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Staff Education Program on Diabetes Using Self-Care Behaviors

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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MS, Walden University, 2015

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Project Submitted in Partial Fulfillment

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Abstract

Type 2 diabetes mellitus affects patients' health across the globe and is costly to manage. The chronic high blood sugar of diabetes is linked to cardiovascular and kidney damage, impaired functional status, and multiple organ failure. To lessen the complications associated with diabetes and promote self-care in those with the disease, health care professionals must be vigilant in offering diabetes education to patients with each clinic or primary care visit. Lack of diabetic educators in the clinic that provided the setting for this study indicated a need to increase clinical staff competency in teaching self-care and diabetes management to patients. The resulting project, guided by Bandura's theory of social learning, involved the creation of an educational curriculum, which was evaluated by 5 content experts with 5 or more years of experience caring for adult patients with Type 2 diabetes mellitus who provided narrative feedback. The content experts indicated satisfaction with the program and offered the following recommendations: (a) implementation of staff coaching on motivational interviewing, (b) additional help in securing medications and blood glucose testing supplies for noninsured patients, (c) translation of patient tools into Spanish at a Grade 3 or 4 reading level for better patient understanding, and (d) proceeding with full implementation after the recommendations are carried out. Improved self-care among diabetes patients could promote positive social change through the prevention of acute, long-term complications and disability.

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Dedication

I dedicate this evidence-based DNP project in loving memory of my late grandparents, Mr. & Mrs. Kepha Asuke Oyuke; my biological dad, Dr. Solomon Ogot Kepha; and my stepdad, Mr. Tobias Otto, for believing in me and continuously giving me steadfast support, love, and encouragement.

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First and foremost, glory to God for strength, guidance, and providence to complete this project. I would like to thank all those who helped to make this project possible: my committee—Dr. Barbara Niedz (chair), Dr. Donna Williams (member), and Dr. Patricia Dittman (University Research Reviewer); my preceptor, Emily Kimble; my sisters and friends, Dr. Schola Kabeya, Dr. Norma Visage, Dr. Janet Meda, and Even Moonga; and my husband, Samwel Maige, for their patience and support during this journey. And finally, not forgetting the support of my organization, without which this project would not be possible.

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Section 1: Nature of the Project

Diabetes is diagnosed by use of a laboratory test called *glycosylated hemoglobin*. When over a certain level, glycosylated hemoglobin, colloquially called *A1C*, indicates a state of chronic hyperglycemia reflecting average blood glucose levels over a 2- to 3-month period (American Diabetes Association [ADA], 2013). Type 1 diabetes typically develops during childhood or adolescence and requires ongoing management with insulin therapy. Adults who become diabetic typically develop type 2 diabetes mellitus (DM). Type 2 diabetes is associated with obesity, lack of exercise, and poor nutrition. Type 2 DM is more prevalent than Type 1 and accounts for 90% to 95% of diabetes cases worldwide. In addition to emerging later in life, type 2 diabetes mellitus is mainly managed by changing one's lifestyle and losing weight, and it may require treatment with oral medications, insulin injections, or a combination of both (World Health Organization [WHO], 1999). Type 2 diabetes mellitus mechanisms include (a) insulin resistance, which prevents the uptake of glucose at a cellular level; (b) a decrease in pancreatic cell function, which changes the way in which insulin is released; and (c) an increase in glucose generation by the liver (Gumbs, 2012).

Type 2 diabetes mellitus has attained epidemic proportions worldwide, threatening the health and cost effectiveness of health care systems. This epidemic has largely developed in western countries as a result of poor diets loaded with carbohydrates, overdependence on processed food, use of artificial sweeteners, and increasingly sedentary lifestyles (Hu, 2011). The chronic hyperglycemia of diabetes

causes organ damage, loss of functional abilities, and a compromised quality of life (ADA, 2013).

In Kern County, California, where this study was conducted, diabetes is a significant public health challenge. In the period from 2013-2015, there were 34.2 deaths per 100,000 population. Adequate glycemic control, which is crucial in preventing complications and disability resulting from diabetes, may be supported by implementing a strategy to promote patient self-care.

In this project, I developed an educational module on diabetic care using the American Association of Diabetes Educators (AADE) guideline on self-care behavior for clinical staff to use to teach patients about self-care and diabetes management. The codified AADE7 behaviors are healthy eating, being active, glucose monitoring, medication adherence, problem solving, healthy coping, and reducing risks. The module was presented to an expert panel for review and approval.

According to Maryniuk, Mensing, Imershein, Gregory, and Jackson (2013), only one-third of patients with diabetes receive formal education on their disease, despite the presence of more than 17,000 certified diabetic educators nationwide. Diabetes education needs to be accessible in convenient, community-based settings, including primary care practices. Providing clinical staff education on diabetes care can add support for diabetes patients and improve patient outcomes (Maryniuk et al., 2013).

Problem Statement

According to the most recent U.S. census data, Kern County has an estimated population of 884,788 and a growth rate of 0.60% in the past year (World Population

Review, 2017). It is the 11th largest county in California in population (World Population Review, 2017), with 10-11% of its population affected by diabetes (Healthy Kern County, 2018). During the period 2013-2015, there were 34.2 reported deaths related to diabetes per 100,000 members of the population in Kern County.

Diabetes is a chronic illness that requires ongoing medical oversight with active patient self-management to prevent long-term complications and maintain positive quality of life (ADA, 2010). To lessen the complications associated with diabetes and promote self-care in diabetics, health care professionals must be vigilant in offering diabetes education to patients with each clinic or primary care visit. Therefore, educational interventions with an emphasis on healthy eating, being active, glucose monitoring, medication adherence, problem solving, and reducing risks is crucial (AADE, 2014). Health care professionals have the responsibility as well as the duty to significantly reduce the increasing incidence of diabetes by promoting proper lifestyle interventions and primary prevention programs by educating patients and their families on diabetes care and management.

At the clinic that provided the setting for this DNP project, 95% of the patients have a diagnosis of type 2 diabetes. It is a busy primary care setting with three specialty providers who are physicians, two advanced practice nurse practitioners (APRN/NPs), one registered nurse (RN), and one licensed practical nurse (LPN) who rotate between two clinics, with 12 medical assistants (MAs) who support both sites. There are no diabetic educators who are accessible to the clinic. The clinical staff members who will ultimately be provided the education include two licensed and 12 nonlicensed staff

members. The full implementation of the educational module and the tools will occur outside the scope of this DNP project.

Purpose Statement

The purpose of the evidence-based project was developing a clinical staff education module on diabetic self-care using the AADE7 guidelines and tools associated with the use of the guidelines. Lack of diabetic educators within the clinic that provided the setting for the DNP project indicated a need to increase clinical staff competency in teaching self-care and diabetic management to patients. Though multiple factors can be considered as contributing to diabetic self-care activities in patients with diabetes, the role of clinicians in promoting self-care is crucial and must be emphasized (Shrivastava, & Ramasamy, 2013). Consequently, the seven self-care behaviors captured in the AADE7 guidelines target key areas of diabetic self-care and will be key components in the educational module.

Nurses have the responsibility of adopting and implementing evidence-based practice (EBP) to improve patient outcomes, reduce costs, support complex nursing practices, and overcome barriers in providing care to diverse populations globally (Correa-de-Araujo, 2016). According to conditions of participation for Medicare providers, patients newly diagnosed with diabetes should have both diabetes self-management education and support (DSMES) and medical nutrition therapy (MNT; Centers for Medicare and Medicaid Services, 2018). However, at the DNP project site, there was no diabetic educator; this represented a significant gap in practice, in that patients lacked this resource and the staff working in the clinic lacked necessary

education and tools. Consequently, the DNP project was developed to address this gap in practice at the site.

Instead of patients seeking education services outside their medical home/clinics, different methods can be used to bring needed diabetes information and education services to primary care settings and community clinics. One fundamental way to provide this needed support to the patient is to offer it directly through clinical staff. This presupposes that clinical staff have adequate knowledge and competency in diabetes self-care as well as tools that can make this content actionable for patients (Maryniuk et al., 2013). The proposed educational module for clinical staff has been developed to increase awareness and empower patients and their families to improve diabetic self-care and management.

In 2014, the AADE created guidelines for the practice of diabetes self-management education and training (DSME/T). These guidelines, which support the delivery of DSME using seven areas of focus or emphasis, are called the AADE7 Self-Care Behaviors and the National Standards for Diabetes Self-Management Education. Because diabetes education programs should be individualized, the AADE7 provides guidance that represents concepts that are commonly used to describe the process of diabetes self-management education and the needed outcomes (AADE, 2014). The AADE guidelines are publicly available to all free of charge and can be used by health care professionals and the public in the interest of improving the day-to-day management of DM (AADE, 2014).

designed an educational module and a toolkit. A panel of experts was asked to evaluate the module content. Revisions were made, and feedback was secured as to the practicality of the education and tools developed, along with recommendations for full implementation. The module has the potential to increase clinical staff members' knowledge and competency while guiding them in teaching patients and their family members about diabetes self-care management. Clinical staff education can assist in reducing the gap created by a lack of diabetic educators. The module includes the seven self-care behaviors outlined in AADE guidelines. Full implementation of the educational content will occur outside the scope of the DNP project.

Nature of the Doctoral Project

Kern County has an estimated population of 884,788, with a growth rate of 0.60% in 2016 according to the most recent U.S. census data (World Population Review, 2017). It is also the 11th largest county in California in population (World Population Review, 2017), with 10-11% of the population in the county affected by diabetes (Healthy Kern County, 2018). The focus of this project was the development of an educational module to help clinical staff teach adult patients with diabetes and their families about diabetes self-care and management. The module may also empower clinical staff with tools for implementing diabetic self-care knowledge that they can apply in their daily clinical practice, thereby improving outcomes for diabetic patients.

Type 2 diabetes requires rigorous patient self-management, involving daily dietary decisions, physical activity, blood glucose monitoring, consistent medication adherence, problem solving, healthy coping, and reducing risks. When clinical staff

possess the competency, knowledge, and tools that they need to use these seven self-care behaviors, they will be able to teach patients and their families about the importance of diabetic management and thereby improve outcomes for diabetic patients.

A panel of five experts was consulted to review and rate the program for its content using six Likert-type scale questions via email. These experts were given 1-2 weeks to rate the program. The experts included the chief medical officer, a registered dietitian, a Certified Diabetes Educator (CDE), an NP, and an RN. There were open-ended questions about the practicality of implementation, any revisions that were needed to the content, and whether the experts would approve a plan to move full implementation forward.

Data and summative evaluation were based on the experts' evaluation and additional comments. The program will be implemented with any recommended revisions after the completion of the DNP project and standardized to be used in the organization to improve diabetic care in the clinics. According to Burke, Sherr, and Lipman (2014), diabetes self-management support and education can be adequately provided by nonlicensed staff members such as Medical Assistants if they have foundational knowledge and skills.

Significance to Nursing Practice

Health professionals play crucial roles in helping patients and their families understand diabetes management. Clinical staff, other nonhealth professionals, and care coordinators can use the educational AADE7 framework to assess and evaluate patients and family members' knowledge of self-care behaviors. The framework can be used to

initiate diabetic self-management education for newly diagnosed diabetic patients and patients with uncontrolled diabetes.

Education of care teams should consistently support patient self-management; therefore, continuing education that includes self-management skills and assessment is vital. The care of patients with chronic conditions will improve if self-management support is part of their usual care (Diabetes Initiative, n.d.). A study done by Peimani and Tabalabaei (2010) showed that nurses could provide effective, high-quality care at a lower cost compared to their physician colleagues for chronic health conditions such as diabetes, hypertension, and heart failure.

Effective management of diabetes requires engaging the patient to take an active role in self-care, and education for staff and patients alike is an important tool of self-management (Burke, Sherr & Lipman, 2014). The development of an education module based on the AADE7 framework will empower clinical and non-health care staff to remain involved in providing diabetic education on self-care to patients and their families on what to eat, activity levels, glucose monitoring, medication intake, coping skills, and reducing risks stemming from diabetes. Thus, the DNP project question is the following: Will the development of a clinical staff education program on diabetic care using the AADE7 framework be approved for implementation at the DNP project site in the clinic, and ultimately improve the clinical staff's perceived knowledge of diabetic self-care?

Evidence-Based Significance of the Project

Patients with type 2 diabetes mellitus must receive diabetes health education both at diagnosis and at subsequent office visits (ADA, 2014). Due to the limited time for an

office visit and the need to accommodate busy providers, clinical staff can be trained to provide primary diabetic education during office visits. Maryniuk et al. (2013) argued that although diabetic education taught by CDEs is the best, not all diabetic patients fully understand the content of such education, and office staff and other non-health-care professionals may influence, reinforce, and even teach some basic diabetic care when trained and given proper materials because of their interaction with patients on a daily basis (Maryniuk et al., 2013).

Interventions with community health workers (CHWs) have also been found to be a helpful approach for improving diabetes outcomes, especially among patients with social determinants of health that pose a threat (Shah Kaselitz & Heisler, 2013). This can be accomplished by referring patients with uncontrolled diabetes with A1C greater than 9 to the county health department for in-home visitation and one-on-one diabetic education for those not able to attend group classes.

Shah Kaselitz and Heisler (2013) conducted a research study in six community health centers (CHCs) in Massachusetts. Patients were randomized to groups that included trained CHWs or the usual care without CHWs. The study goals involved evaluating the impact of CHWs on patient engagement, patients' use of community resources, and patient self-efficacy. The study sample consisted of 1,415 patients, with 494 patients in the CHCs that incorporated trained CHWs into their health care teams. Results showed that, even when corrected for race, the intervention group was more likely than patients in the control group to set a self-management goal, confirming the importance of CHWs in a team-based care model (Shah Kaselitz & Heisler, 203).

Burke , Sherr & Lipman (2014) have shown that for chronic conditions such as diabetes to be managed, an individual must take an active role in self-care, and education is an essential element of self-management. Patients who do not receive formal diabetes self-management education (DSME) have knowledge gaps and are more likely to develop chronic complications than those who have received DSME (Burke, Sherr & Lipman, 2014).

Primary care providers often lack the time needed to engage patients in self-management effectively and would benefit from office staff or other health coaches other than diabetes education specialists or health coaches; different providers can be trained to provide DSME in several ways (Burke, Sherr, & Lipman, 2014). Consequently, patients admit that they are not actively engaged by their providers on self-care, and diabetic education services are not readily available (Power, Bardsley, Cypress, Duker, Funnell, Fischl, & Vivian, 2016).

Providers' communication on the importance of self-management is critical to achieving treatment and quality-of-life goals throughout a lifetime of diabetes (Power et al., 2016). Peimani and Tabalabaei (2010) demonstrated that nurses could provide effective, high-quality care at lower costs for chronic health conditions such as diabetes, hypertension, and heart failure. The gap in CDEs in the clinic prompted the DNP project.

Implications for Social Change in Practice

Diabetes is a complex and burdensome disease that requires affected individuals to make daily decisions (Power et al., 2016). This project may assist in filling the gap caused by a lack of diabetic educators while increasing clinical staff knowledge and

competency in diabetic self-care, thus empowering and motivating patients to be involved in diabetic self-management. The project may result in positive social change by promoting the prevention of acute, long-term complications and disability resulting from diabetes, as well as improved self-care in diabetes patients. Knowledge gained through the project may contribute to the clinical staff's competence in educating patients to perform self-care behaviors using the AADE7 framework.

Summary

Diabetes is a chronic disease that requires ongoing care and patient self-management to prevent complications (ADA, 2010). The AADE provides a framework and a set of tools that represent the necessary components of diabetes self-management education and are also used to describe outcomes (AAED, 2014).

The purpose of this project was to develop an educational module to teach clinical nursing staff about diabetic self-care, so that they might empower patients to gain the knowledge and skills needed to successfully self-manage the illness and its sequelae (Burke et al., 2014). In Section 1, I discussed the clinical practice program, practice problem, purpose statement, and significance of this project to nursing practice and social change. In Section 2, I present an evidence-based literature review, as well as the theoretical and conceptual framework supporting this project at the community clinic in the county that provides the DNP project setting.

Section 2: Background and Context

A literature review is a summary of published material by a researcher on a topic, which is critically analyzed in relation to a research question or hypothesis (Terry, 2018). l used scholarly evidence to develop an educational module for clinical staff to potentially improve self-care among adult diabetic patients. Specific literature was searched for articles on diet, exercise, medication adherence, coping skills, and diabetic risk reduction, and general literature was reviewed on diabetic education and self-management and their effects on diabetic patients' quality of life and A1C.

Concepts, Models, and Theories

Diabetes Self-Care

Johnson, Murray, and Huang (2010) studied the relationship between diabetes self-management education and medical care. Individuals who had received diabetes self-care training were found to have increased odds of receiving a higher level of care compared to those who had not received such education. The higher level of care included an annual foot exam, an annual dilated eye exam, twice-yearly A1C evaluation, and pneumonia and influenza vaccination.

Moser, Bruggen, Widdershoven, and Spreeuwenberg (2008) used a qualitative descriptive and exploratory design with an inductive approach. The information was collected by in-depth interviews in a nurse-led share-care setting. The study found that patients with Type 2 diabetes used three kinds of self-management interventions: daily, off-course, and preventive. Daily self-management interventions involved the steps of adhering, adapting, and acting routinely. The final phase of self-management, preventive

interventions, involved experiencing, learning, being, and putting learned self-care into practice. The older adult participants described these interventions as short-term (off-course) and long-term (daily and preventive) self-management strategies. The study concluded that the goal of diabetes self-management education was to teach and encourage patients with type 2 diabetes mellitus to become actively involved in their care with nurse guidance.

Power et al. (2016) reported that individuals with diabetes often lack knowledge on how to manage their diabetes. Consequently, most patients with diabetes admit that they are not actively engaged by their providers on self-care and state that services such as diabetic education and dietary classes are not readily available (Power et al., 2016). The study concluded that providers' communication on the importance of self-management is critical to achieving treatment and quality-of-life goals throughout a lifetime of diabetes.

A multicenter cluster randomized controlled trial (RCT) was conducted in primary care to measure the benefit of a one-time structured diabetes self-management program with 824 participants Khunti, Gray, Carey, Dallosso, and Heller, (2012) Participants showed improvement in A1C, chronic conditions such as hypertension, and lipid levels, and prolonged follow up would yield further benefits (Khunti et al., 2012). The study also reported the impact of self-made goals in educating patients with type 2 diabetes. The authors concluded that increased contact time is beneficial to patients over time in managing diabetes (Khunti et al., 2012).

Horigan, Davies, Findlay-White, Chaney, and Coates . (2017) pointed out that diabetes education is helpful because the frequent monitoring and attention to nutrition and exercise lead to lower blood sugar levels and prevent long-term complications, specifically retinopathy and chronic kidney disease. Patient education must be personalized for diabetic patients in order to foster an understanding of the disease and improve compliance with the monitoring required to avoid disease progression.

Staff must have continuous training in diabetes management strategies and behavioral interventions beyond basic diabetes knowledge in order to assist diabetics and provide real quality in the diabetes care offered in primary care settings (Mesing et al., 2003). It is often difficult for patients to develop the behavior and lifestyle changes that are essential to successful self-management of diabetes. Patients with diabetes need knowledge and skills to make proper choices, create behavior change, and reduce the risk of harmful long-term complications (Mesing et al., 2003).

The Relationship of Key Content to Diabetic Outcomes

Thomas, Elliott, and Naughton (2009) conducted a systemic review of the impact of exercise on diabetic patients' glycemic outcomes. They reviewed 14 RCTs comparing exercise against no exercise in 377 patients. The exercise intervention groups improved blood sugar levels, as indicated by a decrease in A1C levels of more than half a percentage point. This systematic review showed that exercise improved glycemic control and reduced plasma triglycerides in diabetic patients even without weight loss.

Hemmingsen et al. (2017) conducted a systemic review of adults with type 2 diabetes to assess the effects of diet, physical activity, or both on the prevention or delay

of type 2 DM in patients at increased risk of developing the disease. There were 12 RCTs randomizing 5,238 people to groups that were included in the systematic review. One trial contributed 41% of all participants. The duration of the interventions varied from 2 to 6 years. No firm evidence was found that diet alone or physical activity influences the risk of type 2 diabetes mellitus and its associated complications in people at increased risk of developing the disease. However, diet plus physical exercise was found to reduce or delay the incidence of type 2 diabetes mellitus in people with insulin glucose tolerance (IGT).

Cypress and Tomky (2013) reported a study in which subjects were asked to follow a protocol that included self-monitoring of blood glucose (SMBG) before and 1 or 2 hours after meals on 2 or 3 days per week that included 1 or 2 weekdays and 1 weekend day. Patients were required to keep a log of SMBG results, nutrition, and feelings. Patients in the study were able to make changes in nutrition and exercise based on their own interpretation of their daily blood glucose data to improve longer term metabolic control and lower glycosylated hemoglobin levels. The authors concluded that timing SMBG and teaching patients/families how to interpret the results and what they could do differently (in terms of nutrition and exercise) leads to improvement in long-term metabolic control (Cypress & Tomky, 2013).

A meta-analysis of RCTs done by Zhu, Zhu, and Leung (2016) found that in patients with diabetes who were not using insulin, SMBG improved the HbgA1c level over the short term and long term. There are four good reasons for frequent SMBG: (a) patients get immediate feedback on out-of-range BG levels; (b) patients can learn how to

adjust diet and exercise to target A1C levels; (c) daily BG levels help to reinforce education about the longer term effects of daily management on A1C; and (d) the discipline of taking daily BG levels and adjusting to them helps to motivate healthy behavior in a cyclical way (Klonoff, 2012).

SMBG can also be used by health care providers to monitor and assess the effectiveness of medications and evaluate medication management. Klonoff (2012) argued that diabetes is a disease of numbers, pointing out that patients are asked to monitor BG levels, insulin, and severity of symptoms using numerical scales (e.g., blood sugar numbers). Blood glucose monitoring leads to improved outcomes if patients adhere to appropriate protocols, use tracking to adjust nutrition and activity, and know how to respond to fluctuations (Klonoff, 2012).

Brunton and Polonsky (2017) completed a metanalysis that included 40 studies from 2005 to 2015 and showed that 67.9% of patients with type 2 DM were adherent to their oral antihyperglycemic therapy. Bruton (2015) reported that the 1-year adherence rate with glucagon-like peptide-1 receptor agonist (GLP-1RA) treatment was 34.8% with insulin in patients with type 2 diabetes mellitus and had been reported to range from 51% to 59% at 3 months following initiation, 39% to 48% at 6 months, and 27% to 35% at 12 months (Brunton & Polonsky, 2017). The importance of medication adherence for diabetes management is well known. Effective adherence contributes to higher quality of life, whereas poor adherence may contribute to disease progression, increased morbidity and mortality, and increased health care resource utilization and costs, including more frequent hospitalizations (Brunton & Polonsky, 2017). Patients' self-management of a

disease such as type 2 diabetes mellitus determines their health outcomes. To improve medication adherence, considering strategies that enhance communication between provider and patient to promote greater understanding of the patient's perspective is vital (Brunton & Polonsky, 2017).

A systematic review by Thorpe (2013) gave evidence that various interventions are effective in diabetic populations. The strategies that Thorpe reviewed included diabetes self-management education, support groups, problem-solving approaches, and coping skills interventions for improving diabetes outcomes such as A1C management and ensuring fewer long-term complications. Cognitive behavioral therapy, collaborative care for treating depression, and family therapy for improving coping in youth were also shown to be effective. These techniques can be used by diabetes educators and other health care providers to enhance coping, emotional health, and overall quality of life in diabetic patients (Thorpe, 2013).

Theory of Social Learning

A successful nursing education program/module requires a robust theoretical or conceptual framework (Gifford, Gram, & Davies, 2013). Bandura's theory of social learning was found to be appropriate for this DNP project. Bandura's social learning theory was developed in 1977 (Cherry, 2019). Bandura contended that learning takes place via observation but also involves cognitive processes, whereby learners internalize and make sense of what they see to reproduce the behavior themselves (Horsburgh & Ippolite, 2018). The method of social learning provided a framework for clinical staff to learn via observation and modeling.

Social learning theory is based on the idea that there is a transaction between cognitive thoughts and environmental stimuli that ultimately affects behavior (Bandura, 2006). Bandura's theory involves four stages: attention, retention, reproduction, and motivation.

In the context of this DNP project, in Bandura's first stage, learners will attend a lecture/in-service and observe the behavior that they want to teach patients. In the second stage, they will retain what they have learned/seen, internalizing (through cognitive processes) the modules they have been taught so that they are able to guide patients themselves. In the third stage, they will have the opportunity to instruct patients on diabetic self-management, thereby reproducing their learning. For Bandura's fourth stage, clinical staff will need to be motivated to imitate the behavior that they have observed. The knowledge gleaned by clinical staff will help them to educate patients on self-care behaviors to manage diabetes more effectively. The application of Bandura's model will be crucial for helping clinical staff observe, internalize, and use their knowledge with diabetic patients during patients' office visits in the clinic.

Definition of Terms

Key terms in this evidence-based DNP project are defined as follows:

Self-management: Self-management consists of a complex and dynamic set of processes, and it is embedded in an individual's unique life situation (Moser et al., 2008).

Blood sugar diary/glucose log: A blood glucose diary/log is where a patient records his or her daily or weekly glucose levels, diet, medication, and activities with the goal of tracking glucose levels (Dementia Australia, n.d.)

Hemoglobin A1C: The A1C test measures the amount of hemoglobin with attached glucose and reflects an average blood glucose level over the past 3 months (Centers for Disease Control and Prevention [CDC], 2018a).

Type 2 diabetes: A disease in which the body is unable to produce a enough or respond to insulin, a hormone required by the body to convert glucose to energy (Mensing et al., 2003).

Type 1 diabetes: In Type 1 diabetes, the pancreas cannot produce any insulin or produces very little insulin. Therefore, patients must inject insulin every day to get the insulin they lack (CDC, 2018b).

Self-efficacy: The belief that one has the power to produce a desired effect by completing a given task or activity related to a competency (Bandura, 2012).

Self-monitoring of blood glucose (SMBG): A process of engaging in self-monitoring of preprandial and postprandial blood glucose (i.e., blood glucose before and after each main meal; Holt, 2014).

Role of the DNP Student

I was responsible for creating an educational module and tools and for presenting the educational plan to five professional experts to evaluate the module as an effective means for clinical staff to learn self-care behaviors/self-management in diabetes. I also selected an appropriate theoretical framework and objectives for the project. I invited five professional content experts to participate in the project through an email explaining the purpose of the project. The expert panel participants were asked to assess and evaluate the education module using a Likert-type rating scale and questions requiring narrative

feedback. The participants were given 2 weeks to complete the educational module evaluation.

Summary

Many people worldwide are affected by diabetes, which is a chronic, progressive illness. Enabling diabetic patients to manage the disease effectively in order to prevent long-term complications and improve quality of life is of critical importance (Burke et al., 2014). Diabetes prevention and management require interventions that provide patients with specific knowledge, skills, and tools that foster empowerment (Burke et al., 2014). Because diabetic educators are becoming scarce in health care and are unavailable at the site for which this project has been developed, training other health professionals to provide education in diabetes self-care will help to fill service gaps. The educational module will empower clinical staff with knowledge, competency, and tools they need to teach patients diabetes self-management.

Section 2 has addressed current evidence and the conceptual model/theoretical framework supporting this project. In Section 3, I present the collection and analysis of evidence supporting the project.

Section 3: Collection and Analysis of Evidence

Diabetes is a chronic illness that requires continuing medical care and ongoing patient self-management to prevent acute illness and reduce the risk of long-term complications (ADA, 2010). The purpose of the DNP project was to develop an educational module to empower clinical staff with knowledge and competency so that they can teach adult patients with Type 2 diabetes to practice self-care. l created an educational module and presented it to five professional content experts who evaluated it. In this section, I describe the way in which evidence was collected in support of the project and procedures for obtaining the data.

Sources of Evidence

Published Outcomes and Research

In conducting the literature review for this project, I accessed the Cochrane Database of Systematic Reviews, as well as EBSCOhost, MEDLINE with Full Text, Google Scholar, ProQuest Dissertations, Walden Library databases for online journals and scholarly works, and the websites of the ADA, CDC, and WHO. Keywords used to obtain articles for the review were *diabetes, medication adherence, coping skills, exercise, glucose monitoring, self-management, self-care behaviors, diabetic education,* and *DSME.* A total of 70 articles were identified, of which 17 were selected for the literature review. I found an abundance of peer-reviewed journal articles, scholarly works, and other articles published within the past 20 years, with an emphasis on works published in the past 5 to 7 years, that addressed the effects of diabetes self-management programs on patient outcomes. Within this literature, I limited my search to the seven

self-behaviors: healthy eating, being active, glucose monitoring, medication adherence, problem solving, healthy coping, and reducing risks. The search was further narrowed to works pertaining to diabetes and diet, exercise, coping skills, medication adherence, monitoring, risk reduction, and problem-solving skills. Studies on self-management interventions for adult patients were included in the review. Exclusion criteria applied to non-English-language studies, studies involving gestational diabetes, and pediatric diabetes studies**.**

Evidence Generated for the Doctoral Project

Participants. Five local professional content experts from within the organization were asked to validate the education module. All members of the expert panel had at least 5 years of experience in their fields and were invited to participate in the evaluation phase. The context experts included the chief medical officer, a CDE, an NP, an RN, and a dietician, all of whom dealt directly with adult patients with type 2 diabetes. The content experts were asked to complete a survey anonymously to evaluate the educational module via electronic means.

Purposive sampling was used to construct the expert panel. Purposive sampling involves soliciting participation from individuals who have specific expertise (Burns & Grove, 2009). These experts were invited to review and examine the educational module and to complete an online survey to evaluate the effectiveness of the module.

Procedures. The educational module is described in an overview in Appendix A. The tools in the toolkit appear in Appendix B. These materials were presented to the members of the expert panel for their review. Their feedback, recommendations for use

of the module at the DNP site, and needed revisions were captured in an electronic survey process using the survey presented in Appendix C. Deidentified responses from the experts were sent to me by a third party. Within 2 weeks, I summarized the responses and used them to determine the next steps for the DNP project in terms of an implementation plan, with the understanding that implementation would occur outside the parameters of the DNP project. Because these experts represented the clinic's leadership, their review, feedback, and approval were all essential to full implementation.

Protections. Each professional content expert was contacted in person via e-mail by a third party with instructions for evaluating the educational module (see Appendix C). The experts' consent to participate was secured using the guide in the Walden educational manual for anonymous questionnaires for ethical reasons and to protect participants' privacy. The experts were notified that they were free to withdraw from the project at any time. Hard copies of the email documents have been stored in a secure cabinet and will be destroyed 6 months after the conclusion of the project.

Analysis and Synthesis

After evaluation of the module by professional content experts, data were collected, scored, and organized to facilitate data analysis. Responses to the six Likert-type questions from the five experts were summarized as mean scores. Additionally, all narrative comments were synthesized into themes, which are presented in the findings in Section 4. Final recommendations concerning revisions, next steps, and the implementation plan were developed after the quantitative and qualitative data were analyzed.

Summary

Evidence has shown that although comprehensive diabetes education delivered by a CDE is the gold standard, such education may not reach everyone with Type 2 diabetes. Clinical staff and other non-health-care professionals may influence, reinforce, and even teach some primary diabetes care when trained and given quality materials, given their interaction with patients daily (Maryniuk et al., 2013). Developing an educational module for the entire clinic team will empower clinical and nonlicensed staff with knowledge and competency that they need to teach patients to practice diabetes self-management.

In order to provide high-quality care to diabetic patients, clinical staff should have continuous training in diabetes self-care management techniques that goes beyond their basic knowledge of the condition (Mesing et al., 2003). Consequently, clinicians and support staff need to understand how to actively provide education to their patients, as education has the potential to alter patients' behavior and prompt them to make changes in their lifestyle to successfully manage diabetes and prevent long-term complications. The diabetic patient needs knowledge and skills to make healthy choices, to change and eliminate bad habits, and ultimately to reduce untoward diabetes outcomes (Mesing et al., 2003).

Section 4: Findings and Recommendations

Introduction

The purpose of this project was to develop a clinical staff education program on diabetic self-care using the AADE7 guidelines and tools associated with the use of the guidelines. The project objectives were to (a) develop an educational program and tools and (b) invite content experts to evaluate the educational program and tools. The project took place in a small primary care practice located in central California.

Findings and Implications

The educational program and toolkit were reviewed and evaluated by five professional content experts. Feedback on the educational programs and toolkit's usefulness was provided. The five context experts included the CMO, a CDE, a registered dietician, an NP, and an RN. All members of the expert panel had more than 5 years of direct contact with diabetic patients. All five experts participated and responded in the evaluation of the program. The content experts were contacted via phone and asked to participate in evaluating the educational program and toolkit. An email with instructions on the timeframe and attachments containing the anonymous consent form, program curriculum, toolkit for clinical staff, and SurveyMonkey checklist was sent by a third party to ensure that individual responses would not be linked to specific members of the expert panel.

There were six items on the evaluation survey (see Appendix C) that used a 5-point Likert scale for responses, and there were two items for which narrative feedback

was requested. All five experts responded within the requested 2-week timeframe (see Table 1).

Table 1

Expert Panel Responses

Participant	Will the educational program increase knowledge and competency?	Is content easy to read and uses plain language?	Are the objectives clear and concise?	Is the educational program comprehensive?	Is the ADDE7 framework useful?	Is the content related to the diary helpful?
A	5	4	4	4	4	4
B	4	4	4	4	4	4
C	4	4	4	4	4	4
D	4	4	4	4	4	4
E	4	4	4	4	4	4

Note. 1= *strongly disagree*; 2 = *disagree*; 3 = *neutral*; 4 = *agree*; 5 = *strongly agree*. Average score = 4.

The experts' responses were positive overall, and the narrative comments (see Table 2) pointed to next steps and recommendations. There were few concerns or barriers noted from the content experts; however, one remarked that the pre- and posttest questions were rather lengthy and commented that the pre-and posttest would be a useful tool as a reference to increase knowledge and be able to answer questions from patients. Another member noted that the tools need to be translated for Spanish-speaking patients using language at a fourth-grade reading level. This reviewer also commented that the diary might not be as useful as a tool as projected, especially with the type of patients served in the organization. Another reviewer noted that medication adherence might be an issue for uninsured patients. Reviewer E (Table 2) noted that clinical staff would need coaching on motivational interviewing together with a diabetes knowledge base to teach

patients self-care effectively. Finally, one reviewer commented that multiple blood glucose checks may not be feasible for some managed care patients due to limited supplies for blood glucose checks being provided by managed care companies, as well as lack of evidence on the benefits of SMBG in type 2 diabetes.

Table 2

Qualitative Data Summary

Participant	Quotations
A	"Some of the handouts are at 6th grade reading level. Spanish-speaking patients require at least 4th grade reading level"
	"The module has the potential to be comprehensive with the use of motivational interviewing techniques"
	"Staff will need coaching on when to teach each behavior, as goals may differ, and to allow patients optimal time to reveal patients' motivations and stages of change."
	"I feel the standardized diary may not be useful in outpatient setting, and regarding multiple blood glucose checks: managed care insurance only covers a set amount of supplies per month (1-2 BG checks per day), and due to lack of evidence in multiple daily glucose check in type 2 diabetes patient making the diary not feasible."
B	"Lengthy pre and posttest questions"
C	No comments
D	"Medication adherence might not be possible with the uninsured patients"
E	"Staff will need coaching on motivational interviewing"

Recommendations

There were several themes that emerged from the survey and narrative comment processes. First, there was overall agreement that the educational module would serve the purpose of informing the clinic staff about the AADE7 self-care behaviors. Second, comments indicated the need for translation of patient tools in Spanish and at Grade 4 reading level; the leadership of the clinic has verbally expressed an interest in pursuing this translation. Next, there was an observation that the clinical staff would need coaching on motivational interview techniques, which will also be provided, but outside the scope of the DNP project.

A recommendation emerged from the expert panel responses that may indicate a need to correct misperceptions among clinic leadership about recent research that demonstrates the effectiveness of daily diary tracking and the availability of supplies provided by managed care companies. I provided guidance to the clinic's leadership and clinic staff about enrolling uninsured patients who cannot afford medication in the Merck pharmaceutical program. Providers can also refer patients to medication programs offered by companies such as Target, Walmart, and other discount stores within the community that provide medications and supplies for as little as $4, and they can work with the lead pharmacists of such companies on various discount programs. Patient education on the importance of following up with providers to monitor self-care improvement, set doable goals, and monitor stages of improvement is essential, as this project has demonstrated. Providers can also work with the county health department to tap into additional supports for diabetics such as home visits for patients with A1C > 9 or for those who cannot attend

diabetic care classes during working hours. This county program is provided free of charge to the community.

To correct misconceptions among the members of the expert panel, evidence from the research literature was provided. For example, Klonoff (2012) argued that diabetes is a disease of numbers, noting that patients are asked to monitor their BG levels and medications using numerical scales. Daily diabetes monitoring results in improved outcomes if patients adhere to appropriate protocols, use daily tracking to make needed adjustments, and understand the rationale behind changes needed from day to day (Klonoff, 2012).

Similarly, Zhu, Zhu, and Leung (2016) conducted a meta-analysis of RCTs and found that in patients with non-insulin-dependent diabetes, daily tracking improved HbgA1C levels in the short term and long term. Similarly, Cypress and Tomky (2013) reported a study in which participants were asked to follow a protocol that involved performing SMBG several times per week and keeping tracking logs. The study showed that patients were able to adjust in diet and exercise that led to improved metabolic control and lower A1C levels. The authors concluded that timing SMBG and teaching patients/families what results mean and what they could do to improve their diabetes resulted in clinical and statistically significant improvements (Cypress & Tomky, 2013).

The project's purpose was to improve clinical staff knowledge and competency in diabetes self-care, with the goal of teaching patients the seven essential self-care behaviors. Upon full implementation of the project, the tools will be translated into Spanish at a fourth-grade level at the discretion of the organization. The motivational

interview coaching technique is recommended to enable clinical staff to teach patients about diabetes self-care in a manner that patients understand. Motivational interviewing techniques can elicit behavior change leading to positive health outcomes (Magill, de Zoysa, Winkley, Amiel, Shuttlewood, Landau, & Ismael, (2018).

Strengths and Limitations of the Project

One strength of this project was the use of content experts who had experience and had worked with adult patients with type 2 diabetes mellitus. All the experts agreed that the module would help in increasing clinical staff members' knowledge about diabetic self-care. One of the experts was a CDE; another was a registered dietician. A CMO and an NP who had daily contact with diabetic patients also participated as experts, and their expertise brought another strength to the project. Bruce, Langley, and Tjale (2008) stressed that content experts have been used for different purposes in various fields to design, develop, and test instruments/tools for data collection. In the practice setting, such experts can make predictions about the success and practicality of the educational program in the day-to-day reality of a busy practice. A limitation of the study was the lack of an exercise physiologist on the panel; such an individual would have been a good addition but was not available.

Summary

I developed an educational program and toolkit for clinical staff to increase their knowledge and competency in diabetic self-care. Five professional content expert participants reviewed the educational program and toolkit and evaluated the content. The participants responded to a six-item online survey via SurveyMonkey, which used a 5-

point Likert scale. The participants gave overall positive feedback and provided recommendations for using the educational module toolkit in the future. Providing education to clinical staff will help in filling the gap created by the lack of diabetic educators in the clinic with the hope of teaching type 2 diabetic patients self-care.

Section 5: Dissemination Plan

Introduction

The core aim of DNP education is to equip advanced practice nurses with knowledge on how to formulate clinical questions, identify resources and relevant evidence-based research, and apply evidence in practice to change or solve clinical problems (Zaccagnini & White, 2014). The educational program and toolkit may be used by the organization in the future for teaching clinical staff about diabetes, and the toolkit may be used as a standardized plan of care for adult patients with type 2 DM.

The project findings, discussion, and implications will be disseminated by sharing them with medical staff during a monthly meeting of a regional nurse practitioners' association in California. I may be presently globally at the nursing college where I studied in Tanzania, as I have made application to do so. Project design should include the application of research into practice settings, including the end users and how they will be affected by the implementation (Curtis, Fry, Shaban, & Considine, 2017). A best-evidence practice is critical for safe, transparent, effective, and efficient healthcare service, to which nurses are central (Curtis et al., 2017).

Analysis of Self as a Scholar

The DNP program has been rewarding and challenging, and it has made me a better practitioner and nurse. I have gained knowledge on systems thinking, on organizational operations, and on the skills needed to be a leader in nursing. Deeper knowledge on patient care, customer service, and care access has also been a rich part of the learning process. The DNP project increased my knowledge in the areas of

interdisciplinary collaboration and leveraging community resources for better patient outcomes.

I encountered many challenges during project initiation as I moved from project topic selection to the literature review and selection of relevant evidence-based materials on diabetics' self-care processes. I continued to experience challenges during the writing process and in proofreading and adjusting the style, format, and organization of the paper. These challenges were addressed by contacting and reaching out to my chair, the DNP program coordinator, and friends who were DNP graduates. One of my primary goals in pursuing a DNP education is to become a force for positive social change in the community and the population I serve by educating clinical staff.

As a scholar, I have been engaged in knowledge application, discovery, integration, and translation of research into practice at my clinical site. These activities have been aimed at improving health care practice and outcome reliability. The DNP degree enables advanced practice nurses to improve overall care in different clinical areas, which is the core of clinical scholarship (Zaccagnini & White, 2014).

Summary

The aim of this DNP project was to promote positive social change by increasing clinical staff members' knowledge and competency related to diabetic self-care in order to fill a gap caused by lack of diabetic patient education in a clinic. Clinical and nonhealth staff have been found to play vital roles in educating patients when there is inadequate availability of diabetic educators to teach patients about diabetes management. Providing education and care using an evidence-based approach will allow

clinical staff nurses to help improve outcomes of adult patients with type 2 DM. Educating clinical staff on diabetic self-care may also foster a team approach to caring for patients. Education is no longer viewed as the sole responsibility of providers and should be not be limited to patient-physician/nurse practitioner interactions. As such, an educational program and toolkit were developed for clinical staff to teach adult patients with type 2 DM about diabetes self-care, were evaluated by an expert panel, and were approved for implementation with recommendations.

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Appendix A: Overview of Clinical Staff Education Program

Topical content outline	Time frame	References	Teaching method/learner engagement and evaluation method
Complete the pretest What is diabetes Types of diabetes	10”	American Association of Diabetes. (2013). Diagnosis and Classification of Diabetes Mellitus. Diabetes Care. 36 (Supp1), S67-S74. Doi:10.2337/dc13-S067	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Healthy eating Using a diary or an app for smartphone	20”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Being Active Determining an exercise schedule or an activity schedule, taking 15mins walks after meals	15”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Monitoring; glucose levels, feet for ulcers, weight, blood pressure, what you eat, steps walked	15”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Taking your medications On pillboxes Same time daily	5”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Problem Solving; how to correct the low and high glucose levels	10”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest

Topical content outline	Time frame	References	Teaching method/learner engagement and evaluation method
The seven essential self-care behaviors: Healthy Coping Stress reducers, aromatherapy, meditation, yoga, walking, talking to friends, joining a group	5”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The seven essential self-care behaviors: Reducing Risk; yearly exam of eyes, feet, having routine labs, doctors follow up	5”	American Association of Diabetic Educators. (2014). AADE7 position statement. The AAED Self-Care Behaviors. Retrieved from ttps://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/publications/aade7_position_statement_final.pdf?sfvfrn=4	In person lecture Discussion Case Studies Q&A Pretest/Posttest
The role of clinical staff in diabetic care and education; summary and next steps. Complete the posttest	10”	Maryniuk M, Mensing C, Imershein S, Gregory A, & Jackson R. (2013). Enhancing the Role of Medical Office Staff in Diabetes Care and Education. Clinical diabetes. 31, 116-122. Doi: 10.2337/diaclin.31.3.116 Moser, A., Bruggen H, V. D., Widdershoven, G., & Spreeuwenberg, C. (2008). Self-management of type 2 diabetes mellitus: A qualitative investigation from the perspective of participants in a nurse-led, shared-care programme in the Netherlands. *Bmc Public Health, 8*. doi:10.1186/1471-2458-8-91	In person lecture Discussion Case Studies Q&A Pretest/Posttest

Appendix B: Tools for Staff to Teach DSME

Overview of the seven needed content items (Reminder handout for staff members).

Important Components of Diabetic Self-Care Management

Healthy eating. Healthy eating for people with diabetes has been found to improve glycemic control and lipid profiles, maintenance of blood pressure in the target range, and weight loss or maintenance.

Being active. Exercise is essential in both type 1 and types two diabetes, engaging in regular activity may improve glycemic control and reduce the risk of microvascular and macrovascular complications

Monitoring. Self-monitoring may include such assessments as blood glucose levels, blood pressure, foot checks, steps walked, weight, and achievement of goals.

Taking medication. Adherence is essential for optimal diabetes outcomes and control.

Problem-solving. Problem-solving involves the steps to take for low and high glucose and is very useful in diabetes self-management.

Healthy Coping. Patients thoughts regarding living with diabetes need to be taken into consideration. Negative emotions such as depression related to disease should be assessed and dealt with. Use PHQ9 for screening.

Reducing risks. Effective risk reduction behaviors to prevent or slow the progression of diabetes complications such as nephropathy, neuropathy, and retinopathy, include regular doctor visits to check blood sugar, other laboratory values and an annual eye exam by a retinal specialist.

Patients' diary; to be used daily and reported to staff at every appointment (Blank journal with patient instructions for use; Handout for staff to use with patients).

Food Diary/ Glucose Log

Date	Morning glucose:		Glucose readings			
Breakfast meal		Carbs (g)	Time	Before B'fast	Time	After B'fast
Lunch meal		Carbs (g)	Time	Before Lunch	Time	After Lunch
Dinner meal		Carbs (g)	Time	Before Dinner	Time	After Dinner
Snack 1:		Carbs:	Exercise:			
Snack 2:		Carbs:	NOTES:			
Snack 3:		Carbs:				
Bedtime glucose:						

- **Nutritional guidelines** (Handout for staff to use with patients).https://www.diabeteseducator.org/living-with-diabetes/aade7-self-care-behaviors/healthy-eating

- **Glucose self-blood sugar testing device instructions** (Handout for staff to use with Patients) https://www.diabeteseducator.org/docs/default-source/living-with-diabetes/tip-sheets/blood-glucose-monitoring/insidertipstricks-final.pdf?sfvrsn=8

- **Reference list: Who to call for help**:
  Dial 911 in an Emergency
  To make an appointment call: 661 725 4780
  To discuss your diabetes self-care management plan with a nurse: Call the above phone number.
- **Pre and Posttest** to be used with clinical staff as part of the Educational Module and the Toolkit:

Instructions: Circle one answer for each question.

Basic Knowledge

1. Risk factors for developing Type 2 diabetes include:
   a. Family members with diabetes
   b. Gestational diabetes
   c. Stress of an illness or injury
   d. All the above
2. Which is NOT a cause of diabetes?
   a. Use of steroids

b. Eating sugar
c. Insulin resistance
d. Pancreatic gland failure

3. Which is NOT a sign of hyperglycemia?
   a. Thirst
   b. Fatigue
   c. Shakiness
   d. Frequent urination
4. In Type 1 diabetes, there is not enough:
   a. Insulin
   b. Glucose
   c. Protein
   d. Fat
5. Patients with Type 1 diabetes:
   a. Never need insulin injections
   b. Need 24 hour insulin delivery
   c. May occasionally need insulin
   d. Can take oral medication that makes the pancreas secrete insulin
6. Insulin is made in the:
   a. Liver
   b. Stomach
   c. Kidneys
   d. Pancreas
7. Hyperglycemia means:
   a. Blood glucose is high
   b. Blood glucose is low
   c. Blood pressure is high
   d. Blood pressure is low
8. Symptoms of Hypoglycemia include:
   a. Weakness
   b. Sweating
   c. Shakiness
   d. All the above

Monitoring

9. ADA recommendations for blood glucose levels before meals is:
   a. 50-70 mg/dL
   b. 80-120 mg/dL
   c. 125-160 mg/dL
   d. 180-240 mg/dL
10. A blood glucose level in diabetes over 180 is:
   a. Normal
   b. Acceptable
   c. Unacceptable

d. Requires an ER visit

11. The A1c Glycohemoglobin test is:
    a. Best under 7
    b. Tells how blood has been controlled for 6 months
    c. Can be tested with urine
    d. Should be kept from the patient
12. Low blood sugar is considered to need treatment when glucose levels are under70mg/dL and should be treated with:
    a. Hersey candy bar
    b. Cheese
    c. Avocado
    d. 6-7 small hard candies
13 With intensive insulin therapy, monitoring should be done:
    a. Before meals
    b. After meals
    c. After evening snack
    d. Several times a day
14. Monitoring should be done more often:
    a. On sick days
    b. When traveling
    c. When meals and exercise change
    d. All the above
15. Nighttime hypoglycemia should be treated with:
    a. Carbohydrate
    b. Protein
    c. Fat
    d. First carbohydrate and then carbohydrate with protein
16. During illness, blood glucose should be monitored every:
    a. ½ hours
    b. 3-4 hours
    c. 6-8 hours d
    12 hours

Medications

17. Diabetes pills
    a. lower blood glucose
    b. increases the release on insulin
    c. correct insulin resistance
    d. All the above
18. The preferred site for an insulin injection is
    a. Abdomen
    b. Hips
    c. Buttocks
    d. Arm

19. Insulin should be injected in the same site:
    a. True
    b. False
20. When you travel your medication and supplies should:
    a. Be checked with your luggage
    b. Carried onto the plane with you
    c. Mailed to your destination
    d. Left at home
21. Lantus is an insulin that will last:
    a. 2 hours
    b. 6 hours
    c. 12 hours
    d. 24 hours
22. After taking a rapid acting insulin, the patient should:
    a. Wait 30 minutes before eating
    b. Have food present for eating before injecting
    c. Exercise to maximize the effect of the insulin
    d. Finish income taxes
23. Oral medications work directly on the areas of the body except:
    a. Heart
    b. Pancreas
    c. Cell
    d. Liver

Meal Planning

24. Which nutrient significantly increases blood sugar?
    a. Fat
    b. Water
    c. Sodium
    d. Carbohydrates
    e. Vitamin A
25. What following foods contain about 15 grams of carbohydrate?
    a. 2 cups of ice cream
    b. 1 cups of 1% milk
    c. 1/3 cup of rice
    d. 1/4 cup of cottage cheese
    e. 1 Tbsp. Mayonnaise
26. Saturated fats are found in:
    a. Apples
    b. Broccoli
    c. Margarine
    d. Wheat bread
27. Eating too many carbohydrates can happen when:
    a. Not paying attention to portion sizes

b. Eat every 4-6 hours
c. Add non-starchy vegetables to meals
d. Add 1 glass of wine to a meal

28. Carbohydrates should make up what percent of daily calories?
a. 5-10%
b. 15%
c. 25%
d. 55-65%

29.One serving of a carbohydrate equals 15 grams of carbohydrate and will raise the blood sugar:
a. 0-5 mg/dL
b. 5-10 mg/dL
c. 10-15 mg/dL
d. 20-40 mg/dL

30. A good source of complex carbohydrates is:
a. Eggs
b. Juice
c. Whole-grain bread
d. Hamburger

31. How much cholesterol should a person have per day?
a. 1,200 mg
b. 750 mg
c. 500 mg
d. no more than 300 mg

32. The maximum daily amount of salt in a diet should be:
a. less than 3 grams
b. 5 grams
c. 10 grams
d. 12 grams

33. One serving of alcohol equals
a. 12 ounces of beer
b. 2 ounces of wine
c. 1.5 ounces of scotch
d. All the above

34. If alcohol is allowed you should drink it:
a. On an empty stomach
b. Along with food

35. A “free food”:
a. Has no sugar
b. Has fewer than 20 calories
c. Has no salt
d. Can be eaten in unlimited quantities

36. The amount of carbohydrate should be eaten:
a. Greatest at breakfast

b. Greatest at lunch
c. Greatest at dinner
d. Evenly distributed throughout the meals

Exercise

37. blood sugar can be accurately tested by:
    a. Urine
    b. Blood
    c. Saliva
    d. All the above
38. Regular exercise may
    a. Lower blood glucose
    b. Reduce the amount of insulin needed
    c. Reduce the amount of oral diabetes medication needed
    d. All the above
39. Which exercise is best for patients with insensitive feet?
    a. Swimming
    b. Jogging
    c. Tap dancing
    d. Soccer
40. Fit patients with diabetes should exercise for:
    a. 15 minutes once a week
    b. 1 hour once a week
    c. 20-30 minutes 3 times a week
    d. 1 hour every day
41. If blood glucose is less than 80mg/dL during exercise, the patient should:
    a. Lie down
    b. Eat a snack
    c. Call the doctor
    d. Ignore it and keep exercising
42. If blood glucose is over 250 mg/dL, exercise should be delayed.
    a. True
    b. False

General Care Considerations

43. Any sore on the foot should be reported in:
    a. One day
    b. One week
    c. At the next scheduled appointment
44. Feet should be inspected:
    a. Every day by patient or caregiver
    b. Only when there is pain or pressure
    c. After going barefoot
45. Diabetes patients are more at risk for infections or illness because:

a. The immune system may be impaired
b. Bacteria thrive on higher glucose levels
c. Blood vessels may be damaged
d. Neuropathy may prevent detection of a problem
e. All the above

46. Patients with diabetes have greater risks for all the complications except:
a. Heart Attacks
b. Strokes
c. Fractures
d. Blindness

47: Impotence can be caused by:
a. Chronically high blood sugars
b. Stress and depression
c. Medications and alcohol
d. All the above

48. Routine eye exams are done because:
a. Styles in eyewear change all the time
b. Early treatment may prevent progression of eye disease
c. Only needed when there is trouble

49. Woman with diabetes may have more:
a. Pregnancies
b. Vaginal and bladder infections
c. Blindness
d. Headaches

50. Ketoacidosis may be caused by:
a. Too little insulin
b. Too much food
c. Too much insulin
d. Too little food

51. If blood glucose levels are greater than 250mg/dL and there are large ketones in the blood, the patient should:
a. Take a nap
b. Take extra insulin and water
c. Eat a large meal
d. Exercise

Appendix C: Expert Panel Content Evaluation

This brief survey gives you an opportunity to express your view on the educational module and tools. This survey will provide data on how well the educational module will guide nurses to teach adult patients with Type II diabetes and their families self-care behaviors. This survey is created using an electronic survey platform. The participants will be able to provide their answers and make comments after each question response.
1-SD: You Strongly Disagree (SD) with the content as it applies to the educational module;
2-D: You Disagree (D) with the content as it applies to the educational module or toolkit;
3-Not Applicable: The content does not apply to the educational module or toolkit;
4-A: You Agree (A) with the content as it pertains to the educational module or toolkit; or
5-SA: You Strongly Agree (SA) with the material as it pertains to the educational module or toolkit.

	1 D	**2 SD**	**3 N**	**4 A**	**5 SA**
1. In your view, will the educational module and tools help improve clinical staff knowledge and competency on diabetic self-care?					
2. Are the materials easy to read with plain language? Comment:					
3. Are the educational module objectives clear and concise? Comment:					
4. In your view, is the module comprehensive enough to assist clinical staff in teaching diabetic self-care to patients hence increase diabetic education during office visit? Comment:					

5. In your view, do the AADE 7 self-care behaviors provide an adequate yet straightforward framework that the clinical staff can use to teach patients with diabetic self-care during an office visit? Comment:					
6. In your view, does the standardized diary provided with education on how to use it provide clinical staff with a way to maximize patient compliance and promote self-care as to diet, exercise, and medication adherence? Comment:					