2022

Weight Management Clinical Practice Guidelines for the Obese, Pre-diabetic, and Diabetic Population

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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2022

Abstract

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by

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2022

Abstract

Diabetes is among chronic or lifestyle-related illnesses posing health care challenges at epidemic proportions, pressuring health care systems infrastructure for positive outcome-driven practices and sustainable costs, as continued research suggests that obese people are up to 80 times more likely to develop type 2 diabetes. In June 2021, a weight-loss and wellness center serving this high-risk population established recommended guidelines for Hemoglobin A1C (HbA1C) screening and education. During the initial 3 months of implementation, data findings captured 37% in a total of 220 with elevated HbA1C levels. The gap in practice is that the Wellness Center did not have a program specifically for the prediabetes or diabetes subpopulation. The purpose of this project was to develop a best-practice weight-loss program for this specific population to promote reduction in HbA1C levels. The practice-guided question addressed whether an interprofessional team would adapt the current weight-loss program to accommodate prediabetes and diabetic patients. Five key components were agreed upon: a prediabetes risk test, routine HbA1C screening, the addition of a diabetes cocondition screening checklist, behavior topic videos, and the use of a self-maintenance education tool. The collaborative group consisted of staff volunteer nurse practitioners, one herbal doctor, and medical assistants from the project site. Collaboratively the participants rated the guideline using the AGREE II criteria, with a score of 98.1% agreement on the seven domains. This project improves the provision of weight loss for those with elevated HbA1C levels and potentially decreases the need for diabetic management in patients,

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Dedication

With total surrender, I dedicate this project to my Lord and Savior Jesus Christ, the late Alice Marie Polidore Broussard and Don Lynn Williams, and family, friends, and community mentors for their inspiration, support, and confidence in my pursuit of education. My sincerest gratitude to Walden University and its staff for the opportunity to be pruned and prepped with patience and guidance in fulfilling my project. The professionalism and empirical knowledge imparted provided me with the keys of wisdom to rise to another dimension of passion and dreams.

Acknowledgments

It is truly an honor to be a child of God, blessed with endurance, strength, and wisdom to accomplish the soaring journey of education. My sincere thanks to my son Javon Williams and family who keeps me grounded, for standing with me and giving me moral nudging when my confidence fell short of finishing this race. Special gratitude and thanks to my mentor, Dr. Catherine Garner, and committee member, Dr. Mary E. Rogers, for providing their scholarly expertise during the literary process. Lastly, I would like to thank my present and past preceptors, Dr. Sandra Norris-Deckard, Carlene Johnson, RN, MS, Jean Botley, RN, MS; and Dr. Muhammad Shaikh, MD, who spared precious moments of guidance in pro-bono knowledge and a better understanding of patient care.

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Section 1: Nature of the Project

Introduction

Obesity accounts for 80–85% of the risk of developing diabetes, with recent research suggesting that obese people are up to 80 times more likely to develop type 2 diabetes (T2DM; Apovian, 2019). In June 2021, a weight loss and wellness clinic serving a high-risk obese and overweight population implemented recommended screening guidelines for Hemoglobin A1C (HbA1C) and patient education. Early detection of diabetes can lead to lifestyle modifications and the avoidance of medication. Initial results showed that 37% of patients had abnormal HbA1C levels, indicating prediabetes or diabetes. The gap in practice was that the center did not have a program specifically for this subpopulation. The aim of this project was to develop a best practice weight loss program for this population to promote reduction in HbA1C levels. The practice-guided question was the following: Will an interprofessional team adapt its current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. Nurses can coordinate the care of these patients through the weight loss and wellness center, which will enhance the role of nursing in chronic disease management (CDM).

Problem Statement

One of the largest global healthcare challenges that threaten the financial infrastructure of healthcare systems is chronic lifestyle-related illnesses. Escalated concern related to these illnesses has increased demand for positive outcome-driven

practices (Gammon et al., 2015). T2DM is the only major noncommunicable disease for which the risk of dying early is increasing globally regardless of age, economic status, or social development (World Health Organization [WHO], 2021b). Prevalence has been increasing in low- and middle-income countries versus countries with high incomes (WHO, 2021c). The Centers for Disease Control and Prevention (CDC, 2010) have predicted that 438 million people globally will have this disease by 2030 and, if this trend continues, 1 in 3 U.S. adults could have diabetes by 2050.

For patients in underprivileged populations, not only does T2DM lead to burdens in the form of associated health complications, such as cardiovascular disease, neuropathy, and retinopathy, but also there are economic disparities in diabetic care, as patients in underprivileged populations are likely to be less educated, to be unemployed, and to live in necessitous communities (Tsega, 2021). If early prevention or interventions to delay getting T2DM are made available, they may lower the risk for the other associated conditions (CDC, 2021b). Studies have revealed that living in poverty can double or even triple the likelihood of developing T2DM and its complications (Diabetes in Control, 2010). For the period 2011–2014, there were increases in diabetes prevalence of 40.0%, 74.1%, and 100.4% for median income, relative poverty, and absolute poverty, respectively (American Diabetes Association [ADA], 2021). The disproportionate impact of T2DM on lower income populations indicates an established need for increased prevention strategies for these populations, as the T2DM rate for the impoverished population is 20.4 per 1,000 persons (ADA, 2021). The developmental conditions in which individuals live, work, and age are the social determinants progressively

recognized in correlation to the epidemic of T2DM in the United States (Hill et al., 2013). Comparative data from a York University, Toronto Study concerning patients with T2DM suggested that living in poverty before diagnosis increased the risk of developing T2DM by 26%. During the process of a 12-year study, this population's chance of developing the disease increased to 41% (Diabetes in Control, 2010).

Although it is widely known that evidence-based practice improves the quality of healthcare, it is essential to advancing patient self-care and improving patient outcomes (Adams & Sudha, 2016), especially as prediabetes peaked at an estimated 88 million adults 18 years or older in 2018. Only 15.3% of those adults with prediabetes reported being informed of their health condition by a health professional (CDC, 2020). Screening is readily available for health professionals and is the favored assessment for diagnosis and management of individuals with prediabetes or T2DM (Vadakedath & Kandi, 2017). The U.S. Preventive Services Task Force (USPSTF, 2015) supports education and screening of patients for prediabetes and T2DM, citing that preventive intervention has a moderate net benefit (USPSTF, 2021).

Evidence supports that preventative treatment effectively ameliorates the overall prognosis and prolongs life expectancy in patients with diabetes (Hall et al., 2017). Therefore, the institution of routine HbA1C testing for prediabetes or T2DM assessment addressed a gap in clinical practice for the weight loss and wellness clinic that was the focus of this project, which serves a high-risk, low-income population with weight issues or obesity. Initially, this clinic was not following the recommended guidelines for HbA1C screening and education to identify obese adult stakeholders with prediabetes or

in T2DM states. This practice instituted routine HbA1C testing among patients in early June 2021 and with the guidance of this project the Nurse Practitioner shortly recognized the need for a modification of their normal practice.

Purpose Statement

The purpose of this quality improvement (QI) project is to develop a weight-loss program that promotes the best practice guidelines in aiding the reduction in HbA1C levels for this specific population. This QI project focuses on overweight and obese patients in a weight management and wellness clinic who have personal goals to improve their health. The practice-guided question was the following: Will an interprofessional team adapt its current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focuses on the process of providing appropriate education and clinical management of this population.

The Nature of the Doctoral Project

African American and Hispanic women work diligently to regulate and maintain weight management at an independently owned weight-loss and wellness health clinic in an urban southwest city. More than half of the clinic's patients are noninsured, and most live in this poverty-stricken community. The wellness staff, already condensed to six clinicians, is confronted with the complexity of cost-effective challenges related to resources, improving the quality of care, and making ethical decisions grounded in theoretical frameworks and evidence-based principles. The clinic does not currently have

a weight loss protocol specific to those with abnormal glucose levels. The weight-loss and wellness health clinic's director asked for assistance in developing this program.

The activities of this project align following the *Walden Guide to Clinical Practice Guidelines.* In the review of literature, I used seminal databases, ethically proven recommendations, and guidelines of established professional organizations as resources. The sources of evidence included data searches of OVID, CINAHL, Cochrane Library, Medline, PubMed database, and ProQuest. The keywords were *prediabetes, Type 2 diabetes*, *diabetes mellitus*, the *complications of diabetes,AADE7*, and *diabetes self-management*. The literature review had confined parameters of peer review, English as the chosen language, and full-text articles within the last 10 years of publication. The professional associations whose resources I consulted included the ADA and the National Diabetes Prevention Program.

The selection of sources for the literature review was based on review of the abstracts and full text to determine if they addressed the issue of screening, evaluation, and education for patient self-management. Duplicate sources and those not meeting the criteria were excluded. Key information was extracted from selected studies and placed into a table summarizing the studies. The information included author(s), year of publication, aim, design, level of evidence, sample size and type, instrument(s), and findings. Selected studies were appraised using the GRADE framework (Mercuri & Baigrie, 2018). This approach is used to assess the quality of evidence presented and the strengths of recommendations. The patient care intervention of prediabetes and diabetic

screening implemented for weight loss patients is a new development for the weight-loss and wellness health clinic.

The presence of prediabetes and T2DM is a medical concern posing health care challenges at epidemic proportions, pressuring health care systems infrastructure for positive outcome-driven practices and sustainable costs. Management of weight loss patients for prediabetes and T2DM involves a process with two steps: assessment and management. Assessment requires measurement of an established status of prediabetes or T2DM and absolute risk status through two types of screening tools. Management includes continuing HbA1C lab protocol, weight management goals in reducing and maintaining excess body weight, as well as instituting diabetes education to control associated risk factors. The aim of this guideline is to develop a best practice weight loss program for this specific population to promote reduction in HbA1C levels. This clinic's practitioners and staff need assistance in using guidelines that promote successful treatments in a lifelong effort. Guided by the Donabedian quality assurance framework, this project focuses on identification, evaluation, and the management process of providing appropriate education and clinical management of this population.

The Identified Expert Panel

The team members consisted of volunteer nurse practitioners, one herbal doctor, and medical assistants from the project site. A total of six participants work at the selected weight loss and wellness health clinic and have significant expertise in managing patients. The group members convened by way of internet meetings due to varying schedules and varying Covid-19 pandemic restrictions.

AGREE-II Instrument

The AGREE-II instrument is a scored instrument per the instructions provided by the Agree Trust (2017). The arrangement and content of the AGREE-II instrument distinctively characterize 23 fundamental items organized within six domains. This is followed by a paired overall assessment of global ratings. Each domain is a segmented dimension of the guideline focus. Items 1–3 of Domain 1: Scope and Purpose relate to the overall aim of the guideline, specified health questions, and the target population. The next two items in Domain 2: Stakeholder Involvement tailor the use extent of the guideline development made by the appropriate stakeholders and signify the views of its intended users. The format of this instrument becomes more analytical as the third domain (Rigour of Development) focuses on the process used to synthesize gathered evidence and the methods used to formulate and update recommendations (Items 7–14). Domain 4, Clarity of Presentation, targets the language, structure, and format of the guidelines in Items 15–17, while Domain 5 (Items 18–21), Applicability, channels "improvement of likely barriers and facilitators to implementation, strategies to improve uptake, and resource implications of the guideline application" (AGREE, 2017, p. 7). The Editorial Independence of Domain 6 (Items 22–23) formulates recommendations that are not unduly biased by competing interests. Finally, the additional two overall assessment items rate the quality of the guideline and the need for recommended use in nursing practice.

Significance

This project has the potential to impact patients, providers, and the health system. Prediabetes is a prominent health problem that has been widely underdiagnosed. According to CDC estimates, 34.5% of the adult population in the United States has prediabetes, with 44% of adults aged 65 years and older having blood glucose values that meet the criteria (National Center for Chronic Disease Prevention and Health Promotion, 2020). Innovative practice rooted in empirical data is essential for better outcomes in patient education, patient self-care, and per capita cost containment (Adams & Sudha, 2016). As prediabetes peaked at an estimated 88 million adults 18 years or older in 2018, an estimated one in four young adults (19 to 34 years of age) has prediabetes (Andes et al., 2020). Despite the high prevalence of prediabetes in the United States, only 15.3% of those adults with prediabetes reported being informed of their health condition by a health professional (CDC, 2020). Data for 2019 revealed that 8.5 million adults (estimated 3.4%) aged 18 years or older who met laboratory criteria for diabetes were unaware of diabetes (CDC, 2021c). These statistics on undiagnosed diabetes were based on fasting plasma glucose and HbA1C levels among people self-reporting not having diabetes (CDC, 2021c).

The implementation of diabetes screening along with the proposed quality improvement project addresses health concerns at the aggregate level. An essential stakeholder is a patient who is unaware of being prediabetic. Such patients need comprehensive care, education, and foundational tools in self-management to gain optimal health results. The goals of using a standardized method of prediabetes screening

and education as a preventative health strategy are to improve treatment compliance, maintain cost effectiveness, and ultimately achieve a reduction in those with prediabetes progressing to T2DM. Timing is most auspicious, as research has now established that prediabetes is reversible and T2DM is preventable or may be delayed in high-risk adults. (Albright & Gregg, 2013). Past research results from the Diabetes Prevention Program showed that the onset of diabetes could be delayed or prevented with lifestyle interventions in subjects with glucose intolerance who were overweight and sedentary. Current literature is predicting prediabetes to transform into T2DM within a shorter term of 5 years versus records of 10 years if lifestyle changes are not implemented. Screening is a viable tool for providers to implement necessary care for patients with prediabetes to prevent or reduce the occurrence of long-term diabetes complications.

The healthcare system stands to benefit from cost containment. National economic concerns, costs, and burdens related to the treatment of T2DM are continually being explored, yet, on average, the cost of diagnosed diabetes in the United States is $327 billion (ADA, 2022), with $237 billion in direct medical costs and an additional $90 billion in reduced productivity as diabetes is preceded by prediabetes (Berg, 2021). An individual with diabetes spent about $16,752 on medical expenses in 2017 (ADA, 2022). In 2017, the direct costs of treating type 1 or type 2 diabetes resulted in $9,601 U.S. dollars per year for a diabetic on insulin and $5,683 per year for those using oral glycemic medications (Songer et al., 2019). This encompasses three strategies that focus on a generalized approach to improving diabetes awareness within the healthcare system: synchronizing patient experiences of care (including quality and equity for achievable

optimal care), affording prediabetes health in populations, and reducing the per capita cost of healthcare (American Hospital Association, 2022; Berwick et al., 2008).

Contributions to nursing practice are consistent with the practice of diabetic nurse educators as well as primary care providers. Sources such as the Scope of Practice, Standards of Practice, State Practice Acts, and Standards of Professional Performance for Diabetes Educators define diabetes education, the role of the educator, and the scope and subordinate performance standards for educators (American Association of Diabetes Educators [AADE], 2016; Burke et al., 2014). However, within this domain of clinical privileging, the roles and responsibilities intended for use are inclusive of individuals with minimal knowledge who are involved in the facilitation and delivery of diabetes education and care for patients facing prediabetes or diabetes. No one will perform activities beyond the scope, practice level, and competencies that diabetes care practitioners may be educated and authorized to perform or delegate based on facility policies, protocols, and state occupational supervision regulations (AADE, 2016). The diabetes educational practices are intended to be a general guideline regarding staff roles and responsibilities pertaining to diabetes education and support.

Potential Transferability to Other Weight Loss Centers

The diabetes educational competencies provide structure for the minimal knowledge, skills, and abilities required for practice at each level across the continuum of diabetes care. Overweight and obesity among adults are concerns of this weight-loss and wellness health clinic. Expanding the tactics of intervention as an evidence-based practice problem for prediabetes would lend itself to a didactic approach and opportunity for

existing and continued development measures in research. According to the WHO (2021a), the definition of overweight and obesity is an anomaly of excessive fat accumulation that may debilitate health. In overweight adults, body mass index (BMI) is greater than or equal to 25; obesity refers to a BMI greater than or equal to 30. The proposed quality improvement findings are likely to channel further research regarding the care of weight management patients. Obesity is a precursor to undiagnosed prediabetes or T2DM. Therefore, offering screening and educational strategies for early detection and management is a crucial tactic before the onset of the development of possible diabetes and its complications.

Positive Social Change

The project is in alignment with Walden University's mission, which involves individuals' opportunity to transform themselves as scholars and as instruments that affect positive social change (Walden University, 2020). HbA1C screening and educational strategies for early management are important steps for clinical advocacy, early patient management, and promotion of self-care. Screening and education also constitute a crucial tactic in helping to prevent the progression of T2DM and its complications.

Summary

The estimated total economic cost of diagnosed diabetes is $327 billion, a moderate increase of 26% from ADA's previous estimate of $245 billion in 2012. (ADA, 2022). This estimate illustrates the substantial burden that diabetes imposes on society and supports the need for routine screening for undiagnosed patients to be afforded the

opportunity for optimal care. Prediabetes is a remarkably common condition that can affect people of any age, creed, or color. It is commonly associated with overweight and obesity, which are increasing in prevalence globally.

The weight-loss and wellness health clinic for which I developed this project is serving a high-risk population. In June 2021, staff established recommended screening guidelines for HbA1C screening and patient education and found that 37 % of patients had elevated HbA1C levels. The purpose of this project was to develop a best practice weight loss program for this specific population to promote reduction in HbA1C levels. The practice-guided question was the following: Will the interprofessional team adapt their current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. Optimizing the benefits of screening and the infrastructure of patient education may prelude significance beyond the individual level and prove influential to nursing practice, social change, and the Doctor of Nursing Practice (DNP) essentials. In Section 2, I discuss the background and context of this project.

Section 2: The Background and Context

This scholarly project focuses on overweight and obese patients in a weight management clinic who have personal goals to improve health. In June 2021, this weight loss and wellness center serving a high-risk population established the recommended screening guidelines for HbA1C screening and education. The result findings captured a total of 220 weight loss patients, and 34 patients were screened for HbA1C, of which 37% presented with elevated HbA1C levels. This presents the probability of 1 in 5.9 patients at risk for prediabetes or T2DM and is slightly above the U.S. national average of 34.5% with prediabetes (National Center for Chronic Disease Prevention and Health Promotion, 2020).

The purpose of this project was to develop a best practice weight loss program for this specific population to promote reduction in HbA1C levels. The practice-guided question was the following: Will an interprofessional team adapt their current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. In the next sections, I explore the concepts and models for the project, the project's relevance to nursing practice, the literature review, the background of the project, and my role as the DNP student.

Concepts, Models, and Theories

The simile of atoms as the building blocks of life depicts the foundation of empiricism building the essence of nursing care. The development of theory takes root in

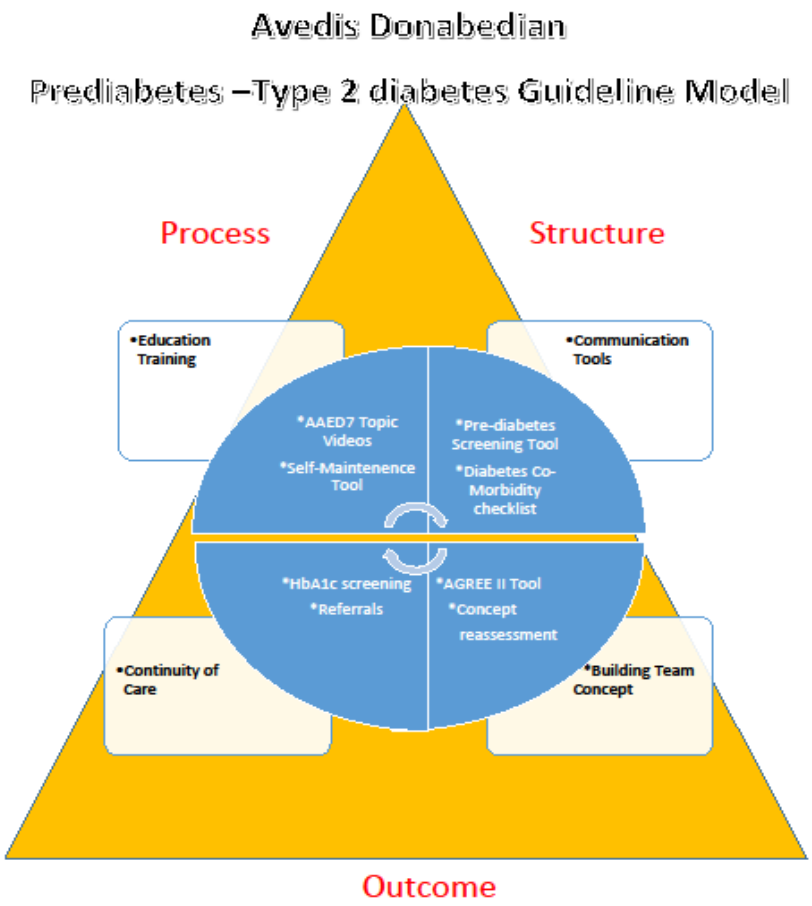
the assembly of various nursing concepts and their progression in research (Bergdahl & Bertero, 2016). Theoretical frameworks are previously tested using research to guide what nurses do as an evidence-based practice. This study will be foundational in the program evaluation model first proposed by Avedis Donabedian (1988). Known as the father of quality assurance, Donabedian monopolized the field of quality measurement as it was understood at the time.

The Donabedian conceptual model is a fundamental framework for examining health services and evaluating the quality of health care. This model focuses on three core elements: the structure, the process, and the outcomes of research (Figure 1). This triad model measures quality by assessing elements of structure or process with proven connections to key outcomes of interest (Patient Safety Network [PSNet], 2005, p. 1), formulating appropriate standards of care, and obtaining pertinent information from Donabedian's (1988) original works, tailoring the components or outcomes of care to be sampled are the guiding steps to follow. In 1985, for instance, Donabedian described the use of decision analysis to identify optimal strategies of care as a notable advance (Berwick et al., 2016; Donabedian, 1966). These included the introduction of patient preferences and monetary cost in the specification of such strategies and the use of decisional algorithms to portray the criteria of quality (Berwick, 1989; Berwick et al., 2016).

As Figure 1 indicates, incorporating a prevention guideline into various settings would serve to improve clinical quality of life outcomes in a cycle of the team concept, communication, and continuity of care.

Figure 1

Donabedian Prediabetes/Type 2 Diabetes Model



In the early decades of the 20th century, Donabedian's focus was on the results of health care interventions (Berwick, 1989; Berwick et al., 2016). Along with Ernest Codman's contribution to quality assessment, Donabedian enhanced accountability within organizations that provided health services. He believed that "systems … are enabling mechanisms only and it's the ethical dimension of individuals that is essential to a system's success" (Berwick et al., 2016; Donabedian, 1966).

The organizing concepts of structure, process, and outcome remain a standard for measuring and improving the quality of the already-established wellness clinic's guiding theory of Dorothy Orem's self-care framework. Orem (1995) contended that maintaining life, health, development, and well-being entails diligent self-care as a human regulatory function performed by the self or others. Orem's mid-range theory (MRT) is foundational for influencing the exploration of prediabetes interventions for the self-care agency (organization), recognition of self-care agents (patients), and maintenance of self-care activities within this clinical setting (see Figure 2). According to AADE (2020), the development of a framework for self-management of diabetes (and other related conditions, such as prediabetes and cardio-metabolic diseases) and behavior change leads to improved behavior and clinical outcome measures (p. 139).

Although the theoretical framework that guided the organization's project development was Donabedian's conceptual model, Orem's conceptual model can be considered as a part of the goal of patient self-care. The guiding interventions of the AADE7 Self-Care Behaviors (Antinori-Lent, 2020) and the nurse education and

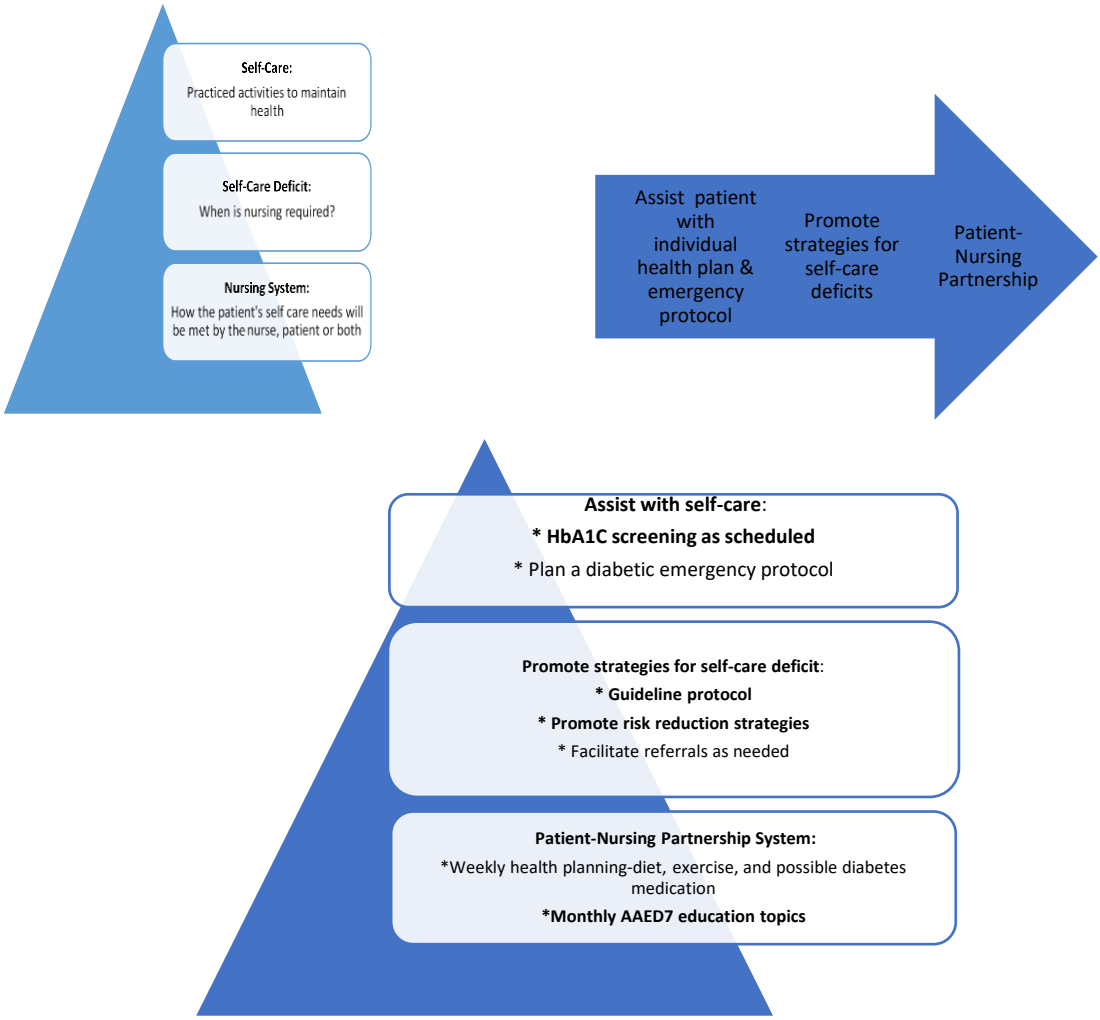
transition DM model provide standardized nomenclature for evaluation, quality improvement, and policy making for the HbA1C implementation practice change.

Orem's self-care conceptual model is used as a supportive tool for self-maintenance, adjusted to meet the goal of prediabetes change while continuing the foundational theory of this clinical operation. Self-care is identified as "a human regulatory function that individuals must, with deliberation, perform themselves or have performed for them to maintain life, health, development, and wellbeing" (Orem, 1995, p. 103). The concept developed the need for HbA1C testing within this weight-loss population. Orem's conceptual model is used as a supportive tool for self-maintenance, adjusted to meet the goal of adding a prediabetes and T2DM organizational change while continuing the foundational theory of this clinical operation (see Figure 2).

In utilizing theory to target an organizational self-care deficit, balance of care prevention care is restored as an objective in meeting the needs of the weight-loss community and the prediabetes and diabetes subpopulation. Because nursing is required when an adult is incapable or limited in the provision of continuous, effective self-care (Petiprin, 2016), a guideline within this weight-loss and wellness health clinic is necessary to assure that prediabetes and T2DM are not overlooked and staff are prepared to deliver quality care that prevents the long-term effects of diabetes, which can alter quality of life at an early age. Although the success of this project will be influenced by numerous factors, some of which are controllable and others of which are not, conducting diabetes training will result in the development of strategies for preventative behaviors to enhance diabetes management skills.

Figure 2

Dorothy Orem Self-Maintenance Model

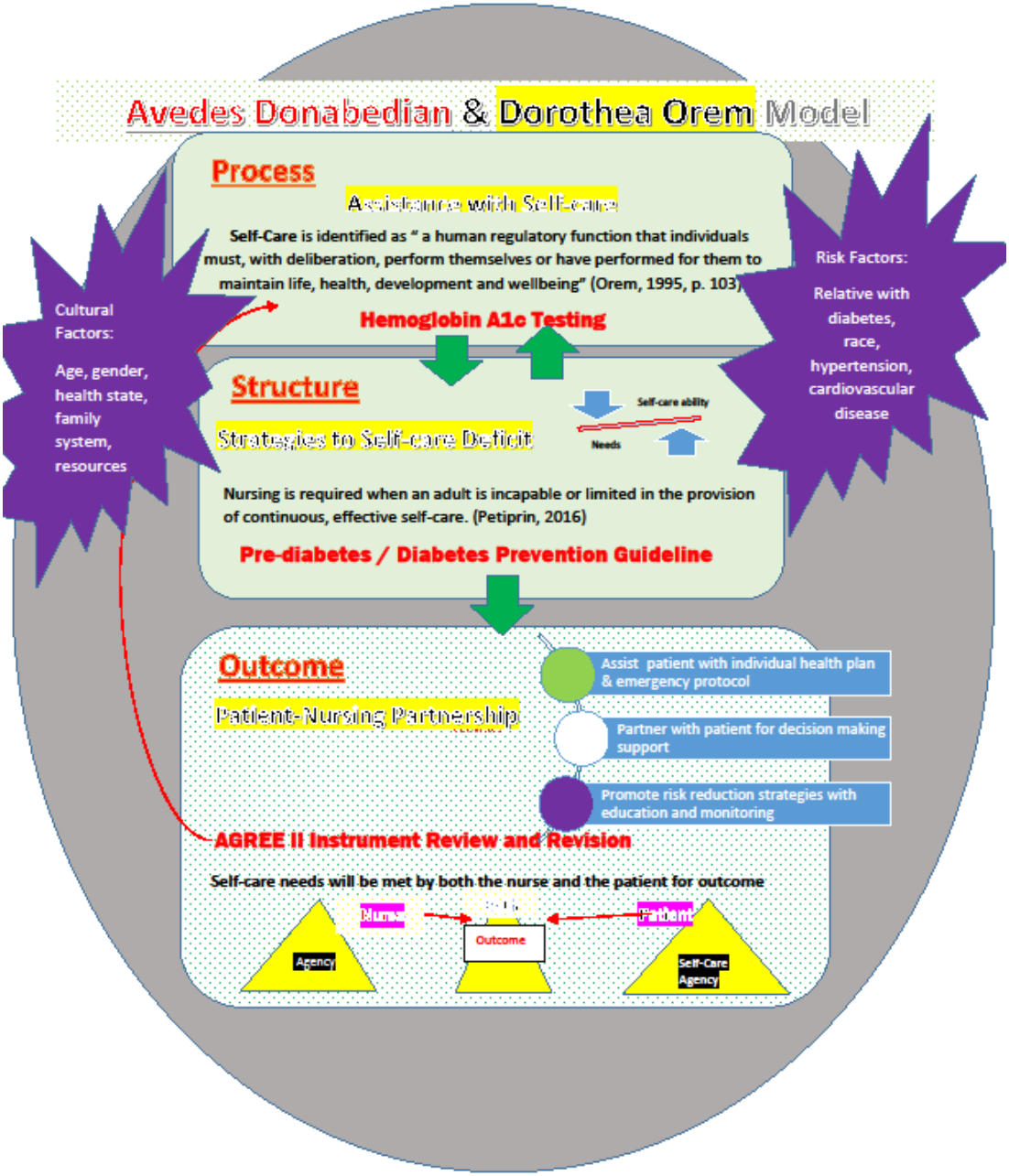


Combining models and tools rooted in self-management favors the expectation of rendering support to the self-care agency (wellness organization) in productive interactions and communication between them as key stakeholders and the agents (patients) who are stakeholders in this project. The objective for the key stakeholder is to modify methods of implementation for diabetes prevention to inform stakeholders that patient self-care is necessary to prevent or control diabetes.

The Delphi-method consensus model, originally developed by the RAND Corporation, will be used in the process of reviewing and revising the new program guidelines and affirming agreement using the AGREE II instrument. Since the late 1940s, the original consensus method has been a visible tool known to resolve problems in medicine and health. Their main purpose is to define levels of agreement on controversial subjects. Strategies of the Delphi approach and decision analysis have been used at random by the National Institutes of Health (NIH) and CDC to gain credible information and medical technologies for developments that range from breast cancer treatments, intraocular lens implantation, and solutions to prevention and treatment for isoniazid-resistant tuberculosis infection. A modified Delphi technique is noted as appropriate when empirical evidence is limited and the advisement of experts is needed to shape clinical guidance or direction (Merlin et al., 2021). This method involves a minimum of three rounds of data collection. Three rounds of responses will be used to assess final consensus and disagreement. Literature supports expert researchers seeking varied perspectives of stakeholders and individuals for the direction of complex decisions (RAND, 2022).

Figure 3

Donabedian and Orem Conceptual Model



This project used the AGREE II instrument, an online platform for conducting modified Delphi panels that was developed by research and programming experts at the RAND Corporation. It is used to automatically identify whether there is consensus or disagreement among responses to help achieve the goals of reviewing, revising, and affirming new program guidelines easily and cost-effectively. Delphi is a useful tool for reliable variability. This project used a small group, which created limitations in this project's reliability for the Delphi approach but the opportunity for added research.

Relevance to Nursing Practice

Successful implementation of the proposed project will contribute to the improvement of weight management nursing practice at this facility. This is consistent with the National Academy of Medicine's Committee on the Future of Nursing 2020–2030 statement that with a unique combination of skills, knowledge, and dedication, nurses can help address health inequities and improve the health and well-being of all. Obesity is a global health concern due to its impact on diabetes, heart disease, joint problems, and general health status. Nurses can benefit from the use of evidence-based practices to improve the early detection and management of diabetes in overweight and obese patients.

Diabetes is the seventh leading cause of death and is associated with comorbidities with detrimental effects on health concerns worldwide. Global estimates indicate that diabetes affects 537 million people; this number is predicted to increase to 783 million by the year 2045 (International Diabetes Federation [IDF], 2021). A further 193 million people with diabetes remain undiagnosed due to the often mild or

asymptomatic nature of this condition in T2DM (Al-Lawati, 2017; IDF, 2021). This project will identify measurable models, the relevance of the topic to nursing, and the roles of the staff in the clinical quality of healthcare, as well as social data that support the clinical practice change within this weight management organization for early identification of affected patients.

T2DM is a growing concern among overweight and obese individuals across the lifespan. Improving the detection and prevention of T2DM with screening and education is critical as diabetes rates continue to escalate, particularly among minority and low-income populations for which access to care is limited and there is a lack of available neighborhood resources to support optimal lifestyle change. Such a fragile infrastructure emphasizes the essential need for supportive evidence-based interventions, screening, self-management techniques, and knowledgeable staff to provide a safe environment. Dineen-Griffin et al., (2019) declared that there is a need to understand the active components required for effective self-management support, what delivery looks like within primary care, and the fundamentals of training and system changes that would subsequently be needed (p. 1).

Routine screening has been an essential tool in identifying asymptomatic individuals. There are several ways to diagnose diabetes. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), ADA, and other global medical entities have endorsed diagnosing prediabetes or T2DM using one of the following blood testing methods: Glycated HbA1C, fasting plasma glucose (FPG), and oral glucose tolerance test (OGTT; NIDDK, 2020). Screening for prediabetes and T2DM, along with

referring patients with prediabetes to effective preventive interventions, is empirically considered starting at age 35 in 3 year intervals (USPSTF, 2021), or more frequently in individuals with more than one of the risk factors is applicable to this study. Evidence supports findings of patients with abnormal HbA1C levels and those with blood glucose levels ≥ 126 mg/dL are synonymous in being less likely of scheduling follow-up appointments. Clinical diagnosis of prediabetes or diabetes is more apt for those outside the normal HbA1C levels of 5.7%–6.4% (ADA, 2019). The HbA1C test measures the patient's average blood sugar level over the past 2 or 3 months. An A1C of 6.5% or above indicates that an individual has diabetes (CDC, 2021a). Using HbA1C as a diagnostic test has the advantages of holding stability at ambient temperature, usage while not fasting or with random blood samples, and flexibility in testing performed at any time of the day (Lim et al., 2018).

Karachaliou et al. (2020) concluded that community-based interventions can modify risk factors for T2DM (anthropometric indices [weight, body mass index (BMI), and waist circumference] and glycemic control indices [HbA1C]). The findings indicated that intervention resulted in a relative risk reduction of 0.57 (85%; Karachaliou et al., 2020, p. 218).

Most often indicators used to evaluate the quality of diabetes care include the proportion of individuals identified as pre-diabetic or diabetic upon doctors' visits and the results of recommended diabetes lab tests. (Hsu et al., 2012). In some cases, this can be costly for uninsured stakeholders. Alternative risk assessment tools such as Findrisc in Colombia may be warranted. Buijsse (2011) states the risk scores show overall good

discriminatory ability in populations for whom they were developed. Measures that vested stakeholders can assess that impact warranted change and organizational priorities are likely to produce successful intended outcomes.

Literature Review

The National Diabetes Education Program is one of the reference tools and referral resources introduced to this organization as part of the fundamentals of this project. Studies reveal the success of lifestyle intervention programs will yield better results than others. Marrero et al. (2016) compared self-commenced and commercial weight-loss programs in individuals with prediabetes. Weight Watchers was the commercial weight-loss program that was used in this study and Your Game Plan to Prevent Type 2 Diabetes developed by the National Diabetes Education Program was the comparison (Marrero et al., 2016). The research continued for 12 months with dramatic results in weight loss for individuals in both parties. Those involved in the Weight Watchers program had a greater reduction in HbA1C and alpha-lipoprotein 'good' cholesterol levels than those involved in the program developed by the National Diabetes Education Program (Marrero et al., 2016). Palmer et al. (2018) completed a continuation of this study with an addendum of discovering the cost-effectiveness of a diabetes program. Intervention participants also displayed significant improvement in HbA1C and good cholesterol levels than controls at 18 months (0.27 vs 0.17) and 24 months (-0.3 vs -0.2) (Palmer et al., 2018). Conclusively the two study's revealed readily available weight-loss programs have the potential to cost-effectively improve health outcomes for any individual with prediabetes.

Local Background and Context

African American and Hispanic women work diligently to regulate and maintain weight management at an independently owned wellness health center in this urban city of Houston, TX. An average of 30 patients rotate weekly in clinical visits because of challenges with being overweight or obese secondary to poor compliance with dietary regimens, sedentary lifestyles, and poor adherence to fad diet schedules. The Nurse Practitioner recognized this as a quality health issue and decided to implement prediabetes screening and education as a supportive part of a comprehensive plan to improve care. The decision to offer HbA1C testing was implemented as a pilot phase for 6 months to a year.

The Role of the DNP Student

My role as a DNP student in this project was to apply the knowledge acquired and display my educational growth. I performed the literature review and synthesis of evidence and developed the initial draft of the program details. I led the group towards consensus. This project is the culmination of my educational goal of doctoral-level knowledge and skills consistent with the DNP Essentials to eliminate health disparities and promote patient safety and excellence in nursing practice (AACN, 2006).

The Role of the Project Team

Although there is no pattern to transitional change within an organization, healthcare providers are pivotal in influencing the direction of quality care, providing the necessary education, and sustaining improvements as frontline managers (Institute of Healthcare Improvement [IHI], 2020). The nursing challenge is to develop the ability to

measure progression and the outcomes of implementing new practices that sustain change. With no set path to a successful outcome, quality control is an internal driver in maintaining empirical health practices, improving organizational infrastructure, and meeting the need for partners to sustain change (IHI, 2020). The development of a scholarly product for dissemination forwards opportunities for guided improvements in nursing practice, promoting pre-diabetes health outcomes, and promising health care policies. The Inter-professional wellness team consisted of six staff participants. Their roles were to contribute specialized knowledge to the development of this program guideline. They were volunteers who agree to participate in this project.

Summary

The control of the disease burden of diabetes is a long-term balance of diet, exercise, and medical attention for patients. The cost involved in this process and healthcare resources is a financial burden to the healthcare system (Ji et al., 2019). The World Health Organization and health providers seek to contain healthcare costs while providing safe and effective health care to this population (Garner et al, 2014). An urban city weight loss clinic has implemented HbA1C screening and education as a supportive part of a comprehensive plan to improve care. An inter-professional team convened to produce a modified weight loss program that is specific to those with elevated HbA1C levels. Chapter 3 presents the details of the collection and analysis of evidence used in this project.

Section 3: The Collection and Analysis of Evidence

This scholarly project focused on overweight and obese patients in a weight management clinic who have personal goals to improve health. In June 2021, a weight-loss and wellness health clinic serving a high-risk population established recommended guidelines for HbA1C screening and education. The resultant findings captured a total of 220 weight-loss patients, and 34 patients were screened for HbA1C, 37% of whom presented with elevated HbA1C levels. This presents the probability of 1 out of every 5.9 patients being at risk for prediabetes or T2DM. The outcome supports the need for this project to develop a best practice weight-loss program for this specific population to promote reduction in HbA1C levels. The practice-guided question was the following: Will an interprofessional team adapt their current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. In this section, I explore the process used in the development of these guidelines.

Sources of Evidence

The activities of this project align with the *Walden Guide to Clinical Practice Guidelines.* A review of the literature involved the use of seminal databases, ethically proven recommendations, and guidelines of established professional organizations as resources. The sources of evidence included data searches of OVID, CINAHL, Cochrane Library, Medline, PubMed database, and ProQuest. The keywords were *prediabetes*, *Type 2 diabetes*, *diabetes mellitus*, the *complications of diabetes, AADE7*, and *diabetes*

self-management. The literature review had confined parameters of peer review, English as the chosen language, and full-text articles within the last 10 years of publication. The professional association guidelines included those of the ADA and the National Diabetes Prevention Program.

The selection of sources was based on a review of the abstracts and full text to determine if they addressed the issue of screening, evaluation, and education for patient self-management. Duplicate sources and those not meeting the criteria were excluded. Key information was extracted from selected studies and placed into a table to summarize the studies. The information included author(s), year of publication, aim, design, level of evidence, sample size and type, instrument(s), and findings. Selected studies were appraised using GRADE (Mercuri & Baigrie, 2018). This approach is used to assess the quality of evidence presented and the strengths of recommendations.

In the United States today, early detection and prevention of prediabetes is a cost-effective measure that may curtail the dramatic rise in diabetes rates, particularly among minority and low-income communities. According to the CDC (2020), globally, an estimated 34.2 million people (about twice the population of New York) of all ages, or 10.5% of the U.S. population (and rising), are affected by diabetes mellitus. T2DM incidence is growing among overweight and obese individuals across the lifespan. Although the risk factor correlation between lifestyle choices and the development of the disease is not statistically proven at 100%, research supports that weight loss of 5–7% in addition to an exercise regimen of 150 minutes per week can decrease the risk of developing T2DM by up to 58% for adults younger than 60 years (71% for ages greater

than 60 years; CDC, 2021d). The prevalence of prediabetes is high among low-resource communities where access to care is limited and there is a lack of available neighborhood resources to support physical activity and healthy nutrition. This fragile infrastructure emphasizes the need for supportive community interventions; techniques that involve screening, education, and engagement of staff in discussions of best practices; and encouragement of self-management of patient care. The application of a theoretical perspective provides a foundation for the development of positive outcomes and effective improvements in clinical indicators, quality practice, and disease knowledge or control (Dineen-Griffin, 2019).

Globally, entities such as the ADA and NIDDK have endorsed using one of the following blood testing methods to diagnose prediabetes or T2DM: glycated HbA1C, fasting plasma glucose, or oral glucose tolerance test. In efforts to facilitate early detection cost-effectively, screening is an essential care management tool in identifying asymptomatic individuals who are likely to have diabetes. The USPSTF (2021) recommends screening adults for prediabetes and T2DM who have overweight or obesity traits at age 35 to 70 years. Evidence supports findings of patients with "abnormal HbA1c levels and those with blood glucose levels ≥ 126 mg/dl" are synonymous in the likelihood for not scheduling follow-up appointments. Clinical diagnosis of patients with prediabetes or diabetes is apt for those outside normal HbA1C levels of 5.7%–6.4% (36% vs. 26%; ADA, 2019).

Most often, indicators that may be used to evaluate the quality of diabetes care include the proportion of individuals identified as diabetic (or prediabetic) through visits

to diabetes clinics and completion of recommended diabetes lab tests (Hsu et al., 2012). In some cases, this can be costly for uninsured stakeholders. Alternative risk assessment tools such as the Finnish Diabetes Risk Score (FINDRISC) questionnaire for detecting and predicting T2DM and prediabetes (Bernabe-Ortiz et al., 2018) may be warranted. Buijsse (2011) stated that the risk scores assessed with this tool display overall good discriminatory ability in populations for which they were developed. Measures that vested stakeholders can use to identify the need for change and to assess organizational priorities are likely to produce successful intended outcomes.

Protection of Human Subjects

This project involved no interaction with patients. All expert panel members were volunteers committed to the purpose of the project. Site leadership had requested that I assist with a prediabetes and diabetes program guideline and signed a data use agreement for this DNP project. Working drafts were destroyed once consensus was verified using the AGREE II instrument. The project was submitted to the Walden Institutional Review Board (IRB) for review and was granted the approval code of 08-22-22-0034123.

Analysis and Synthesis

The skills of analysis and synthesis are vital to scholarly writing and dissemination of information to staff, fellow scholars, and professionals in the healthcare arena. Involving stakeholders in the interpretation of evaluation findings leads to deeper understanding and facilitates the use of the data (CDC, 2021a). The patient care intervention of prediabetes and diabetic screening implemented for weight-loss patients is a new development for the weight-loss and wellness health clinic. The gap in practice

was that the center did not have a program specifically for this subpopulation. The purpose of this project was to develop a best practice weight-loss program for this specific population to promote reduction in HbA1C levels. For this project, a three-round modified RAND Delphi communication approach was completed with educational guidelines.

Development of Recommendations / Guidelines

The group members convened by way of internet meetings due to varying schedules and varying Covid19 pandemic restrictions. The literature review, draft guidelines, and AGREE-II instrument were placed into a Google document, which was cost-effective and allowed for simultaneous comments and edits. The second and third drafts were updated per the comments, which was consistent with the RAND Delphi approach. Once the group appeared to have reached a consensus, members were asked to score the guidelines using the AGREE II tool. The final version of the document was saved in a password-protected file. The clinic site will continue servicing patients with recommended guidelines, which will be sent through the appropriate administrative committees for final approval for implementation.

The AGREE-II instrument is scored per the instructions provided by the Agree Trust (2017). The arrangement and content of the AGREE-II instrument distinctively characterize 23 fundamental items organized within six domains. This is followed by a paired overall assessment of global ratings. Each domain is a segmented dimension of the guideline focus. Items 1-3 of Domain 1: Scope and Purpose relate to the overall aim of the guideline, specified health questions, and the target population. The next two items in

Domain 2: Stakeholder Involvement tailor the extent of the guideline development made by the appropriate stakeholders and signify the views of the intended users. The format of this instrument becomes more analytical as the third domain, Rigour of Development, focuses on the process used to synthesize gathered evidence and the methods used to formulate and update recommendations (Items 7–14). Domain 4: Clarity of Presentation targets the guidelines' language, structure, and the format in Items 15–17, while Domain 5: Applicability (Items 18–21) channels "improvement of likely barriers and facilitators to implementation, strategies to improve uptake, and resource implications of the guideline application" (AGREE, 2017, p. 7). Domain 6: Editorial Independence (Items 22–23) formulates recommendations that are not unduly biased by competing interests. Finally, the additional two overall assessment items rate the quality of the guideline and the need for recommended use in nursing practice (p. 7).

Summary

Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. Implementing education guidelines along with HbA1C testing is significant in influencing decisions that model safe and effective self-care delivery practices that may prevent long-term effects that might alter quality of life prematurely. The purpose of this quality improvement project was to develop a best practice weight-loss program for this specific population that promotes reduction in A1C levels. The project's findings and application of scholarly information are presented in Section 4.

Section 4: Findings and Recommendations

Introduction

The purpose of this project was to develop a best practice weight-loss program for a specific population to promote reduction in HbA1C levels. The practice-guided question was the following: Will an interprofessional team adapt its current weight management program to accommodate those who are prediabetic or diabetic? Guided by the Donabedian quality assurance framework, this project focused on the process of providing appropriate education and clinical management of this population. Sources of evidence included literature accessed using academic databases, ethically proven recommendations, and guidelines of established professional organizations.

Process Steps

Team members consisted of six volunteers, including nurse practitioners, an herbal doctor, and medical assistants from the selected weight-loss and wellness health clinic who had significant expertise in managing patients. The group members convened by way of internet meetings due to varying schedules and varying Covid 19 pandemic restrictions. A synopsis of the evidence was provided to the interprofessional team along with the first draft of the proposed program guideline. The draft was placed into a Google document and made available to team members for their review and comment. Google Docs allows multiple authors to access a document simultaneously. After the first round, I provided an updated document for discussion and review during a video conference. The AGREE II instrument was designed to conduct internal assessments of guidelines developed by affiliated health or governing organizations for self-evaluation or potential

adaptation methods for organizational structure as a comparison to established criteria from another facility. During this project, the AGREE II instrument was used to automatically identify whether there was consensus or disagreement among responses to help achieve the goals of reviewing, revising, and affirming the new program guidelines easily and cost-effectively. Additional comments from the conferences and subsequent reviews of the program guideline were then incorporated, and a final draft was submitted to the team for grading using the AGREE II tool.

The consensus of organizational change is a result of a rigorous methodology of the AGREE II tool (see Table 1 & Figure 4). The Agree Checklist was used to guide the reporting of the guideline changes. In Table 1, the individual appraiser's select scoring is calculated and reflected in comparison to the AGREE II tool's maximum and minimum potential scores for each domain category. The resulting appraising total of 2,969 composed 98.1% of the maximum score of 3,024. This percentage supports an agreement that the guideline was a usable tool for this weight-loss and wellness clinical change for prediabetes and T2DM screening and management.

Figure 4 displays the cumulative three-round assessment of individual appraiser scores as a percentage. The domain "Scope and Purpose" ranked the highest percentage in agreement at 99.6%. The Agree II tool report revealed that the overall objectives of the guideline met the need of the organizational change and target population with specific and unambiguous recommendations as informed by the body of evidence. Disseminating these research findings and implications of the prediabetes / T2DM concept is vital for the successful health outcomes of this evidence-based practice optimizing patient care

(Ploeg *et al.*, 2010). Communication techniques focus on making guideline evidence "interpretable, persuasive, and actionable" (USDHHS, 2012, p. 2) as organizational stakeholders are a critical component in this dissemination process.

Table 1 and Figure 4 include the aggregate data of the original version and updates of the existing prediabetes and T2DM prevention guidelines.

Table 1

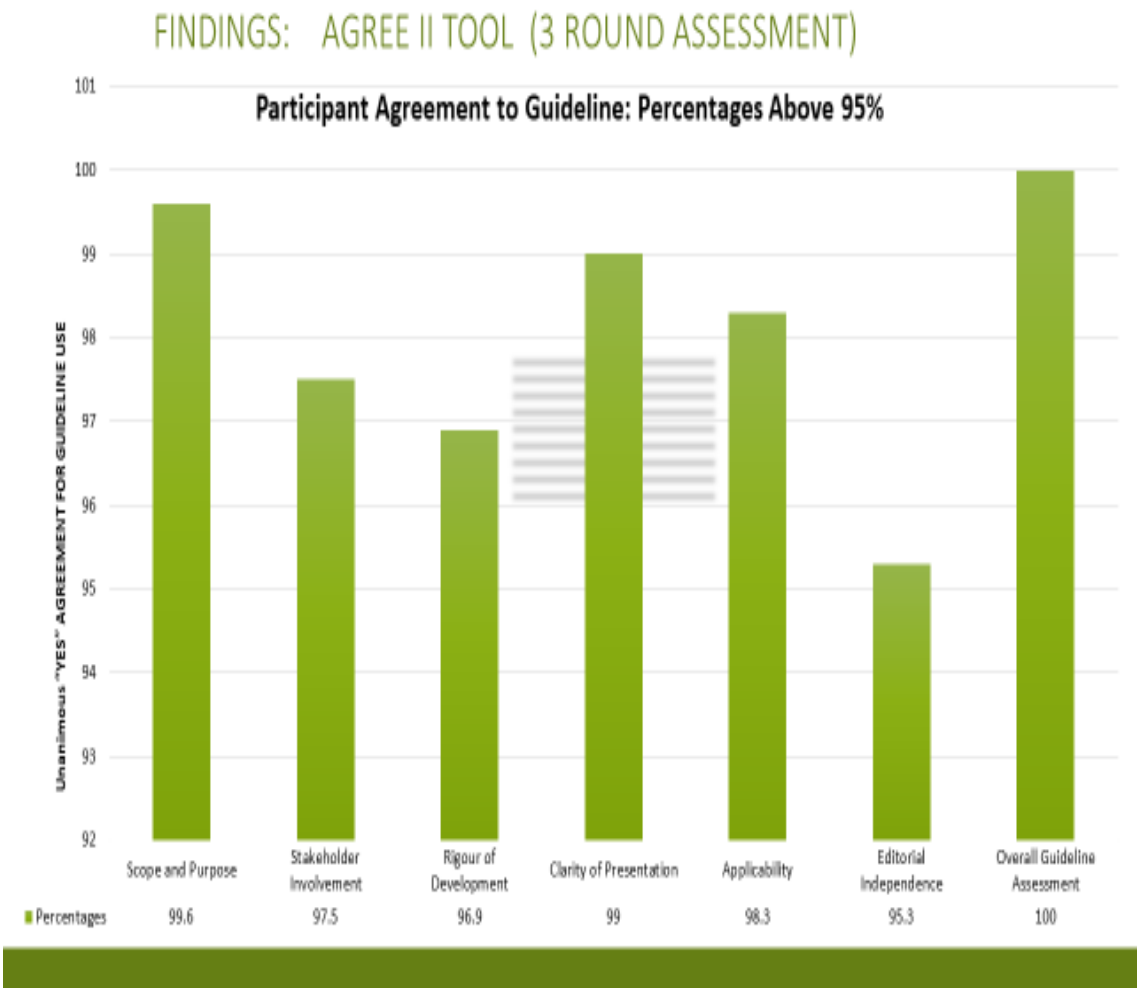
AGREE II Instrument: Individual Findings With Maximum/Minimum Potential Scores

(3-week totals)	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Percentage of agreement	Min possible score	Max possible score	Sum of scores
Domain 1: Scope and purpose (Items 1–3)	63	63	63	63	63	62	99.6	54	378	377
Domain 2: Stakeholder involvement (Items 4–6)	63	59	63	63	63	59	97.5	54	378	370
Domain 3: Rigour of development (Items 7–14)	168	154	167	164	168	161	96.9	134	1,008	982
Domain 4: Clarity of presentation (Items 15–17)	63	63	62	63	63	61	99	54	378	375
Domain 5: Applicability (Items 18–21)	84	83	82	82	84	82	98.3	72	504	497
Domain 6: Editorial independence (Items 22–23)	42	32	42	42	42	42	95.3	36	252	242
Overall assessment	21	21	21	21	21	21	100	18	126	126
Recommend the guideline for use	Yes	Yes	Yes	Yes	Yes	Yes				

Figure 4 reflects the sum of each AGREE II category as a percentage of agreement for the guideline used by the appraisers.

Figure 4

Percentage Agreement for Guideline Use



In translating evidence into practice, it is essential to consider the process of evaluating outcomes. It is that likely that individuals will encounter barriers in introducing research into practice; using theory and nursing frameworks for evaluation can assist in minimizing those barriers. The importance of translating this project is

determining the effectiveness of the practice approaches and whether they are making a difference. Each education and training tactic, at its core, is person centered with preventative measures that start with personal knowledge of staff and readiness to change and sustain change.

Findings

Incorporating prediabetes and T2DM education into various practice settings would serve to improve clinical quality of life outcomes. In a culture of weight-loss management, it is a multistep process that begins with assessment and is a continuous cycle assisting self-care, strategizing solutions to self-care deficits, and formulating decisions within a nursing–patient partnership. Metabolic measurement of prediabetes and T2DM and absolute risk status through screening tools is a critical attribute of assessment and self-care. Management includes continuing HbA1C lab screenings according to national protocol, instituting diabetes education, and media interventions as part of the organization's weight-loss and management goals. The plan must include maintaining diabetes health checks to control associated risk factors. This guideline is fundamental in developing a best practice weight-loss program for this specific population to promote reduction in HbA1C levels. Guidelines for early detection and lifestyle modifications developed from the research evidence include 33 pages targeting the summary of evidence for the conceptual framework(s), background, problem, scope, purpose, tools for learning, target audience, analysis of team involvement, and method.

The following evidence-based recommendations are suitable for the introduction to this program:

- Prediabetes Risk Test
- HbA1C lab screening
- Diabetes Co-Conditions Screening Checklist
- AADE 7 behavior topics (videos)
- self-maintenance education tool: *On Your Way to Preventing Diabetes*

Prediabetes Risk Test

Prediabetes is a condition in which blood glucose levels are higher than normal but not high enough for a diagnosis of T2DM. The objective is to reduce the risk and prevent the development of T2DM with early identification through routine screening and education. The Prediabetes Risk Test (see Appendix A) is authorized by the ADA and CDC. Screening typically starts in the primary care setting. This screening tool is located on the ADA website as an assessment tool and requirement for initial visits for weight-loss patients.

Hemoglobin A1C Lab Screening

Annual blood glucose screening is recommended for patients with prediabetes (A1C ≥ 5.7%, impaired glucose tolerance [IGT], or impaired fasting glycaemia [IFG]). If results are normal, the ADA (2020) recommends rescreening at least every 3 years with consideration for additional risk factors. The weight-loss and wellness organization has adopted initial, 3-month, and annual screening for all weight-loss patients. Prediabetes and T2DM can be detected by measuring fasting plasma glucose or HbA1C level, or with an oral glucose tolerance test. A USPSTF recommendation statement indicates that providers should perform diagnostic screening from age 35–70 years (see Appendix E)

for prediabetes and T2DM in asymptomatic adults who are obese (USPSTF, 2018) or overweight and who have one or more of the following risk factors for diabetes (ADA, 2020):

- immediate blood relative with diabetes (e.g., mother, father, or siblings)
- race/ethnicity (e.g., African American, Latino, Native American, Asian American, and Pacific Islander)
- history of cardiovascular disease
- hypertension (≥ 140/90 mm Hg)
- abnormal cholesterol level (HDL< 35mg/dl and/or triglyceride level > 250mg/dl)
- sedentary physical activity level

Demographic weight-loss screening (e.g., height, weight, BMI) is provided weekly. Modification interventions for diet, physical activity, and medications are also a part of the weight-loss program. Two medications given during this program are subject to change the clinical outcome of HbA1C and glycolic state. The first medication, Topamax (TPM), is a known antiepileptic drug used in weight-loss programs as an appetite suppressant. Literature is not abundant in clinical studies linking the medication's use to diabetes; however, reports show that TPM treatment statistically reduced body weight and HbA1C levels in up to 25% of obese patients with or without T2DM (Liang, 2005; Moradi, 2013). The second medication, dexamethasone, is a corticosteroid (steroid). It works on the immune system to help relieve swelling, redness, itching, and allergic reactions. In terms of steroid use with prediabetic patients, the

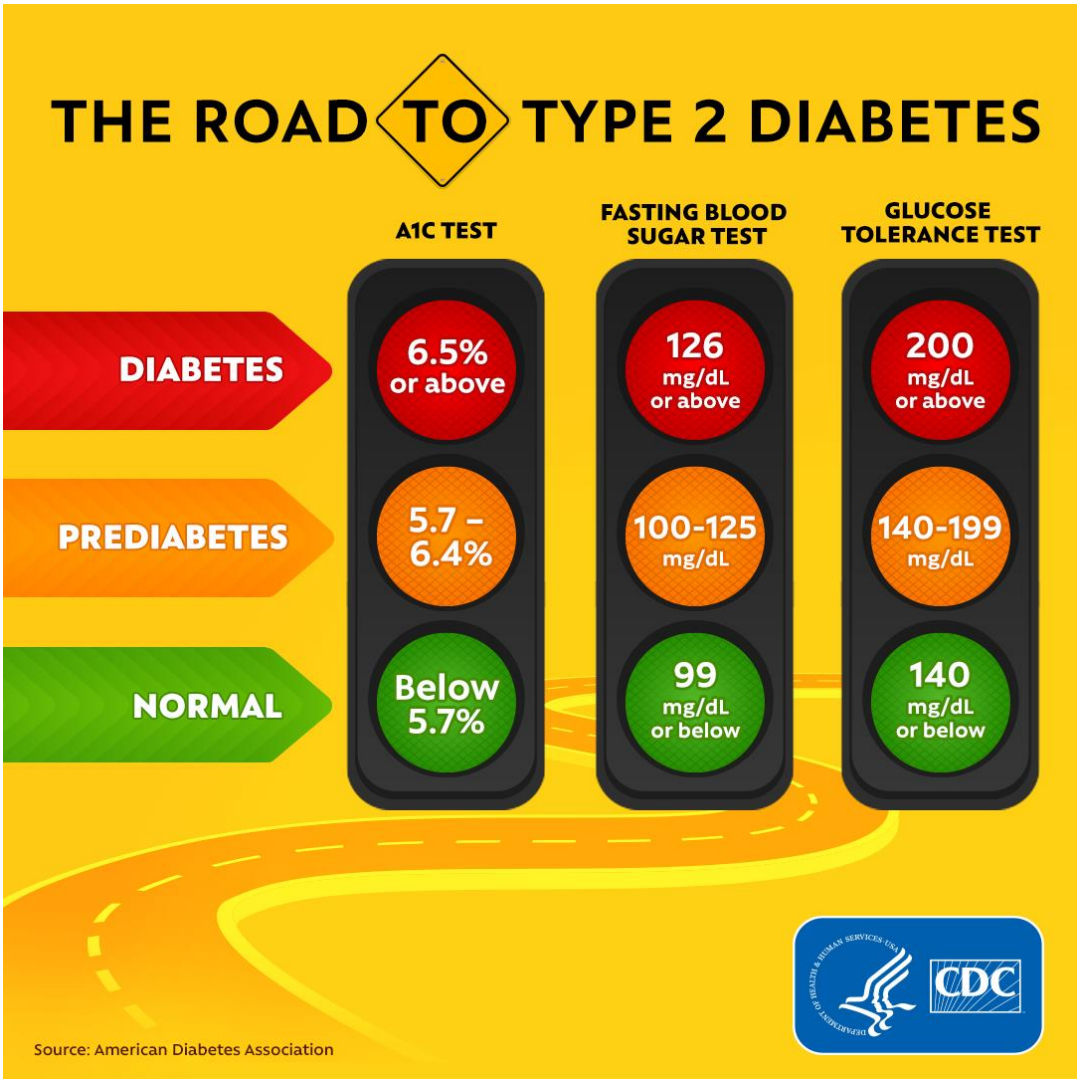
clinical presentation of patients on oral glucose medications has been proven to increase the likelihood of diabetes in up to 2% of incident cases in a primary care population (Tamez-Pérez, 2015). Simple finger sticks will remain a practice before the administration of medication for the organization's weight-loss patients.

In efforts to establish clinical baseline demographics, HbA1C screening will continue upon initial visits, before medications are prescribed for weight-loss patients, and monitoring will occur every 3 months and annually per recommended guidelines. Blood glucose levels are expected to normalize within the timeline of the annual assessment (see Figure 4). One distinguishing change for those patients who use this facility as their primary care clinic will be the addition of metformin medication for those diagnosed with T2DM. All others will be referred to their primary care physician (PCP) and monitored as weight-loss patients.

Figure 5 shows a commonly used diagnostic criteria for screening for prediabetes and diabetes in asymptomatic adults. In premetabolic dysregulation, glucose levels are higher than the normal level but lower than the diagnostic determinant of diabetes.

Figure 5

Diagnostic Criteria for Diabetes and Prediabetes



Note. From *Diabetes Tests*, by Centers for Disease Control and Prevention, 2021 (https://www.cdc.gov/diabetes/basics/getting-tested.html). In the public domain.

Diabetes Co-Conditions Screening Checklist

The ADA (2020) recommends screening for prediabetes and T2DM in asymptomatic adults of any age who are overweight and have one or two additional risk factors. Within the literature, estimates indicate that 98% of adults with T2DM have one additional condition (e.g., high cholesterol) and 89% have at least two comorbidities (e.g., cardiovascular and kidney disease; Rosselli, 2021). Annual screening for symptoms will begin at diagnosis. These complex concerns can create a significant burden on the patient, the clinical team, and the healthcare infrastructure if unattended. Screening can be used to create a recommended individualized approach from the moment of diagnosis. (Kenney & Briskin, 2022). The Diabetes Co-Condition Screening Checklist is used to diminish concerns by targeting the following four areas with measures of parameters and frequency of assessment: cardio metabolic, microvascular, behavioral health, and autoimmune diseases. This tool (see Appendix B) is an addendum to the common knowledge of the nurse practitioner and often captures miscellaneous medical needs for referrals.

Videos: American Association for Diabetes Educators Self-Care Behaviors

The AADE7 Self-Care Behaviors constitute a novice framework for managing diabetes and achieving behavior change that leads to effective self-management through improved behavior and clinical outcome measures. The AADE7 model guides a clinical team in achieving effective person-centered collaboration, setting goals for health-related outcomes, improving the quality of care, and sustaining quality of life. It shifts educational content delivery to an outcome-driven practice that refines diabetes education

as a “behavior change” that promote successful and effective diabetes self-management using self-determined goals. (Tomky et al., 2008). The goal is for staff to establish monthly topics for diabetes care derived from the AADE7 model and assign tasks related to a corresponding video to continue at home. The AADE7 topics are the following: healthy coping, reducing the risk, monitoring, taking medication, being active, consuming healthy meals, and problem solving. Videos (see Appendix D) were selected to coincide with the topic presentation. Communication will maintain a therapeutic and open concept when educating and managing diabetes interventions to achieve behavior change that leads to effective clinical outcome measures.

Self-Maintenance Education Tool: *On Your Way to Preventing Diabetes*

The *On Your Way to Preventing Diabetes* guide focuses on the first steps toward preventing prediabetes and T2DM by teaching skills to manage health effectively by checking blood sugar, exercising, and eating more plant-based foods which are all small steps to healthy living (see Appendix C). This tool is synoptic with the goals of the prediabetes and T2DM prevention project as well as the goal of the weight-loss clinic is targeting three objective areas: pre-diabetes assessment, activities of wellness, and tracking progress.

The study of prediabetes and diabetes prevention has been performed by researchers for many years. The prevention of prediabetes and T2DM is the fundamental basis of this project and requires a close examination of literature and refining therapeutic approaches. The vast majority of individuals with prediabetes remain undiagnosed and

untreated. Therefore, it is the responsibility of the healthcare communities to identify creative methods for screening and assessment to identify those at risk.

Assessment for pre-diabetes and T2DM is a great starting point for healthy lifestyle changes. Tracking the progress of the wellness activity is important as tailoring an individual's care to meet their personal need. Both measures begin at diagnosis and several studies encourage patient engagement to make note of self-care behaviors such as what they eat, daily activities, and weight in reaching their goals as a successful tactic. (Ehrhardt et al., 2019; Musacchio et al, 2011). The tracking process is identical to the AGREE II instrument theory in that if you measure the tactic, you can build upon its progress.

Implications

Implications for Individuals

Key stakeholders are vital in deciding the implications of quality interventions and safe outcomes when integrating a system that is ethically functional in providing a smooth transition in operational patient care. Often, there is a lack of nursing involvement in sitting at the table where strategic decisions on safeguarding the delivery of patient-centered care, universal innovations, as well as the legal and ethical implications of governing policy. Leadership is more than skill and critical thinking, it is a responsibility to share knowledge in a fashion that empirically revolutionizes change. The Doctorate of Nursing Practice (DNP) exudes an "integrative practice experience and an intense practice immersion experience" (AACN, 2006, p. 3). The implications of a DNP student formulate an infrastructure of knowledge, partnership, and strategic

planning foundational to the implementation of changing a concept. In this project, guided wisdom was derived from referenced resources, frameworks, analysis, and synthesis collectively attributed to the dissemination of the prevention of prediabetes as a scholarly product. The implementation and evaluation of these new weight loss guidelines for the prediabetic and diabetic populations can add to the literature on diabetes management.

Implications for Community

Prediabetes is a common preventative condition that can affect people of any age, creed, or color. It is commonly associated with overweight and obesity, which is increasing globally. As a risk factor for diabetes and cardiovascular disease, its' potential toll on the individual is significant. Timing is most auspicious, as research has now established that prediabetes is reversible and T2DM is preventable or may be delayed in high-risk adults. (Albright, A., & Gregg, E., 2013). Optimizing the benefits of screening and the infrastructure of patient education may prelude significance beyond the individual level and prove influential to nursing practice, social change, and the nursing program of DNP essentials. Prediabetes is also determined to transform into T2DM within a shorter term of 5 years (CDC, 2021e) versus the long-term records of 10 years if lifestyle changes are not implemented (Turso, 2014).

Implications for Institutions

The project is in alignment with Walden University's mission of an individual's opportunity to transform themselves as scholars and instruments that affect positive social change (Walden University Vision, 2020). As patient-centered care is the ultimate

objective, screening and educational strategies for early detection are an important step for clinical advocacy, risk reduction, and promotion of self-care.

Implications for Systems

The opportunity to translate empirically-based information as a guide to innovative practice builds leadership and confidence in directing healthcare. Initially, this practice sought to provide optimal health to weight-loss patients. The validity of foundational evidence supports a prevention program for prediabetes and T2DM that globally sustains identification and managing principled interventions for safe nursing practice and quality patient care to an at-risk subpopulation. Societal gains are improved population health, reduced healthcare spending, and increased individual responsibility for health decisions.

Recommendations

This era of chronic diseases and their complications requires a multidisciplinary approach to understanding the complex conditions and cultural environments that support patients with lifestyle changes and innovation to thrive. At an aggregate level, a standardized multidisciplinary approach can be implemented in weight-loss clinics to address disease management (such as prediabetes and T2DM) and along with an evaluation of meeting the short-term needs of this revolving sub-population. Healthcare centers' policy inclusion of evidence-based pre-diabetes screening and education innovations will enhance the operation of the practice within the auspice of national compliance and an objective of holistic care. Policy could target diabetes self-management strategies as part of training for all nurses and healthcare professionals.

It is recommended that the guidelines be put into practice and continuously evaluated using formative and summative measures. The assessment and modification of this program can add to the literature on diabetes and be used by others with similar populations or adapted to local communities. This program may also be useful in other primary care settings which treat diabetic patients due to the concurrent need to address obesity as a contributing factor. These results should be widely disseminated in the healthcare community as a contribution to the field of diabetes prevention and management.

Contributions of the Project Team

The interprofessional Wellness team consists of six staff participants who agreed to volunteer in the implications of organizational change. Their roles contributed to specialized knowledge of the development of this program's guidelines. Fundamentally, their duties included data input on interventions that modified risk factors for prediabetes and T2DM, as well as, utilizing the AGREE-II instrument for a consensus of change. The statistical analysis quantified the number of non-diagnosed patients who subsequently were found to have elevated A1C levels, indicative of prediabetes or diabetes. This information was assessed. The founding nurse practitioner declared interest in further research to build upon the guideline established. The task of literature review, synthesis of evidence, and developing the program guideline details has been embraced by the herbal doctor, who currently has a clinical practice and wishes to implement the guideline screening precepts while serving as a referral service to patients whose blood glucose levels are found to be indicative of prediabetes or T2DM.

All information reported in the aggregate was presented to the Center's professional team. Application of scholarly knowledge has displayed the desire for expansion, educational growth, and continued practice decisions that have led this group towards consensus.

Strengths and Limitations of the Project

A key strength of this project was the use of an inter-professional team with over 50 years of experience in the co-development of a program to target weight loss clients with elevated HbA1C levels. This program has the potential to expand practice interventions that have and can continue as a fundamental guideline for diabetes care within a weight-loss program or in other settings. The herbal doctor expressed the desire to utilize the guideline in her private practice. A weakness is that innovation outcomes have yet to be evaluated.

Section 5: Dissemination

Frequently noted in the literature is a gap between research evidence and practice. CDC estimates indicate that 34.5% of adults (18 years or older) meet the criteria for prediabetes, of which 15.5% reported being informed of their condition by a health professional (USPSTF, 2021). This has led to an increase in comorbidities (e.g., kidney failure) and a need for advocacy for actions that result in more positive outcomes. Doctorally prepared nurses who become involved with the details of patient care are going to encounter concerns about the policy process within the organizational structure and/or at other levels of policymaking. It is the responsibility of nurse leaders to be familiar with policy, regulations involving care, and statutes paramount to the delivery of patient care. It is the goal of nurse leaders to formulate durable change through a nursing–patient partnership. A combination of these health facets of political participation and human connection results in sustainable change and safe spaces for self-identity, willingness to improve care, and holistic lifestyle changes.

Plans for Dissemination

Dissemination plans include presenting information to other weight-loss clinics and settings whose staff treat diabetes, with the hope of collaborating on the use of the program and the formative results with different populations. If the program proves to be successful, it will be shared with a larger audience via publication and presentation in professional forums.

Analysis of Self

Early onset of this study T2DM was identifiable as the most pressing health promotion and disease-prevention issue of national significance. It is a common health concept that exudes the need for program planning in any target population and is identified as an infectious disease topic in *Healthy People 2020* and the Institute of Medicine's *Future of Nursing*. This call for attention became an interest to go beyond the treatment and maintenance of the disease. As a nurse engaged in advanced practice, I found that thoughts of opportunities for disseminating the results of the prediabetes program gave hope to the greater desire to eradicate the disease by stopping it where it starts. The key was a human connection and lifestyle change. It is a belief that human connection results in sustainable change and safe spaces for self-identity and willingness to improve one's holistic lifestyle. Completing work for a newly developed program was enlightening concerning the amount of time and effort that goes into organizational change. It was a great pleasure to be a part of a community project in which the innovation was implemented in a matter of months and in which empirical literature and quality improvement were considered foundational for future studies.

As this DNP season has closure, I have professional confidence in the area of program planning and evaluation efforts (comprehensive problem analysis; use of theory; design of program elements; business planning, budgeting, and financial analysis). The knowledge that I have gained through Walden University's program has provided me with preparation to critically evaluate the pros and cons of sustaining the life of an organizational program. In this project's implementation, cultural diversity has fused with

personal innovations. Focusing on the practical application of scientific discoveries involving diabetes helped to solidify the benefits of the translation of research into practice and guided me in developing into a scholar-practitioner—a nurse leader who navigates evidence-based projects with confidence, knowledge, and integrity. This achievement has come with diligence, astute awareness of organizational concepts, and embracing those who work within them. This personal achievement entails not only the completion of this project, but also the ability to augment the delivery of healthcare at any level of policy with durable change. Achievement of change starts with a concept and is accomplished when the nurse leader is sitting at the organizational table where the changes are made. A DNP-prepared nurse has ethical and professional authority and an obligation to disseminate findings. This program has afforded foundational scientific knowledge, expertise, and ethical understanding of collective progress toward life-sustaining efforts to support the quality of health.

Summary

Diabetes is highly prevalent among low-economic-status communities. Strategies and initiatives such as a diabetes guideline to improve the delivery of care to the weight-loss population are vitally important to enhancing the quality of care among this interprofessional team and subpopulation. This study demonstrated the Donabedian framework of structure, process, and outcome evaluation as a valuable and validated approach to instituting the safety and quality of prediabetes screening and management innovation. A combination of several frameworks was added to guide interventions in meeting the standards of care. The study targeted portions from the organization’s

perspective of Orem's conceptual model. This framework appeared to be the undiscovered operational framework for established patient services. Each portion of Orem's theory process was addressed with the organizational structure and patient in mind as the target for a holistic analysis of self-care, self-care deficit, and the nursing system. I made no patient contact during this project; however, the objective guidelines given to the staff in support of the continuum of care should render productive clinical outcomes upon reassessment of prediabetes screening data.

Using Donabedian as the foundational framework displayed a multisystem approach that targeted the organizational infrastructure of care as well as individual patients' ability to care for themselves. Environmental and sociocultural factors that affect self-care were not incorporated in this study of prediabetes empirical innovation. Therefore, further research has to render credible evidence pertinent to the evaluation, lending clinical variables to support recommended literature as guided results of self-care and management in the weight-loss setting.

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Appendix A: National Diabetes Prevention Program Prediabetes Risk Test

Appendix A is a one page screening tool for prediabetes that is approved and regulated by the American Diabetes Association and the Center for Disease Control and Prevention

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.

DS10069A

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

American Diabetes Association. CDC

Appendix B: Diabetes Co-Conditions Screening Checklist

Appendix B is a clinical checklist for individuals found to have symptoms of diabetes. This is a preventative tool to deter conditions that are secondary to a life after being diagnosed with diabetes.
https://www.diabeteseducator.org/docs/default-source/practice/educato-tools/co-conditions/diabetes-co-conditions-screening-chart.pdf?sfvrsn=4

Diabetes Co-Conditions Screening Checklist

ADCES

	SCREENING PARAMETER AND FREQUENCY
Cardiometabolic	
Blood Pressure	
✓	Every routine visit.
Lipid Panel	
	Children age > 2 years with type 1 diabetes: • Start after diagnosis once glycemic targets are met. • Then, at age 9 to 11 years and every 3 years thereafter.
	Children with type 2 diabetes: • Annually (start after diagnosis once glycemic targets are met).
	Adults: • At diagnosis. • Every 5 years if under 40 years of age.
	Individuals taking lipid-lowering medication: • At initiation of medication. • 4 to 12 weeks after initiating or modifying medication. • Annually.
Smoking Status and History	
	Every routine visit.
Body Weight with BMI Calculation	
	Annually at a minimum.
Ankle Brachial Index	
	In the presence of symptoms/signs of peripheral arterial disease (e.g. claudication, a history of decreased walking speed, leg fatigue, diminished pedal pulses).
Microvascular	
Retinopathy	
	Children age > 11 years (or at puberty) with type 1 diabetes: • Every 2 to 4 years (start 3 to 5 years after diagnosis).
	Adults with type 1 diabetes: • Every 1 to 2 years (start within 5 years of diagnosis).
	Adults and children with type 2 diabetes: • Annually (start at diagnosis).
Nephropathy	
Random spot urine albumin-to-creatine ratio	
	Adults and children age > 10 years (or at puberty) with type 1 diabetes: • Annually (start 5 years after diagnosis).
	Adults and children with type 2 diabetes: • Annually (start at diagnosis).

Content contributed by: Jennifer L. Rosselli, PharmD, BCPS, BCACP, BC-ADM, CDCES

Appendix C: Centers for Disease Control and Prevention Preventative Guide

for Prediabetes and Diabetes

Appendix C is a preventative guide for prediabetes and diabetes is a great asset to any program or newly diagnosed patient.
CDC. (2022). http://www.cdc.gov/diabetes/pdfs/prevent/On-your-way-to-preventing-type-2-diabetes.pdf

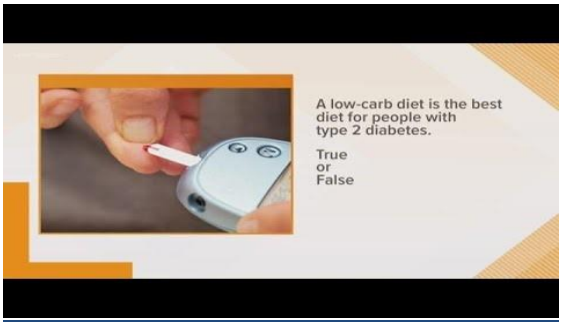
Appendix D: Educational Videos

Appendix D is the videos selected to reflect and coincide with the AADE7 behavior topics that are recommended for diabetes clinical outcome changes. One AADE7 Topic and video will be highlighted for education monthly. Videos are shown in the waiting of the clinical site. The How does insulin work video will precede each AADE7 topic video of the month as an addendum for added information and self-check knowledge for staff and eventually patients with prediabetes / T2DM who are a part of the weight-loss program.

What is diabetes? Learning how diabetes affects the body

Novo Nordisk. Aug 2, 2018. *How does insulin work?* YouTube.

https://www.youtube.com/watch?v=HJGjNTJgf48



Video Education: AADE 7 behaviors

Topic 1. Healthy Coping

The patient talks about his emotional journey with diabetes

Diabetes UK, May 14, 2019. *Coping with the emotional impact of diabetes.* [Video].

https://www.youtube.com/watch?v=XJWBHfbSqEEYouTube.

https://www.youtube.com/watch?v=XJWBHfbSqEE

Topic 2. Reducing the Risk

The first step to preventing diabetes is understanding the risks.

Diabetes UK. April 15, 2020. *How to prevent Type 2 diabetes.* [Video]. YouTube.

https://www.youtube.com/watch?v=2yMCmP6CxuE

Topic 3. How to take Metformin

A general guide on how to build up the dose of immediate-release Metformin

Abrahamthepharmacist. 2018. *How to take Metformin.* [Video]. YouTube.

https://www.youtube.com/watch?v=rc4ukEnN0OA&t=80s

Topic 4. Monitoring

Five general rules of when to test blood sugar levels

Palmeiro, Christopher. May 27, 2018. *When to Check Your Blood Sugar.* [Video]. YouTube. Doctablet. *https://www.youtu.be/5iaZip66Ct0*

Topic 5. Being Active

Demo to create 40-50 minute exercise routine to help normalize blood glucose levels

Glucosezone. May 20, 2019. *10 Light Exercises to Lower Blood Sugar Levels.* [Video] YouTube. *https://www.youtube.com/watch?v=MYjSMqqzc6k*

Topic 6. Eating Healthy

Foods to eat for prediabetes and lower blood sugar fast.

Redmond, Shelly. (Nov 15, 2021*). 12 Dietitian Approved BEST Foods for Prediabetes | THESE Foods Lower Blood Sugar FAST*. [Video]. YouTube. https://www.youtube.com/watch?v=YfIOAuvstlk

Topic 7. Problem Solving

Explanation of the National Health Service Diabetes Resource Program

National Health Service. April 06, 2018. *The NHS Diabetes Prevention Program story.* [Video]. YouTube. https://www.youtube.com/watch?v=7S21NH_sDQI

Appendix E: Screening Tool

What does the USPSTF recommend?	**Adults aged 35 to 70 years who have overweight or obesity:** • **Screen** for prediabetes and type 2 diabetes, and offer or refer patients with prediabetes to effective preventive interventions. **Grade: B**
To whom does this recommendation apply?	Nonpregnant adults aged 35 to 70 years who have overweight or obesity and no symptoms of diabetes.
What's new?	The USPSTF has lowered the starting age of screening from 40 to 35 years.
How to implement this recommendation?	**1. Assess risk:** • Obtain height and weight measurements to determine whether patient has overweight or obesity. Overweight and obesity are defined as a BMI ≥25 and ≥30, respectively. **2. Screen:** • If the patient is aged 35 to 70 years and has overweight or obesity. Consider screening at an earlier age if the patient is from a population with a disproportionately high prevalence of diabetes (American Indian/Alaska Native, Black, Hawaiian/Pacific Islander, Hispanic/Latino), and at a lower BMI (≥23) if the patient is Asian American. • Screening tests for prediabetes and type 2 diabetes include measurement of fasting plasma glucose or HbA_{1c} level or an oral glucose tolerance test.
How often?	The optimal screening interval for adults with an initial normal glucose test result is uncertain. Screening every 3 years may be a reasonable approach for adults with normal blood glucose levels.
What are other relevant USPSTF recommendations?	The USPSTF has made a recommendation on behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults with a BMI ≥30. This recommendation is available at https://www.uspreventiveservicestaskforce.org
Where to read the full recommendation statement?	Visit the USPSTF website (https://www.uspreventiveservicestaskforce.org) to read the full recommendation statement. This includes more details on the rationale of the recommendation, including benefits and harms; supporting evidence; and recommendations of others.

The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision-making to the specific patient or situation.