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Diabetes Self-Care Management Education for Advanced Practice Registered Nurses in Primary Care Setting

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This is to certify that the doctoral study by

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

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by

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MS, University of Missouri, 2003

BS, Southeast Missouri State University, 1998

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Type 2 diabetes mellitus is a preventable chronic condition that affects many members of the U.S. population. Diabetes is associated with comorbidities including cardiovascular disease, end-stage renal disease, hypertension, neuropathy, and lower limb amputations, leading to increased mortality. Patient self-care education has been shown to improve adherence to diabetes self-care (DSC) in the primary care setting. However, advanced practice registered nurses (APRN) in the local primary care setting lacked knowledge of DSC. Therefore, nursing knowledge of DSC was needed. The project question asked whether staff education on the use of the Association of Diabetes Care and Education Specialists 7 (ADCES7) self-care behaviors framework can improve APRN knowledge of Type 2 diabetes patient self-care management. The purpose of this project was to address lack of APRN knowledge related to ADCES7 self-care behaviors; APRNs need this knowledge to provide self-care education for the Type 2 diabetes patient. The adult learning theory was the theoretical framework for the staff education project. A single group, pretest–posttest design was used to evaluate the effectiveness of the education in improving APRN knowledge of Type 2 diabetes patient self-care management. The participants were 10 APRNs at the project site. Data were analyzed using inferential statistics via paired t-test. Results were found to be statistically significant with *p* value 0.001. Implementation of the ADCES7 self-care behaviors as a framework for APRN education could therefore be effective in the primary care setting. Social change could be accomplished by improving nursing knowledge regarding DSC, so that nurses can impart this knowledge to their patients to improve self-care in diabetes.

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Dedication

This project is dedicated to my friends, family, and instructors who supported me while I tried to achieve my career goals.

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I would like to thank my instructor Dr. Schweickert; my parents, David and Geraldine Griggs; and my husband, Carey Galyean, for supporting and challenging me to complete the DNP (Doctor of Nursing Practice) program.

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Section 1: Nature of the Project

For this Doctor of Nursing Practice (DNP) project, I conducted staff education at the local primary care setting to improve advanced practice registered nurses' (APRNs') knowledge of diabetes self-care practices. In the education, I introduced the Association of Diabetes Care & Education Specialists 7 (ADCES7 self-care behaviors as a framework for self-care management of Type 2 diabetes (Kolb, 2021). Nonadherence with diabetes self-care is a major problem with Type 2 diabetes patients in the primary care setting, in part due to lack of patient education (Mathew et al., 2022). Nonadherence with diabetes medications and self-care are directly related to increased complications in the adult diabetes population (Zhou, 2020).

Treatment of Type 2 diabetes mellitus usually consists of a complex regimen of self-care education including diet and medications (Van Vugt et al., 2019). Patients with good diabetes self-care and proper medications can have improved glycemic control. However, many patients suffer serious comorbidities including heart disease, kidney disease, stroke, diabetic retinopathy, limb ischemia and amputation, and death as a result of poor control (Mohammadi et al., 2018). Even with effective treatment measures, half of the diabetes patient population in the United States continues to have unsatisfactory glycemic control **(**American Diabetes Association **[**ADA], 2021). Hailu et al. (2019) attributed patient nonadherence to medications and self-care recommendations to the failure of primary care providers to provide effective patient education practices. This is concerning because most patients with Type 2 diabetes are treated by their primary care

providers (Van Vugt et al., 2019). In the local primary care setting, medical providers are not following best practice guidelines in managing patients with Type 2 diabetes.

Provider choice dictated the standard of diabetes-related patient education in the local primary care setting. Providers orally communicate information during patient-provider interactions. Patient education was different for each provider depending on their knowledge base, which typically included patient/provider discussion during a routine office visit. The APRN providers talked to the patient during a routine office visit on general diabetes management topics. Orally conveyed education about general diet management is not based on current best practice guidelines. An effective way to address the lack of staff involvement and knowledge may be through APRN education introducing the ADCES7 self-care behaviors. as a The ADCES developed the framework for the self-care management of diabetes (Kolb, 2021). The ADCES7 self-care behaviors framework provides recommendations and guidelines for best practices for providers to address diabetes self-care management. The framework has been widely accepted as a standardized framework and used in some form since 1990s by diabetic educators in the clinical setting to provide a comprehensive patient centered and patient motivating self-care management plan to improve patient outcomes (Kolb, 2021).

Evidence shows that use of the ADCES7 self-care behaviors results in a significant reduction in glycated hemoglobin (hbA1c) levels (Kolb, 2021). In providing APRNs at the project site with education, I used a multimodal format featuring two ways of learning (visual and auditory) to make the education more accessible to diverse types of learners. The use of multiple types of learning expands the reach of instruction and

improves chances of retention of information (Goodwin, 2016). Addressing multiple styles of learning in one educational tool may make diabetes education more effective in providing staff with knowledge of how to improve diabetes self-care management in patients. By empowering APRNs to better support Type 2 diabetes patients on self-care management, the project may potentially foster positive social change starting in the primary care setting.

Problem Statement

Lack of staff knowledge related to diabetes self-care management is a problem with Type 2 diabetes patients in the local primary care setting. Educating APRNs on the ADCES7 self-care behaviors assisted in giving staff tools to positively impact the lives of diabetes patients in their care. According to the ADA (2021), 1 out of 3 people in the United States will one day be affected with complications related to diabetes. Van Vugt et al. (2019) found that medication nonadherence assessed during routine care by the primary care provider is directly related to increased mortality in the Type 2 diabetes patient. Improved self-care education of the Type 2 diabetes patient in the primary care setting may improve glycemic control in the adult population and prevent these complications (Van Vugt et al., 2019). Improvement of glycemic control also prevents complications such as amputations, vision problems, and kidney disease, therefore preventing surgeries, specialists' consultations, and financial burden, and improving the overall health of the diabetes patient (Mohammadi et al., 2018).

This project may lead to improvements in nursing practice in the local setting. The doctoral project may help to improve the provision of diabetes-related patient

education at the site by empowering APRNs to become more active in motivating patients on improving self-care and diabetic control. The primary care provider, who has a DNP degree, can play a critical role in implementing staff education in the primary care setting to help increase efforts to educate and empower patients in diabetes self-care. In summary, by educating staff on the ADCES7 self-care behaviors, I sought to empower APRNs in the local setting and give them the tools to positively affect the lives of their patients through patient education. Improvement of APRNs' knowledge may help these clinical staff to provide a high quality of care, which supports core values of nursing practice that include patient autonomy, integrity, and dignity (Terry, 2012).

Purpose

The gap in practice that this project addressed was the lack of APRN knowledge related to ADCES7 self-care behaviors that addresses self-care education for the Type 2 diabetes patient in the primary care setting. Evidence-based practice shows that more structured diabetes teaching for staff, which features the use of visual aids and electronic tools, helps to improve diabetes control in Type 2 diabetes patients (ADA, 2021). By implementing an education project based on ADCES7 self-care behaviors, I sought to bolster APRNs' knowledge of best practices for diabetes self-care education. This knowledge may allow them to provide better patient care.

The project question asked whether an educational session introducing the ADCES7 self-care behaviors could improve APRN knowledge of Type 2 diabetes patient self-care management. This project has the potential to address the lack of staff knowledge related to diabetes self-care management education. The use of a multimodal

approach may improve APRN knowledge in the primary care setting. I surmised that the lack of staff knowledge was due to their not using the ADCES7 self-care behaviors to address diabetes self-care education and support. I administered a pre- and postquestionnaire to gather empirical data to test this statement. Educating APRNs on diabetes self-care management may give APRNs the tools to address diabetes self-care with their patients and potentially positively have an impact on the outcomes of the diabetes patient.

Nature of the Doctoral Project

I collected evidence for the DNP project by reviewing the literature related to diabetes education, diabetes patient self-management, and staff diabetes knowledge. I reviewed key evidence to clarify the topic of adherence and justify the use of the adult learning theory as a framework for addressing the problem. I also sought to clarify the complexity and issues related to adherence with Type 2 diabetes and education (see Terry, 2012). Evidence pertaining to the use of education to address issues with diabetes self-care management was also evaluated.

The purpose of the project was to address the gap in practice, which was lack of APRN knowledge of diabetes self-care management. To address the gap in practice, I implemented a staff education project to introduce APRNs to the ADCES7 self-care behaviors to address Type 2 diabetes staff education in the primary care setting. The project employed an educational session for APRNs introducing ADCES7 self-care behaviors (Kolb, 2021). ADCES7 self-care behaviors is a framework, which covers seven areas of recommended best practices for providers to address diabetes self-care

management. The approach for the DNP project was an APRN education project using a pretest–posttest questionnaire, analyzing outcomes data with inferential statistics via paired t-test (Terry, 2012). To evaluate the questionnaires, I used IBM SPSS Statistics to analyze outcomes data with inferential statistics via paired t-test (Terry, 2012). The potential implications of the project include greater knowledge of diabetes self-care management that extends not only to the staff who receive the educational programming but also to patients whom they care for. With increased knowledge, APRNs may be able to better educate patients about ways to improve self-care management and diabetes glycemic control. The effects, if any, of staff education will be reflected in changes in hbA1c that will be seen by the provider later, after this project. Lower hbA1c levels would indicate that the APRNs were using the ADCES7 self-care behaviors framework with success.

Significance

Improving diabetes care in the United States is critical due to complications that arise from nonadherence and because evidence shows that half of patients with Type 2 diabetes still do not reach targets for glycemic control (ADA, 2021). Diabetes research has yielded substantial knowledge of effective management of the disease and prevention of complications, and evidence-based practice guidelines have been widely disseminated by the ADA to help improve clinical outcomes and glycemic control (ADA, 2021). Yet best practices for addressing diabetes self-care management were not being consistently implemented in the primary care setting. For example, the primary care patients were not achieving hbA1c levels below 7.0. Most patients with diabetes in the practice had a

hbA1c above 7.0 based on a needs assessment conducted in the primary care practice. Because of poor diabetes control in this primary care setting, different education techniques were needed to improve patient outcomes. A more structured educational process featuring a multimodal approach was needed to improve the current quality of care because this better aligns with recommended best practice guidelines.

Stakeholders for the DNP project were the primary care practicum medical providers, who included three APRNs. The project could bolster the medical providers' confidence and job satisfaction. The project also had support from administrative and clinic staff. The project could give support staff an increased understanding of the importance of diabetes education. The patients were also stakeholders who could be affected by the project. By becoming more involved and by better adhering to medication and self-care, they could potentially improve their glycemic control and their own outcomes. Addressing diabetes adherence requires more work on the part of providers and employees to implement the staff education program.

The project setting was a nurse practitioner-run outpatient clinic. Changes developed from the DNP project may contribute to nursing practice by providing educational information for nurse practitioners who are working in local practices. The DNP-prepared nurse at the project site can potentially use the project conclusions to implement more in-depth staff education related to diabetes self-care management. The project could bolster the medical providers' confidence and job satisfaction. It could have a beneficial impact on the administrative and clinic staff by making them feel more aware of the educational needs of the patient with diabetes.

Improvement in glycemic control in the diabetes patient population has the potential to decrease costs of treatment of diabetic complications, improve overall health of the diabetes population, and improve health of the community. The American Diabetes Association reported that the estimated annual cost of diabetes in 2017 was $327 billion, part of which included direct medical cost and costs related to reduced productivity (ADA, 2021). The economic cost of treating diabetes increased 26% between 2012 and 2017 (ADA, 2021). Health care intervention is needed to reduce costs and optimize care.

Effective patient education through staff education is one way that primary care providers can contribute to improving glycemic control and patient adherence (Van Vugt et al., 2019). In this project, I sought to develop effective staff education for APRNs that incorporated the ADCES7 self-care behaviors. The DNP project could potentially affect the cost of diabetes in the long term by providing education that staff and patients can use to improve glycemic control and prevent further complications. A short-term implication that could be considered is decreasing the amount of time that patients with diabetes spend seeking care for complications or the amount of time they lose from work related to diabetes. Healthy patients contribute to a healthier society with longer work histories, improved quality of life, and fewer medical bills (Zhou, 2020). Nurses can play a significant role in addressing this issue by becoming an advocate for patients through patient education and development of evidence-based protocols in the clinic setting. Van Vugt et al. (2019) supports the nurse's power in health promotion and education by pointing out that nurses at all levels possess the power of influence in the lives of their patients. The DNP project represents a way of using the power of nursing to potentially

effect change. By educating APRNs on the use of the ADCES7 self-care behaviors, nurse leaders may be able to empower patients to improve self-care and glycemic control.

Diabetes is the most common metabolic disorder and the sixth leading cause of death in the United States, with the potential to cause major complications such as cardiovascular disease, end–stage renal disease, hypertension, neuropathy, lower limb amputations, and fatality (Clark & Utz, 2014). Healthy People 2020 is a health care vision plan that is evaluated and updated every 10 years by the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services (Heffernan et al., 2019). The goals include health promotion, disease prevention, the creation of physical environments that promote good health, and the promotion of quality of life and healthy behaviors in all stages of life (Heffernan et al., 2019; Powers et al., 2017). This health care vision plan focuses on the individual improving self-behavior and management outcomes to reduce complications and improve quality of life (Zhou, 2020). According to the ADA (2021), social determinants of health, such as environment, education, economic stability, and access to health care can influence the individual's self-management and self-care behaviors of Type 2 diabetes.

Diabetes is a disease that is listed as a target for a nationwide health promotion and prevention program in the United States (Centers for Disease Control and Prevention, 2020). Nationwide improvements cannot be effective without improvements in self-care on the local level. The primary care provider must be engaged in providing access to patient education for patients and APRNs. The DNP project's focus was on educating APRNs, thereby improving staff knowledge of the ACDES7 self-care behaviors that can

subsequently be used to educate Type 2 diabetes patients. I conducted a teaching education session in which I introduced APRNs to the ADCES7 self-care behaviors framework. This framework can be used as a tool to address diabetes self-care management and education with Type 2 diabetes patients in the primary care setting. Therefore, it could contribute to the nationwide goal of improving diabetes patient outcomes.

Summary

Type 2 diabetes is a major health problem in the U.S. adult population. Lack of adherence to self-care contributes to many adult patients not achieving glycemic control. By implementing a staff education project in the outpatient primary care clinic, I provided these medical providers with insights on the ADCES7 self-care behaviors. A staff education project was implemented to incorporate a multimodal educational approach to teaching, with the broader goal of improving self-care education in the primary care setting. To develop the project, I researched the literature and explored a framework for evaluating staff education. In Section 2, I explore the adult learning theory as a conceptual framework and clarify common terms used in the discussion of staff education. The relevance of the DNP project to nursing practice and my role and that of the project team are also discussed.

Section 2: Background and Context

Introduction

The DNP project addressed the practice problem of lack of APRN education related to diabetes self-care with Type 2 diabetes patients in the primary care setting. Improved APRN access to self-care education for the Type 2 diabetes patient in the primary care setting may serve to improve patient education techniques. The project question asked whether APRN education on the ADCES7 self-care behaviors improves staff knowledge on diabetes mellitus self-care information including health coping, diet, medications, physical activity, monitoring, problem solving, and reduction of risks. The purpose of the project was to educate APRNs on the ADCES7 self-care behaviors framework for use in addressing diabetes self-care management.

I begin this section by discussing the relevance of adult learning theory as a conceptual framework for exploring the lack of APRN knowledge related to patient education. The adult learning theory is a conceptual framework that is used in health education to address lack of staff knowledge (Azami et al., 2018). I also discuss the relevance of the staff education project to nursing practice. Last, definitions and terms are further clarified in relation to the project.

Concepts, Models, and Theories

I used Knowles's adult learning theory as a conceptual framework for the evaluation of the staff education. The theory, which Knowles developed in the early 1980s, has become an important part of the design and implementation of staff education in health care and other professions (Mukhalalati et al, 2019). Adult learning theory is

based on andragogy. Andragogy is the idea that adults have past experiences that influence learning, and these past experiences shape how the learner retains and applies information (The Wellness Network, 2018). Adult learning theory consists of a set of assumptions about how adults learn. Adults tend to be self-directing and to use their experience as a resource for learning (Smith, 2021). Readiness to learn is influenced by the need to learn. Motivation to learn comes from internal factors, not external factors (The Wellness Network, 2018). Adult learners need to know why something is important and have freedom to learn in their own way. Timing of training is important along with making the process positive and encouraging (The Wellness Network, 2018).

The adult learning theory is appropriate for staff education in the health care setting, some research shows (Mukhalalati et al., 2019). APRNs have diverse levels of experience, education, and background (Wheeler et al., 2022). Each provider will apply the information they learn differently but hopefully will see it as important for patient outcomes. This investment in learning concurs with a key premise of the adult learning theory that most adults are self-motivated learners (The Wellness Network, 2018). The project's aim was to provide learning tools, such as the ADCES7 self-care behaviors, to APRNs in the practice setting was consistent with the adult learning theory.

Some terms specific to the project include *blood glucose, diabetes mellitus, Type 2 diabetes mellitus, hgbAIc,* and *complications*. Blood glucose is the body's main source for energy and the main sugar found in the blood (ADA, n.d.). Diabetes mellitus is a condition that causes hyperglycemia because the body is unable to use blood glucose for energy (ADA, n.d.). Type 2 diabetes mellitus is defined as diabetes with insulin

resistance and relative rather than absolute insulin deficiency (ADA, n.d.). The U.S. National Library of Medicine (n.d) defined hbA1c as a lab test that shows a 3-month average level of the blood glucose. For the DNP project, Type 2 diabetes was the term used in the staff educational material. Another term related to the project was *complications*, which describes harmful effects of diabetes that can include damage to the heart, eyes, blood vessels, kidneys, nervous system, feet, skin, gums, and teeth (ADA, n.d.).

Adherence is defined as a commitment to a cause or belief. In relation to the DNP project, the patient would be committed to self-care. Another word that could be used is *compliance*, which is defined as the act or process of complying to desire, demand, proposal, or regimen (see Merriam-Webster, n.d.). The definition of adherence as applied to the nursing practice problem is the extent to which a person's behavior, diabetes self-care, corresponds with agreed recommendations of the health care provider (see Merriam-Webster, n.d.).

The ADCES7 self-care behaviors was another important part of the project. The ADCES7 self-care behaviors is a framework for self-care management of diabetes (Kolb, 2021). More specifically, the framework provides an evidence-based model for assessment, intervention, and evaluation of patients with diabetes. This framework allows for providers and patients to partner together to develop more informed decision-making for diabetes self-care. In the educational session, I introduced the ADCES7 self-care behaviors framework, which consists of seven subjects of importance in diabetes self-care. Since its development in the 1990s, the ADCES7 self-care behaviors has offered

clinical staff a framework to help patients with diabetes improve self-care and outcomes (Kolb, 2021). I used the ADCES7 self-care behaviors to educate APRNs at the project site on importance of diabetes self-care management. The framework itself is a guideline that these providers can use in their provision of patient education.

Relevance to Nursing Practice

Type 2 diabetes mellitus is the most prevalent type of diabetes affecting 90%–95% of the population with diabetes globally (Zhou, 2020). Type 2 diabetes mellitus is a chronic condition that affects a growing number of patients (Shabibi et al., 2017). As of 2020 Diabetes affected approximately 463 million adults worldwide, 9.3% of the global population (Centers for Disease Control and Prevention, 2020). Data show that expenses related to diabetes in the United States increased 26% between 2012 and 2017, yet improvement in hbA1c was minimal (ADA, 2021). Diabetes can cause multiple organ complications and is the leading cause of retinopathy and nontraumatic limb amputation (Centers for Disease Control and Prevention, 2020).

Clinical experience indicates that no improvement in diabetes control is possible without patient adherence (Price, 2016). Van Vugt et al. (2019) pointed out that the primary care provider manages most diabetes patients. The primary care provider must be actively involved in providing staff education related to diabetes education and must work toward improving outcomes of this population. Research has shown that educational interventions can improve glycemic control in the Type 2 diabetes patient (Hailu et al., 2019). Implementing evidence-based practice education focused on improving patient self-care has been found to be effective in improving glycemic control

(Van Vugt et al., 2019). The primary care provider must provide educational techniques supported by evidence-based practice to have the best chance of being successful in improving outcomes in diabetes patients (Dehghami-Tafti et al., 2015).

Local Background and Context

The DNP project was justified due to the lack of patients meeting hbA1c goals in the primary care setting. I completed a needs assessment at the primary care setting by calculating the mean, or average, hbA1c of the sample population (Hodges & Videto, 2011). I retrieved a list of Type 2 diabetes patients from the facility's electronic medical record system that included results for the last hbA1c. Only three of the 20 patients were found to have currently achieved glycemic control with an hbA1c below 7.0 (see ADA, 2021). The mean hbA1c for the sample population was 9.0. The current evidence-based treatment guidelines from the ADA (2021) substantiate the need for addressing the management of the facility's diabetes patients. Uncontrolled diabetes in this primary care setting needed to be addressed to improve glycemic control of this group of primary care patients. Patients may not have been meeting goals due to a lack of knowledge of diabetes self-care in the practice setting or a lack of adherence to treatment instructions; however, this could have been the result of a lack of staff knowledge. Before the project, patient education consisted of basic discussion between the provider and patient related to glucose control and medication adherence.

Improvement in glycemic control in the diabetes population positively influences health promotion and disease management. Hailu et al. (2019) pointed out that addressing diabetes through patient education and improved glycemic control positively affects the

diabetes patient population by decreasing hospitalizations, complications, and mortality. Improved glycemic control in individual patients therefore reduces health care costs of managing complications in this patient population. Improving population health can be accomplished by targeting adult patients with diabetes in the primary care setting (Van Vugt et al., 2019).

Role of the DNP Student

Improvements in diabetes self-care management through staff education are a major part of primary care. The DNP student currently works as a primary care provider and needed more diabetes educational materials and APRN involvement to improve glycemic control in the current primary care setting. The DNP student implemented, supervised, evaluated, and summarized each step of the DNP project. The steps of the project that the DNP student implemented began by informing APRNs of the plan for the educational program. APRNs in local primary care practices were invited. The DNP student developed the pre- and postquestionnaire draft. The stakeholder group evaluated the questionnaire for content validity via the content validity index (CVI) range of 0 to 1 and I-CVI. If the result was greater than 0.79, the item was considered relevant; if the result was between 0.70 and 0.79, the item was revised. If the value was below 0.70, the item was eliminated. Stakeholder group evaluation was completed after the project gained Walden University Institutional Review Board approval. Demographic information collected included the attendee's age. The 25 questions in the pretest–posttest questionnaire assessed staff knowledge level of the ADCES7 self-care behaviors covering the seven topics of importance. The staff completed the pretest questionnaire,

attended the educational session, and then completed the posttest questionnaire. Last, I collected, analyzed, and evaluated the effectiveness of APRN education from the data gathered from the questionnaires.

The DNP project took place at a local venue for a group of 10 participants. The DNP student currently works as a primary care provider and will use findings to address educational protocols for teaching APRNs. The motivation for this project was to improve patient outcomes by improving access to staff education related to the adult diabetes population treated in the primary care setting.

Potential biases that were identified included the assumption that staff and patients know what to do but do not want to be adherent, due to lack of motivation or lack of correct knowledge. Biases were addressed by becoming educated on issues with self-care adherence with the adult diabetes population. Education topics included research on diabetes, diabetic complications, and successful educational techniques all addressed in the ADCES7 self-care behaviors framework. The convenience sample also increased risks for assignment bias (Polit, 2010).

Role of the Project Team

The DNP project was completed in a local venue suitable for 10 or more people. The stakeholder group consisted of three employees who are APRNs, including this author. The stakeholder group met as needed to discuss and review the project, including purpose, intended outcomes, approach, method, and educational content. This author developed a draft pretest and posttest data collection tool. The tool was reviewed and validated by the stakeholder group using the CVI. The pretest and posttest questionnaire

were developed based on content from the evidence based ADCES7 self-care behaviors that have been developed to guide APRNs in diabetes self-management education and support. The questionnaire in Appendix reflects the content of the educational intervention (Kolb, 2021). APRNs were notified about the project. The team helped with implementing the staff education by assisting with scheduling. Findings were shared with the team and participating APRNs when data collection and evaluation were completed.

Summary

The DNP project was a staff education project that addressed improving APRN knowledge of the ADCES7 self-care behaviors used as guideline for diabetes self-care management and support of the Type 2 diabetes patient in the primary care setting. Clinical experience indicates that no improvement in diabetes control is possible without patient adherence (Price, 2016). Patient adherence in the adult diabetes population is an area that must be addressed by the primary care provider (Van Vugt et al., 2019). By providing APRN education using an educational program to introduce the ADCES7 self-care behaviors, APRNs were enabled to better understand the importance of diabetes patient self-care management. This therefore improved APRN knowledge related to diabetes education and guidelines for improving adherence to medication and self-care in this population. The next section discusses the collection and analysis of evidence for this project.

Section 3: Collection and Analysis of Evidence

Introduction

Type 2 diabetes mellitus in the adult population is a preventable chronic condition that affects a growing number of Americans. The complications from uncontrolled diabetes can decrease quality of life and length of life (Mohammadi et al., (2018). Management of Type 2 diabetes must start with the primary care provider (Van Vugt et al., 2019). The purpose of the project was to educate primary care APRNs on ADCES7 self-care behaviors to foster improved diabetes self-care management education in the primary care setting. The project gave APRNs a tool to use with Type 2 diabetes patients in the primary care setting to improve diabetes self-care.

Practice-Focused Question

The standard of education in the primary care practicum setting involved mostly oral communication between providers and patients. Such educational techniques are not based on current best practice guidelines (ADA, 2021). The project question asked whether education on the ADCES7 self-care behaviors improves APRN knowledge on self-care management and support of Type 2 diabetes patients (see Kolb, 2021). The purpose of this project was to develop a staff education program to improve APRN knowledge of the ADCES7 self-care behaviors and application of the framework to patient education on diabetes self-care practices.

I used the adult learning theory as a conceptual framework for this staff education project. I employed a pretest–posttest design; the results were analyzed with the use of inferential statistics. Potential implications to educating APRNs in the primary care

setting include improvement of APRN knowledge of the ADCES7 self-care behaviors. This knowledge can potentially be applied to patient education. In this section, I further discuss concepts and terms related to the DNP project. The sources of evidence for the project are also discussed.

Sources of Evidence

To obtain the sources of evidence for this DNP project, I reviewed past research and evaluation of adherence, staff education, diabetes education, diabetes self-management, and diabetes adherence. I present key terms and evidence to clarify the topic of adherence, discuss the appropriateness of self-care management education and support when addressing patients with diabetes education, and clarify the complexity and issues related to adherence with Type II diabetes and education.

For this staff education project, I employed a pretest–posttest questionnaire design, analyzing the results with inferential statistics. Questionnaires were employed before and after the educational program to assess the project's outcome. Twenty-five questions in the pretest–posttest questionnaire assessed staff knowledge level of the ADCES7 self-care behaviors emphasizing the seven areas of importance. Potential implications to a staff education project introducing the ADCES7 self-care behaviors as a framework for treating patients with diabetes in the primary care setting include improvement of access to diabetes education in the primary care setting. By improving access to diabetes self-care management education, APRNs could influence improvement in glycemic control in the diabetes patient.

To evaluate patient adherence in Type 2 diabetes mellitus, I completed a literature review to evaluate the conceptual framework and past research related to the topic. The literature reviewed was developed around the topics of adherence, patient education in Type 2 diabetes, and diabetes self-management. Research was completed using the Walden Library databases including PubMed, MEDLINE and CINAHL. A combination of research articles, systematic reviews, and meta-analysis were collected. Search terms included *diabetes education*, *diabetes self-management*, *diabetes adherence*, and *adherence*. Sixty articles were reviewed with approximately 33 articles used for the literature review.

I began the literature review by evaluating the issue of medical adherence. Lawn (2011) pointed out that it does not matter whether "compliance," "concordance," or "adherence" are used if positive outcomes are achieved. Adherence can be affected by attitude and interventions (Dehghani-Tafti et al., 2015). In a cross-sectional study, Dehghani-Tafti et al. (2015) examined the design and implementation of educational interventions for diabetes management. They found that diabetes causes direct and indirect costs to the health care system and can negatively influence an individual's quality of life. Lack of self-care management and self-care behaviors can lead to increased complications and death; to achieve optimal glycemic control, self-care measures must include a healthy lifestyle, medication adherence, and blood glucose monitoring, Dehghani-Tafti et al. stated. Health care providers must promote self-care behaviors to diabetes patients by using health education programs.

Mohammadi et al. (2018) performed a meta-analysis randomized controlled intervention study involving education bases on the health belief model and was divided into two outcomes. The first outcome involved the hbA1C, fasting blood glucose, lipid profile, and anthropometric levels, whereas, the second outcome involved nutrition knowledge, health beliefs, and quality of life. Mohammadi et al.'s study revealed that lifestyle changes and patient education on self-care management is the main treatment strategy for Type 2 diabetes. Being proactive in diabetes education can reduce complications, morbidity, and mortality, the researchers concluded.

Educational studies have been completed to evaluate self-care management. Shabibi et al. (2017) performed a quasi-experimental study featuring a patient education intervention to address self-care management. They used multistage random sampling. As Shabibi et al. noted, diabetes is a chronic illness that requires lifelong self-care management behaviors and is known by the World Health Organization as a silent epidemic. Diabetes is one of the diseases that patients have control over and must be educated on to achieve appropriate glycemic control and avoid further disease complications, Shabibi et al. (2017) observed. The first step in better glycemic control, they noted, is the improvement of self-care management behaviors. Providers should educate patients, staff members, and the community on improving self-care management behaviors and implementing healthy lifestyles so that the perception of the disease is understood along with the potential complications.

Self-care management was further evaluated by Azami et al. (2018) who conducted a two-arm parallel-group randomized controlled trial with blinded assessors to

study the effectiveness of diabetes self-care management education. The results showed self-care management education to be effective. Patients showed improvement in blood pressure, hbA1c, body weight, and diabetes self-care management behaviors. This study supports the use of diabetes self-care management strategies to address patient education.

Research shows that a positive relationship between the patient and provider with focus on understanding provides improved outcomes (Shabibi et al., 2017; Van Vugt et al., 2019). Van Vugt et al. (2019) pointed out that the provider should play a significant role in providing education. Vermeire et al. (2003) performed a qualitative research study featuring focus group discussions with 46 patients with Type 2 diabetes. Vermeire et al. concluded that patient provider relationship and patients' health beliefs strongly influenced adherence. Mathew et al. (2022) also found that the provider-patient relationship is related to adherence and glycemic control. Mathew et al. conducted a study of two primary care clinics between 2019 and 2021 interviewing Type 2 diabetes patients and analyzing content using comparison and synthesis. Conclusions supported that patient education along with patient and provider communication effect adherence. Mathew et al. used content analysis, as did Vermeire et al.

Patient-provider relationship and patient satisfaction have been attributed to improved adherence (Vermeire et al., 2001). Vermeire et al. (2001) performed a comprehensive review of literature over 3 decades from 1975 to 1999 that evaluated adherence. Vermeire et al. (2001) identified patient-provider relationship and patient satisfaction as variables that influence adherence. Kerse et al. (2004) conducted a waiting room survey on 370 patients from multiple general practice settings. Statistical analysis

of variance was used to evaluate data and form conclusions. Kerse et al. (2004) found that improved patient-provider communication with understanding and mutual agreement improved patient adherence with medications. Van Vugt et al. (2019) pointed out that patient-centered education helps to improve adherence. The patient provider relationship is essential to effective communication and improved adherence (Van Vugt et al., 2019). Key aspects of communication include teaching the patient about diabetes, its effects, medications, and need for adherence (Hailu et al., 2019). Increasing contact time between the staff and patient also helps to improve adherence (Norris et al., 2002).

Next this author evaluated patient adherence and patient education in Type 2 diabetes. Improvements in adherence have been successful with patient education (Zhou, 2020). Multiple research articles support the conclusion that patient education improves adherence and glycemic control (Dehghami-Tafti et al., 2015; Shabibi et al., 2017). Ferguson et al. (2015) performed a systemic reviewed and meta- analysis to evaluate the effectiveness of diabetes self-care management education and primary care, which concluded that primary care and diabetes self-care management education could improve glycemic control. The review also established that the provider patient relationship affects adherence (Ferguson et al., 2015). Kasznicki et al. (2007) concluded that patient education needs to include patient and provider communication along with ensuring the patient has a thorough knowledge base of the disease process. Interventions that involve a cognitive and behavioral component can also improve adherence (Hailu et al., 2019). Shabibi et al. (2017) pointed out that providers could implement successful interventions to improve glycemic control.

With advances in technology new practices are available to address diabetes mellitus adherence. Research has shown successful outcomes with goal-oriented programs that have included telephone and telehealth interventions including self-care management (ADA, 2021). Farugue et al. (2017) found that both telehealth and telephone interventions assisted to improve glycemic control as evidenced by a reduction in the hbA1c. Tang et al. (2011) found that telephone, email, and Internet based patient support programs have been successful in improving diabetes glycemic control and adherence. Farwana et al (2020) conducted a systematic review of the use of video-based media as an educational tool. The results concluded that educating with a computer program could be effective in-patient education.

Videos have proven to be an effective and cost-effective form of educational material (Millao et al., 2017). Novak et al. (2019) found that computer-based education can play a vital role in educating patients about their condition and patients like learning about their health problems. Lee et al. (2017) completed a systematic review and network meta-analysis that concluded computer-based technology can improve glycemic control in a patient with diabetes. Other studies concluded that videos are an effective form of patient education (Farwana et al., 2020). Telehealth technologies continue to evolve, and the health care profession must consider innovative approaches to teaching to stay up to date with modern technology (Millao et al., 2017).

Based on the literature review, the reader can conclude that patient education and the patient staff and provider relationship are important components of adherence and glycemic control in Type 2 diabetes patients. ADA (2021) found that successful

improvement in glycemic control needs a systems approach in the primary care setting addressing policy and procedure. Type 2 diabetes patients need the provider and staff to be actively involved in patient education and regular follow-ups along with encouragement (Van Vugt et al., 2019). Diabetes self-care management has been a major focus of diabetes control. Van Vugt et al. (2019) pointed out that diabetes self-care management education including topics related to healthy eating habits could assist in improving glycemic control. Siminerio et al. (2013) confirmed that the primary care setting has been successful in improving patient adherence by using a patient centered self-care management approach. Siminerio et al. (2013) completed a randomized controlled trial on 141 participants in the primary care setting comparing diabetes self-management support approaches over a 6-month period. The trial concluded that all participants showed improvement in glycemic control with diabetes self-management support. Van Vugt et al. (2019) concluded that education should include information on self-care strategies to improve adherence and glycemic control. Johnson et al. (2010) completed a data analysis, population based, cross sectional study from a statewide Florida survey database. The study evaluated the connection between diabetes self-care management education and access to comprehensive diabetes care in adult diabetes patients. The study found that patients who received diabetes self-care management education had more access to comprehensive diabetes care. Bowen et al. (2016) completed a randomized controlled trial evaluating the effectiveness of diabetes self-management education on glycemic control. Conclusions showed that structured patient education centered around self- management improves glycemic control in patients with

diabetes. Van Vugt et al. (2019) note that patient education needs to include self-care management, access to the provider, individualization, ongoing support, and follow-up.

Analysis and Synthesis

For this staff education project, I employed a pretest–posttest questionnaire design, the results of which analyzed with inferential statistics. I developed the pre- and postquestionnaire draft. The stakeholder group evaluated the questionnaire for content validity via the CVI range 0-1 and I-CVI. Stakeholder group evaluation was completed after the project gained institutional review board approval. The pre- and postquestionnaire is included in Appendix. Results were evaluated via inferential statistics for this educational program. The ADCES7 self-care behaviors (Kolb, 2021) was the basis for the educational material for the project.

The population for this project was from a convenience sample of Primary Care APRNs from local primary care settings. The primary care setting is a practice that has been open for 10 years. The primary care office serves a rural area of Tennessee and currently treats multiple patients with diabetes. The APRNs were not actively participating in diabetes education in the clinic setting. The ADCES7 self-care behaviors education was the intervention chosen for the staff education project (Kolb, 2021). The ADCES7 self-care behaviors educational program materials were provided by the ADCES (2021) who provided written permission for duplication and distribution as desired with copyright citation. The educational session was a Microsoft PowerPoint presentation that was developed and presented by the DNP student. The educational session was approximately 45 min long and introduced the ADCES7 self-care behaviors

framework for providers to use as a model for diabetic teaching. Diabetes self-care services included discussion of seven topics including healthy coping, healthy eating, being active, taking medications, monitoring, reducing risks, and problem solving. The educational session discussed information in simple language that APRNs should be able to follow. Evidence has shown that use of the ADCES7 self-care behaviors results in a significant reduction in hbA1c levels (Kolb, 2021). The educational session provided materials based on evidence-based practice and recommendations by the ADCES (Kolb, 2021). The ADCES7 self-care behaviors are available as a framework for unlimited review of material to motivate staff to work with patients to improve self-care management of Type 2 diabetes and therefore possibly improve glycemic control if this intervention was determined to be effective in educating staff.

Several steps were taken to implement the staff education project. Approval was obtained from the practice setting and Walden University for implementation of the DNP project. A list of APRNs was obtained from local primary care settings. Each APRN was contacted individually by the DNP student to request volunteer participation in the project. APRNs were able to opt out of the project at any time if they chose. Once the APRN agreed to participate he/she was given full disclosure of the project details and goals were reviewed. Each participant was given consent forms provided by Walden University. Participants were informed that submission of the pre- and postquestionnaire would assume the form of consent due to no official signed consent required. APRNs consented to taking a questionnaire before and after attending the educational session that was a PowerPoint presentation developed and presented by the DNP student. APRNs also

consented to allowing the project data to be shared with Walden University, providers, and staff at the primary care setting. During the first interaction, before the educational session the participants answered the prequestionnaire related to knowledge of diabetes patient education and the ADCES7 self-care behaviors. Matching pre- and postquestionnaires had corresponding numbers for identification. The APRNs attended the educational session on the same day as a group. The DNP student was available after the educational session to answer any questions from APRNs.

After APRNs completed the pretest and attended the educational session, they completed the posttest. Data was transferred to an Excel spreadsheet. No names were used due to questionnaire results remaining anonymous. Intra-coder reliability was strong since the DNP student was responsible for coding all APRN responses and keeping the hard copy data secure in the practice setting to protect APRN responses (Terry, 2012). Protected APRN information was stored in a locked file cabinet in the practice setting that can only be accessed by the DNP student and providers. I used a spreadsheet to compile answer data and transferred data into IBM SPSS statistical analysis program to perform a paired t-test with the pre- and posttest results. I discuss the conclusions from the research in Section 4. A consent form provided by Walden University was given to participants before the education session.

Issues with external validity made it difficult to generalize the results of the project. This author considered that there was a risk for mixed outside education and contamination of results so that the findings are not solely related to the educational session. Results could not represent the general public and the sample pool was narrow.

The benefits of the pretest–posttest study design include low cost, convenience, and simplicity (Polit, 2010). The DNP project supported the idea that APRN education on the ADCES7 self-care behaviors for addressing diabetes self-care management can improve staff knowledge and ability to assist diabetes patients in learning about self-care.

Summary

This project was designed to address the need for staff education in diabetes self-care management. APRNs at the local primary care setting were not educating patients with diabetes on self-care management strategies. The project purpose was to increase APRN knowledge of ADCES7 self-care behaviors for addressing diabetes self-care management education and support (Kolb, 2021). The project addressed the gap of lack of APRN knowledge related to the ADCES7 self-care behaviors and application to diabetes self-care management education and support. Improving APRN education could improve executive function of the primary care setting by subsequently improving patient education, therefore improving self-care management in the patient with diabetes. Patient improvement in self-care adherence through staff education may decrease mortality and morbidity in this group. A DNP is in a perfect position to use a theoretical framework, such as the adult learning theory as a guide to implement a staff education project to assist in the goal of increasing APRN knowledge of the ADCES7 self-care behaviors. The project provided evidence-based data to assist the primary care provider in improving the educational programs for APRNs. The DNP project was shown to be useful the primary care setting, APRNs can apply this knowledge to patient education.

Section 4 will discuss the findings and recommendations developed from project conclusions.

Section 4: Findings and Recommendations

Introduction

I conducted this staff education project on diabetes self-care management education for APRNs in the primary care setting. APRNs in the local primary care setting were not actively providing self-care management to patients with diabetes. The gap in practice was the lack of APRN knowledge related to ADCES7 self-care behaviors for the Type 2 diabetes patient in the primary care setting. The project question asked whether education on the use of the ADCES7 self-care behaviors can improve APRN knowledge of Type 2 diabetes patient self-care management.

I used the adult learning theory as a theoretical framework for the staff education project. The 45-min educational session included instruction on the ADCES7 self-care behaviors as a framework for treating patients with Type 2 diabetes in the primary care setting. I used a single group, pretest–posttest design to evaluate the effectiveness of ADCES7 self-care behaviors education in improving APRN knowledge of Type 2 diabetes patient self-care management. There were 10 APRN participants. Each participant also completed a self-assessment of the competencies for diabetes self-care and education specialists. Results were analyzed with inferential statistics via paired t-test.

Findings and Implications

I administered and evaluated the staff education. Ten APRNs participated in the assessment. I used a single group pretest–posttest design to evaluate the effectiveness of ADCES7 self-care behaviors education on improving APRN knowledge of Type 2 diabetes patient self-care management. APRNs in the evaluation ranged from 24 to 63 years old with one man and nine women in the group. The 45-min educational session covered the content of the ADCES7 self-care behaviors with discussion of each of the seven categories including healthy coping, healthy eating, medication adherence, physical activity, monitoring, reduction of risks, and problem solving. For each category, there was in-depth discussion of provider strategies including brainstorming issues with patients, reviewing each category at each office visit, reviewing medications at each office visit, addressing issues, making adjustments, assisting with updating monitoring devices, educating patients on monitoring devices available, reviewing goals and outcomes, and emphasizing creativity with increasing activity. The staff education project was presented in simple language, and students were allowed to ask questions.

Quantitative data were analyzed using a paired t-test to compare pre and post-test results on a 25-item questionnaire with a p value of <0.05 indicating statistical significance. The comparison of the mean score of the pre and post-test showed a statistically significant higher mean score after participants completed the educational program ($p<0.05$). The educational session increased knowledge of the ADCES7 self-care behaviors with a 4-point average gain in points (95% confidence interval, 2.092, 5.907) on overall scores after participation in the educational session. APRNs post-test

scores showed a significant (p=0.001) improvement over the pre-test scores. Eight out of 10 participants showed an increase in knowledge while two participants scored the same on both the pre and post-test. All participants scored greater than 70 on the pre and post-test. Results of the pre and post-test questionnaires are illustrated in Table 1. Based on conclusions of this study, implementation of the ADCES7 self-care behaviors as a framework for teaching patients with diabetes could be effective in the primary care setting.

Table 1

Paired t Test: Knowledge Pre and Post Educational Session

	Paired Differences							Significance	
				95% Confidence Interval of the Difference					
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
PreTest-PostTest	-4	2.66667	0.84327	-5.90762	-2.09238	-4.743	9	<.001	0.001

Each participant completed a self-assessment of the competencies for diabetes self-care and education specialists. On a scale of 1 to 4, participants reported an average level of knowledge (3) related to diabetes education. All participants stated that they could communicate and advocate for patient education and indicated that information was important for quality improvement, professionalism, and lifelong learning. Areas that were considered less important were business management and systems practice. All participants worked with patients with diabetes.

The staff education project has some limitations. Because of the small convenience sample, the results of the project cannot be applied to the general population

of APRNs. More research is needed to support the conclusion of the pilot study. Follow-up on findings that could expand to patient involvement would be beneficial.

The conclusions of the staff education project support implementation of the ADCES7 self-care behaviors as a potentially effective framework for teaching patients with diabetes in the primary care setting. Because the material is relevant to each provider's practice, the material could be applied to patient interactions. Simple discussion of lifestyle changes related to taking medications, monitoring blood glucose, coping with daily life, reducing risk factors, engaging in healthy eating, being active, and solving problems can be incorporated into patient office visits. Leaders in the primary care setting could later develop protocols that include the ADCES7 self-care behaviors for diabetic teaching. Educational materials related to the ADCES7 self-care behaviors could be distributed in exam rooms so that providers have easy access to information for patient education. The simplicity of recommendations may make them convenient and applicable to other areas of practice such as acute care, hospital, or urgent care settings. By improving staff education on ADCES7 self-care behaviors, patients with diabetes could potentially have improved outcomes, which might promote improved health of the Type 2 diabetes population. These efforts may lead to positive social change in the form of improved patient outcomes and decreased complications related to diabetes.

Recommendations

ADCES7 self-care behaviors can be used as a framework for educating patients with Type 2 diabetes in the primary care setting. The ADCES7 self-care behaviors are easily adaptable to any setting with patient interaction. Open communication between the

provider and patient can facilitate discussion on each of the seven categories at each office visit. Identification of problem areas within the seven categories could be easily identified with open-ended questions and addressed with casual discussion. A recommendation arising from the staff education project is the use of the ADCES7 self-care behaviors as a framework at each patient visit to systematically evaluate each patient's individual needs and address areas needing attention. Patient recommendations would be tailored to individual challenges and could include interventions such as prescribing a continuous glucose monitoring device, assisting with community resources, adjusting medications, referring to other agencies, ordering lab tests, providing education on medication adherence, offering emotional support, or just requesting more frequent follow-up visits.

Contribution of the Doctoral Project Team

The doctoral project team completed the content validity evaluation. I developed the pre- and postquestionnaire drafts. The stakeholder group, which consisted of three providers, evaluated the questionnaire for content validity via the CVI range 0-1 and I-CVI. A result greater than 0.79 meant that the item was considered relevant; if the result was between 0.70 and 0.79, the item was revised. If the value was below 0.70, the item was eliminated. One hundred-twenty-five items were reviewed with one item that needed to be revised. The item in question was revised and approved by stakeholders. Stakeholder group evaluation was completed after the project gained institutional review board approval. The team also gave feedback on grammar and clarity of the questionnaire. The team helped with brainstorming ideas for extending invitations to the

educational session. The team stayed open minded and committed to continuous evaluation and follow-up, and members were generous with their time and feedback. The project team helped to prepare forms and organize materials for the educational session as well as with setup and cleanup for the sessions.

Strength and Limitations of the Project

Strengths of the project include the pretest–posttest study design due to low cost, convenience, and simplicity. Some limitations considered included issues with external validity making it difficult to generalize the results of the project. This author considered that there was a risk for mixed outside education and contamination of results so that the findings are not solely related to the educational session. The convenience sample was used to obtain volunteer accessibility but cannot be used to represent the entire population. Results could not represent the general public due to the sample size and sample pool being narrow. The convenience sample also created the risk of selection bias further limiting generalizability of finding (Polit, 2010). Expanding education to a larger group of APRNs in the future or even expanding to patient involved education should be considered.

Section 5: Dissemination Plan

I plan to disseminate findings of the study through a poster presentation at the local primary care setting to providers and educational session participants. Providers can use the information provided in the poster presentation as a reminder to address ADCES7 self-care behaviors with patients with diabetes at every office visit. The primary care setting is an ideal place to use the educational information to effect change in patient education. The educational information is simple and readily accessible for APRNs as well as easy to translate into practice.

Analysis of Self

I stepped out of my comfort zone in implementing the staff education session. Public speaking has not been a favored activity of mine in the past. However, speaking on ADCES7 self-care behaviors as a framework for diabetes management in the primary care setting was easier than expected. I realized I knew the educational material well, and it was easy to lead a discussion and ask for group participation on the subject. In my view, the educational session was a success in terms of organization, participation, implementation, completion, and conclusions. The time needed to complete the project was longer than expected. The process of developing and implementing even a staff education project is more in depth and tedious than anticipated. After this educational project, I feel that educational sessions I deliver will be easier to implement. For the first time, I have considered teaching as an option in a future career path.

Summary

Based on the findings of the DNP staff educational session, I concluded that the ADCES7 self-care behaviors would be beneficial to use as a framework for diabetes education management in the primary care setting. The project may help bridge the gap between APRN knowledge of ADCES7 self-care behaviors and education of the patient with Type 2 diabetes in the primary care setting. The simplicity of the ADCES7 self-care behaviors makes the framework adaptable to multiple practice settings and situations (Kolb, 2021). Providers can use the framework to initiate open-ended discussion with patients to help solve problems and improve diabetes self-care management. They can address the seven categories of the ADCES7 based on individual patient needs. More studies are needed in the future to support the results of this pilot study.

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Appendix: Pre- and Postquestionnaire

Pre- and Postquestionnaire
ADCES7 Self-Care Behaviors

Mark the answer that is most correct:

1. Joan is an APN in a rural family practice that has a high population of patients with diabetes who lack adequate knowledge of diabetes self-care. How can Joan use the ADCES7 goals to improve this population's knowledge of self-care?
   a. By applying patient teaching centered on self-care patient education
   b. Through assisting patients with behavior changes to improve glucose control
   c. By defining behaviors to address diabetes self-care management
   d. All the above

2. When assisting patients in improved diabetes self-care APN Joan should implement which of the following actions?
   a. Individualize patient centered care to impower the patient to work on seven behavior areas that improve diabetes control though self-determined goals
   b. Focus mainly on medication management to improve diabetes control
   c. Stress to the patient how risk factors for health problems will increase if diabetes self-care is not met
   d. None of the above

3. APN Joan needs to have an understanding about ADCES7 Self-Care Behaviors that includes which of the following information.
   a. ADCES7 Self-Care behaviors focus mainly on healthy eating
   b. Risk factors are not taken into consideration when following the ADCES7 Self-Care Behaviors
   c. The most important part of ADCES7 Self-Care Behaviors is to learn problem solving to aid in diabetes control
   d. The ADCES7 Self-Care Behaviors address treating the patient as a whole by addressing coping, eating, activity, monitoring, risk factors, medications, and problems solving to assist the patient in diabetes self-care management

4. APN Joan has learned the ADCES7 Self-Care Behaviors. Which of the following categories does not belong?
   a. Healthy eating
   b. Taking medication
   c. Sleeping eight hours a night
   d. Addressing risk factors

5. APN Michelle is assisting a newly diagnosed 25-year-old female patient with diabetes accept news of her health condition. According to ADCES7 Self-Care Behaviors, which of the following falls under healthy coping?
   a. Positive attitude
   b. Positive relationships
   c. Quality of life
   d. All the above

6. According to ADCES7 Self-Care Behaviors, APN Joan needs to address healthy coping with patients with diabetes for which of the following reasons?
   a. Patients with diabetes are more at risk for depression
   b. Patients with diabetes have plenty of access to care
   c. Patients with diabetes have above average lifestyles
   d. All the above

7. When assisting patients in healthy coping APN Joan should consider which of the following interventions?
   a. Refer patients to a diabetes self-management education specialist
   b. Screen patients with diabetes for depression, anxiety, and addiction
   c. Develop a team of healthcare workers along with family members to support the patient with diabetes
   d. All the Above

8. APN Joan needs to help a patient with diabetes address barriers to healthy eating. Which answer best addresses healthy eating strategies?
   a. High fat foods with each meal
   b. Eating the same processed foods daily for each meal
   c. Eating a variety of high quality, nutritionally dense foods, plan meals
   d. None of the above

9. APN Michelle is working with 25-year-old Jessica to assist in healthy eating strategies. Which of the following suggestions would be beneficial?
   a. Avoiding a meal plan
   b. Eating a high carbohydrate diet with high fat content
   c. Measure portions and monitor intake
   d. None of the above

10. Which of the following strategies can APN Joan use to assist patients with diabetes in achieving healthy eating goals?
   a. Work with a registered dietitian to make an individualized meal plan
   b. Use a mobile app to track food intake with calories and nutritional information
   c. Use a food diary on pencil and paper to track food intake
   d. All the above

11. APN Mark is treating a 50-year-old male patient, John, who is trying to be more active. John weighs 400 pounds, works 40 hours a week as an accountant, has a two-hour commute to work, and does have a gym membership. Which of the following could be barriers to being active?
   a. Lack of time to exercise
   b. Body mass index
   c. Sedentary job
   d. All the above

12. APN Mark will explain to patient John that being active will improve his health in what way?
   a. Being active helps keep glucose levels closer to normal
   b. Physical activity can improve cholesterol and blood pressure
   c. Physical activity can improve muscle strength and heart rate
   d. All the above

13. APN Mark needs to explain which of the following to patient John about being active?
   a. Being active only involves aerobic exercise
   b. John should have medical clearance before vigorous exercise
   c. Resistance training is not recommended
   d. All the above

14. APN Michelle is treating a 60-year-old female with diabetes post hospitalization. Which of the following interventions could be done to support medication adherence?
    a. Reconcile home medication list with the patient
    b. Send in prescriptions for all medications to the pharmacy
    c. Assessment of cognitive level and understanding of medications with patient
    d. All the above

15. APN Michelle's 60-year-old patient with diabetes, Mary, has a history of non-adherence to her medications and was hospitalized due to a hypoglycemic episode. Which of the following could influence medication adherence?
    a. Mary was changed to Insulin therapy which is easier to take than pills
    b. Mary's hypoglycemic episodes do not affect medication adherence
    c. Mary's perceived medication effectiveness improves adherence
    d. None of the above

16. While learning about the ADCES7 Self-Care Behaviors, APN Michelle learned she could help Mary with medication adherence in which of the following ways?
    a. Address Mary's concerns related to side effects, personal preference, and lifestyle
    b. Review medication cost and efficacy with Mary
    c. Consider weight goals and risks of hypoglycemic episodes
    d. All the above

17. According to the ADCES7 Self-Care Behaviors, when addressing glucose monitoring with patients APN Joan needs to instruct the patient with which of the following information?
    a. ADCES7 Self-Care Behaviors recommends only monitoring glucose levels when the patient feels symptoms of hypoglycemia
    b. ADCES7 Self-Care Behaviors recommends monitoring blood glucose levels three times a day
    c. Glucose monitoring with Dexcom is not part of the ADCES7 framework
    d. None of the above

18. APN Mark is teaching a newly diagnosed patient with diabetes about glucose monitoring. Which of the following statements are true about monitoring?
    a. Monitoring only involves blood glucose testing
    b. Monitoring is independent of the other six self-care behaviors
    c. Identifying trends in blood glucose can be assessed with structured monitoring
    d. Self- monitoring does not improve outcomes

19. APN Mark is aware of which aspects of glucose monitoring should be considered in diabetes self-care management.
    a. Patients should not worry about knowing their glucose numbers
    b. The Dexcom is the best way to monitor blood glucose levels
    c. Finding a pattern of glucose readings can only be done with use of Dexcom
    d. None of the above

20. ANP Joan knows that reducing risk factors for diabetes in her patient population can be achieved by which of the following?
    a. Early diagnosis and screening
    b. Avoiding treatment of sleep apnea
    c. Focusing just on diabetes management
    d. None of the above

21. 65-year-old white male with diabetes, Tom, smokes one pack of cigarettes daily and has a BMI of 42. Which of the following lifestyle changes should he focus on to improve glycemic control according to the ADCES7 Self-Care Behaviors?
    a. Tom should focus on limiting activity to improve glycemic control
    b. Tom should work on smoking cessation and weight loss strategies to improve his overall health and glycemic control
    c. Tom should see a cardiologist
    d. None of the above

22. 65-year-old male with diabetes that smokes, Tom, wants to work on reducing risk factors for complications related to diabetes. According to the ADCES7 Self-Care Behaviors which of the following activities can APN recommend for this patient?
    a. Getting recommended vaccines
    b. Daily foot checks
    c. Yearly eye exam
    d. All the above

23. ANP Joan is informed that patient Tom is having problems sticking his fingers, which is interfering with routine glucose monitoring. Which of the following should be considered to help Tom solve this issue?
    a. Instruct Tom that he must stick his finger to check his blood glucose levels
    b. Brainstorm ideas with Tom including sticking his forearm or abdomen, having a family member help him, or order a continuous glucose monitoring devise to assist in glucose monitoring
    c. Tell Tom to stop checking his blood glucose
    d. None of the above

24. 25-year-old Jessica is married, has two children, works as a patient care technician five days a week, is currently training for a half marathon by running daily, and is vegan, which of the following may affect Jessica's problem-solving choices?
    a. Working five days a week
    b. Training for half-marathon
    c. Self-inflicted dietary restrictions
    d. All the Above

25. APN Joan needs to convey which of the following information to patients with diabetes about problem solving as part of diabetes self-care management?
    a. Diabetes teaching class will give the patient all he/she needs to management diabetes the rest of his/her life
    b. Patients with diabetes have less barriers to learning than other patients
    c. Physical and social environment do not affect learning
    d. Being a lifelong learner can help improve outcomes