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Staff Education on Diabetes Self-Management for Patients

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Walden University

College of Nursing

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Gloria Okoye

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Walden University
2021

Abstract

Staff Education on Diabetes Self-Management for Patients

by

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MSN, Walden University, 2016

BSN, Walden University, 2015

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

May 2021

Abstract

Diabetes mellitus is a chronic disease that poses health and financial burdens to patients, families, and society. An outpatient clinic in the Southeastern United States noted a gap in staff knowledge on diabetes self-management education for high-risk, diabetic patients. The purpose of the project was to educate clinical staff on lifestyle modification practices so that they could better educate diabetic patients. Bandura's social learning theory was used to support the project. Staff education was aimed at improving nurses' skills and knowledge of diabetes management practices. Educational content was developed using the American Diabetes Association guidelines and the Centers for Disease Control and Prevention's Road to Health Toolkit. Three experts evaluated the education program content and agreed that the program was informative and applicable for clinical staff. The program was then presented to eight clinical nurses, including three registered nurses, three licensed practice nurses and two nurse practitioners. Pre- and posttest questionnaires, using a 5-point Likert-type questionnaire with a rating of *strongly agree* to *strongly disagree*, were used to evaluate the educational program. Pretest questionnaires were answered in the strongly disagree to neutral range by all participants; posttest results indicated knowledge improvement among the participants. Eight nurses answered *strongly agree* or *agree* on each post question, indicating the importance of lifestyle modifications for patients with diabetes. Given these results, the educational program supports social change by educating nurses on diabetes management practices to help their diabetic patients achieve improved clinical outcomes.

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Dedication

I dedicate this project to my husband Ekene Okoye and to my daughter Gift Okoye who stood by me all through my struggled day and night while I make my dream a reality, to God almighty who gave me the strength, confidence, and fortitude I needed to make this dream come through and finally, my sincere gratitude to my friends and family members who also supported me in many ways.

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Section 1: Nature of the Project

Introduction

Diabetes mellitus (DM) is the third largest noninfectious chronic disease worldwide after cancer and cardiovascular diseases. DM threatens the health and financial burden of the patient, the patient's family, and society (Liu et al., 2015). However, most patients and their families neglect the complications, which affects the living standards in the community (Zheng et al., 2019). Effective management is crucial for better health outcomes. Powers et al. (2016) asserted that diabetes self-management is essential for behavior change among individuals living with the disease. Diabetes self-management education (DSME) can be used to outline effective and quality diabetes self-management to facilitate improvement in patient and healthcare outcomes.

Self-care management activities and behaviors for diabetic patients include weight reduction and exercise, diet planning and portion control, avoiding high fat foods, self-glucose monitoring, stress management, and smoking cessation. The goal of providing an education program is to teach staff to improve their understanding of dietary compliance and healthy lifestyle changes for patient education. According to Kisokanth et al. (2019), SME is the main component of diabetic care. Diabetes health education provides the necessary skills and knowledge needed to practice self-care, control, and manage diabetes conditions, and to practice lifestyle changes for effective glycemic control. Section 1 of the study includes the gap in practice related to staff knowledge on DSME for patients, the purpose of the doctoral project, and the significance in the clinical setting.

Problem Statement

Diabetes is a world and national health problem, and the number of patients with diabetes continues to rise. According to the local facility medical director I spoke to during my initial meeting at the facility stated that staff nurses at the clinic lack expertise and knowledge in the use of appropriate teaching approaches for patients with diabetes. The primary care facility does not offer any training for staff members on DSME and does not have a certified diabetes educator (referred to as an outside diabetes educator). This facility serves many diabetic patients who need DSME.

Diabetes has remained a complex chronic health condition that requires patients with diabetes to make necessary self-management changes and adopt self-care behaviors to improve glycemic control (American Diabetes Association, 2015). These behaviors include glucose monitoring at home and keeping a log, being active, eating in a healthy way, and taking diabetes medications as directed. There is a need to nurses on method to educate their diabetic patients on dietary and nutritional intake to prevent diabetes-induced complications (Powers et al., 2016). Nurses should have adequate knowledge of evidenced-based education and training to provide their patient effective education on diabetes self-care management.

However, Nurses lack proper skills and knowledge of appropriate patient-centered approaches, including patient teaching on diabetes treatment (Jutterström et al., 2016). DSME implementation can be used to outline effective and quality DSME that will help improve patient and healthcare outcomes. Self-monitoring of blood glucose and healthy lifestyle changes can be beneficial in achieving glycemic control. Rushforth et al. (2016)

pointed out that the lack of effective use of patient education is associated with healthcare professionals' lack of confidence in their skills and knowledge of guidelines needed for effective implementation of the educational program. Despite evidence on the effectiveness and efficiency of diabetes educational programs, most healthcare clinics do not have standardized, evidence-based, diabetes self-care management educational programs. Optimal management of diabetes requires the coordinated and combined efforts of various health professionals who must have adequate knowledge on the role of diet in glycemic control and proper counseling skills (Wallymamhed, 2013).

Lack of diabetes education may lead to patients' and healthcare professionals' inability to gain deeper insights into the benefit of such an educational program in improving diabetes outcomes (Stenberg et al., 2016). Staff education on self-care management for diabetes is crucial to improve nurse's knowledge, skills, and confidence. An education program for nurses gives them the chance to improve their knowledge and understanding in diabetes self-care management and the benefits of improving health outcomes, including glycemic control in diabetic patients (McBrien et al., 2017). My project goal was to develop and implement an education program for nursing staff on diabetes self-management.

Proactive teaching plays an important role in empowering patients to assume accountability for their health care management. Nurses who receive continuing education on diabetes management are more comfortable and successful in providing education to their patients compared to those who are uneducated (Kleier & Welch-

Dittman, 2014). Teaching patients allows them to practice self-care management of their health conditions at home or in the primary care setting (Zhang & Chu, 2018).

The goal of the program is to improve the knowledge and skills of nurses in an outpatient clinic so that they can better educate their diabetic patients on self-care management for improved glycemic control. Nurses and diabetes educators are equipped to teach and guide diabetic patients in ways to better control and manage their disease. The Medical staff at this project site stated that only few of their staff nurse knew about the CDC Road to Health toolkit educational material for diabetes self-care management. The clinic site does not have a protocol for diabetes self-care management and nurses struggles with educating diabetes patients. Therefore, there is a need for staff education on diabetes self-care management to improve nurse's ability to provide evidenced-based teaching to diabetes patients.

Purpose Statement

The purpose of this doctoral project was to implement teaching sessions on diabetes self-management for nursing staff, which will include registered nurses (RN), licensed practical nurses (LPN), and nurse practitioners (NP). The clinical question this doctoral project sought to answer was:

Does an educational program on diabetes self-care management strategies improve nursing staff knowledge and understanding in teaching diabetes patients in the primary care clinic?

The teaching program will be implemented to improve skills and knowledge of nurses on educating their patients with diabetes on self-care practices for effective

management of their health conditions. Świątoniowska et al. (2019) established that educating diabetic patients on nutritional value, lifestyle changes, and weight management is crucial for better glycemic control. Świątoniowska et al. discussed that diabetes education provides knowledge and skills and changes the behavior of patients and motivation to adhere to the recommended therapeutic practices for quality of life. Diabetes education enables patients to comply with the treatment process; it increases their level of awareness on diabetes-related complications, and it prepares them for self-care (Świątoniowska et al., 2019).

I used a pretest/posttest to evaluate the impact of implementing a staff diabetes self-care management educational program based on the American Association of Diabetes Educators National Standard 7 (AAD7). The evidence-based content was on diabetes self-care management for patients, with the goal of adopting diabetes self-care management behaviors among diabetes patients in a primary care setting. Implementing the AAD7 provided an evidence-based framework and foundation as recommended by American Association of Diabetes Educators (AADE) and Diabetes Self- Management Education and Support (DSMES) program guidelines for diabetes education and care (Hollis et al., 2014).

There was an identified gap associated with the nurse's knowledge and skills on diabetes self-care and DSMES and the ways they support, and provide education to, their diabetic patients in the primary care setting. This project contributed to diabetes education by evaluating the effectiveness of a staff education programs and enhancing nurses' skills and knowledge in a primary care setting. I developed and implemented an

educational toolkit with a PowerPoint presentation to educate RNs, NPs, and LPNs. The toolkit will contain information on diabetes self-management and guidelines, healthy eating, and physical activities. Road to Health Toolkit (CDC, 2016) provided the evidence-based practice (EBP) guidelines that supported the development of the educational program content. The clinical staff members planned on utilizing this project toolkit as a resource to assist their staff in teaching patients on diabetes self-care management and lifestyle modifications.

Nature of the Doctoral Project

Evidence-based literature was gathered from these databases: PubMed, Medline, Web of Science, Scopus, Embase, Google Scholar, and CINAHL. The following search terms, using Boolean search operators and modifiers, were used: *staff education, training, diabetes self-care management, primary care and diabetes management, diabetes health care costs, EBP guidelines and healthy diabetes eating*. As part of the doctoral project, I developed an education program on diabetes self-care based on the guidelines presented by the ADA, AAD7 DSMES. The educational program will focus on physical activity, healthy eating, and weight management practices. This staff education approach was on diabetes self-care program management and followed the Walden DNP staff education manual in designing and implementing the diabetes education program. An annual evidenced-based education program can improve knowledge, skills and quality improvements for both staff and patients.

To develop this education program, I used the analysis, design, development, implementation, and evaluation (AADIE) model and Bandura's social learning theory.

The five-point Likert-scale questionnaire was administered before and after the educational program. The collected pretest and posttest data were analyzed using descriptive statistics. This DNP project was intended to bridge the gap in the clinic by developing and implementing a diabetes self-care management educational program so that the nurses would be able to educate their patients effectively. Program participation is successful only if patients and nursing staff are well informed about effective care for diabetes.

Significance

Diabetes remains one of the chronic diseases (CDC,2016), and interventions like staff education enhance knowledge of diabetes self-care and management. The goal of this DNP project was to develop and evaluate a staff education program that can be used as reference point or teaching tool for the nursing staff so they can provide evidenced based teaching to their patients on diabetes self-care management to improve. This DNP project supported the staff members in teaching their patients on self-care management and lifestyle modifications to potentially improve their blood glucose level decrease diabetes complication. Teaching diabetes patients on lifestyle modifications, that includes healthy diet, self-blood glucose monitoring, smoking cessation and physical exercise can potentially reduce the occurrences of hypoglycemia; hyperglycemia; and some of the diabetes complications such as neuropathies, retinal, peripheral, cardiovascular disease, and kidney disease which can in turn reduce or decrease healthcare cost (Healthy People 2020, 2017). Stakeholders, including the medical director, nurse practitioner and the dietician at the organization recognized and supported the need for this educational

project. This project served as a teaching guide, reference, and PowerPoint tool for the clinical staff. Content includes components of a healthy diet, portion control, a calorie count, self-monitoring of blood sugar, smoking cessation, and physical exercise.

Diabetes is a chronic condition that requires an ongoing patient self-management educational program as a support system to reduce the long-term effects of the disease. This project enabled clinic nursing staff to acquire the necessary skills to teach patients about the benefits of self-care management for better health outcomes. Teaching RNs, LPNs, and NPs has the potential to improve nursing knowledge, which, in turn, will improve patient education on self-management practices, and thus promote positive social change because patient with diabetes living on low income tends to struggle to survive and managing their chronic conditions like diabetes.

Summary

Diabetes is one of the chronic health conditions that can be challenging for patients to control or manage. Diabetes self-care management and lifestyle modification such as healthy diet, increase in physical exercise are crucial in improving outcome. The Road to Health Toolkit (CDC's (2016) was used for this diabetes self-care management educational content. A better understanding of diabetes self-care management can improve nurses' ability to provide evidenced-based care for diabetic patients and can also improve patients' outcomes in self-management, and diabetes control. Thus, providing a diabetes education program for nurses on DSME is especially important. Section 1 outlined the project introduction, problem statement, purpose statements, nature, and significance of the project. Section 2 presents the literature that supports the project and

diabetes self-care management; it also presents the model and theory that support the project.

Section 2: Background and Context

Introduction

Diabetes is associated with significant morbidity and mortality due to diabetes-related complications such as increased risk of ischemic heart disease, stroke, peripheral vascular disease, blindness, renal failure, amputations of lower extremities and also reduction in life expectancy and low quality of life, (ADA, 2014). Diabetes is one of the most challenging healthcare problems due to cost, prevalence, complications, and the burden it places on both patients and the healthcare system. It is imperative for nurses to remain up to date about diabetes to provide care education to the afflicted population that is effective, and evidence based.

The purpose of this doctoral project was to create a diabetes education program to nurses at an outpatient clinic in the southeastern United States. Section 2 covered the theory and model that supported this project and its relevance to nursing practice. It also covered the role of DNP project team and my role as project leader and DNP student.

Theory, Model, and Concepts

Bandura's Social Learning Theory

The effective management of diabetes involves healthcare providers partnering with patients to support their efforts at long-term adherence to what exactly? to improve their functional status and health outcomes. Patient self-management of diabetes is important for improving healthy behaviors, quality of life, and health outcomes. Bandura's (2010) social learning theory provided a framework to support teaching diabetes self-care management to nurses. To be successful in self-management of

diabetes or any other chronic disease, a sense of self-efficacy, or a feeling of confidence in one's self-management capabilities is needed for both patients and nurses. To better manage diabetes and thus achieve better outcomes, the diabetes patient must have confidence in choosing the right foods when hungry and in their ability to lose weight through exercise for 30 minutes, four times a week.

According to Bandura's theory, self-efficacy is what people believe about their abilities to carry out given tasks that can affect their lives. Self-efficacy can determine how a person thinks, feels, inspires herself, or behaves over time. The nurse's perception of his ability to influence patients' thought patterns is especially important in effectively educating their patients.

Paying Attention

A person cannot learn without focusing on the task, so creating informative and evidenced-based PowerPoint slides that is different from what the nurses see every day will likely create the focus of their attention.

Retaining Content

A person learns more when internalizing information provided in memories, and that information can be recalled later. The information provided to the nurses during the education can be recalled during the posttest.

Reproducing Knowledge

Nurses may use this learning principal to reproduce previously learned information like behavior, skills, and knowledge with ongoing practice; this can be

helpful when nurses continue an ongoing educational program and also continue to provide educational teaching programs to their patients to improve glycemic control.

Motivation

Diabetes education can motivate patients to self-care manage; most of the time, motivation originates from observation of someone else, reward or punishment. When nurses understand the significance of the diabetes self-care management program and how it can make a change in the behavior of the patients, they will be motivated to empower their patients. For diabetes patients, their sense of confidence or ability to perform their daily self-care management is crucial to successful glycemic control.

Bandura's theory of social learning is based on the ideology that learning occurs through both observation and via cognition, that is, a learner will understand what they see, and because it becomes innate, they incorporate it into their behaviors (Cherry, 2019). When acquiring knowledge, people tend to employ self-care behavior as the result of cognitive process (Bandura, 2010). The knowledge a nurse will acquire through this program may result in teaching the patient information on self-care management with use of a toolkit as a written reference. The aim of this diabetes self-care management education program was to provide nurses with the knowledge and tools to appropriately educate their patients on diabetes management.

Analyze, Design, Develop, Implement, and Evaluate (ADDIE)

The ADDIE model is an instructional design approach to organize and evaluate a staff education program. In the DNP program, a DSME program was implemented using the ADDIE model to analyze, design, develop, implement, and evaluate the educational

program. Analysis of the practice problem identifies the need for further staff education on diabetes self-care management for diabetes patients at the local clinic site. The next step includes designing the program based on the learning goals and objectives for the staff's educational needs. This will outline and explain the principles of diabetes self-management. The design stage will include an extensive review of the literature and diabetes guidelines to create a toolkit on patient self-care management principles for diabetes. During the development stage, I developed the educational content and module based the practice problem identified, literature review, scholarly evidenced, and the pretest/posttest questionnaire for the nurses to improve their understanding of diabetes self-care management education program. Application of the ADDIE model for this program will provide a useful structure for creating effective diabetes self-care management education program for the nursing staff.

Definition of Terms

Clinical guidelines: Developed-systematic decision statements to help assist nurse, practitioner, and patient about appropriate healthcare for specific clinical circumstances (Institute of Medicine [IOM], 2010).

Clinical practice protocols: Document and detailed information aim of guiding decisions and criteria regarding diagnosis, management, and treatment in specific areas of healthcare (IOM, 2010).

Diabetes mellitus: A chronic disease in which the body is not able to produce or respond to the hormone insulin, causing abnormal metabolism of carbohydrates and elevated levels of glucose in the blood (Centers for Disease Control [CDC], 2013).

Evidence-based practice: Applies the principle and technique of integrating best decision-making to clinical expertise and intervention intended to improve, enhance clinical issues of affected patients and individual needs and care, and deliver quality, cost-effective healthcare (Burns & Groves, 2009).

Self-care management: Instructions were given to healthcare providers on how to guide patients to care for themselves as part of their role in the treatment of their illnesses.

Self-efficacy: The confidence that someone has the power to produce their desired effect by following task or activities given regarding competency (Bandura, 2012).

Social learning: Learning through observing the behaviors of experts involved in a program and from illustrations used in PowerPoint presentations.

Relevance to Nursing Practice

Self-Care in Diabetes

There are several evidenced-based models that exist currently to help healthcare providers and nurses to provide quality care to patients in the clinical settings. Diabetes self-care management will involve people who are affected by diabetes making choices and decisions about how to manage their life and their diabetes and this can be done through good self-management. Evidence-based nursing practice guidelines for diabetes management will be applied in the educational content of this project. The educational program will act as a tool for clinic staff to promote lifestyle modifications among diabetes patients.

Benefits of Diabetes Self-Care Management

Świątoniowska et al. (2019) posited that in the treatment of diabetes patients, SME is essential in improving the patient outcomes through, for instance, aiding in their glycemic control. Staff education is critical for improving their knowledge, abilities, and skills necessary for ensuring that when they educate patients on self-management, self-care behaviors, and activities are efficiently implemented, leading to the effective management of the condition (DSMES, 2017). Staff education should focus on ensuring that RNs, LPNs, and NPs are educated on behaviors like healthy eating, taking medication, problem-solving, healthy coping, reducing risk, being active, and healthy coping.

The behaviors that Azami et al. (2018) suggested should be taught in diabetes self-care for staff are provided for by the American Association of Diabetes Educators and investigated how effective a nurse led DSME was on glycosylated hemoglobin. This is the day-to-day self-care management of the chronic conditions, like diabetes, by the patients over the period of their disease or illness. Because of several factors involved in diabetes management, the care of diabetes is usually handled by patients and their families; there is an essential need for reliable method for self-management of diabetes. The two-arm parallel-group randomized control trial involving 142 adults who have Type 2 diabetes.

In the Azami et al. (2018) study, the control group in the research received the usual diabetes care. In contrast, the intervention group was involved in a nurse-led diabetes self-care management education in addition to routine diabetes care. Azami et al.

noted that the patients in the intervention group displayed noticeable improvements in their blood pressure, outcomes, HbA1c, body weight, and self-management behaviors.

The relationship between diabetes self-management and medical care was studied by Al-Khaledi et al. (2018). Khaledi et al. noted that participants in diabetes self-care training had higher chances of getting access to a high level of care in comparison to those who did not receive any education. Patients who have diabetes have minimal knowledge of the management of their condition (Powers et al., 2016). Most of them mention that medical practitioners do not educate them on self-care services, and do not provide advice to them on diabetes education programs at the health facilities. Powers et al. (2016) suggested that medical practitioners need to communicate to patients the importance of diabetes self-management because it is essential in improving the treatment outcomes and quality of life of diabetes patients. The relationship between diabetes self-care management education and primary care was studied by Johnson et al. (2010). Results showed that nurses who received diabetes self-care education were more knowledgeable and better equipped to provide education, thereby providing a higher level of care and improving blood glucose levels to their diabetes patients.

Horigan et al. (2017) stated that diabetes self-care education is crucial due to the constant monitoring and guidance needed to exercise; a diet plan can result in lower blood sugar levels and prevent long-term diabetes complications. Patient plans and education will need to be individualized for people diagnosed with diabetes in order to improve understanding of the disease process and improve patient's compliance with the program to avoid regression. Nurses need to have continuous education or in-service in

diabetes self-care management and behavioral interventions, beyond simple diabetes knowledge, to provide effective and evidenced-based education and quality care to patients in primary care settings (Mesing et al., 2003). It is hard for diabetes patients to modify and maintain the lifestyle changes that are required to be successful in diabetes self-care management. Diabetic patients need the skills and knowledge to make healthy choices that can help reduce complications associated with diabetes.

Diabetes Complications

A diabetes patient who has poor self-care knowledge may lead to long-term poor metabolic control that may lead to the development of diabetic complications. These complications include kidney disease, neuropathy, and retinopathy.

Nephropathy (Kidney Disease)

Maintaining a good blood sugar level (fasting blood sugar level between 72 and 99 mg/dL and 140 mg/dL for 2 hours after eating) pressure levels can lower the chance of developing kidney disease. Educating patients on how the body breaks down protein and how the kidney filters the waste products is an especially important part of diabetes self-care management because lack of patient awareness of their disease complications plays an important role in the rise of this condition. Patients with diabetes develop some evidence of change in the function of the kidneys within 2 to 5 years of the disease, and 30% to 40% of patients progress to the serious kidney in 10 to 30 years (Atkins et al., 2010). Emphasis on the importance of providing education on preventive screening for kidney disease and increasing awareness in patients with diabetes helps prevent this complication.

Neuropathy

Diabetic neuropathy happens when the nerve is damaged from diabetes, and uncontrolled high BG levels in the blood. Half of the patients with diabetes have nerve damage, mostly with patients who have the condition for a longer number of years (ADA, 2013). Teaching patients to keep their blood sugar level at goal, routine monitoring of hemoglobin A1C level, how to take care and protect their feet, and early signs and symptoms of this condition can delay or reduce the risk of nerve damage.

Retinopathy

Diabetes retinopathy is a term used to describe damage to retina by diabetes. People with diabetes have a higher risk for eye complications like cataract, glaucoma, and blindness, especially with poorly controlled diabetes. According to ADA (2017), people with diabetes are at higher risk of blindness than people without diabetes; but, with effective management of diabetes and regular eye checkups, the chances are decreased. Educating patients on self-care management and providing information on the importance of eye exams is especially important for early detection and treatment (Jackson et al., 2014). Implementation of the diabetes self-care education program by the nurses will help in ensuring that diabetic patients admitted at the facility achieve improved metabolic control.

Diabetes Self-Care Education Toolkit

Patients with diabetes are encouraged to be continually active to improve their blood sugar. Road to Health Toolkit developed by CDC in partnership with The National Diabetes Education will be used as the educational intervention that will guide the nurses

to educate their diabetes patients on lifestyle modification (CDC, 2016), this a program developed to prevent and manage diabetes. Diabetes self-care education programs are especially important in providing the necessary knowledge to make and maintain behavioral and lifestyle modifications. Knowledge is crucial in making lifestyle changes and maintaining the changes after receiving education. The information, task and instructions included in the toolkit will be easy to follow and will provide direction on how and where to locate the Road to Health Toolkit education information on the internet. There will be relevant instructions in the toolkit to educate the nurses on diabetes self-care education program and lifestyle modifications for better A1C control and prevention of diabetes complications. This education toolkit will include three parts with useful information for the nurse to facilitate their knowledge. The participants will also have access and information on how to locate the diabetes self-care educational program toolkit materials on the internet.

The road to health toolkit outline: This educational toolkit covered three major parts that will be beneficial to the nurse and their patients. Part 1 includes information about progression of diabetes, population at risk, and risk factor preventive steps in development of diabetes. The role nurses play in diabetes educational program was also included, an explanation of the people at risk for diabetes, and how to prevent or delay Type 2 diabetes. As stated by the healthcare providers and the medical director at this clinic, they do not have stipulated manual or materials to follow for diabetes education, thereby creating a gap in care and partnership for better management of their chronic condition. Developing a staff educational program will bridge that gap, improve nurse's

confidence, and enhance patient and provider relationship and partnership in their diabetes management.

Part 2 focused on the AADE's recommendation of diabetes self-care—eating healthy, being physically active, regular self-blood-sugar monitoring, medication compliance, problem-solving and reducing risky behaviors (AADE, 2009). The staff education toolkit includes lifestyle changes and behaviors such as being physically active, eating healthy, self-blood sugar/blood pressure monitoring, taking medications as ordered, coping well with stress, calorie count, healthy snacks, smoking cessation, gradual weight loss, and making healthy grocery list to help improve blood sugar levels and overall A1C level. According to the ADA (2017), following guidelines for SME are crucial part of diabetes care and helps reduce blood sugar levels, excessive weight, mortality rate, and as well as healthcare costs.

Part 3 of the toolkit discussed the presence and management of diabetes related complications. Diabetes patients need to understand the important of yearly eye exam to assess for diabetic retinopathy and maintaining optimal blood sugar level to prevent kidney disease and reduce the risk for cardiovascular disease. This part also includes educating nurses on how to look up community resources to assist their patients, such as food banks, other resources for free food and medication, discount coupon, recognizing factors that can cause relapse or lack of compliance with patient during educational session, and the need for collaboration with the dietitian, behavioral health counselor, social workers and providers.

The toolkit includes methods to reward patients' participation and compliance, monitoring, and discussed progression of A1C. These rewards can be implemented by the nursing staff teaching the patients. According to National guidelines and EBP recommendations, lifestyle intervention is especially important for patients with diabetes in reducing blood sugar (ADA, 2017). Providing new knowledge to patients is especially important; so, nurses must continue to learn evidence-based practice on diabetes self-care management.

Continuous individual and group reinforcement weekly for accountability strategies are crucial compared to one-time reinforcement. This staff educational toolkit will be used to show nurses that a structured diabetes self-care education program in a primary care setting can serve as an effective cornerstone to improve self-care behaviors are feasible during regular clinic visits to sustain self-care skills in diabetes disease management (Beck et al., 2018).

Lifestyle Modifications

Long-term diabetes self-care management requires lifestyle modifications such as smoking cessation, physical activity, healthy diet and blood sugar monitoring have showed to be positively impact good glycemic control, reducing complications also improves quality of life in patients with diabetes. Lifestyle modification and management are fundamental in diabetes care management and this includes self-care management education and lifestyle modification (ADA, 2017); diabetes self-care management education is very important but must be channeled to action of self-care activities which can be beneficial to the patient. When diabetes Individuals actively participates in the

management of their condition, it can create a dramatic impact on the development and progression of their disease.

Smoking Cessation

Smoking can cause damage to the pancreas. Nicotine from tobacco can cause the pancreas to make less insulin, resulting in an increase in blood sugar and glucose (Thaane et al. 2019). Diabetes patients who indulge in smoking showed a consistently higher risk of developing CVD, microvascular complications, and premature death, so increase in nicotine consumption can cause vasoconstriction and decreases in circulation. Smoking cessation is a nonpharmacological method in the management of obesity-related condition like diabetes and insulin resistance (Thaane et al., 2019). It has become necessary for a patient with diabetes to be educated on the benefit of smoking cessation to reduce the chance of developing diabetes related complications.

Physical Activity

Exercise has become part of diabetes management plans because a regular exercise routine has shown to improve blood sugar and hemoglobin level. Diabetes patients should be educated to engage at least 150 min/week of moderate-intensity aerobic physical activity, dividing it least over 3 days/week with no more (ADA, 2017). Healthy weight management, using physical activity after eating big meals and routine exercise can be used to improve blood glucose levels and prevention of insulin resistance in patients with diabetes. A systemic review was conducted on the benefit of exercise on glycemic outcomes with diabetes patients, 14 records were reviewed and compared the patients that exercised and the ones that did not exercise and the patients that exercised

had improved blood glucose levels, as shown by decrease in their hemoglobin A1C levels of more than 1%. This systematic review indicated that routine exercise can improved glycemic control and help reduce plasma triglycerides with diabetes patient (Thomas et al., 2009).

Educating patients and explaining that exercise can include riding a bicycle, swimming, going to the gym or walking can all be beneficial and can be used as a tool to control their blood sugar levels. Lack of physical activity and sedentary time for more than 2 hours should be discouraged, unless contraindicated in patient with diabetes. Structured exercise plan of at least 9 weeks' interval can lower A1C by an average of 1% in diabetes patients, even when there is no significant change in their BMI (Hemmingsen et al., 2017). Inactive lifestyle can cause obesity and should be avoided, especially with diabetes patients to prevent worsening of their condition. Providing educational environment and support for patient with chronic condition can influence their choices and empower them to make better and healthy choices in their physical activity, therefore this project will be essential to improving the nurses' knowledge on how activities affects a patient's ability to self-care management and better improvement in blood sugar.

Healthy Diet

Healthy eating and eating plan remained one of the powerful tools in diabetes self-management and when trying to manage diabetes. According to the ADA (2014), there are three types of nutrients in food: carbohydrates, protein, and fats. Knowing the right amount to add during meal planning is important in improving blood glucose and lipid levels (ADA, 2014). Diabetes patient should include low carbohydrate counting

meal method and dietary changes to improve their glycemic control. A consistent carbohydrate intake in meal planning, portion control, and healthy food choices can be maintained through ongoing diabetes self-care program management. The type of carbohydrate and fatty acids taken is much more important than the total amount when examining the metabolic goals and risk of CVD in diabetes patient. Method of making healthy food, reading food product labels to identify the calories and fat, plates sizes for portion control/following eating plan and adding vegetable and fruit choices are all especially important when managing diabetes.

Every patient is different in their belief and culture when it comes to food and diet. Diabetes patients should be taught on healthy food choice, healthy method of food preparation and food portions based on their understanding and preference (Funnell et al., 2010). The developed DSME was according to the guidelines provided by the ADA and 2017 and DSMES. Based on DSMES guidelines, the education program created was in a manner that is responsive to any advancements in educational strategies, knowledge, and nutritional suggestions affecting the diabetes illness (Funnell et al., 2010). Nurses will be taught how to set a realistic and achievable healthy meal planning and eating goals, discussing different healthy food choices and healthy eating, portion control, and serving sizes that will appropriate for the patients, understanding facts labels and nutritional contents when making grocery lists and being aware of healthy carbohydrate, sodium, trans and saturated fat portion, and bad carbohydrates to avoid rise/drop in blood glucose level.

Blood Sugar Level and Monitoring

Educating patients on blood sugar monitoring at home and how to interpret results parameters is essential for diabetes self-care management and decision making. This simple step can aid patient in detecting, preventing, and treating acute blood sugar problems, and to develop personal strategies to help foster healthy behavior changes (ADA, 2017). Another study where patients were asked to follow self- blood -monitoring of blood glucose (SMBG) before each meal and 2 hours after meals about 3 days per week including 1 weekend and 2 weekdays. Patients were instructed to keep a health log of their blood sugar readings and follow dietary changes based on the blood sugar reading and patients in the group were able to make their own dietary changes and exercise based on their daily blood sugar readings which showed improved metabolic control and thereby lowering their glycosylated hemoglobin levels. This study showed that providing diabetes patient education on self -care management that includes SMBG, how to interpret their results and what to with the results could do (regarding dietary changes and exercise) can lead to long-term improvement of metabolic control (Cypress & Tomky, 2013). The four benefits of educating patients on frequent SMBG included (a) Patient can understand how to recognize out-of-range blood glucose levels, (b) patients ability to learn how they can adjust their diet and exercise based on the blood sugar levels on daily basis to target their individual A1C levels, (c) knowing daily BG levels help to inform patient, and their healthcare provider about how good patient's medication therapy is working to reduce longer-term complication of diabetes, and (d) the knowledge and understanding of daily self -monitoring of blood sugar levels help to reduces patient's

anxiety associated with hypoglycemia/hyperglycemia and also helps in motivating healthy behavior (Klonoff, 2012). Self-monitoring blood sugar can be used by the healthcare providers to assess patient's understanding of their disease management and evaluate the compliance of treatment plan of the regime. Klonoff (2012) stated that diabetes is a chronic condition that uses numbers to monitor BG levels and taking insulin using numerical sliding scales and syringes numbers based on blood sugar levels. When patients adhere to self-blood sugar monitoring, it can lead to improve diabetes management outcome, therefore, the required SMBG frequency should be determined through the collaboration of the healthcare provider and patients for effective care management.

Local Background and Context

The DNP project was implemented at an outpatient primary care clinic in the southeastern United States. The patients with diabetes receiving treatment at the facility are approximately 100 in number. The staff members in the clinic includes four RNs, four NPs, two LPNs, three auxiliary nurses, one laboratory technician, and a medical director who attend to the patients at the clinic, providing care to diabetes patients and managing other comorbidities.

The patient population in this clinic are mainly African American and Hispanic of low socioeconomic background and are unsure of how to manage their diabetes due to lack of education on diabetes self-care management and support from the nursing staff. The nurses in this medical clinic were the target audience because nursing staff have especially important responsibilities and clear roles in taking care of diabetes patients and

with their help and support, this condition can be well controlled and effectively managed. The nurses in this facility are responsible for providing diabetes self-care education program to the patients so continues in service and better understanding of diabetes self-care is crucial.

As a healthcare provider in an outpatient clinic and sometimes as the lead provider, I interact and educate patient and nursing staff daily on diabetes prevention and complications, so I have the knowledge and experiences on diabetes management to assist me in developing a diabetes self-care education program for the nursing staff in this clinic. As stated by the medical director and the healthcare provider in this clinic, this program is highly needed to help their patients in diabetes self-care management.

Role of the DNP Student

Currently, I am working as a clinical nurse practitioner in an outpatient facility managing same-day complaints and chronic condition management, including diabetes. My role as a nurse practitioner involved providing patient education on self-care management for better diabetes outcomes. As an experienced NP, I can recognize the impact of poorly controlled glycemic control due to a lack of patient's understanding of their disease management and the benefits of empowering patients through education. As a DNP student, my educational foundation in evidence-based practice research, perform nursing education that can help influence healthcare outcomes for patients and systems leadership in quality improvement and in developing this project. My role as the leader of this DNP project was to be responsible for developing a diabetes educational module and program using current literature and diabetes self-care guidelines. I also met with the

leadership of the clinic to discuss the need for staff training based on the identified gap in practice at the site.

I invited three content experts that included the medical director, nurse practitioner, and the dietitian to participate in this project by meeting and discussing the objectives of this project. I developed the diabetes educational program using current literature and the diabetes self-care guidelines and for presenting the educational plan to the panel of experts for evaluation of the project as an essential tool of educating the nurses on diabetes self-care management program. The expert panel reviewed the educational program materials and evaluated the content.

I am also responsible for selecting the appropriate goals and theoretical framework for this project. My role for this project also included partnering with the nurses to create and develop a method that will fit into their work schedule. Together with the nurses, I found common ground for the teaching session schedule without interrupting their workflow, and patients care. I also supported the clinic in the recruiting of the nurses for the education program by creating flyers and sign on sheet information that were posted at their backrooms, conference rooms, and at the nursing stations.

Nurses need an understanding of diabetes self-care management in lifestyle modifications and better blood sugar management to provide evidence-based teaching to the patients. I finalized the development of the staff education program, including a second anonymous questionnaire review with the NP and the supervising physician. Evidence-based resources for implementation were then be secured, and the diabetes self-care management PowerPoint presentation finalized. I analyzed the pre and posttest to

determine the effect of the interventions that will address the focused question, which states (P), Does an educational program on diabetes self-management (I) compared to no Educational program (C), improves nursing staff knowledge in educating diabetes patients in the primary care clinic? Results and recommendations of the analysis will be shared with the primary care clinic leaders.

Role of the Project Team

Identifying stakeholders during this DNP project is critical. The stakeholders were needed at the beginning of this project to obtain commitment and support to assure that the project aligns with the facility's expectation in diabetes self-care management. I met with the staff members and stakeholders and explained the goal of the project and the need related to the identified gap in the facility's practice problem. The stakeholders were used as the expert panel and participated in the staff education program for evaluation. The expert panel included the nurse practitioners, dietitians, and the medical director. The expert panel were introduced to the nurse during education using a PowerPoint presentation.

Meeting invites were sent to the staff members through emails so participants could agree on time before scheduling the meeting. The dietitian and the medical director were used as a support system due to background on diabetes management during the meetings. The NPS and nurses provided their input due to their daily involvement with educating patients in this clinic to assure alignment with her requested train-the-trainer approach so they can provide education using the contents as reference. RNs and LPNs were involved in the staff education program where they were the participants as well as

responsible for evaluating the program in terms of its effectiveness by analyzing its impact via pre and posttests.

A dietician was included in providing practical dietary advice during the implementation of the education program in addition to providing advice about how diabetes is food-related in terms of causes and recovery. Similarly, an endocrinologist was included to provide input into the education program on how the staff can teach diabetes patients on self-care on the hormonal management of blood sugar levels through diet. An experienced RN guided the development and implementation of the program by providing facility-specific aspects that I, as the leader, may not be aware of yet may affect the education program.

Summary

Diabetes can be prevented from progressing and the problem of diabetes can be linked to lack of knowledge by nurses to provided evidenced-based education to their diabetes patients. Diabetes management and prevention of complications needs continues and ongoing interventions and follow up that can provide patients with evidence-based knowledge, tools, and skills that enhance self-care and empowerment. Nursing staff members can play an important and clinical role in educating, supporting, and maintaining diabetes patients in the primary care facility. This educational program aimed to empower the nurses with the knowledge, tools, and competencies needed to educate their patients on diabetes self-care management.

Section 2 of this project showed an overview of the theoretical framework and model that supported the project. The relevance to nursing practice section includes an

explanation of the current literature on diabetes self-care management, evidence-based clinical guidelines, and toolkit content on diabetes care. I also discussed my role as a DNP student and the local context of this project.

Section 3 outlined the design of this staff education project and the methods that were applied in collecting and analyzing the project data.

Section 3: Collection and Analysis of Evidence

Introduction

In this doctoral project, I addressed the following problem: nurses lack knowledge about the appropriate teaching approaches when providing treatment to patients with diabetes. After meeting and speaking with the facility medical director, the plan to design and implement diabetes self- management education program for nurses was agreed upon with the goal that their nurses would provide effective education to help patients manage their condition and maintain a healthy lifestyle, including a healthy diet, smoking cessation, and physical activity.

The purpose of designing this project was to develop an evidence-based based educational program to help nurses provide effective diabetes self-care management education to the patient with diabetes, which included (a) evidence-based clinical practice guideline on DSME, (b) an educational outline plan, and (c) a pretest/posttest. Section 3 will address the practice-focused question, program source of evidence, and analysis/synthesis.

Practice-Focused Question

The nursing staff has the key responsibility for teaching diabetic patients the knowledge and skills they need, that is, self-care practices. Improving the staff's knowledge of the best ways to educate their patients with diabetes is an important step in improving glycemic control. Educating patients on a healthy diet, which is one of the practices of self-care, plays a crucial role in encouraging diabetic patients to successfully manage their condition and achieve a quality life (Zhang & Chu, 2018).

The Road to Health Toolkit module (CDC, 2016) was used as the intervention in this educational segment. The existing literature was reviewed for current clinical strategies to improve diabetes management. Based on the assumption, there is a need to address the gap in nurses' knowledge with the implementation of the education program. The practice-focused question that guided this project was:

Does an educational program on diabetes self-care management strategies improve nursing staff knowledge and understanding in teaching diabetes patients in the primary care clinic?

The practice-focused question was relevant to the project's purpose in that it helped identify and address the gap in nurses' knowledge of self-care management for diabetes and implementation of an education program to widen their skills. A pretest and protest assessment will helped determine nurses' level of knowledge about self-care management for diabetes.

Sources of Evidence

Databases are useful when searching relevant articles on staff education in promoting diabetes counseling and improved glycemic control for diabetic patients. Databases that were used included PubMed, Web of Science, Scopus, EMBASE, Google Scholar, as well as CINAHL. Organizational websites are useful when searching for relevant articles. Among the organizational websites used included Diabetes Self Care Guidelines, American Association of Diabetes Educator Care Behavior, and American Diabetes Association Guidelines. I developed search terms or keywords and use the Boolean operator "AND" to find relevant articles on the subject under study. The search

terms will include *staff training, diabetes self-care education, diabetes knowledge for nurses, healthy diabetes eating, diabetes self-management, primary care, and diabetes management.*

I used keywords in all the database searches, and the screening process for the identified will be necessary to determine their eligibility. A review of abstracts of each article was an essential step to determine whether the article is eligible for review. Inclusion and exclusion criteria assisted in determining relevant sources. Based on inclusion criteria, only articles published in the English language, conducted within the last 5 years, and peer-reviewed articles were eligible as the source of evidence. For exclusion criteria, articles written in non-English languages, older than 5 years from the date of publication, not peer-reviewed, including blogs, magazines, and dissertations, will be excluded.

The evidence from the sources may provide valuable information on self-care management for diabetes. The evidence will support the existence of the problem in the question and show the importance of education as an essential practice for the treatment process of diabetic patients. The evidence will support the purpose of the doctoral project on the need to implement staff education because of a lack of knowledge and expertise among nursing staff on appropriate patient-centered approaches, including patient education on self-care management practices. The evidence may align with the purpose of the project by providing relevant information on the need to improve patients' awareness through education programs on the best ways they can engage in for better management and control of their chronic conditions.

Project Design and Method

The main objective for this DNP project was to develop a diabetes self-care management education program using Road to Health Toolkit so that the nurses can provide effective teaching on lifestyle changes and modification to their diabetes patients. Because the nursing staff in this clinic stated that they do not have access to diabetes education program, thereby lacking education on current evidenced-based diabetes self-care management and guidelines in educating their diabetes patients.

This project followed Walden University DNP Staff Education Manual, and as the project leader, I worked and collaborated with the stakeholders, expert panels, and the clinical staff members in developing this educational program.

The following steps were followed in organizing and implementing the DNP project process:

1. The multidisciplinary team of stakeholders, which included the medical director, NP, and the clinical diabetes dietitian, were carefully chosen for the design.
2. The literature was analyzed, synthesized, and presented to the stakeholders
3. Collaboration on the project's initiative was undertaken with the stakeholders
4. Evidence-based clinical practice protocol/guidance on diabetes self-care management education was developed
5. The educational plan and content were developed and presented to the stakeholders, clinical staff members, and the medical director for the effectiveness and usability of the education program. The program was

revised and modified based on the recommendations of the expert panel. The project was presented to the participants.

6. The quantitative summative pretest/posttest questionnaires evaluated staff knowledge and program effectiveness

Participants

The goal of the doctoral project was also to implement teaching sessions on diabetes self-management for clinic staff. A total of eight nurse participants took part in the project. The panel of experts consisted of one medical director, one NP, and one clinical diabetes dietitian. The requirement for the panel of experts was based on their clinical knowledge and their years of clinical expertise in the management of diabetes in primary care facilities. Eight nurses, consisting of three RNs, three LPNs, and two NPs were asked to participate in the staff education program and evaluate the program for content and applicability to the clinical care during the treatment process of diabetic patients. m. The nurse practitioner has about 6 years of clinical primary care experience, the medical director has about 12 years in diabetes management and the dietitian is a certified diabetes dietitian and has been working with diabetic patients for over 7 years.

As the leader of the project, I have about 3 years of nurse practitioner experience working in a primary care facility caring for diabetes patients. As the leader of this project, I was responsible for planning, implementing, and evaluating the results of this educational project. The implementation of this educational program may improve nurses' skills and knowledge on how they can educate their diabetic patients on self-care practices for effective management of their health conditions.

Procedures

I developed a 60 to 90-minute PowerPoint educational presentation that was used to educate the participants on lifestyle adjustment and self-care (Appendix A). The Road to Health Toolkit (Appendix B) supplemented the PowerPoint educational presentation and provided a written resource for staff. The expert panel reviewed the content of the educational programs for their understanding and usability in the clinical facility and complete the expert panel questionnaire (Appendix C). The questionnaires were anonymous. I analyzed the results of the expert panel questionnaire. The PowerPoint presentation was modified based on expert panel evaluations.

The educational program was presented to the staff participants. There were pretest and posttest questionnaires (Appendix D) that were completed by all the participants, and the result of the questionnaires was anonymous before and after the presentation. A Likert Scale scoring system was used as the question for the participants and the expert panel; scoring question as rated based on *strongly disagree* to *strongly*. Results were analyzed and presented to the clinic administration and the project stakeholders.

Protections

This project required a signed site agreement form from the clinical site medical administrator. The Walden IRB application and signed site agreement was sent to the Walden's institutional review board (IRB) for approval. After IRB approval # 11-24-20-0285474 was obtained, the project was implemented. The participants' privacy and confidentiality as protected during the project planning and implementation. Anonymous

data will be kept for 5 years under lock and key. This project was a staff educational project that did not involve any patient intervention or participation. Staff members were informed that their participation was voluntary, and they can withdraw from the project whenever they want during the program.

Analysis and Synthesis

Data analysis is crucial in research, and it entails the application of statistical and logical tools to explain, show, condense, and evaluate the data collected (Gilmore et al., 2019). Data analysis and synthesis assists in providing actual meaning from the raw data and use the analyzed data to describe the problem. This data analysis and synthesis focuses on the use of appropriate methods for accurate analysis (Gilmore et al., 2019). The participants received a paper and pencil pretest/posttest questionnaire using a 5-point Likert scale format at the clinical site. Data collected from the participants were used to evaluate the nurses' knowledge and understanding of the content. I used a descriptive statistics and graphical representation to present the participants' posttest questionnaire data. Results were analyzed to determine program effectiveness.

Summary

Early detection and prevention are vital to lessening disease severity of diabetes and diabetes-related complications. Education on self-care management is one of the essential approaches to manage diabetes. Educating patients on self-care management practices is the primary role of healthcare professionals. In this section, I provided the identified practice problem, the purpose of conducting the project and the project question.

Section 3 discusses the sources of evidence, including databases, search terms, program design, and implementation. The section includes protections, participants, and data analysis, using a 5-point Likert- scale questionnaire for the expert panel and program participants. The panel of experts comprised of one medical director, one nurse practitioner, and one clinical diabetes dietitian. The participants who took part in the education program were eight nurses, comprising of three RNs, two NPs, and three LPNs.

Section 4 of the project provides the findings of the project. It outlines the interpretation of the findings based on the collected data. Also discussed here are project implications, project team contributions, recommendations, project limitations, and strength.

Section 4: Findings and Recommendations

In Section 4, I will analyze the quantitative data collected and report the findings and evaluation of this project. The purpose of this project was to implement a teaching program on diabetes self-management for nursing staff, address the gap in the nurse's skills and knowledge on diabetes self-care which included RNs, LPNs, and NPs. A 60–90-minute PowerPoint presentation on the Road... toolkit was developed to educate the participants on lifestyle adjustment and self-care (Appendix A). This chapter includes findings and implications, recommendations, and strengths and limitations of the project.

Findings and Implications

A lifestyle modification toolkit was developed and implemented. Its purpose was to teach selected nurses so that they, in turn, could educate their diabetic patients about lifestyle modification behaviors including healthy eating, physical activity, smoking cessation, weight management, and self-care behaviors such as blood sugar monitoring. All experts in the panel signed an informed consent before participating. The education was conducted using a 60–90-minute PowerPoint presentation (Appendix A).

The content of the education program, as presented in Appendix A, was evaluated by the panel of three experts: a medical director, a nurse practitioner, and a dietician with clinical knowledge of the management of diabetes in primary care facilities. The experts also had clinical experience in diabetes management and had worked with patients diagnosed with diabetes. After the presentation, the experts received a Likert-type questionnaire (Appendix C), which used a five-point scale (*strongly disagree, disagree, neutral, agree, strongly agree*) to measure their evaluation of the presentation.

Based on the anonymous results of the questionnaire, all members of the panel agreed that they understood the contents of the presentation. They also agreed that the toolkit was informative and would help improve their own nursing knowledge and awareness of diabetes self-care management. They reported that the content of the toolkit improved their levels of understanding and would improve that of other nurses in clinical practice to improve patients' self-care management of diabetes. The results of the experts are presented in Table 1.

Table 1*Expert Panel Questionnaire, N = 3*

Survey Questions	SD	D	N	A	SA
1 The teaching content aligns with the learning objectives and can increase nursing staff knowledge and awareness on diabetes self-care management.	0	0	0	0	3 (100%)
2 The educational teaching contents on diabetes self-care management using on lifestyle modification will be beneficial in improving diabetes outcome.	0	0	0	0	3 (100%)
3 The content of the lifestyle modification toolkit will be easy to understand by the clinic staff	0	0	0	0	3 (100%)
4 The content of the diabetes self-care management program will help nurses to provide evidence- based care to the patients'	0	0	0	0	3 (100%)
5 The style and contents of the PowerPoint presentation of the instructor will be easy for the staff to understand	0	0	0	0	3 (100%)

Note. SD = strongly disagree; D = disagree; N = neutral; A = agree; SA = strongly agree.

Based on the responses or feedback presented by the three experts about the suitability of the educational tool kit, they did not suggest any changes in the program before implementing and using the content to educate the selected clinical staff or nurses. From the Likert scale scores, it is evident that the panel of experts strongly agreed that the content of the educational toolkit was informative and helped attain the learning outcome. As such, the content may be integrated into clinical practice to improve self-care management among diabetic patients. The feedback from the experts showed the potential of the lifestyle modification toolkit as an effective teaching or educational module that can be used to train new staff on the best self-care practices they should focus on while educating their diabetic patients on disease management. The feedback from the experts indicated that the toolkit was appropriate to use while educating the

selected clinical staff. After obtaining the feedback from the experts, pretest and posttest questionnaires were then developed and distributed to the participants to determine their level of knowledge and awareness on the self-management of diabetes.

Participant Pretest Questionnaire Results Pretest Questionnaire

Participants received the pretest questionnaire (Appendix D) on diabetes and diabetes management, using a 5-point Likert type scale from *strongly agree* to *strongly disagree*. Eight nurses took part in the educational program on self-care management of diabetes. The participants entailed three registered nurses and two nurse practitioners and three Licensed Practical Nurse. Each participant was provided the Consent for Anonymous Questionnaire before the session began. The participants were briefed that their participation was voluntary, and they were free to withdraw from the project at any time they feel uncomfortable. The participants also received the information that their responses or answers to the questions posed would remain private and confidential.

Each participant who took part in the presentation completed the questions on the pretest questionnaire. This provided the foundation to assess their knowledge before implementing the educational program. The results from the pretest questionnaire are presented in the following Table 2.

Table 2*Participant Pretest Questionnaire, N = 8*

Survey Questions	SD	D	N	A	SA
1 The educational program on diabetes self-care management changed my attitude on the importance of lifestyle modification	0	0	2 (25%)	2 (25%)	4 (50%)
2 This program will help nurse in assessing patients' knowledge of diabetes, how they manage their blood glucose and how to set goals for the management of their diabetes.	4 (50%)	2 (25%)	2 (25%)	0	0
3 Taking this educational program improves nurse knowledge on the serious complications of diabetes like kidney failure, blindness, strokes, and amputation and how these can be prevented.	2 (25%)	6 (75%)	0	0	0
4 Educating patients on how to access resources to help them self-manage their diabetes and improves their outcome.	0	0	2 (25%)	6 (75%)	0
5 Understanding the important of annual staff education on diabetes self-care management education program and lifestyle modifications like healthy diet, smoking cessation, and physical activity for patients with diabetes.	0	0	6 (75%)	2 (25%)	0

Note. SD = strongly disagree; D = disagree; N = neutral; A = agree; SA = strongly agree.

Based on the responses given by the participants, a knowledge gap was identified in all the questions posed. For instance, in Question 2, two participants (25%) disagree that the educational program on diabetes self-care management changed nurses' attitude on the importance of lifestyle modification. A similar number (25%) were not aware while others disagree (50%) about the effectiveness of the program in improving the

attitudes of lifestyle modification. Similar results were observed regarding whether patient education helps nurses to assess patients' knowledge of diabetes, how they manage their blood glucose, and how to set goals for the management of their diabetes. All participants (100%) answered Question 3 as strongly disagree to disagree when asked whether taking the educational program improves nurse knowledge on the serious complications of diabetes like kidney failure, blindness, strokes, and amputation and how these can be prevented. Most of the participants (75%) disagreed that the educational program improves nurse knowledge on the serious complications of diabetes. The results evidently supported a lack of knowledge among the participants, which supported the purpose of using a pretest questionnaire. The participants' responses to the pretest questionnaire indicated a need to teach nurses on lifestyle modifications to educate and manage diabetic patients.

Participant Results from Posttest Questionnaire

After assessing the knowledge and awareness of participants about lifestyle modification, a PowerPoint presentation (Appendix A) on the toolkit was used, and it lasted for 60-90 minutes. Three sections were developed in the presentation to help nurses educate their diabetic patients on self-care management practices. Section one of the presentation entailed an overview of diabetes, risk factors of diabetes, and complications of Type 2 diabetes. In Section 2 of the presentation discussed self-care management of diabetes with a focus on healthy eating, healthy food choices, and reading food labels. Section 3 of the presentation discussed the benefits of regular engagement in

physical activities as one of the evidence-based practices to reduce the risks of developing diabetes.

All the participants were provided with posttest questionnaires (Appendix D) after completing the educational program. The participants were instructed to provide answers to all the questions posed in the questionnaire. The participants were informed not to include their identifying information like their names and addresses in the questionnaire for security purposes. All the participants presented the answers, and knowledge improvement was noted based on their responses. The posttest results are presented in Table 3.

Table 3*Participant Posttest Questionnaire, N = 8*

Survey Questions	SD	D	N	A	SA
1 The educational program on diabetes self-care management changed my attitude on the importance of lifestyle modification	0	0	0	2 (25%)	6 (75%)
2 This program will help nurse in assessing patients' knowledge of diabetes, how they manage their blood glucose and how to set goals for the management of their diabetes.	0	0	0	6 (75%)	2 (25%)
3 Taking this educational program improves nurse knowledge on the serious complications of diabetes like kidney failure, blindness, strokes, and amputation and how these can be prevented.	0	0	0	6 (75%)	2 (25%)
4 Educating patients on how to access resources to help them self-manage their diabetes and improves their outcome.	0	0	0	6 (75%)	2 (25%)
5 Understanding the important of annual staff education on diabetes self-care management education program and lifestyle modifications like healthy diet, smoking cessation, and physical activity for patients with diabetes.	0	0	0	2 (25%)	6 (75%)

Note. SD = strongly disagree; D = disagree; N = neutral; A = agree; SA = strongly agree.

Based on the posttest questions, all answers showed improvement in the importance of lifestyle modification interventions. All participants (100%) answered each question with agree to strongly agree. This is an improvement of the pretest questionnaire the posttest questionnaire indicated knowledge improvement on the nurses' perceptions regarding the importance of annual staff education on diabetes self-care management education program and lifestyle modifications like a healthy diet, smoking cessation, and physical activity for patients with diabetes, as evidenced in Question 5.

Project Implications

Diabetic patients are faced with health-related complications, such as cardiovascular disease, diabetic neuropathy, and diabetic nephropathy. They are also faced with increased healthcare costs due to readmission, poor health outcomes, and lack of knowledge on self-care management practices. The clinical guidelines from the ADA and CDC have played a crucial role in the development of a toolkit that improves the health outcomes of diabetic patients. Lifestyle modification toolkit is the most recommended clinical guideline for diabetic patients. The results attained in this project, mainly the posttest questionnaires results, supported the clinical efficacy of lifestyle modification toolkit to educate diabetic patients on self-care practices for effective management of their health conditions. As evidenced on the posttest questionnaire, nurses showed significant knowledge improvement on the use of a lifestyle modification toolkit to teach patients self-care management practices. Nurses also improved their knowledge of the use of toolkit to improve health outcomes among diabetic patients. The implementation and use of the lifestyle modification toolkit enhanced the ability of nurses

to make better decisions on evidence-based practices they should teach their patients to achieve improved clinical outcomes.

The expected outcome of the educational program was to achieve knowledge improvement among nurses and better treatment outcomes among diabetic patients. Based on the posttest results, it was evident that nurses acquired the necessary knowledge they would use to educate their diabetic patients on lifestyle behaviors, including healthy eating, smoking cessation, and active participation in physical activities to prevent disease progression. Nurses who received education on lifestyle modification have enough knowledge they would transfer to their patients to achieve better outcomes. The findings showed that staff better understand diabetic lifestyle modifications in helping to teach patients how to manage diabetes. Education on lifestyle modification behaviors has the potential to improve clinical outcomes among their patients.

Strengths and Limitations of the Project

The experts who reviewed and approved the content of the toolkit were able to evaluate the viability of using the program in the project. The experts determined and suggested the need to implement nurse education as an informative way of improving nurses' understanding of self-management for better patient outcomes. These experts consisted of professionals from different specialties and different years of experience; they were likely to have enough background on the effectiveness of the lifestyle modification toolkit.

The lifestyle modification toolkit used in the presentation had useful content that benefited the nurses and will have significant benefits to diabetic patients. The

information in the toolkit is adequate for the nurse educator to teach their diabetic patients, prevent disease progression, and improve the management of diabetes and related complications.

The project had some limitations. First, a smaller sample size of eight participants was used. The findings are not able to be generalized due to a small sample size. Second, the project was limited to only RNs, LPNs and NPs working in the same primary care facility. There was a possibility for the participants to share information that led to almost similar answers, which might have influenced the project findings.

Project Recommendation

For this project, one recommendation for improvement of this education program is yearly contents, guidelines and clinical research update on diabetes self-management and lifestyle modification as presented in the literature. I will also follow up after graduation to measure application and use by staff and their patient's outcome.

Summary

The evaluation of the questionnaire results indicated the benefit of providing staff education on lifestyle modification to teach patient. For knowledge improvement, the nursing at this outpatient clinic will be provided educational module to help educate their diabetes patient on lifestyle modification. Three panel experts evaluated the content of the educational program used during the presentation to educate the clinical staff. The experts supported that the contents were informative and would be useful to educate the clinical staff. Before implementing the educational program, pretest questions were administered to the eight selected nurses, followed by PowerPoint presentation and

posttest questions. The pretest analysis showed a lack of knowledge among nurses, the implementation of the educational program was useful. In this section, I presented the analysis and results from the educational presentation and toolkit. I also discussed the project implications, strengths and limitation and future recommendations.

The results showed that the educational toolkit is useful for nurse educators to use while teaching their diabetic patients on the need for eating healthy diets, smoking cessation, and the need for regular physical exercise as the evidence-based practice to prevent and reduce the progression of diabetes and to reduce complications of diabetes. In Section 5, I will provide the dissemination plan of the project and self-analysis.

Section 5: Dissemination Plan

Dissemination is a crucial part of a research project that helps increase the discernibility of the project outputs, improves science engagement and innovation, and increases public confidence in each research. Successful dissemination is also helpful in making sure that the research project conducted has economic, social, or political effects (Marín-González et al., 2017). With respect to the findings or results attained in a project, researchers have a crucial role in disseminating them for people to use. The findings are presented to the audiences or readers, including other researchers, to understand what is known and not known about a research topic.

Edwards (2015) pointed out that the researchers are ethically obliged to present their research findings by publishing them in support of the existing literature. However, they may present disappointing results that may distort the existing body of evidence in a specific research topic. Disseminating the research findings can be done using various approaches, including publications in biomedical or nursing journals and through oral and poster presentations at professional proceedings or meetings (Edwards, 2015). This section of my project presents how the findings was disseminated. I provided detailed information on how I disseminated the findings of my project.

Project Dissemination

After presenting the findings of this project, I decided on the best approach to use to disseminate the project findings. I met with the project members in the clinic who took part in the project and shared the finding using a handout. This education program will be used during their annual nurse's in-services training and new staff hiring training in this

outpatient clinic. I have also planned to disseminate my findings by publishing in a nursing journal and in a poster presentation, especially during the annual nurse association meeting and Nigeria Nurses Association quarterly meetings.

Self-Analysis

To disseminate nursing knowledge and expertise is very crucial nurse practitioners. I also acquired basic knowledge regarding the clinical efficacy of an educational program and the benefits of educating patients to engage in self-care management practices to prevent disease progression. As an advanced nurse practitioner, it is very essential to successfully contribute, empower and be able to transfer knowledge and skills to nurses, associates, patients, and other healthcare interdisciplinary through PowerPoints presentations, meetings, seminars, and interviews. Through my practice as a nurse practitioner, I have seen an increasing number of patients with diabetes, and I realized that providing education to patients on lifestyle modification that includes healthy eating, smoking cessation, and practicing regular physical exercise, is helpful in preventing patient risk to diabetes-related complications and decrease levels of HbA1c.

As a nurse first, I understand the important of patient's educations and developing this education program confirms my experiences as a nurse leader and my competence in the management of diabetes patients in the outpatient facility. I will use the evidence of this project to show that my clinical practice has the potential to make a difference when appropriate programs are implemented and used. The evidence also suggests the need for nurses and other healthcare professionals to consider using an education program as an

appropriate clinical strategy to teach patients about healthy behaviors they should practice for improved outcomes.

Summary

As a nurse, it is especially important for continues education program to help improve our knowledge and skills on current evidenced-based guideline for effective education to patients. An education program on lifestyle modification such as diet, physical activity and smoking cessation can be beneficial for better outcome with diabetes patients. The project showed that implementing an education program on diabetes self-care management plan can improve nursing staff knowledge and understanding in teaching diabetes patients in the primary care clinic. This program will continue to be implemented at this this outpatient clinic after my DNP graduation and will follow up with the clinic's medical director for effectiveness and usability of the education program.

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Appendix A: PowerPoint Presentation



Diabetes Self-care Management Educational Program and Toolkit for Staff Education

Gloria Okoye- RN/FNP

Learning Goal/Objectives

Describe	Identify	Explain	Describe
Describe Diabetes and contributing risk factors	Identify some evidenced-based practice on some of the steps in preventing diabetes and understanding of the effect of diabetes	Explain benefits of diabetes self-care management and tools which health care providers can use to empower their patients	Describe the important of lifestyle modification , healthy eating, physical activities, smoking cessation, self blood sugar monitoring and weight management



Benefits of Diabetes Self-Care Management

Understanding Self-care Practices

I will be teaching on:

- Self-care behaviors
- Physical activity
- Healthy eating
- Weight management practices

Importance of teaching lifestyle modifications

Importance

- Improves knowledge and attitudes of participants on Proper self-care practices (Johnson et al., 2010)
- Learn the benefits of medication adherence, problem-solving, healthy coping, reducing risk, and being active (Azami et al., 2018).
- Learn the benefits of lifestyle behavior change (Horigan et al., 2017)

Diabetes as a leading chronic problem

- *Is diabetes a problem?*
- 463 million people are living with diabetes
- 9.3% of adult ages from 20 -79 yrs old
- 1.1 million children and adolescent under the age of 20 yrs (CDC, 2017).
- About 6.3% (18.2 million) of U.S population with diabetes, diabetes death will double by the year 2030 (ADA, 2014) .
- *Diabetes Risk Factors:*
- *Overweight/Inactivity*
- *Hypertension*
- *Family history/genetics*
- *Race/ethnicity*
- *History of vascular disease*
- *Smokers*

Complications of Diabetes

- *Microvascular*
- Nephropathy
- Retinopathy
- Neuropathy
- *Macrovascular*
- Ischemic heart disease
- Peripheral Vascular Disease
- Cerebral Vascular Accident
- All resulting in organ and tissue damage .

Steps/Practice

• Part 1

- By achievable Lifestyle modifications such as:
- Cutting sweet and refined carbohydrate from food
- Staying physically active
- Losing weight if overweight/obese
- Quit smoking
- Avoid sedentary behaviors



Part 2: Becoming food detective for food choices

- Understanding how to read labels and shopping for healthy food (ADA, 2014). Knowing nutrition facts label on food items are crucial in making the best choice when shopping.
- During this teaching session, participants will Learn to:
 - Compare listed items for calories, nutrition and fats .
 - Reduce the amount of fatty foods and increasing physical activities that can be beneficial in losing weight and controlling blood sugar level.
 - Understand how to count calorie and reducing portion sizes to help manage blood glucose level.
 - Replacing juices and soda with water. As water does not contain carbohydrate or calorie, therefore, perfect for diabetes patients.



Part 2 Cont'd

ACTIVITY 2: Community Waterlog

- Encourage the patients to drink more water than sodas because water does not have any calorie and can boost metabolism.

Interventions

- Have a waterlog chart.
- Understand waterlog: 1 gallon is equal sixteen 8-ounce glasses.
- Set a realistic drinking water goal for each day.
- Continue to reinforce and review water chart each session or meeting
- Drinks that has added or natural sugar should be avoided such as regular soda, energy drinks, sweetened iced tea/lemonade (CDC, 2017).

Part 3: Physical Activity

Importance of physical activity

- Improves health and well-being
- Reduces risk for complications.
- Reduces the risk diabetes.

Activity 3: A Journey of Two- Partnership and collaboration

Get a walking buddy to commit and hold each other accountable by:

- Schedule 30-40 mins of physical exercise daily
- Be creative with planning
- Exercise can be done before or after work depending on preference like cycling, biking , jogging or even dancing .



Part 3 Cont'd

Steps and Suggestion

- 1) Choose a target timeframe for realistic goal with partner e.g., 1- 3 months accountability.
- 2) Set up meeting time and place that works for both partners.
- 3) Share health and motivating quotes that can encourage each other e.g., “I’m on the road to health” or “Diabetes does not have to be my destiny” (CDC, 2017).
- 4) Agree to park cars away from store or destination
- 5) Walk as often as possible rather than taking bus to short distance to add up daily steps goal
- 6) Take steps at work or mall instead of elevator or escalator.
- 7) End each goal of activity with a celebration of accomplishments.

Intervention

- Encourage walking as friends or partnering with local community centers /outdoors activities like dancing class to avoid boredom and to form relationships that encouraged healthy goals.

Smoking Cessation and diabetes

Smoking and Diabetes

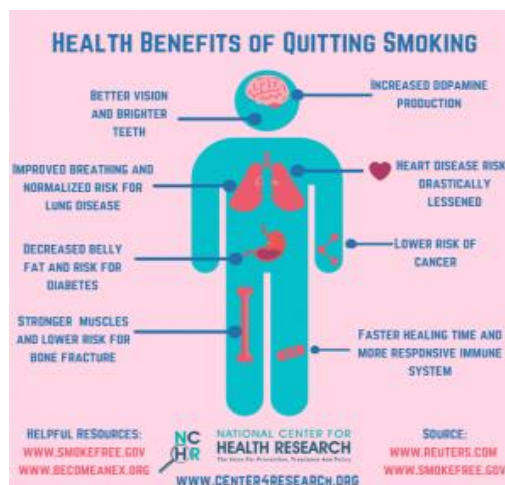
Smoking is a risk factor of type-2 diabetes mellitus not only among middle-aged but also among elderly men and women.

Current smokers were 2-3 times more likely than never smokers to develop Type 2 diabetes

It appears to be a modifiable risk factor: the risk of developing diabetes among former smokers was similar to that of never smokers



The American Heart Association





Diabetes Self-Care Education Toolkit

Diabetes Self-Care Education

- Communicating to patients the importance of diabetes self-management is essential in improving the treatment outcomes
- Teaching patients on self-care practices aid in achieving quality of life
- Some Patients with diabetes have minimal knowledge on how they can manage their condition, hence self-care education allows them to have chances of getting access to a high level of care (Powers et al., 2016).



Teaching Lifestyle Modifications Cont'd

Healthy Eating

- Knowing right amount to add during meal planning helps improve blood glucose and lipid levels (ADA, 2014).
- Diabetes patient should include low carbohydrate counting meal method and dietary changes to improve their glycemic control (ADA, 2014).
- Diabetes patients learn more on healthy food choice, healthy method of preparing food and food portions based on their understanding and preference (Funnell et al., 2010).



Teaching blood sugar monitoring at home

Blood Sugar Level And Monitoring

- Self-monitoring of blood glucose (SMBG) before each meal and 2 hours after meals aids patient in detecting, preventing and treating acute blood sugar problems (ADA, 2017)
- Patients who keep a health log of their blood sugar readings and follow dietary changes have improved metabolic control; hence reduced HbA1c levels (Cypress & Tomky, 2013).
- Adherence to self-blood sugar monitoring leads to improve diabetes management outcome



Questions

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Toolkit on Lifestyle Modification for Nurses' Use to Educate Patient on Diabetes Self-Care Management Education Program



Interventions in preventing Diabetes for Staff Members

Purpose and Scope of Diabetes self-care Management Educational Program

This toolkit will help to teach nurses on lifestyle modifications to prevent and improve diabetes. The CDC (CDC, 2016), and EBP contains guidelines and recommendations on lifestyle modifications which includes healthy diet and exercises to prevent diabetes. The toolkit will be developed based on the nurses' level of knowledge, skills, and experiences. This toolkit will be the for the staff educational tool to utilize when teaching diabetes patients on diabetes self-care management education program and on lifestyle modifications to better manage their diabetes. The objective of using diabetes self-care management guideline is to improve the nurses' understanding and knowledge, also to better equipped the nurses in providing effective and evidenced-based education to their diabetes patients for better outcome.

Objectives

- To educate nurses on the benefit of understanding the important of lifestyle modifications for diabetes patient and individualized goal setting in the management of their diabetes
- To discuss diabetes risk factors and how to prevent and manage them effectively.
- To reduce personal and financial burdens of diabetes by providing diabetes management strategies that includes self- monitoring glucose, annual checkup and follow ups.
- Teaching diabetes patient on the difference between self -monitoring glucose value and A1c Glycohemoglobin test value? And when to seek help to better manage their condition and reduce the rate of hospitalization.
- To continue to increase awareness of the importance of diabetes-self-care management and lifestyle modifications such as healthy eating, physical activity, and smoking cessation.
- Benefits of continuous staff training during orientation and annual in-service on diabetes self-care management education program and lifestyle modifications for effective patient's education and better disease management outcome for diabetes patients.

Explain

- Diabetes
- Diabetes Self-Care Management
- Lifestyle Modification

- Diabetes Complications

Diabetes Risk Factors:

- **Family History and Age:** Having a family member with history of diabetes such as parents and siblings. You can develop diabetes any age but people with family history of diabetes are more likely to develop diabetes. The older you get, the higher the risk of developing diabetes especially in middle-age adult (45 and older)
- **Physical inactivity /Overweight:** Physical activities less than 3 times a week along with overweight put one at risk for developing diabetes.
- **Race or Ethnic Background:** Certain ethnic groups are most likely to develop diabetes such as African American and Latino/Hispanic-American (ADA, 2017).
- **History of Prediabetes or Gestational Diabetes:** You are at higher risk of diabetes if you develop diabetes when pregnant.
- **Cigarette smoking:** People that smokes are more likely to develop diabetes than nonsmokers
- **Unhealthy eating habit**

Complications of Type 2 Diabetes

Major Complications of Diabetes

Microvascular

Eye

High blood glucose and high blood pressure can damage eye blood vessels, causing retinopathy, cataracts and glaucoma



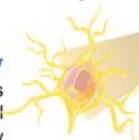
Kidney

High blood pressure damages small blood vessels and excess blood glucose overworks the kidneys, resulting in nephropathy.



Neuropathy

Hyperglycemia damages nerves in the peripheral nervous system. This may result in pain and/or numbness. Feet wounds may go undetected, get infected and lead to gangrene.



Macrovascular

Brain

Increased risk of stroke and cerebrovascular disease, including transient ischemic attack, cognitive impairment, etc.



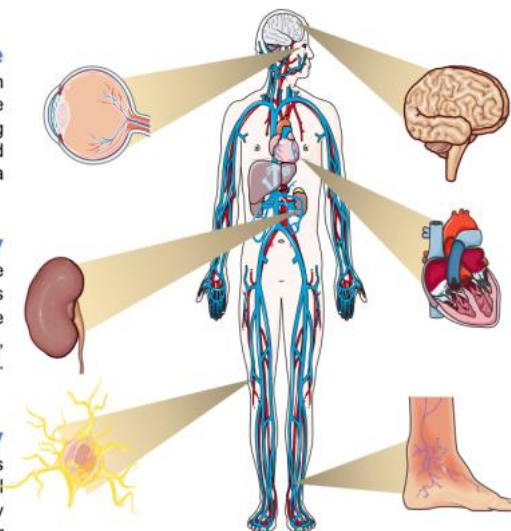
Heart

High blood pressure and insulin resistance increase risk of coronary heart disease



Extremities

Peripheral vascular disease results from narrowing of blood vessels increasing the risk for reduced or lack of blood flow in legs. Feet wounds are likely to heal slowly contributing to gangrene and other complications.



- Cardiovascular disease: High glucose level in the blood increases the risk of plaque buildup in the arteries. Therefore, making it hard for blood to flow well or block the arteries causing coronary heart disease.
- Diabetic neuropathy: high levels of glucose in the blood causes damages to the peripheral nerve causing pain, numbness, loss of feelings in the legs resulting in poor wound healing and amputation of limbs.
- Diabetic nephropathy: One of the long- term complications of diabetes is kidney damage.

- Diabetic Retinopathy: High glucose in the blood can damage to the eye vessels resulting to increase eye pressure, cataract, glaucoma and even sometimes blindness.

Summary

Providing education on diabetes self-care management program education can improve nurse's knowledge and equip them to better educate their diabetes patient they see daily in the clinic to help improve diabetes outcome and prevent some of the above mention complications. Even though diabetes comes with risk for serious health problems and cost, but the good news is, teaching diabetes patient on diabetes self -care management, establishing the right treatment plan and recommendations of lifestyle modifications, many patients with diabetes can better manage their condition and delay the onset of diabetes complications.

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Appendix C: Expert Panel Questionnaire

Please read through the following statements and choice your best options to evaluate the content of the program that will be used in educating the nurses on diabetes self- management education program. Your responses are anonymous and confidential.

Kindly respond using the following scale:

1=SD 2=D 3=N 4=A 5=SA

	Teaching Contents	1	2	3	4	5
1	The teaching content aligns with the learning objectives. The teaching program can increase nursing staff knowledge and awareness on diabetes self-care management.					
2	The educational teaching contents on diabetes self-care management using on lifestyle modification will be beneficial in improving diabetes outcome.					
3	The content of the lifestyle modification toolkit will be easy to understand by the clinic staff					
4	The content of the diabetes self-care management program will help nurses to provide evidence- based care to the patients'					
5	The style and contents of the PowerPoint presentation of the instructor will be easy for the staff to understand					
Overall comments:						

Note. SD = strongly disagree; D = disagree; N = neutral; A = agree; SA = strongly agree.

Appendix D: Participant Pretest and Posttest Questionnaire

Please read the following questions and check the appropriate that matches to your skills, confidence, and level of knowledge on Staff Education on Diabetes Self-Care Management program for patients before and after presentation using the same questionnaire. Your responses are anonymous and confidential.

Kindly use the following scale for your responses.

1=SD 2=D 3=N 4=A 5=SA

		1	2	3	4	5
1	The educational program on diabetes self-care management changed my attitude on the importance of lifestyle modification					
2	This program will help nurse in assessing patients' knowledge of diabetes, how they manage their blood glucose and how to set goals for the management of their diabetes.					
3	Taking this educational program improves nurse knowledge on the serious complications of diabetes like kidney failure, blindness, strokes, and amputation and how these can be prevented.					
4	Educating patients on how to access resources to helps them self-manage their diabetes and improves their outcome.					
5	Understanding the important of annual staff education on diabetes self-care management education program and lifestyle modifications like healthy diet, smoking cessation, and physical activity for patients with diabetes.					
Overall comments:						

Note. SD = strongly disagree; D = disagree; N = neutral; A = agree; SA = strongly agree.