (AACN, 2006).

Healthcare providers in clinic settings and other healthcare facilities perform essential roles in ensuring that the highest quality of care is provided to patients and surrounding communities (Udlis & Mancuso, 2015). DNP's role will be founded on practice essentials and scholarly research. This role will prepare the DNP to address the critical skills essential for transforming evidence-based care into practice to improve care systems within the clinical setting.

DNP Essential II

DNP essential II concentrates on improving patient and healthcare outcomes, eradicating health disparities, improving patient safety, and excellence in practice consistent with DNP goals. Doctoral-prepared nurses must maintain the ability to imagine new care delivery models that are effective with new organizational, governmental, cultural, and financial perspectives harmonious with nursing and healthcare objectives to improve health disparities (AACN, 2006). Culture has an interplay with equity and poverty issues in American society. Cultural metrics affect access and utilization of

prediabetes care among these women due to negative perceptions (Rebolledo & Arellano, 2016).

The phenomenon also reflects the notion of women of African origin that diabetes treatment indicates the inability to function normally (Rebolledo & Arellano, 2016). Considering this, most of these women believe in natural immunity's resilience and perceive interventions as a waste of time. These women refrain from seeking health care since they do not want to be discriminated against in the face of institutional racism, even in healthcare organizations. Please make no mistake about it; many women of color will start prediabetes interventions and abandon them midway.

DNP Essential V

A DNP nurse's role includes promoting the health and well-being of a population or community, which often requires them to address all the potential and existing barriers to a specific health issue. A DNP nurse's role includes developing new policies and modifying existing systems (Salmond & Echevarria, 2017). As a result, interventions should be considered in order to successfully address the selected issue. After that, the DNP nurse must focus on the altered mentality among health professionals. They must assume their roles as educators to teach the other health professionals about their duties towards patients. DNPs must also advocate for the patients, considering their legal right to health and well-being.

The DNP nurses are expected to assume their leadership roles in the healthcare centers in their communities. They are also likely to develop multidisciplinary teams and ensure effective management of the group. The advocacy roles of the DNP nurses include indicating the future directives for the policies (Lathrop & Hodnicki, 2014). To make the

necessary changes in the system or develop newer policies for addressing the clinical problem, the DNP nurses must consider the patient's rights appropriately.

As a healthcare advocate, the main aim of a DNP nurse should be the promotion of health equity for the selected population group. Another role of a DNP nurse in this issue could be the role of an ethical consultant. An ethical dilemma is a common issue in healthcare practice. DNP nurses must have explicit knowledge and understanding of healthcare ethics for this role (Courtwright et al., 2017). They must analyze any possible ethical issues and use practical judgmental skills to find an ethically appropriate solution to the problem. Effective communication, negotiation, and the promotion of morally relevant practice are necessary skill sets that should be present in an ethical consultant (Courtwright et al., 2017). DNP nurses must utilize all these skills for ethical decision-making as a part of their role as ethical consultants.

DNP Essential VI

The DNP nurses' doctoral education enables them to assume their role as teaching faculty members (Ketefian & Redman, 2015). The DNP nurses must design educational courses to change the nurse practitioners' attitudes to establish appropriate interpersonal relationships with their patients (Udlis & Mancuso, 2015). The connection will help develop mutual trust, which will enhance the accessibility of patients to healthcare services. The issue of mutual distrust also requires educational approaches for the patients. Professional collaboration is an essential aspect of every healthcare provider. The development and management of a multidisciplinary team are often a necessity in a primary care setting.

DNP Essential VII

DNP-prepared nurses need to be experts in complex care environments to improve the patient population or system (Udlis & Mancuso, 2015). Healthcare organizations depend on their expert staff and senior nursing staff to manage clinical practice problems. The patient population must understand that DNPs and other nursing professionals work for their welfare when problems and clinical practice occur (Ketefian & Redman, 2015).

Summary

Improving awareness of prediabetes entails encouraging primary care providers to find out if their patients are at risk. Many individuals are not aware if they are exposed to risk factors that predispose them to T2DM. Formulating online health assessment surveys that are later circulated to the patients makes it easier to analyze the risk of developing diabetes (Vluggen et al., 2018). These surveys enable patients to analyze their current health status and determine any predisposing risk factors, precipitating earlier diagnosis, better outcomes, and efficient management.

Education of healthcare providers on the significance of early and frequent screening goes a long way in promoting early diagnosis and management. Identifying the risk factors that predispose individuals to the condition and encouraging them to change any modifiable risks will significantly reduce prediabetes. Highlighting the various signs and symptoms to look out for will also make it easier for healthcare providers to detect prediabetes early and initiate early management.

CHAPTER II - METHODS

Context

Barriers to the Population

The recommended intervention for this population is not without some stumbling blocks. Most AA females in Mississippi do not have access to healthcare facilities. Most affected women come from impoverished neighborhoods with inadequate quality healthcare services (Blanks et al., 2016). They must travel longer distances, especially state-to-state travel, to access these services. The situation induces slackness in accessing prediabetes care, with most people anticipating the condition to go away by itself. Besides, care facilities available do not offer prediabetes education and propose amicable interventions.

Secondly, most individuals in the population do not have insurance despite progressive insurance policies that the government has developed in the past. Some AAs do not have comprehensive insurance plans (Bellou et al., 2018). As a result, seeking prediabetes interventions becomes costly since the available programs can cover the treatment costs. Therefore, the women and their families experience a financial burden when accessing these services.

Thirdly, most of the populace is from middle or low-income households. High unemployment rates and low wages characterize the family. Lastly, women of color living in impoverished neighborhoods face the challenge of limited resources. Thus, they cannot access physical exercise facilities and other resources needed to promote physical activity. Therefore, they cannot pay for prediabetes care. The women end up giving up on losing weight and improving their quality of life.

Population of Interests

This study's population of interest is AA females between the ages of 30-60 years old and adult healthcare providers who work in primary care and treat these patients. The target population will be geographically limited to the State of Mississippi and Hinds County. AAs make up 13.4% of the total U.S. population (U.S. Census Bureau, 2020), with the majority residing in southern states such as Mississippi (Noonan et al., 2016). As will be discussed, various health factors, determinants, and outcomes are peculiar to this population, mainly Mississippi County.

Population Risk Factors

According to the Office of Minority Health (USHHS, 2019), the known risk factors among AAs include a genetic predisposition, a high prevalence of obesity, and increased insulin resistance. AAs are more prone to being diagnosed with T2DM and prediabetes than non-Hispanic blacks and whites. Complications arising from uncontrolled or undiagnosed diabetes mellitus are also common in AAs. The National Institute of Health (Hicklin, 2018) reported that the high prevalence of prediabetes and T2DM in AAs is associated with biological factors. Obesity among AAs, in combination with other factors such as behavior, psychosocial and socioeconomic livelihood, predisposes AAs to develop prediabetes and T2DM.

Because of the risks of diabetes, obesity, high blood pressure, and sedentary lifestyles, women have higher levels of prediabetes than men (Rebolledo & Arellano, 2016). Uniquely, black women are more predisposed to the condition since they are overweight and obese. Also, AA women do not experience positive lifestyle changes that make them lose excess weight. This population is less active than their white or Hispanic

counterparts. They do not enroll in physical exercise programs or frequently jog like their counterparts.

Factors of Social Determinants of Health(SDOH)

The SDOH-related to prediabetes comprises conditions where individuals are born, where they spend their time either studying, working, or living, and their age. These encompass aspects of the social environment, including education level and marital status, physical environments, such as housing situations, and healthcare services, including access to and quality health care (Hill-Briggs et al., 2021). SDOH is associated with reduced opportunities to access resources vital to protecting, improving, and maintaining health. These factors are mainly responsible for the health disparities witnessed in society. Poor social determinants increase the risk of prediabetes and, consequently, T2DM.

Religion and culture are also significant determinants of the health of AAs. Their beliefs about fate, the future, and a supernatural being (God) have a substantial impact on their health-seeking activities and perceptions (Kim et al., 2021). Timely diagnosis and screening of chronic illnesses leading to earlier identification rely on this population's capacity to recognize the urgency and importance of preventive health measures (Kim et al., 2021). Poverty and unemployment have significantly contributed to the overall health of AAs.

Poor socioeconomic status also contributes to the condition. Most AA females come from middle-class and low-class households. Therefore, they cannot afford healthcare services to diagnose prediabetes. Care facilities in poor neighborhoods are also

insufficient to ensure maximum healthcare outcomes for this population (Rebolledo & Arellano, 2016).

Priority Population Health Needs and Factors

AAs have been disadvantaged in various health aspects as compared with other races. However, their better ability to endure mental health disparities has been commendable. Their health needs are mainly chronic disease management, homicide, and interpersonal violence (Noonan et al., 2016), human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) and sexually transmitted diseases (STD), behavioral health needs, and health literacy (Berkley-Patton et al., 2018). The poor management of the chronic disease has been associated with reduced access to better care services due to racial discrimination, poverty, and unemployment. The rates of interpersonal violence and homicides are higher in AAs. The level of health literacy among AAs has been lower than in other races (James & Harville, 2016).

Health literacy is defined by the population's average abilities in obtaining, processing, understanding, and decision-making regarding basic health information (James & Harville, 2016). This concept determines the population's ability to incorporate preventive health measures such as the prevention of progression of prediabetes to T2DM. The concept of health literacy influences preventive population health interventions and the success rates of such interventions (James & Harville, 2016). As aforementioned, chronic disease population health management requires prediabetes risk factors modification. Fulfilling AAs' health needs should ensure a change in modifiable risk factors that necessitate improving health literacy concerning such risk factors.

Data Priority Population Health Data and Sources

Census Data

Prediabetes primarily affects AA women, who make up 37.8% of the population (U.S. Census Bureau [USCB], 2018). The state also reports that 54% of its residents have diabetes. Excessive drinking among adults in the state is 18%, including AA females. Drinking and poor diets are the driving forces for prediabetes. The state experienced food insecurity in 2017, and most people do not have access to healthy foods (Kim et al., 2021).

County Data on Prediabetes

Adult obesity is 5%, according to the United States Diabetes Surveillance System. The state's physical inactivity rate is almost 44%, with most adults aged 20 and older reporting that they engage in leisure activities (Johnson & Givens, 2022). However, access to exercise opportunities stands at 81%, despite the prevalence. Most of the population can access exercise facilities due to their proximity to their homes. Premature deaths in the state also stood at 50% between 2016 and 2018, based on the National Center for Health Statistics (Johnson & Givens, 2022) The point is that most women with prediabetes are likely to progress into T2DM if the issue is not addressed. In truth, physical inactivity contributes majorly to the rampant diabetic cases among AA females in Mississippi. The phenomenon has reduced the population's quality of life due to diabetes prevalence emanating from a lack of physical exercise (Kim et al., 2021).

In Hinds County alone, the quality-of-life metric shows that poor physical health days are at 4.8%, and adult obesity is at 37%. Also, the physical inactivity rate is 32%, while access to physical activity is 54% (Johnson & Givens, 2022) The ADA and the

CDC recognized the burden of T2DM nationwide and in Mississippi. As a result, the Division of Diabetes Translation at the CDC and the National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health started an initiative in 2014 and 2015 that was aimed at preventing diabetes, improving lives, and possibly finding a cure (CDC, 2020). This initiative has since invested in research and education in Mississippi to alleviate the burden of diabetes in the state.

Population Health Initiative

In 2014, the National Association of Chronic Disease Directors and the CDC partnered with the Diabetes Prevention and Control Program to address the diabetes issue in Mississippi. The program aimed to promote awareness of prediabetes conditions among the population to prevent them from contracting T2DM (Moody et al., 2018). Also, it is intended to increase referrals to the CDC. Therefore, people could utilize the CDC's lifestyle change program to learn about healthy lifestyle changes to prevent diabetes risks. The project also wanted to expand the utilization and access of these programs. The program aligns with the ADA's strategy of conducting training sessions in various regions. As a result, the ADA strives to provide resources and technical assistance to these programs in order to promote a prediabetes diagnosis (Moody et al., 2018). Lastly, the initiative needed to expand and increase reimbursements to CDC-recognized enterprises. The state and the national governments wanted to offer sufficient funds and resources to fight the epidemic

Methodology

Epidemiological Methods

A quality improvement project would be suitable to address the issue. The actual issue is that healthcare professionals need education and training to improve their knowledge and awareness. Therefore, they can screen for the condition within the population effectively. The cohort was developed from a federally qualified health center (FQHC) centered in rural Hinds County, Mississippi. Eligible participants were adult PCPs who treat AA women between 30-60 years old, with at least one HgbA1C reading documented between January 1, 2022, and April 3, 2022.

This project was a pre-and post-survey design, a checklist for providers to assess risk factors (see Appendix D). This checklist will offer evidence-based knowledge to healthcare providers to mitigate the issue. This education intervention will involve teaching 20-minute sessions explaining the pre-survey and post-survey screening of prediabetes (see Appendix E). The sessions will involve PowerPoint presentations on prediabetes. Healthcare providers will discuss the risk factors facing this population. They will identify the crucial risk factors that need to be solved urgently to reduce the prevalence. The stakeholders will also examine how to integrate the best prediabetes practices into clinical settings. In healthcare environments, coordination with each other will enable knowledge-sharing transfer and satisfactory care results (Cupp-Curley, 2020).

Then, the adult PCP will identify an appropriate screening tool to implement in their workplaces. Therefore, the providers will conduct a pre-survey and post-survey risk analysis to screen for the condition effectively. In essence, healthcare providers will assess how a team approach and interprofessional collaboration can help detect

prediabetes. They will also analyze the effectiveness of electronic health records (EHR) in alerting medical professionals to the targeted population during screening or post-care. Thus, healthcare practitioners will use standard care procedures to test glucose and insulin resistance. The process will entail looking for opportunities that promote screening efforts.

The best epidemiological method to use would be to adopt a cohort design (Cupp-Curley, 2020). The subjects will be selected based on a set of risk factors. Individuals' inclusion criteria to be screened and educated would include the description mentioned earlier of the target population. This prospective cohort design would consist of registering subjects based on their baseline HgbA1C levels, anthropometric measurements, and risk assessment (Cupp-Curley, 2020). This cohort, sharing similar risks and related measures, would be observed after patient diagnosis, education, treatment, and various behavior change strategies over the next three months. Assessment of desired outcomes would then follow. A cohort methodology is appropriate for this study since it will enable healthcare providers to track prediabetes in AA females. The cohort will enable researchers to observe the population to identify trends and patterns.

Statistical Analysis

A descriptive analysis of serum HgbA1C will provide the basis for statistical inference and conclusions. The measurement of HgbA1C and analysis of changes (increase or decrease in HgbA1C levels) from the baseline would provide quantitative analysis of serum HgbA1C control over the three months. It would provide an assessment of the outcome of the interventions. Descriptive analysis of serum HgbA1C levels from the baseline would also be used in statistical analysis.

Project Purpose

The purpose of the DNP project was to create a standardized prediabetes testing and clinician learning objectives for completion for FQHC practitioners. There were no guidelines for identifying the risk of prediabetes and integrated care among individuals who need additional therapy (Okosun & Lyn, 2015). Providers were able to confront the increasing concern of prediabetes, the absence of diagnosis and monitoring in the population by constantly implementing the ADA's screening methodologies and follow-up requirements (Okosun & Lyn, 2015).

The inclusion criterion for participation will include adult PCPs working at an FQHC responsible for diagnosing and screening patients with risk factors. The ancillary staff will not be asked to participate but may attend the PowerPoint presentation on diabetes to ensure the project's goals are met. The inclusion criteria also include the patient population of AA females aged 30–60 with prediabetes risk factors, BMI > 25, physical inactivity, family history of gestational diabetes and T2DM, smoking, unhealthy diet, and PCOS. Teaching prediabetes management to primary care providers could decrease the risk of the onset of T2DM complications. The AA females' risk of developing prediabetes is increased by the lack of screening, education, and preventive measures in a primary care setting. PCPs are the first step in monitoring and managing prediabetes.

Organizational Support

This project was approved by the organization's Chief Executive Officer. The clinic is a 501(c)(3) nonprofit that organizes and delivers affordable healthcare for residents of disadvantaged, primarily minority population in Jackson, Mississippi, and the

nearby communities. To fulfill the needs of our customers, this FQHC provides a complete spectrum of health and public assistance. Clinical guidelines were appreciated by the PCPs, and they followed current recommendations and treatment goals (Nhim et al., 2018). The practice provided superior patient care by focusing patient optimal health through evidence-based testing. After an original discussion of the project's aims, consent for project delivery was approved by the organization, which may be seen in Appendix G.

Recruitment Plan

Upon gaining organizational approval (see Appendix F) and approval of The University of Southern Mississippi (USM) Institutional Review Board (IRB), protocol number 21-330 (see Appendix H), participants for the screening protocol and educational intervention will be recruited by two methods for this project. The first method involves the target patient population for this project: English-speaking AA females in the primary care clinic. The target sample size was n = 40 adult AA females ranging in age from 30 to 60. The plan is to conduct a retrospective pre and post-chart review on individuals who meet the inclusion criteria (AA females, English speakers, aged 30-60, BMI 25, T2DM family history, history of gestational diabetes, smoker, PCOS, and a HgbA1C (5.7–6.4%).

The target population in the chart reviews will not need to be contacted or consented to provide any additional information beyond what is in their current medical records. No identifying patient information will be collected or recorded during chart reviews. The providers will receive an introductory email explaining the project

investigator and the project details, including a timeline for receiving a consent letter, the screening checklist, pre-survey, PowerPoint educational intervention, and post-survey.

Participants will have the opportunity to respond to or decline the invitation to participate two weeks before the proposed project. Participants will be given opportunities to respond to the email to ask questions, vocalize concerns, and acquire a complete understanding of the project's goals prior to the anticipated timeline of implementation and completion. All participants will verbalize consent upon beginning the project education and implementation stages.

Participants

Staff participants included four primary care providers who regularly provide care to patients diagnosed with prediabetes. The staff chosen were selected because they are considered experts in the care of patients with prediabetes and because these providers are critical stakeholders in the organization's decision-making. Throughout the education and implementation phases, all participants were indirectly involved in the quality improvement strategy.

Implementation Process

After USM IRB approval was granted, (protocol # 21-330) the project investigator conducted a pre-implementation of a retrospective review of charts of the target population two weeks before the intervention to determine the current practice of screening and diagnosing patients seen in the clinic for prediabetes. Data extracted from medical records included glycated HgbA1C, age, race, gender, diagnosis of prediabetes, and referral to DPP per provider was developed by creating a report using the inclusion

criteria as identifiers. A method of choosing charts randomly yet including an equal number of charts. A total of forty charts were reviewed to collect data.

Intervention

Consent was obtained on written consent forms and provided before initiating the education session (see Appendix G). Participation in the group education sessions was voluntary. Individuals were asked to participate before the initiation of the DNP project. Each PCP received an introductory email explaining the details of the project, including the timeline on when they will receive the checklist, pre-survey, post-survey, and the prediabetes PowerPoint presentation.

The pre-survey and post-survey were created through the online software Survey Monkey website and were administered via email to the PCPs. The PowerPoint presentation was administered via Zoom at our monthly provider meeting two weeks after the pre-survey. Participants received email reminders to review the checklist and ADA screening tool and complete the surveys before the PowerPoint presentation. Fourteen days following the administration of the educational PowerPoint presentation, the PCPs were given a post-survey to assess their opinions and knowledge of prediabetes education.

Data Collection

A pre and post-survey consisting of 10 questions each were administered to assess PCPs' knowledge and perception of prediabetes. This data collection method was selected to yield information comparing the difference between the pre and post-survey results after receiving the group prediabetes education intervention. The PCPs will receive an email invitation to accept an invitation to the education intervention via Zoom meeting.

The success of the intervention was determined by the chart reviews, which assessed AA females aged 30–60 years old for prediabetes screening and whether the target population was adequately screened and diagnosed. Also, were they referred to a DPP? The results of the pre-and post-chart reviews were entered on an excel spreadsheet to analyze the results. Once collected, only the project investigator had access to the surveys and chart review data. Data was stored in an encrypted password file.

Data Analysis

Results were compiled throughout the data collection period and analyzed after that phase. Reviewing clinician notes aided in assessing whether screening and education were appropriately documented in the patient's chart. Descriptive statistics were used to explain demographic data: number of subjects, gender, age, race, HgbA1C, diagnosis of prediabetes, and referral to the DPP.

Ethical Considerations

No part of this project harmed human subjects, as no intervention was performed on patients, and no patient data was compromised. The anonymity of participants was maintained, as participants were identified by subject numbers only. The project took place at an FQHC that provides primary care and specialty care to over 60,000 persons. At no time was the facility mentioned by name. Confidentiality was maintained and protected during all phases of this project. All chart audit data will be collected by the project investigator only and stored on the project investigator's password-protected computer. No identifying patient or provider information will be collected or recorded during EMR chart audits. Since there are no patient identifiers, no Health Insurance

Portability and Accountability (HIPAA) compliance issues are anticipated. Data from this project will be reserved for no longer than one year after completing this project.

Summary

The strategic steps utilized to establish and write protocols for acquiring data for analysis were investigated in this quality improvement project implementation. The project investigator's involvement included developing evidence-based teaching tools for the participants, as well as population identification and setting. The project's implementation at a FQHC gave AA females and minority/ethnic females with the opportunity to receive instructions about prediabetes education and. The two surveys used in this experiment allowed participants to evaluate their views on disease progression and treatment choices. The recruitment and participation process were meant to educate participants, but it also provided them with the opportunity to assess their risk of prediabetes and T2DM.

CHAPTER III – RESULTS

Pre-survey Scores

In the pre-survey tests on prediabetes knowledge and practice application, a 10-questionnaire test was administered. Four clinicians participated in the survey. The average score was 75%, the median score was 71%, and the standard deviation of the mean was 7%. The lowest score was 71%, while the highest score was 86%. The first question tested the knowledge about the normal blood sugar cutoffs. Four participants answered this question, and 75% were considered 65-99 mg/dl as the normal range for blood glucose, while 25 % considered 126-145 mg/dl as the normal blood glucose level. Figure 1 depicts the collective results of the first question on the pre-survey.

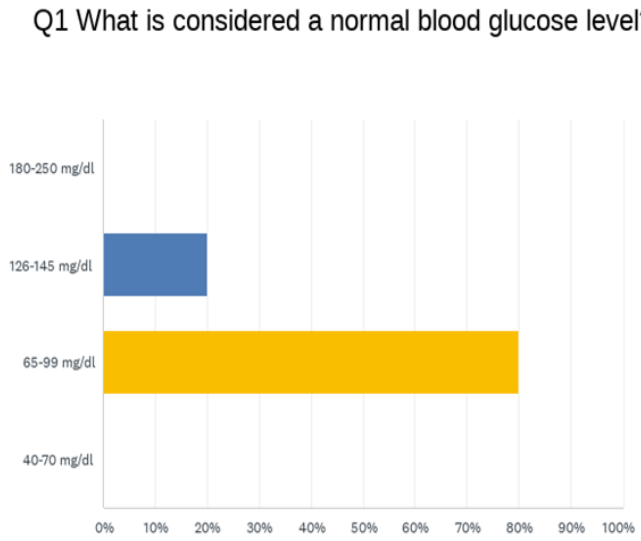


Figure 1. Pre-Survey Question 1

(Survey Monkey, 2022)

The second question tested the clinicians' understanding of the blood glucose levels that are considered high. All participants recognized 180-250 mg/dl as high

glucose levels. The third question assessed the participants' understanding of racial predilection for prediabetes. Fifty percent of the clinicians identified AAs as the most ethnically predisposed to getting diabetes, and another 25% identified Native Americans as those with the highest risk. In contrast, the other 25% identified Hispanics as the race with the highest risk. Figure 2 illustrates the results of Question 3.

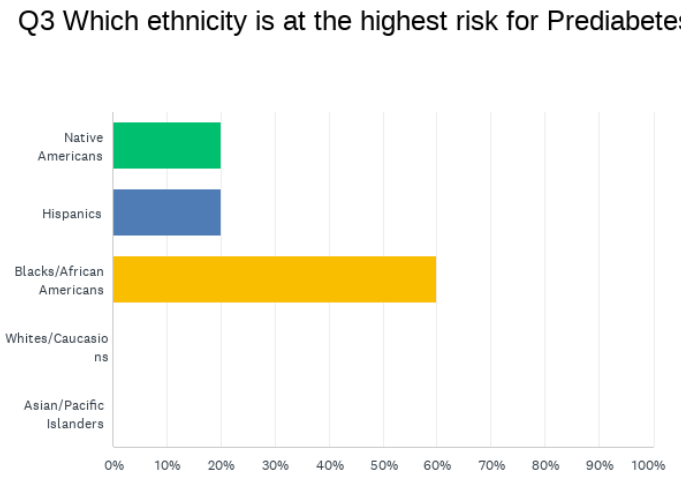


Figure 2. Pre-Survey Question 3

(Survey Monkey, 2022)

The fourth question tested the knowledge of the recommended duration of daily exercise, and half of the clients identified 45 minutes while the other half identified 30 minutes. In the fifth question, three participants denied that advancement in age does not increase the risk of T2DM, while one participant agreed. Half of the participants stated that one should be screened for prediabetes every year, while the other half indicated that it should be every three years. All participants identified 5.7-6.4% as the range for diagnosis of prediabetes. Four options for selection were provided for risk factors for prediabetes: physical inactivity, gestational diabetes, dyslipidemia, and hypertension.

Three participants selected all of them as risk factors, while one clinician identified only one factor – physical activity as the risk factor. All participants agreed that prediabetes is a reversible disorder.

The knowledge about first-line treatment for prediabetes was tested by providing five options: increase exercise and activity, metformin, eating one meal a day, decreasing proteins and fats, decreasing the intake of carbs and high-calorie foods, first, second and fifth, and all the options. Three participants chose the combination of treatments as the first line for prediabetes. One participant identified only a decreased intake of carbs and high-calorie foods, and the other identified only metformin as a first-line treatment. Figure 3 depicts the results of the providers' opinion of first-line treatment for prediabetes

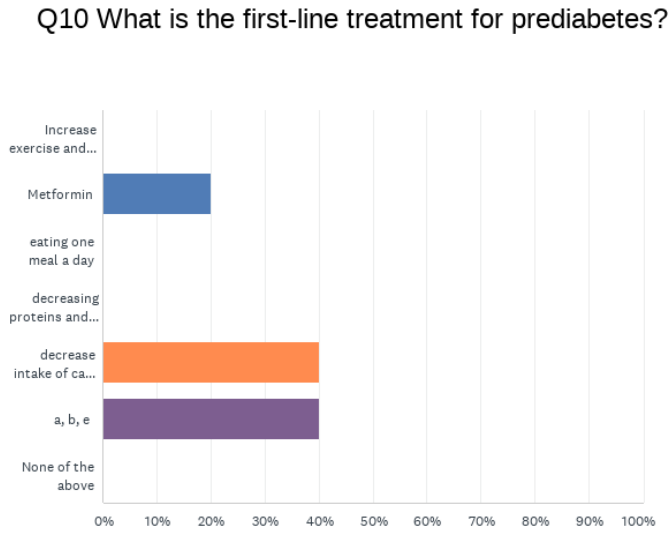


Figure 3. Pre-Survey Question 10

(Survey Monkey, 2022)

Four providers completed the surveys before and after the educational intervention. Providers showed mixed results in progressing in knowledge in terms of prediabetes diagnosis and referral of patients to DPP, yet some of the respondents

regressed, showing worse test results compared to the pre-intervention. The results of the quiz were the following:

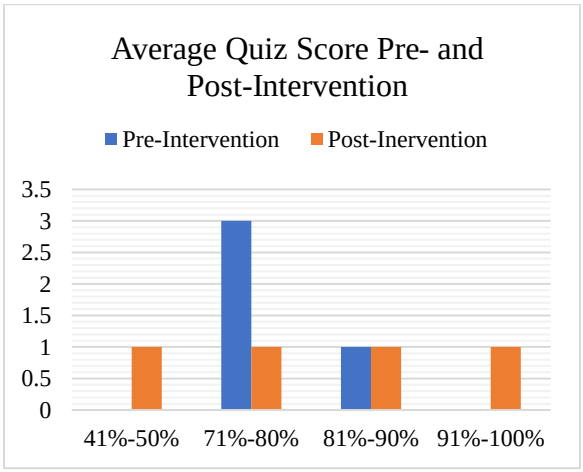


Figure 4. Average Quiz Scores

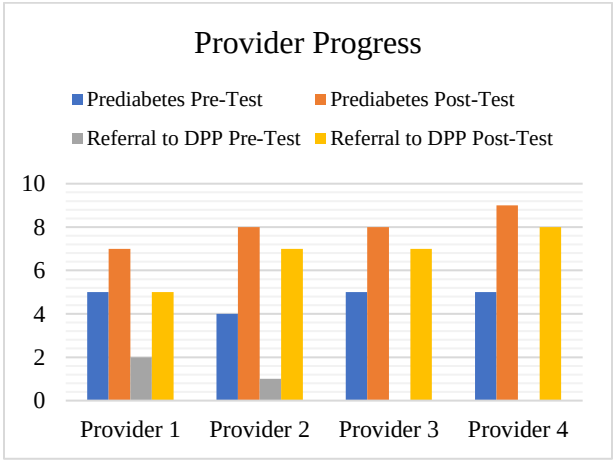


Figure 5. Provider Progress

Overall, the average quiz score of participants is controversial, considering pre-test and post-intervention data. The score improved from 75% in the pre-intervention period to 81% in the post-intervention period. It is possible to compare the results in the quiz with the individual results of providers, showing that, for example, providers 3 and 4 progressed the most in terms of prediabetes diagnosis and referral to DPP (Figure 4). Yet, all respondents showed an improvement in terms of prediabetes diagnosis and referral to

DPP. At the same time, one of the participants regressed dramatically by showing a score between 41% and 50%, while one participant progressed dramatically by showing a score between 91-100%. The results of the pre-test and post-intervention quizzes showed that respondents improved their knowledge of prediabetes in most cases. However, some questions were still answered incorrectly after the educational intervention.

For instance, the respondents showed improvement in knowledge of normal blood glucose levels (83% vs. 75% correct), the impact of age on T2DM (100% vs. 75%), frequency of patient screening for diabetes (67% vs. 50%), risk factors indicating T2DM (83% vs. 75%), and first-line treatment of T2DM (67% vs. 50%). Regression in knowledge was observed in participants regarding the knowledge of high blood glucose levels (67% vs. 100%). It is critical to note that respondents were familiar with the correct range of HgbA1C levels in patients, which means that they knew what level constitutes prediabetes and could become the risk factor for developing T2DM. Yet, the pre-intervention phase showed that, in most cases, providers tend not to diagnose prediabetes or refer patients to a DPP. Such controversial results could point to other reasons affecting providers' failure to refer patients to DPP or diagnose prediabetes.

Post-Survey Scores and Deviation

The number of participants who took the post-intervention tests remained the same. The average score by the four participants after implementing the educational intervention was 81%, representing a 6% increase in clinicians' knowledge. Their average score in the first question increased to 83% from 75%, representing an 8% increase. The average score in understanding high blood glucose levels dropped from 100% to 67%.

The selection score for the race with the highest risk for prediabetes also increased from 50% to 66.7%, representing a 16% increase.

There was a 25% increase (from 75% to 100%) in knowledge scores about the impact of age on prediabetic risks. Understanding the impact of ethnicity, especially risk among blacks, increased from 50% to 66.7%. More participants (66.7% from 50%) chose 30 minutes as the recommended daily physical exercise duration to prevent T2DM. The score on the frequency of prediabetes screening also improved from 50% to 66.7%. There was no adverse change in knowledge about prediabetes HgbA1C ranges. The average score on risk factors increased from 75% to 83%, representing an eight percent increase. There was no adverse change in knowledge about the reversibility of prediabetes. The score on first-line treatment for prediabetes increased from 50% to 67%, thus a 17% change.

Pre and Post-chart Reviews

The project reviewed 40 AA female charts for each provider (10 per provider) for HgbA1C testing, prediabetes diagnosis, and referral to DPP. The study also recruited four adult PCPs. A retrospective pre-chart review was conducted in January 2022 after USM IRB approval (protocol # 21-330), and post-chart review data was collected in April 2022. All participants (n = 40) were AA females aged 30–60 years old with an elevated HgbA1C. The average age of participants was 48 years old (Mean (M) = 48.8; Standard Deviation (SD) = 7.83). The table below illustrates the results of the chart reviews.

Table 1

HgbA1C Levels in Pre and Post-Chart Review

t-Test: Paired Two Sample for Means

	Hemoglobin Pre-Test	*Hemoglobin Post-Test*
Mean	6.095	6.0575
Variance	0.033307692	0.064557692
Observations	40	40
Pearson Correlation	0.432133669	
Hypothesized Mean Difference	0	
df	39	
t Stat	0.986599059	
P(T<=t) one-tail	0.164960432	
t Critical one-tail	1.684875122	
P(T<=t) two-tail	0.329920864	
t Critical two-tail	2.02269092	

To compare before and post HgbA1c levels, a paired-samples t-test was used. A three-month HgbA1C was obtained on all 40 subjects. The scores for the pre-test HgbA1c were (M=6.09, SD=0.19) and after HbgA1C (M=6.05, SD=0.25; p = 0.005) were not significantly different. These findings imply that HgbA1c levels may not be directly associated to educational intervention, activity completion, or prediabetes. However, the findings suggest that some did reduce with intervention, and patients who are at risk for prediabetes or have been diagnosed with prediabetes could benefit from more in-person educational material and tools. When the provider took the pre-survey, only 19 charts showed a diagnosis of prediabetes, as seen in Figure 6. Following the viewing of the PowerPoint presentation and completion of the post-survey, clinicians diagnosed prediabetes in 32 of the 40 chart reviews.

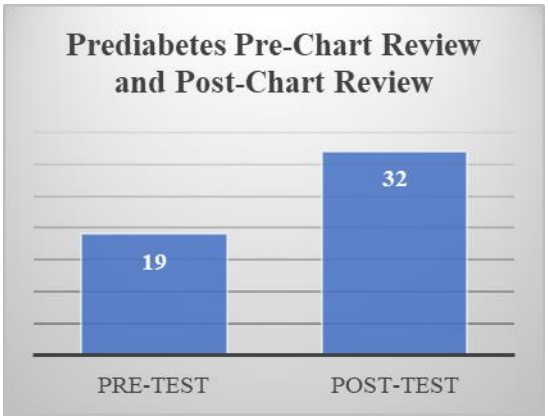


Figure 6. Prediabetes Pre and Post Tests

However, the diagnosis of prediabetes status and referrals to DPP has increased significantly after the intervention (Figures 7).

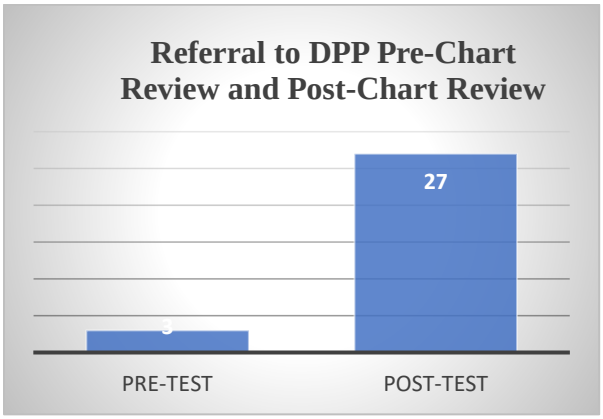


Figure 7. Referral to DDP Pre and Post Test

Results generated by this project led to several implications. First, patients and providers benefited from the educational intervention, as it has improved the knowledge of providers on several aspects of prevention of T2DM and prediabetes diagnosis. This intervention also affected the preventative efforts among patients with prediabetes status, who could improve their health and reverse T2DM by undergoing DPP and following recommendations provided by their providers. Educational intervention could potentially improve patient outcomes, especially among those in risk groups for developing T2DM.

Despite the mixed results in the quiz, providers showed practical progress in their diagnosis of prediabetes and referred patients to the DPP within a short period of time. No improvement in the HgbA1C level in patients showed the ineffective initial diagnosis and treatment of patients with prediabetes.

Summary

The clinical significance of conducting this project in an FQHC included identifying patients with prediabetes and increasing participant awareness of their current risk factors. Advanced nursing practice has become a critical component of efforts to enhance healthcare outcomes, cost-effective care, community partnerships, and medical progress. Opportunities to contribute to nursing practice become more relevant, frequent, and in higher demand as nurses gain more substantial leadership responsibilities as a result of further education. In an FQHC, this quality-improvement study focused on the prevalence of prediabetes among AA females in FQHC. The project investigator-led an educational intervention on disease perceptions and lifestyle adjustments to prevent or delay the onset of prediabetes. The goal of this quality-improvement project was to incorporate evidence-based practice modifications for prediabetes screening and diagnosis for the AA females at an FQHC.

CHAPTER IV – DISCUSSION

Key improvements were observed in clinicians' knowledge about risk factors, screening, diagnosis, and treatment of prediabetes. Higher pre-survey scores were observed in questions concerning risk factors, and the lowest scores were recorded in questions concerning treatment and diagnosis. An unfavorable change in scores on cutoffs for high blood glucose levels was noted. This change could be attributed to the participants' knowledge after the interventions. The number of correct responses remained the same, but the number of incorrect responses increased by two. General improvement was noted in all other aspects of the assessment before and after the intervention. Increasing knowledge was associated with an increase in awareness about prediabetes. The awareness of risk factors should enable the clinician to identify the at-risk patients and start the necessary care process. Their knowledge and awareness of the disease would determine their ability to initiate these processes.

The ADA recommends that individuals above 45 years of age be screened for T2DM every three years (U.S. Preventive Services Task Force, [USPSTF], 2021). This screening is part of preventive treatment for those at risk of developing diabetes. The participants were able to identify the recommended frequency with improved accuracy after providing the intervention. This change implies improving their knowledge capacity to correctly educate their patients on screening and prevention (Khan et al., 2019). This information needs to be as accurate and evidence-based as possible. A study by Martos-Cabrera et al. (2021) showed that health education provided by nurses in the consultation could improve the HgbA1C levels of these patients. The intervention provided to participants in this study was guided by the guidelines of the ADA and the CDC.

PCPs should be able to provide education and screen for prediabetes to prevent undiagnosed diabetes cases among at-risk patients. Providing this education requires improved awareness among these PCPs. This study demonstrated that improving this awareness is feasible and viable in increasing clinician awareness. Owei et al. (2019) discovered that informing patients about their prediabetes status can help them improve their HgbA1C levels. Therefore, care providers should be able to diagnose and educate these patients about their prediabetic status.

Increasing care providers' awareness and knowledge about screening and referring patients is essential in promoting lifestyle change programs. When PCPs are aware of the risks, screening, diagnosis, and treatment of prediabetes, they can avert the disease's consequences during its early stages. Nhim et al. (2018) concluded that it is essential to increase care providers' awareness of prediabetes to improve their ability to screen, diagnose, and refer. This awareness would enhance proper disease prevention programs. Roper et al. (2019) found that barriers to prediabetes care also include perceptions and awareness of prediabetes among patients and clinicians. The PCPs' interaction with patients provides an opportune time to educate and screen their at-risk patients about prediabetes status. To overcome the awareness and perception barriers, clinicians should communicate accurate and up-to-date information about risks, diagnoses, and treatment to their patients. Therefore, an increase in their awareness is necessary

Limitations

This project had a smaller sample size that would limit the generalizability of the findings to the general population. The sampling was done through convenience methods that predispose bias to the selection of participants. Clinician education through

PowerPoint presentations provides visual aids that improve information retention. This study is a single-center study and does not account for the differences in health institutions' practices and protocols. The study's strength is the use of the intervention's power to be delivered in any setting.

Benefits of the Project

The organization's benefit was participating in the DPP sponsored by the CDC. The primary care team has become more aware of their patient populations' need for screening based upon the project criteria and not solely on an existing prediabetes diagnosis. Another benefit for the principal investigator was learning to become a trainer through the DPP and helping to teach preventive health practices for diabetes prevention and other chronic conditions in underserved communities in Jackson.

Future Implications for Practice

Identifying the risk factors that predispose individuals to the condition and encouraging them to change any modifiable risks will play a massive part in reducing prediabetes. Education of healthcare providers on the significance of early and frequent screening goes a long way in promoting early diagnosis and management. Highlighting the various signs and symptoms to look out for will also make it easier for healthcare providers to detect prediabetes early and initiate early management.

Healthy People 2020 notes that people from minority groups are at a higher risk of developing diabetes. (CDC, 2019) AAs, Hispanic Americans, and American Indians form a cohort population at a greater risk of developing diabetes (Mitchell et al., 2020). T2DM is associated with other complications, including cognitive impairment, incontinence, an increased risk of fractures, and the added risk of developing cancer.

Lifestyle adjustments have been proven effective in preventing and delaying the development of T2DM in individuals who are at high risk of developing the condition.

Conclusion

This quality improvement project sought to implement evidence-based practice changes for prediabetes screening and diagnosing in an FQHC among primary care providers. Understanding the informational and education gaps in clinical practice among PCPs regarding the management of prediabetes and T2DM provides a basis for clinical practice improvement. This study ascertained the gaps in prediabetes treatment among PCPs. The application of the educational intervention improved their awareness. This increase in awareness would improve their ability to identify at-risk patients correctly, screen them, diagnose prediabetes and T2DM, and treat or refer them appropriately.

Prediabetes education, therefore, improves clinicians' prediabetes awareness and disease prevention. Clinician education improves awareness and improves their capacity to ensure early identification of a disease with known risk factors and understanding of their management. Future studies should carry out multicenter studies to provide findings that would be generalizable and have a larger sample size. It is suggested that future quality improvement projects address prediabetes prevention programs that educate AA females and other minority groups about dietary habits, perceptions related to disease progression, and PCPs implementing prediabetes screening.

APPENDIX A – Prediabetes Screening Questionnaire

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.

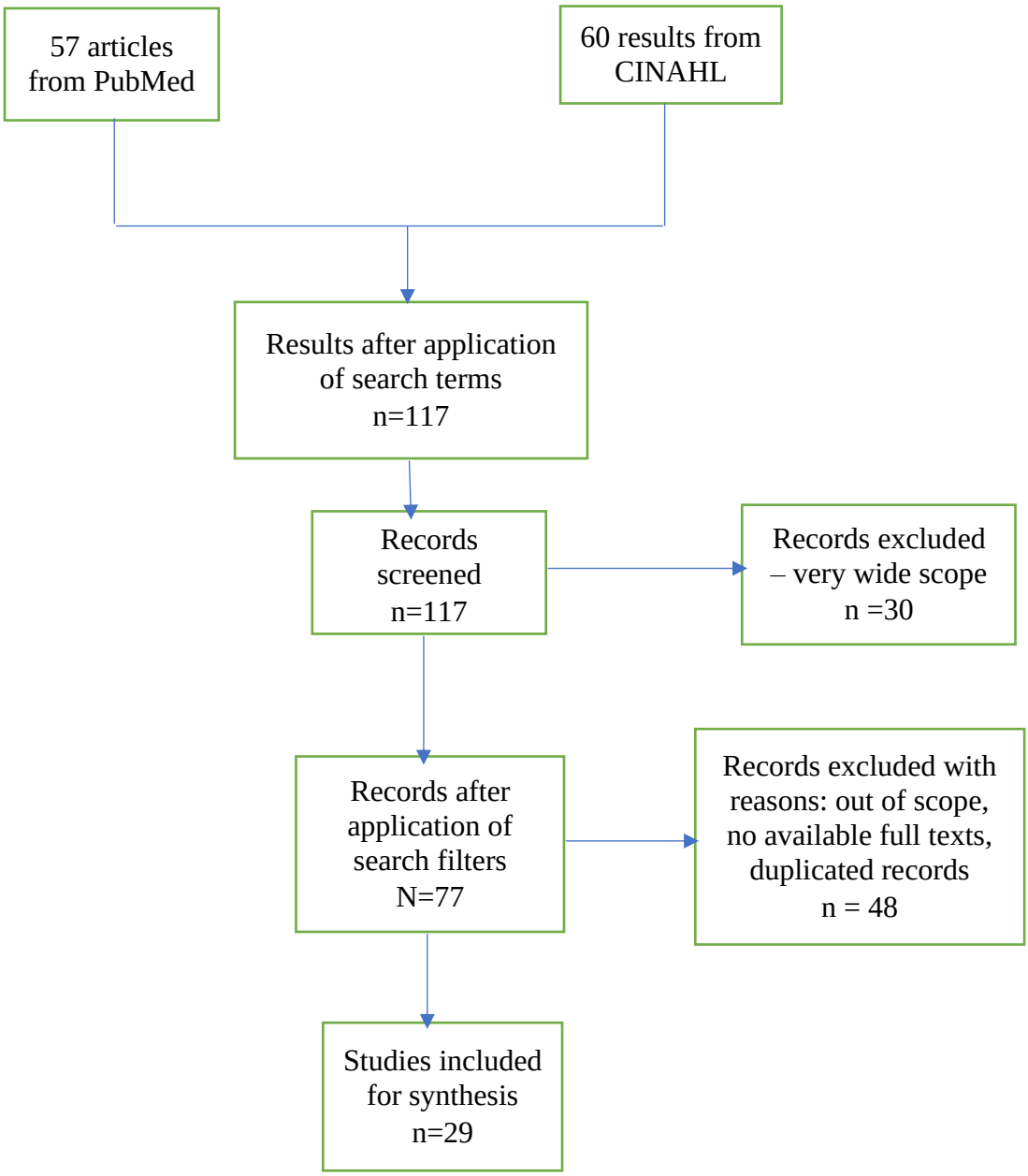
You can reduce your risk for type 2 diabetes

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.

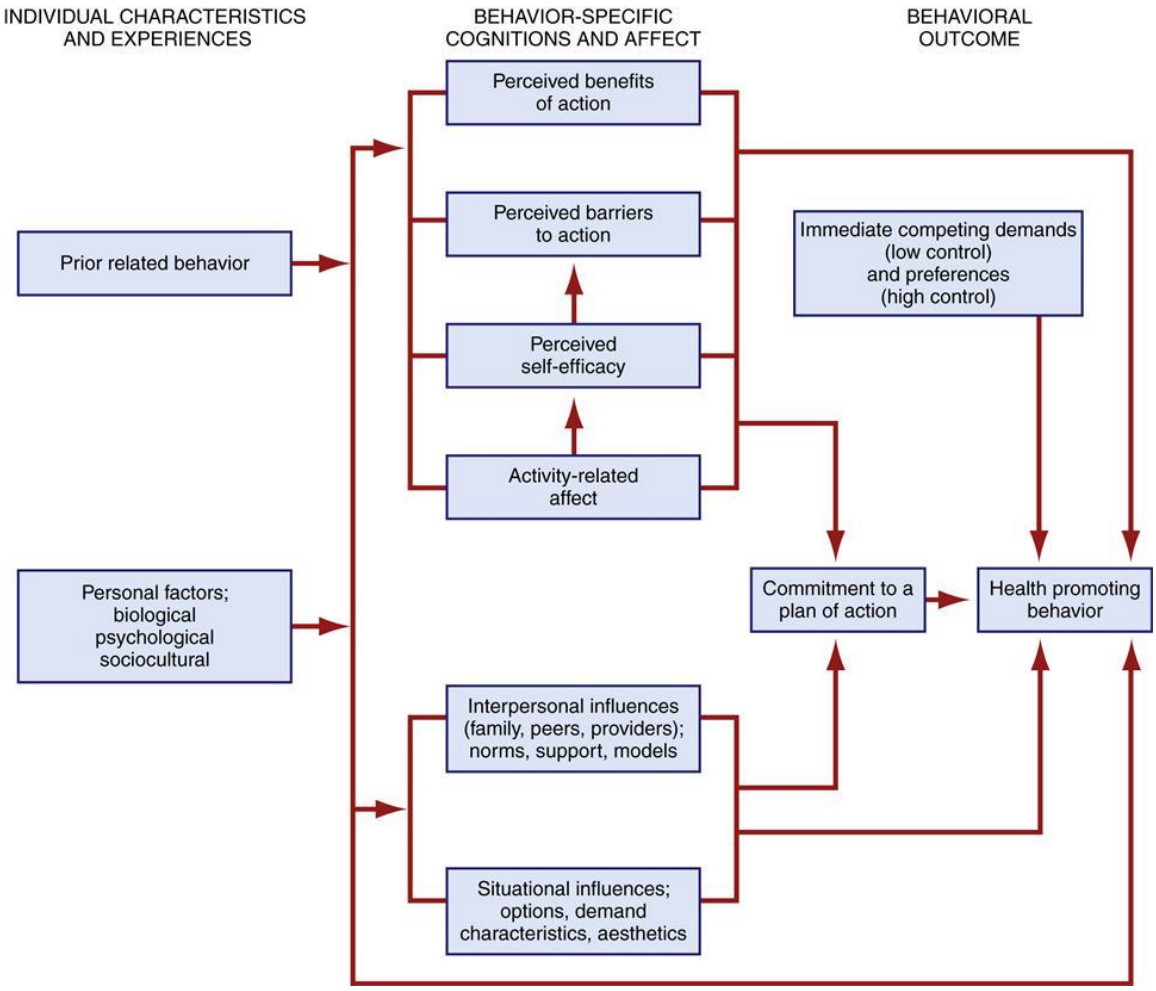
Risk Test provided by the American Diabetes Association and the Centers for Disease Control and Prevention.

American Diabetes Association. CDC

APPENDIX B - PRISMA Guidelines



APPENDIX C - Health Promotion Model



APPENDIX D - Prediabetes Checklist

- Identify patients at risk for prediabetes by administering CDC Prediabetes Take the Test
- Assess all risk factors
- Determine what diagnostic or screening tool you will use to identify patients
- Discuss lifestyle changes and help the patient identify barriers to those changes
- Refer patients to your local CDC National Diabetes Prevention Program
- Follow up with patients' progress

APPENDIX E - Pre and Post-survey

1. What is considered a normal blood glucose level?

a. 180-250 mg/dl

b. 126-145 mg/dl

c. 65-99 mg/dl

d. 40-70 mg/dl

2. What is considered a high blood glucose level?

a. 180-250 mg/dl

b. 126-145 mg/dl

c. 65-99 mg/dl

d. 40-70 mg/dl

3. Which ethnicity is at the highest risk for Prediabetes?

a. Native Americans

b. Hispanics

c. Blacks/African Americans

d. Whites/Caucasions

e. Asian/Pacific Islanders

4. To help prevent Type 2 Diabetes what is the recommended amount of daily exercise?

a. 30 minutes

b. 45minutes

c. 15 minutes

d. 60 minutes

5. You are at higher risk for developing type 2 diabetes the older you are?

a. True

b. False

6. How often should you screen your patients for prediabetes?

a. every 2 years

b. every 5 years

c. every 3 years

d. every year

7. What HBA1C level in indicative of prediabetes?

a. 5.0-5.4%

b. 6.0-6.4%

c. 5.7-6.4%

None of the above

8. What are the risk factors for developing prediabetes?

a. physical inactivity

b. gestational diabetes

c. dyslipidemia

d. hypertension

e. all of the above

9. Prediabetes is a reversible disorder.

a. True

b. False

10. What is the first-line treatment for prediabetes?

a. Increase exercise and activity

b. Metformin

c. eating one meal a day

d. decreasing proteins and fats.

e. decrease intake of carbs and high calorie foods

f. a, b, e

g. None of the above

APPENDIX F - Letter of Support

August 27, 2021

Dr. Jasmine Chapman, CEO

Jackson Hinds Comprehensive Health Center 3502 W. Northside Drive

RE: Permission to Conduct DNP Project Dear Dr. Chapman

I am writing to request permission to conduct a scholarly project at your institution. I am currently enrolled in the Doctor of Nursing Practice (DNP) program at The University of Southern Mississippi in Hattiesburg, MS, and am writing my scholarly paper. The project is entitled: Improving Screening and Diagnosing of Prediabetes Among Primary Care Providers by Increasing Awareness Prediabetes Education.

I hope that the administration will allow me to conduct a PowerPoint educational presentation at one of the adult provider meetings this year. This project aims to implement an educational intervention to increase provider knowledge and awareness of prediabetes screening, diagnosing, and management by utilizing a pre-survey, a PowerPoint presentation, and a post-survey. Due to covid precautions, I hope to present my project via Zoom and provide staff with the pre-surveys through staff emails before the scheduled meeting and post-surveys after completing the presentation.

If approval is granted, adult primary care providers will be asked to complete the pre-survey via email before the scheduled provider meeting. During the meeting, there will be a short PowerPoint presentation on Prediabetes education and screening. After completion of the meeting, providers will be receiving the post-surveys through email.

The survey process should take no longer than five to 10 minutes to complete. The survey results will be pooled for the DNP project and shared with staff before the presentation. Post-survey results will be shared with staff through email after outcomes have been calculated.

I will greatly appreciate your approval to conduct the DNP scholarly project in your facility. I will follow up with a telephone call and email next week and be happy to answer any questions or concerns. Please contact me at my email address: sonia.walker@usm.edu.

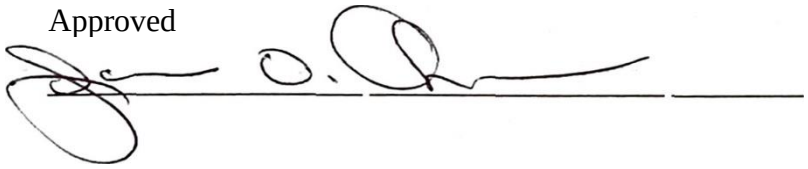
If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope. Alternatively, kindly submit a signed letter of permission on your institution's letterhead acknowledging your consent and authorization for me to conduct this survey/study at your institution.

Sincerely,

Sonia Walker, FNP-C, The University of Southern Mississippi Enclosures

cc: Dr. Lawanda Baskin, Project Chair

Approved



APPENDIX G Consent Letter

Consent for Participation

My name is Sonia Walker, FNP-C and I am a doctoral student in The University of Southern Mississippi's Doctoral of Nursing program. As a part of my academic requirements, I am conducting an evidence-based practice project entitled Improving Screening and Diagnosing of Prediabetes Among Primary Care Providers by Increasing Awareness of Prediabetes Education. PROTOCOL NUMBER: 21-330. This study will use a survey design to investigate the implementation of an evidence-based prediabetes screening protocol and educational intervention among primary care providers in a Federally Qualified Health Center. There are currently no specific screening recommendations for addressing risk factors for prediabetes and care for patients who need treatment. By applying the American Diabetes Association screening and clinical guidelines, primary care providers will address the increasing concern for prediabetes and the lack of screening and diagnosing. Participation is voluntary and responses are anonymous.

Your participation in this study will include:
If any education component or other parts, add as needed in the order for the project process.
(1) Completion of Prediabetes education
(2) Completing a Pre-Test of Prediabetes education and screening protocol
(3) Completion of an anonymous survey which will take approximately 5 minutes.
(4) Completing a Post-Test of Prediabetes education and screening protocol
You must be 18 years of age to participate.
Your participation is voluntary, you do not have to answer any questions you are uncomfortable with, and you can stop anytime.
There will be no compensation for participation or penalty for nonparticipation in this study.

All participant responses to the survey will remain confidential. Your answers will be used to provide insight on barriers, strengths, and opportunities related to the DNP Project. The Project investigator on this evidence-based practice clinical inquiry involved with this study is myself and my Chair, Dr. Lawanda Baskin, Ph.D. We will have access to the data. Data will be reported as group data. In any reports written about this study, no identifying information will be included. No individual responses will be reported. Participation in this study is strictly voluntary and completing the study survey indicates an agreement to participate in this study and that you are at least 18 years of age.

The principal investigator of this study is Sonia Walker, and she can be contacted at email sonia.walker@usm.edu She is working with her advisor Dr. Lawanda Baskin, Ph.D. who can be reached at Lawanda.Baskin@usm.edu This project has the approval and support of the project committee.

This project has been reviewed by the University of Southern Mississippi's Institutional Review Board Human Subjects Protection Review Committee, which

ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-5997. The results of this study will be made available upon completion of the project

Thank you for your consideration to participate in this study.

Sonia Walker

By signing here: _____ Participant's Signature for consent

_____ I confirm that I am 18 years of age or older.
_____ I agree to participate in this project. I understand that I may withdraw at any time.

APPENDIX H –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:	21-330
PROJECT TITLE:	Improving Screening and Diagnosing of Prediabetes Among Primary Care Providers by Increasing Awareness of Prediabetes Education
SCHOOL/PROGRAM	Systems Leadership & Health Outcome
RESEARCHERS:	PI: Sonia Walker Investigators: Walker, Sonia~Baskin, LaWanda~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	15-Feb-2022 to 14-Feb-2023

Donald Sacco Jr.

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

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