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Nursing Staff Education Project to Improve Diabetic Patients' Glycemic Control

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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,
and that any and all revisions required by
the review committee have been made.

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Abstract

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by

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Post-Master's Certificate, Maryville University, 2017

MSN, Benedictine University, 2013

BSN, University of Phoenix, 2009

ASN, Middle George College, 1990

Project Submitted in Final Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2022

Abstract

Diabetes is a chronic disease affecting more than 34.2 million people in the United States. The International Diabetes Federation predicted by the year 2045 an estimated 700 million people will have diabetes. In the clinic project site, the practice problem involved the increasing clinician's knowledge about Type 2 diabetes mellitus (T2DM) with improved glycemic control through self-care management. The purpose of this project was to develop an educational training and intervention for staff to increase their knowledge of self-care management to improve glycemic control and have it validated by a panel of experts before dispersing it to the intended audience. The theoretical framework used in developing education was the theory of Knowles's andragogy. The practice-focused question addressed whether a staff education project on self-care management will improve glycemic control in patients with T2DM. The research design included an informational PowerPoint presentation with pre and post-test questionnaires that were evaluated by five expert panelists using a Likert Scale. All materials were dispersed to the panel and responses were collected from the Likert Scale. The responses on the Likert Scale were analyzed and utilized to validate the educational module. The educational module was validated by the panel and was noted to have the potential to enhance staff knowledge on self-care management and glycemic control. Among the panelist three of five panel members awarded "5" for all areas and unanimously approved it for dissemination to the staff. Education for clinical staff on self-care management and glycemic control can positively impact social change by providing a better understanding of diabetes with the potential to improve patient and staff knowledge.

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Dedication

In loving memory of my mother, Geraldine Riley, and my husband, Samuel Gaston. To my children: Tamara and Reginald Robinson Jr., Cassandra and Arronie Riley. Your encouragement and support will never be forgotten. Thank you.

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A special thanks to Dr. Jody Minnick and Dr. Mary Martin for your guidance, encouragement, and support on this journey. Kimberlyn Walthour, Oneika Britton, and Dr. Monique Moseley are friends who provided prayer support and encouragement when I felt overwhelmed.

My family, the greatest support system: Tamara and Reginald Robinson Jr, Cassandra and Arronie Riley. Apostle Christine Sherman for covering me in prayer throughout this process. In loving memory of my mother, Geraldine Riley, and my husband, Samuel Gaston.

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Section 1: Nature of the Project

Type 2 diabetes mellitus (T2DM) is a chronic disease that affects more than 34.2 million people in the United States (Wadas et al., 2020). The International Diabetes Federation (June 11, as cited in Nikitara et al., 2019) predicted by the year 2045 an estimated 629 million would have diabetes. A normal hemoglobin A1C (HgbA1C) is less than 5.7; for patients diagnosed with T2DM, the HgbA1c is 6.5 (Castro, 2018). According to Kapur and Seshiah (2017), diabetes affects people equally; however, women have an increased risk for blindness, renal disease, stroke, and depression. Also, women with a body mass index (BMI) of 35 kilograms are at 93 times greater risk of developing T2DM, increasing the risk of heart disease twofold (Barnes, 2011). The health care cost for individuals with T2DM who are obese is $327 billion in direct care and $90 million in reduced or lost productivity (Wadas et al., 2020).

According to Leung et al., (2017), obesity is one of the most important and modifiable risk factors of diabetes. Prevention of obesity is the key to decreasing complications associated with T2DM and health care costs. The individuals affected are often poor, have lower education levels, are more likely to be racial minorities, and are obese with diabetes-related comorbidities (Leung et al., 2017). Nurses and nurse practitioners frequently provide care to the patients diagnosed with T2DM. Patient education is a key component of the legal role of the nurse either spelled out directly or implied in the state nurse practice acts. Teaching the patients about self-care practices to decrease glycemic control, as measured by the HgbA1c, preventing the disease's

progression, and improving health care outcomes should be a priority of the nurse and nurse practitioners.

Nurses working with patients in a family practice clinic setting provide the discharge teaching; however, the education given to the patient is based on the individual nurse's understanding of what information to present. There is no set standard teaching protocol for nurses to use as a guide. The current staff education project was designed to increase the knowledge of the staff when educating the patient regarding how to improve glycemic control leading to improved health care outcomes.

Problem Statement

The American Diabetes Association (ADA, 2021) characterized diabetes as a metabolic disease with hyperglycemia resulting from insulin secretion defects. The ADA also reported long-term damage and multiple organ failures, including the eyes, kidneys, nerves, heart, and blood vessels, by chronic hyperglycemia. T2DM affects more than 34.2 million people in the United States and is associated with significant mortality and morbidity (Wadas et al., 2020). Obesity and diabetes contribute to the health care cost of $327 billion in direct care and $90 million in reduced or lost productivity (Wades et al., 2020). Leung et al., (2017) reported 87% of U.S. adults with T2DM are overweight or obese with a BMI greater than or equal to 25.

The ADA and the American Heart Association consider a BMI of 30 to 39.9 obese, and greater than 40 extremely or severely obese (Perreault, 2020). The HgbA1C is one of the most used tests to diagnose and manage diabetes with a target range of 7%–8% (Lyon et al., 2018). The HgbA1C measures the amount of sugar attached to the

hemoglobin over 3 months. A normal HgbA1C is less than 5.7, prediabetes is 5.7–6.4, and T2DM is 6.5 or higher (Centers for Disease Control and Prevention [CDC], 2021). During a quarterly review in an adult health clinic, staff shared that diabetic patient did not comply with the prescribed medical regimen, diet, or exercise. The patients were experiencing progressive weight gain, increased BMI, and HgbA1C greater than 8. I noted the patients had limited health literacy, which led to poor glycemic control and increased BMI.

Huffman & Vaccaro, (2013), reported that educating people with diabetes on how to lower their BMI, regulate their glycemic index, and reduce their weight will minimize the effects of T2DM. Also, Huffman & Vaccaro, (2013), reported that T2DM patients could accomplish this through adequate diet and exercise. Education about lifestyle changes related to diet and exercise is the first-line therapy for patients with T2DM (Mottalib et al., 2018). According to Garber et al., (2019), the daily practice routine for health care providers when caring for patients with T2DM includes a teaching regimen about a healthy diet and lifestyle practices what will result in keeping a HgbA1c level within the normal range. The method is fundamental when interacting with obese and diabetic patients due to the significant effects of this diagnosis on morbidity and mortality (Wadas et al., 2020).

However, the nurses working with patients with T2DM in an outpatient setting in a state in the southern region of the United States provided discharge teaching without the evidence-based standard of care. In addition, no discharge teaching guideline was available in the clinic to use as a guide (, personal communication, February 3, 2020). A

staff education project to increase nurses' knowledge of T2DM to improve glycemic control after discharge was designed to address the gap in practice.

Purpose Statement

The purpose of this education project was to increase nurses' knowledge of evidence-based self-care practices that can be taught to patients with T2DM to improve self-care management of their disease and improve glycemic control with decreased comorbidities. The practice-focused question was the following: Will a staff education project on self-care management improve nurses' knowledge of glycemic control in patients with T2DM? Diabetes mellitus is one of the most prevalent and costly chronic diseases in the United States (Leung et al., 2017). Educating nurses with the information to teach patients with T2DM before discharge can empower the patients with strategies, they can use to improve their glycemic control after discharge from the clinic, improve their quality of life, and decrease readmission and hospitalization cost.

Nature of the Doctoral Project

The nature of this project was educational and focused on the nurses' academic skills and knowledge of the best practices for teaching patients with T2DM. Empowering nurses/staff with information to educate those affected by T2DM with self-care management knowledge to improve glycemic control may change the current mortality and morbidity rate. The purpose of this project was to increase nurses' knowledge of the information needed to teach patients to improve glycemic control, which would address the gap in practice.

Significance

This project was significant because increased BMI and HgbA1C damage other major organs creating other health care issues such as chronic kidney disease, hypertension, retinopathy, neuropathy (see Wadas et al., 2020). Self-care management and improving health literacy may improve glycemic control and decreased BMI, thereby reducing health care costs. This project may empower the nursing staff with the knowledge of T2DM glycemic control and self-care practices so nurses can use current and reliable evidence-based standards of care to improve health outcomes for patients.

Summary

The information in this chapter included the problem statement, purpose, nature, and significance of the study. A pretest and posttest were developed to identify the gaps in nurses' knowledge and was evaluated by five expert panelists. The aim was to test prior knowledge through pretesting, provide an education intervention, and conduct a posttest for knowledge retention. A Likert Scale 5-point questionnaire for evaluation and validation of the project methodology was presented to the five expert panelists.

Section 2: Background and Context

T2DM is rooted in obesity and an unhealthy lifestyle. A change in health behavior is the main target in diabetes care to attain glycemic control and avoid diabetes complications (Koponen et al., 2018). Low glycemic control increases the risk for comorbidities, including cardiac, eye, and renal disease (Wadas et al., 2020). A staff education project was designed to increase nurses' knowledge to present the content accurately and based on evidence to decrease the long-term effects of T2DM by improving patients' glycemic control.

Diabetes and obesity are chronic diseases that are progressive and difficult to treat (Shiau et al., 2018). Weight loss improves glycemic control by increasing insulin sensitivity and glucose uptake and reducing hepatic glucose output (Shiau et al., 2018). A lifestyle change is necessary to support weight and glycemic control (Shiau et al.,2018). Barriers to glycemic control and weight management include medication, sleep apneas, skipped meals, shift work, and pain (Shiau et al., 2018).

T2DM is a growing epidemic that can be reduced with improved glycemic control and lifestyle change. The purpose of this Doctor of Nursing practice (DNP) project was to increase nurses' knowledge of evidence-based self-care practices that can be taught to patients with T2DM to improve self-care management of their disease and improve glycemic control with decreased comorbidities. A lifestyle change can improve glycemic control with weight loss and maintenance, exercise, and monitoring of blood glucose (Shiau et al., 2018). Educational instructions on self-care management with a staff education project may improve health outcomes of patients.

Concepts, Models, and Theories

The model for this project was ADDIE (see Figure 1), which consists of five phases: analysis, design, development, implementation, and evaluation (see Branson et al., 1975). The ADDIE model was developed in the 1970s for the U.S. Army at the Center for Educational Technology at Florida State University (Molenda, 2015). The model in an educational environment guided learning to increase skills and knowledge (Molenda, 2015). The approach clarifies the problem and the intended participants' knowledge. The plan includes systematic and specific methods to evaluate and develop the identified problem effectively. Development is the creation of a project that may require revising. Implementation includes creating a plan to train the staff regarding the outcomes. The evaluation is the final phase with two parts: formative and summative. Formative is present during the process, and summative is the feedback received from the five expert panelists (Branson et al., 1975). ADDIE's model focuses on the identified problem and creating a design with specific outcomes with the options to review and revise the plan based on the feedback from five expert panelists. This model supported the development and evaluation of the current educational project.

The theoretical framework guiding this project was Knowles's (1984) andragogy. Andragogy includes principles of adult learning based on experience, insight, and early application (Knowles, 1984). Knowles's theoretical foundation is based on six learning principles:

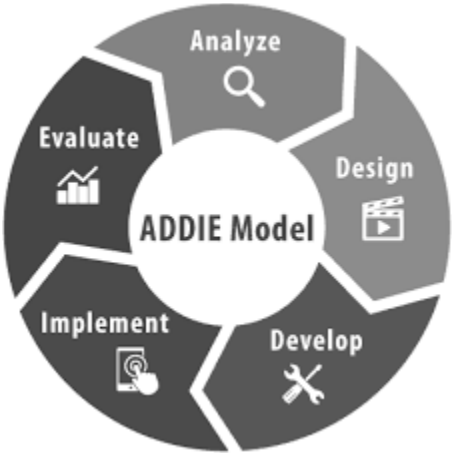
1. Adults are internally motivated and self-directed.
2. Adults bring life experiences and knowledge to learning experiences.

3. Adults are goal oriented.
4. Adults are relevancy oriented.
5. Adults are practical.
6. Adult learners like to be respected.

The knowledge to self-manage diabetes through a lifestyle change may improve glycemic control and the overall health of the patient. The awareness of current practices and the problems is the motivating factor for change. If adults are goal oriented, the goal is to change the diet, exercise habits, and overall lifestyle. The practicality of life, relationships, environment, discouragements, and respect for the patient's reason for nonadherence with education may improve the outcome.

Figure 1

ADDIE Model



A staff education project was designed to enhance nurses' knowledge to educate patients and improve their glycemic control and weight loss, thereby improving their HgbA1C.

Key Terms

ADDIE: Systematic design to determine the training needs of the project. The model has five phases: analysis, design, develop, implement, and evaluate (Molenda, 2015).

BMI: Body mass index measures weight in relation to height. This is obtained by dividing the weight in kilograms by the square of height in meters (CDC, 2021).

Chronic disease: Conditions lasting over 1 year and requiring ongoing medical attention. These include heart disease, diabetes, kidney disease, and circulatory disease (CDC, 2021).

DNP: The highest level of training in nursing practice for a nurse practitioner (NP). The degree is also called a terminal degree and validates the ability of the NP to transfer evidence-based information into practice (American Association of Colleges of Nursing, 2006).

Evidence-based practice: The application of theory into practice using the best practice guidelines and bridging the gap between research and application to improve health outcomes (American Association of Colleges of Nursing, 2006).

Glycemic control: Glucose levels within optimal range. Fasting glucose level 70–130 or A1c 7% or lower (ADA, 2021).

HgbA1c: Glycated hemoglobin that measures the percentage of sugar attached to the blood's hemoglobin protein. The HgbA1c measures blood glucose level over a 2- to 3-month period (ADA, 2021).

Likert scale: A measurement of attitudes in the format of questions with five possible responses: strongly disagree, disagree, undecided, agree, strongly agree (Batterton and Hale, 2017).

Lifestyle change: A lifelong alteration of certain behaviors or habits to improve health overtime (CDC, 2021).

Obesity: Body weight greater than what is considered normal or healthy for a certain height (CDC, 2021). Obesity is a BMI of 30–39.9 (Perreault, 2020).

Self-care management: Educating the patient how to improve and maintain health by providing them with skills and knowledge (Ahmad et al., 2020).

T2DM: Chronic metabolic disease resulting from progressive loss of B-cell insulin secretion or insulin resistance (ADA, 2021).

Relevance to Nursing Practice

Koponen et al., (2018) argued that T2DM is rooted in obesity and an unhealthy lifestyle. Change in health behavior is the main target in diabetes care to attain glycemic control and avoid diabetes complications. Karimy et al., (2016) predicted that the number of patients with diabetes will double by the year 2025. The World Health Organization (May 14, as cited in Karimy et al., 2016) expects the number of patients with diabetes to increase to more than six million by 2030. Self-care behaviors, including self-monitoring of blood sugar, diet, and exercise, are associated with lower HgbA1C levels (Karimy et al., 2016).

Diabetes mellitus is an economic burden increasing health care cost related to the complications of the disease. In 2015, approximately five million people died from

diabetes (Mamo et al., 2019). Despite the cost and long-term effects of poorly controlled diabetes, an effective universal policy to treat the patients is still missing (Mamo et al., 2019). The nurses providing frontline care for patients at the project site lack the knowledge and skills to adequately assess and educate. A mixed systematic review of the nurse role, facilitators, and barriers in diabetes revealed nurses' lack of knowledge, time, and ability to collaborate on patients' care (Nikitara et al., 2019). In the current outpatient clinic setting, nurses reported a lack of knowledge, in-service education, and limited time to adequately assess the needs of the patients with T2DM due to the current schedule load. This reported evidence was noted and reported by the staff in the morning huddle to the nurse manager when an informal inquiry was conducted by the nurse manger as part of the morning routine for process improvement. Therefore, a rise in BMI and increased HgbA1c was noted, increasing the risk for further complications.

Previous strategies in standard practices to close the gap with poor glycemic control included diabetic educators, home health agency skilled nurses to monitor medication administration, and education concerning diabetes. However, these methods were only as effective as the educator and the willingness of the patient to participate. An assessment was conducted to understand why and how patients had poor glycemic control, which addressed finances, poor family support, shame, language barrier, and responsibilities. The next step is to develop a method to assist or change the issue by educating in self-care management (Nikitara et al., 2019). This DNP project was designed to increase staff knowledge and ability to teach self-care practices to patients with T2DM. The information may empower staff to help patients make lifestyle changes

that will improve care outcomes related to T2DM, including diet, exercise, and self-monitoring of glucose effects to improve glycemic control.

Local Background and Context

This DNP project was conducted in an outpatient clinic setting in the southern region of the United States with patients experiencing HgbA1C greater than 8, increased weight gain, and poor dietary habits. The clinic on average sees 12 patients daily with approximately 50% of the patients diagnosed with diabetes. The average American's reading level is 7th grade according to the National Center for Education Statistics (2021). This reading level was also reflected in the population addressed in the current project. With this population's challenges related to literacy, it is imperative for nurses and staff to educate patients and their families on the medical conditions and options for treating them. Staff education projects on this subject at the project site were limited.

Studies have demonstrated that staff education assists in the improvement of patient outcomes. Piette et al., (2000) a random case study of 280 diabetic patients with and intervention assigned with bi-weekly automated phone calls to assess self-care management after discharge resulted in improved glycemic control. The intervention resulted in lower HgbA1c and improved glycemic control. Mamo et al., (2019), conducted case-controlled study of poor glycemic control adults with T2DM. The study consisted of 410 patients with poor glycemic control, comorbidities, lack of self-monitoring glucose greater than 7 years, physical activity 3 or less days, and obesity. The study revealed central obesity, diabetes greater than 7 years, physical activity less than 3 times a week, and lack of self-monitoring affected glycemic control.

The success of any project design depends on the stakeholders (Kettner et al., 2017). The current project team consisted of a five expert panelist. The ADDIE model was the educational tool used to guide learning to increase skills and knowledge (see Molenda, 2015).

Role of the DNP Student

As a DNP-prepared student, my responsibility was the development of a staff education project to improve glycemic control through self-care management. I completed a review of current literature and evidence-based practices to develop the PowerPoint presentation (PPT), pretest, and posttest, and I then submitted the project with the Likert Scale to the expert panelists to review and evaluate. The project team (panelists) consisted of an RN nurse educator, 2 NPs, board-certified internal medicine physician, and board-certified endocrinologist. Bias was avoided by applying the ADDIE model. After the five expert panelists evaluated the material and provided recommendations for improvement, I modified the staff education project and test questions based on their recommendations. At the conclusion of the review process, the project was administered to the staff.

Role of the Project Team

The DNP project had five expert panelists including 2 board-certified physicians, 2 NPs, an RN diabetic educator who evaluated the staff education pretest, posttest, and PPT. The board-certified internal medicine physician in private practice had 45 years of experience. The endocrinologist had 32 years of experience managing the care of diabetic patients. The NP specializing in diabetic education had 10 years of experience and

worked in private practice. The second NP had 10 years of primary care experience in private practice, which included caring for diabetic patients. The RN had 22 years of experience as a diabetic educator for a local hospital.

The role of this team was to review and evaluate all materials via email using the Likert Scale. After receiving the Likert Scale results, I scheduled a meeting via telephone to discuss recommendations. The five expert panelists evaluated the project for effective educational appropriateness and design, methodology, and efficacy using the Likert Scale (see Appendix C). Each panelist had the opportunity to collaborate and provide constructive criticism for project improvement or acceptance.

Summary

This chapter addressed the concept, model, theory, relevance to nursing practice, background, and location. The project was designed to increase nurses' knowledge of T2DM, self-care practices to improve glycemic control. The educational project was relevant to nursing by increasing the knowledge and skills of the staff. Section 3 addresses the planning, implementing, and evaluation of the project.

Section 3: Collection and Analysis of Evidence

Diabetes is a chronic disease associated with obesity and poor glycemic control. The disease affects more than 34.2 million people in the United States and is associated with significant mortality and morbidity (Wadas et al., 2020). Staff and patient education on diet and exercise by health professionals is essential in controlling health issues. The project site clinic, with the quarterly review, noted an increase in HgbA1C and weight affecting glycemic control. A staff education project was designed to decrease the long-term effects by improving glycemic control in patients with T2DM.

Practice-Focused Question

The practice-focused question for this DNP project was the following: Will a staff education project on self-care management improve nurses' knowledge of glycemic control in patients with T2DM?

Sources of Evidence

I obtained the sources of evidence for this DNP project from databases including Cumulative Index of Nursing and Allied Health Literature, ProQuest, American Diabetes Association, Center for Disease Control and Prevention, and Nursing and Allied Health. The research evidence was collected from the last 5 years. Key search terms included *diabetes type 2*, *glycemic control*, *lifestyle change*, *obese*, *obesity*, *overweight*, *nurse role in diabetic education*, and *HgbA1c*. The Walden University Staff Education Manual and DNP Essentials was used as a guide for collecting and applying evidence. The collection and analysis of this evidence was conducted by descriptive analysis.

Participants

The participants in this project consisted of five expert panel members selected for their expertise to review the project for quality:

- Participant 1: A board-certified internal medicine physician with over 35 years of experience in private practice.
- Participant 2: A board-certified internal medicine physician certified in endocrinology with over 35 years of experience in private practice.
- Participant 3: An NP certified in diabetic education with 10 years of experience in private practice.
- Participant 4: An MSN RN diabetic educator for a local hospital with 22 years of experience.
- Participant 5: An NP in private practice with over 5 years of experience in primary care managing patients with diabetes.

Prior to implementing the project, I obtained approval from the Walden University Institutional Review Board (IRB Number 11-12-21-1031037). After IRB approval was received, the educational project along with the pretest and posttest were emailed to the panelists for evaluation and recommendations.

Procedures

For this DNP project, I used a PPT (see Appendix A) emphasizing self-management, diet regimen, exercise, and glycemic control based on evidence-based practice. The pretest and posttest (see Appendix B) was developed from the PPT and literature review of evidence-based practices to increase staff knowledge of glycemic

control in patients with T2DM. The staff education project and pretest and posttest (see Appendix A and Appendix B) were emailed to the five expert panelists with a Likert Scale (see Appendix C) to evaluate the content and materials created for the staff (see Batterton and Hale, 2017).

Protections

Ethical protection of the participants was ensured. I obtained verbal consent before presenting the pretest, posttest, and PPT presentation. Participants' privacy and confidentiality were protected during the project by assigning numbers/letters to the Likert Scale. The five expert panelists reviewed and approved the staff educational project based on the DNP Manual for Staff Education Projects and current guidelines in management of T2DM. The tests were identified as 1A and 1B to distinguish data for analysis. A Likert Scale was completed by the five expert panelists who provided an evaluation of the material presented. Walden University served as the IRB reviewer for the protections of human subjects. A letter from the practice manager to implement the project was obtained.

Analysis and Synthesis

The pretest, posttest, PPT, and Likert Scale were emailed to the five expert panelists. The responses were collected via email and analyzed using descriptive data. The pretest and posttest were designed to assess the staff's basic knowledge of diabetes. The pretest was designed for administration before the PPT via Zoom to ascertain the staff's basic knowledge of diabetes, lifestyle changes, and educational foundations to improve glycemic control. After the PPT, the posttest was scheduled to assess the staff's

understanding and retention of information presented. The pretest, posttest, and PPT was presented to the five expert panelists after the staff education project was approved by my committee. The focus of the panelists was to validate the content prior to administering it to the staff.

A 5-point Likert Scale (see Appendix C) questionnaire was used by the panelists to evaluate the project, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The purpose of the Likert questionnaire was to assess the face validity of the materials and determine whether they would elicit a change in the knowledge base of the learner. All information must be validated to determine whether the material will achieve the intended goal (Kettner et al., 2017). This evaluation aligned with the purpose of the current project.

Summary

This staff education project was designed for an outpatient clinic in the southern region of the United States. The DNP project was developed from evidence-based research to improve health outcomes of patients with T2DM. The pretest, posttest, and PPT were designed to increase nurses' knowledge of self-care management practices to improve glycemic control in patients with T2DM before discharge from the clinic. Section 3 addressed the sources of evidence, participants, procedures, evidence, and protections. Section 4 includes an analysis and synthesis of the results.

Section 4: Findings and Recommendations

T2DM is a chronic disease affecting more than 34.2 million people in the United States (Wadas et al., 2020). Literature suggested staff education improves the knowledge of nurses' and can improve glycemic control of those with T2DM. The long-term effect of poor glycemic control is related to the knowledge gap of the nurses and poor compliance of those diagnosed with diabetes. The purpose of this DNP project was to teach the staff nurses' self-care management skills, lifestyle changes, and current evidence-based information to improve glycemic control of patients with T2DM. The practice-focused question was the following: Will a staff education project on self-care management improve nurses' knowledge of glycemic control in patients with T2DM?

I developed a PPT for staff education to address the knowledge gap of nurses related to poor glycemic control in patients with T2DM. The PPT was presented to the five expert panelists for review and critique. A pretest and posttest were developed and reviewed by the five expert panelists as well. The project design was to pretest nurses prior to the PPT presentation and to posttest nurses after the presentation to validate their knowledge. The expected outcomes from the staff education project were to improve nurses' knowledge and close the gap in diabetic management of patients. Patient education is a key component of the legal role of the nurse either spelled out directly or implied in the state nurse practice acts. Teaching patients about self-care practices to decrease glycemic control, as measured by the HgbA1c, and preventing the disease's progression may improve health outcomes. Nurses' lack of knowledge on the importance

of diabetic patients' self-care management with a lifestyle change indicated a gap in nursing practice.

Findings and Implications

In compliance with Walden University doctoral education staff manual, approval from the IRB was obtained. Five expert panelists specializing in diabetic education were recruited to validate the PPT. The panelists confidentially were maintained throughout the project, per Walden University's guidelines. A pretest and posttest were developed along with a PPT to evaluate the knowledge of the staff. The pretest was designed to assess nurses' knowledge prior to the PPT. The PPT focused on lifestyle change regimen, glycemic control, disease, and long-term effects with poor glycemic control. The five expert panelists included 2 board-certified internal medical physicians, 2 NPs, and a RN diabetic educator who evaluated, critiqued, and recommended revisions to the PPT, pretest, and posttest. The questions on the Likert Scale were designed to assess the content of the PPT, pretest, and posttest.

The pretest, posttest and PPT were sent via private secured email links to the five expert panelists. Written instructions were provided for guidance, including an invitation for Zoom, team, or duo conference for review. Everyone agreed to a Zoom conference for discussion of the pretest, posttest, and PPT on December 4, 2021. I received all panelists' data via secured email within 5 days of the Zoom conference.

The participants' overall assessment was positive regarding the PPT. This DNP project was designed to address the knowledge gap in nursing practice and improve health care outcomes. Table 1 includes the recommendations from the five expert

panelists. The data from the Likert Scale questionnaire validated the staff education project. The PPT evaluation via Likert Scale indicated that 3 of the expert panelists responded *strongly agree* and 2 responded *agree*.

The unanticipated limitation on this DNP project was the inability to administer the pretest, posttest, or PPT due to the COVID-19 pandemic. Educating staff to improve evidence-based knowledge and decrease the gap in nursing practice was the goal of this DNP project. The project may be used to improve diabetic patients' self-care management skills and glycemic control, which may result in improved health care outcomes and decreased mortality and morbidity.

Table 1

Likert Scale Expert Panelist Results

Question	Number who strongly agreed	Number who agreed	Comment
Is the educational PPT accurate and address T2DM disease process, complications, and management?	3	2	Very easy to follow, understandable and stresses key points well
Does the educational material evaluated educate the nurse to adequately assess the patient?	3	2	No comments
Does the educational material provide requirements to improve glycemic control?	3	2	Weight loss by even 5%, exercise, diet is important
Is the most significant contributing factor for T2DM noted?	3	2	Anyone can get T2DM pts who are of African American, Alaksa, Native American, Indian, Asian American, Hispanic/Latino, Native Hawaiian or Pacific Islander are at higher risk
Does the educational material identify to the nurse hinderance in compliance with diabetes management?	3	2	No comment
Other comments			Recommend add 1-2 slides about prediabetes & diagnostic criteria

Recommendations

The five expert panelists validated the PPT, pretest, and posttest based on their expert opinion and evidence-based guidelines. The PPT provided sufficient educational information with recommended wording adjustments. The PPT is a guideline for the staff to improve knowledge and close the gap in nursing practice. The use of the staff education model to improve glycemic goal was demonstrated in a mixed systematic review of the nurse's role, facilitators, and barriers in diabetes, which revealed that nurses lack the knowledge, time, and ability to collaborate on the patient's care (Nikitara et al., 2019). The next step is to develop a method to assist or change the issue by educating in self-care management (Nikitara et al., 2019).

Several recommendations from the endocrinologist included changing the wording in Question 1 from "gold standard" to "most used" and "available test" to "diagnose and monitor A1c." Revisions to Question 7 included "what is the most modifiable risk factor likely to result in better T2DM control?" Revisions to Question 8 included "recommended weight loss is 5-15% of current weight." Another recommendation was to implement pretesting upon hire to evaluate the staff's knowledge followed by the PPT. The education project may increase staff knowledge and improve patients' glycemic control through self-care management.

Contribution of the Doctoral Project Team

I was the project team leader. The five expert panelists were chosen for their knowledge, expertise, health care background, and longevity in practice. The panelists' individual and collective goal was to ensure the education project would improve health

care outcomes and prevent long-term organ damage. The collaborative team efforts assisted in the validation of the project. Bias among the five expert panelists was accessed upon their years of experience and practice and eliminated based on the Walden University Student Manual.

Strength and Limitations of the Project

Limitations of the project included the inability to conduct face-to-face education to the staff and the five expert panelists due to the COVID-19 pandemic. Contact with each panelist was via email and telephone. The focus of the project was staff education. I did not evaluate the staff due to the COVID-19 pandemic. The institution did not allow in-person visits due to COVID-19.

I used evidence-based guidelines to validate a staff education project to educate nurses in an outpatient setting on patients' glycemic control with self-care management. The PPT, pretest, and posttest were validated by the five expert panelists with recommended changes to enhance the learning process. The PPT was developed as a staff education project to improve the knowledge, skills, and assessment of T2DM with poor glycemic control. This education project was designed to enhance the knowledge of nurses to prevent patients' organ damage and improve their glycemic control. The strength of the project was that all five expert panelists were actively treating and managing T2DM patients. Social change implications include improved glycemic control, improved weight management and stability, and increased staff knowledge.

Section 5: Dissemination Plan

This project focused on evidence-based staff education in an outpatient setting in the southern region of the United States. The project's purpose was to improve staff knowledge of patient self-care management and improve glycemic control of patients with T2DM. The dissemination plan is to educate the staff for the purpose of improving their knowledge of current diabetic guidelines and recommendations. My plans include education during orientation to ensure all staff are current with the evidence-based guidelines for diabetic self-care management. I developed a pretest, posttest, and PPT to increase knowledge and close the knowledge gap in nursing practice. The project study included the purpose statement, practice problem, background, project results, and theoretical framework to improve the staff's knowledge. The formal plan for disseminating this project is as an educational tool during new hire orientation and training. The focus of the project was to promote adherence to self-care management with improved health care outcomes indicated by improved glycemic control through lifestyle change.

Analysis of Self

The greatest challenge encountered was the inability to educate the staff during the COVID-19 pandemic. Despite this challenge, the DNP project provided me the opportunity to practice the skills obtained throughout this terminal degree. The opportunity to collaborate with expert panelists and develop methods to ensure staff have access to the most current evidence-based information and the implementation according to state guidelines was an area of significant professional growth for me. The vast amount

of knowledge I obtained empowered me to facilitate improved health outcomes with the prevention of further organ damage as an NP and scholarly prepared practitioner. Developing this project improved my skills and knowledge of planning, designing, revising, and implementing methods to close the gap in practice. Evaluation of the project will be continuous with the intent to close the gap by improving staff knowledge in educating patients in self-care management to improve glycemic control.

The project's process of researching current guidelines, evidence-based practice guidelines, and methods to improve health may close the gap in nursing practice related to patients living with T2DM. Self-care management and education are essential to decrease health care cost, increase productivity, and improve overall health. A lifestyle change will decrease the long-term effects, including organ damage, with improved glycemic control.

Summary

This DNP project was designed to improve nurses' knowledge and close the gap in nursing care. The project may equip staff with the information to improve patient outcomes. The focus was to improve staff knowledge regarding patients' self-care management of T2DM to improve their glycemic control. Self-care management includes lifestyle changes to empower patients with the knowledge and skills to change their current health care status.

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Appendix A: Staff Education PowerPoint Presentation

Staff Education Project on Improved Glycemic Control in Diabetics

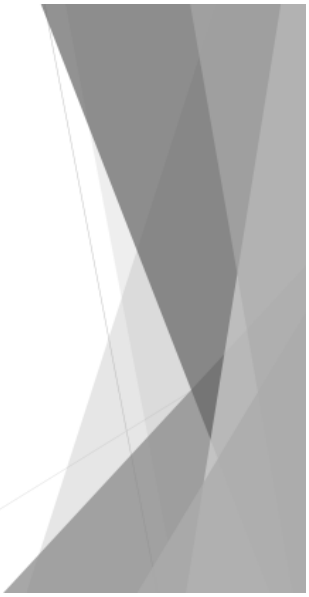
Presented by Valerie Gaston, AGNPC, MSN

Type 2 Diabetes Mellitus

- Chronic disease affecting more than 34.2 million globally (Wadas et al., 20020).
- HbgA1C, most used diagnostic test for diabetes (Lyons et al., 2018).
- Diabetes affects all people equally, however, women have an increased risk for blindness, renal disease, stroke and depression (Kapur & Seshiah, 2017).

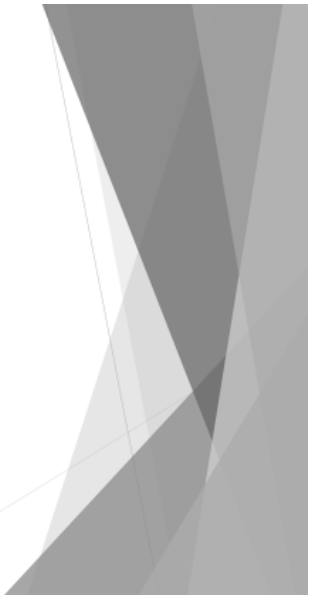
Type 2 Diabetes Mellitus

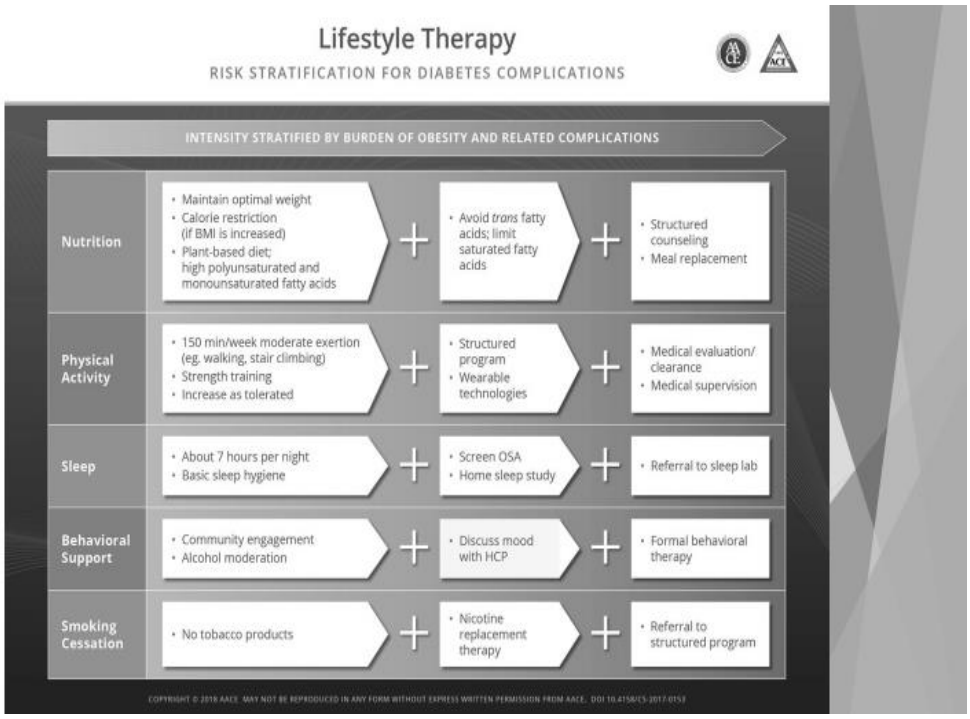
- The most modifiable risk factor is obesity (Leung et al., 2017).
- Obesity and diabetes health care cost is over $327 billion in direct care and $90 million in lost productivity (Wadas et al., 2020).
- Purpose of project is to increase the nurse knowledge about evidence-based practices to improve glycemic control, and their quality of life.



Glycemic Control

- Improved with weight loss 5% or greater
- Lifestyle change including: diet, exercise, weight loss




Lifestyle Therapy
RISK STRATIFICATION FOR DIABETES COMPLICATIONS
INTENSITY STRATIFIED BY BURDEN OF OBESITY AND RELATED COMPLICATIONS
Nutrition
• Maintain optimal weight
• Calorie restriction (if BMI is increased)
• Plant-based diet; high polyunsaturated and monounsaturated fatty acids
• Avoid trans fatty acids; limit saturated fatty acids
• Structured counseling
• Meal replacement
Physical Activity
• 150 min/week moderate exertion (eg, walking, stair climbing)
• Strength training
• Increase as tolerated
• Structured program
• Wearable technologies
• Medical evaluation/ clearance
• Medical supervision
Sleep
• About 7 hours per night
• Basic sleep hygiene
• Screen OSA
• Home sleep study
• Referral to sleep lab
Behavioral Support
• Community engagement
• Alcohol moderation
• Discuss mood with HCP
• Formal behavioral therapy
Smoking Cessation
• No tobacco products
• Nicotine replacement therapy
• Referral to structured program
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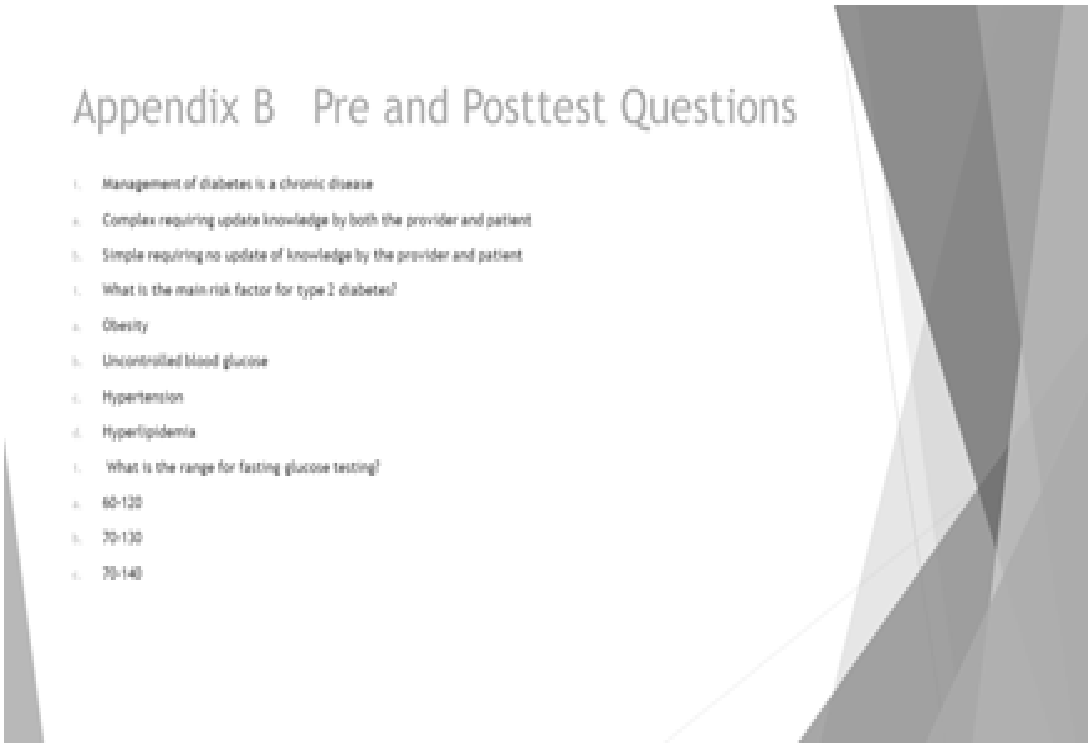
Addie Model

Staff Education Model (google.com).

ADDIE Model

- Clarifies the problem
- Clarifies the knowledge of the staff
- Develop the project and or revise
- Implementation a plan to train the staff with outcomes
- Evaluation of the final phase by formative (during the process) and summative or
- feedback from the five-expert panelist.


Appendix B Pre and Posttest Questions
1. Management of diabetes is a chronic disease
a. Complex requiring update knowledge by both the provider and patient
b. Simple requiring no update of knowledge by the provider and patient
1. What is the main risk factor for type 2 diabetes?
a. Obesity
b. Uncontrolled blood glucose
c. Hypertension
d. Hyperlipidemia
1. What is the range for fasting glucose testing?
a. 60-120
b. 70-130
c. 70-140


Appendix B Pre and Posttest Questions
1. What are the major organs affected?
a. Heart, kidney, eyes
b. Heart, kidney, eyes, blood vessels
c. I'm not sure
1. What factor affects blood glucose control?
a. Weight
b. Diet & exercise
c. Smoking
d. All of the above
1. What hinders life style changes?
a. Lack of interest
b. Lack of knowledge
c. Lack of interest
d. Lack of support
e. All the above

Appendix C: Likert Scale

Please complete the form below with you best rating on the information provided. Please enter your expert opinion and comments below each question.

1. Is the educational PPT accurate and address diabetes type 2 disease process, complications and management?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly agree
5. Agree

Comments:

1. Does the educational material evaluate and educate the nurse to adequately assess the patient?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly agree
5. Agree

Comments:

Appendix C: Likert Scale

Please complete the form below with you best rating on the information provided. Please enter your expert opinion and comments below each question.

1. Is the educational PPT accurate and address diabetes type 2 disease process, complications and management?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly agree
5. Agree

Comments:

1. Does the educational material evaluate and educate the nurse to adequately assess the patient?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly agree
5. Agree

Comments:

Appendix C: Likert Scale

1. Does the educational material provide requirements to improve glycemic control?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly agree
5. Agree

Comments:

1. Is the most significant contributing factor for Type 2 Diabetes noted?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly Agree
5. Agree

Comments:

1. Does the educational material identify to the nurse hinderance in compliance with diabetes management?

1. Strongly disagree
2. Disagree
3. Neutral
4. Strongly Agree
5. Agree

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Appendix B: Staff Education Pre- and Posttest Questions

1. The most used and available test for diagnosis and monitoring both fasting and postprandial glucose
    a. Fingerstick daily
    b. A1c
    c. BMP
2. The recommended frequency for obtaining A1c
    a. Q 3 months
    b. Q 6 months
    c. Q 12 months
3. The most recommended target for T2DM is less than what percentage?
    a. 7%
    b. 6%
    c. 8%
4. The target recommendation for fasting blood glucose
    a. 70-130
    b. 70-150
    c. Less than 200
5. The three main characteristics of T2DM
    a. Defect in B cell function, insulin resistance, overproduction of glucose by the liver

b. Overproduction of glucose by the pancreas, defect in B cell function, insulin sensitivity

6. Recommendation for glucose control
    a. Diet management, weight management, exercise 30 minutes daily
    b. Diet management, lose 10% current weight, exercise 15 minutes daily
    c. Diet management, weight loss and maintenance, 30 minutes exercise daily
7. What is the most modifiable risk factor likely to result in better glycemic control?
    a. Diet
    b. Obesity
    c. Weight loss
    d. All the above
8. What is the recommended weight loss goal?
    a. 20 pounds
    b. 5 pounds
    c. 5-15% of current weight
    d. 10-20% of current weight
9. What is the most common barrier to managing diabetes?
    a. Denial
    b. Family responsibilities
    c. Shame
    d. Finances
    e. All the above

10. What is the health cost for managing diabetes?

    a. About the same as any other disease

    b. Greater than $300 billion

    c. I don’t know

    d. Less than $300 billion

Appendix C: Likert Scale

Please complete the form below with you best rating on the information provided. Enter your expert opinion and comments below each question>

1. Is the educational PPT accurate and address diabetes type 2 disease process, complications and management?
    1. Strongly disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly Agree

Comments:

2. Does the educational material evaluate and educate the nurse to adequately assess the patient?
    1. Strongly disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly Agree

Comments:

3. Does the educational material provide requirements to improve glycemic control?
    1. Strongly disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly Agree

Comments:

4. Is the most significant contributing factor for Type 2 Diabetes noted?

    1. Strongly disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly Agree

Comments:

6. Does the educational material identify to the nurse hinderance in compliance with diabetes management?

    1. Strongly disagree
    2. Disagree
    3. Neutral
    4. Agree
    5. Strongly Agree