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Staff Education on Diabetes Self-Management for Patients

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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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MS, Morgan State University, 2013

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Program Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Diabetes mellitus, a disease in which the body does not metabolize, store, and excrete glucose appropriately, presents an economic and health burden in the United States. Summary of recent evidence shows that nurses lack adequate education in providing diabetes self-management education to patients. Research also shows that providing nurses with education increases their knowledge of the disease and empowers them to teach their patients self-care. Framed within the analysis, design, development, implementation, and evaluation model of instructional design, the purpose of this Doctor of Nursing Practice program was to plan, implement, and evaluate a staff education program on diabetes self-management. The program objectives relative to the curriculum were evaluated by five participating nurses in the primary care clinic choosing either *Met* = 1 or *Not Met* = 2. All nine objectives were met, resulting in a mean of 1. The pretest/posttest change in knowledge by the participants showed a pretest range of 2 to 8 (72%) and 10 out of 10 on the posttest (100%). The group increase from pretest to posttest was 28%, indicating a positive change in knowledge. The staff education program on diabetes self-management will not only impact the nurses who received the training but will also affect patients, families, and the health care organization. The education improved the nurses' understanding of diabetes management and, more importantly, gave nurses the opportunity to offer high-quality, evidence-based care to their patients, thus promoting patient self-care behaviors, reducing cost and complications, and improving patients' overall health.

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Dedication

I dedicate this program to God Almighty and my family who stood by me day and night as I struggled to make my dream a reality, to God almighty, who gave me the strength, confidence, and fortitude I needed to make this dream a reality, and finally, to my friends and family members who also supported me in various ways.

Acknowledgments

I would like to give thanks to my God, my Lord and Savior, for the opportunity to have this experience and the existence for living. I would like to extend my husband for his uttermost support throughout this journey. My beautiful children, who understand that mummy loves them, and know that they can be great and accomplish whatever they put their heart and mind into. I am grateful to everyone with whom I have had the pleasure to work with during this program. Each of the members of my DNP Program Committee have provided me with extensive personal and professional guidance and taught me a great deal about both evidence-based practice and life in general. Lastly, I am immensely grateful for my parents, and my preceptor for not giving up on me, supporting me and providing the inspiration to advance in nursing practice.

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Section 1: Nature of the Program

Introduction

Diabetes mellitus (DM) presents an enormous economic and health burden in the United States. DM is a disease in which the body does not metabolize, store, and excrete glucose appropriately (Centers for Disease Control and Prevention [CDC], 2019). The global diabetes prevalence in 2019 was estimated to be 9.3% of the population (463 million people), rising to 10.9% (700 million people) by 2045 (CDC, 2019). Although there are several types of diabetes, Type 2 diabetes (T2DM) accounts for 90%–95% of cases (CDC, 2019). The national statistics report 2020 showed that 34.2 million individuals in the United States were diagnosed with T2DM in 2018 (CDC, 2020)

DM presents an enormous economic and health burden in the United States, contributing to hospitalization, mortality, and morbidity (CDC, 2019). According to the American Diabetes Association (ADA; 2018), the estimated total costs of diagnosed DM in 2012 was $245 billion, with $176 billion going towards direct medical expenditures and about $69 billion for indirect expenditures, like disabilities, lost wages, and premature death. In addition, the total costs related to DM in 2017 was $327 billion, showing a 26% increase over 5 years (ADA, 2018).

Research has shown that practitioners do not have enough knowledge about DM management, which affects the approaches they teach their patients, such as self-management (Debussche et al., 2018). This lack of knowledge creates missed opportunities to help patients manage the condition. The program site clinic does not follow the ADA guidelines for diabetes care as demonstrated in the chart reviews

completed during my practicum there. Nurses are charged with the responsibility of providing diabetes education, but they are often overwhelmed by several other duties in addition to lacking adequate training in diabetes self-management education (DSME) (Debussche et al., 2018).

The negative impact of DM, such as complications, cost, and poor quality of life, can be decreased by introducing DSME. Evidence-based literature shows that educating health care providers on DSME can empower them to enable healthy self-care behaviors in people with DM. Self-care behaviors, such as physical activity and self-monitoring, can positively influence glycemic control (Colberg et al., 2016). Azami et al. (2018) evaluated the impact of a nurse-led diabetic self-management program on glycosylated hemoglobin (HbA1c) in diabetic patients and found that the intervention not only lowered HbA1c, but the positive effects persisted after the study ended, resulting in long-term improvements in clinical, lifestyle, and psychological outcomes. DSME also lowers health care costs by reducing hospital admissions and readmissions (Powers et al., 2020). In addition, a study on the effect of DSME on glycemic control in Latino adults with T2DM showed that culturally tailored DSME interventions significantly reduce hemoglobin a1c (AIC)in Latinos with T2DM despite the heterogeneity across the studies (Hildebrand et al., 2019). Chrvala (2016) reported that all methods of DSME delivered by either a solo clinician or a team of health care providers achieved a more significant reduction in HbA1C than the control group. In addition, DSME positively affected other clinical, psychosocial, and behavioral aspects of DM (Chrvala, 2016).

Nurses play a significant role in improving the quality of care delivered to individuals with DM. The nurse's primary role in diabetes care is to facilitate behavioral change and self-care in managing DM through education and support to patients with DM. DSME is the hallmark of self-care that allows individuals to gain the necessary skills and knowledge to modify their behavior and successfully manage their diabetes (ADA, 2014).The nature of this program on DSME was to educate the nurses about DSME so that they can translate this knowledge to promote self-care behaviors in patients with DM, and by doing so, practice in a more empathic and compassionate manner that potentially leads to positive social change.

Problem Statement

The problem identified in this Doctor of Nursing practice (DNP) program was the lack of knowledge on DM self-management among the nursing staff and the potential impact this can have on DM care and patient outcomes. According to the needs assessment results of 50 chart reviews conducted during my practicum, the nurses at the program site lacked knowledge on DM self-management. This lack of knowledge is consistent with the literature, which has shown that nurses lack adequate training in providing DSME to patients with DM (Debussche et al., 2018). This lack of education created a gap in practice at the program site and care delivery, which ultimately affected patient outcomes. However, the evidence strongly supported that this gap could be filled by providing nurses with DSME training, which has the potential to positively impact DM-related complications, patient quality of life, and health care cost and utilization (Chrvala et al., 2016).

Purpose Statement

A gap in practice existed at the program site because nursing staff lacked training in providing DSME to patients and following ADA guidelines for DM self-care management. Evidence-based literature showed the importance and effectiveness of such education in caring for DM patients (Colberg et al., 2016). This staff education program had the potential to close the gap in knowledge and training related to DSME among nurses. The purpose of this program was to plan, implement, and evaluate a staff education program (SEP) on DSME and the incorporation of the ADA guidelines into the practice setting. With this program, I aimed to increase nurses' knowledge in DSME and ADA guidelines as evidenced by a pretest/posttest evaluation. The following practice-focused questions guided this program:

1. What evidence in the literature supported the planning, implementation, and evaluation of a SEP on DSME?

2. The desired outcome of SEP was to close the gaps in nurses' knowledge and training in providing DSME to patients with diabetes.

Nature of the Staff Education Program

Evidence to Support the staff education program.

This staff education program was built on knowledge from literature and previous evidence-based interventions, so I conducted a comprehensive review of studies published from 2015 to the current day. Several pieces of evidence from practice guidelines; health care associations; and regulatory bodies, such as the American Nurses Association, the CDC), and the ADA, supported the education of nurses on DSME in the.

program. As credible sources for finding evidence-based research, I searched Medline, PubMed, CINAHL, ProQuest, Google Scholar, and the Cochrane Library databases and search engines. The evidence from the literature was placed on a literature review matrix (see Appendix B) and graded using Fineout-Overholt and Melynk's Rating System for the Hierarchy of Evidence for Intervention Studies (see Appendix B).

Approach

I developed the SEP using the phases of the analysis, design, development, implementation, and evaluation (ADDIE) model of instructional design (see Appendix A). The ADDIE model is considered an essential framework in designing and developing educational and training programs (Beck et al., 2018). While developing this program, I followed the steps outlined in the Walden University Staff Education Manual.

Planning

The first phase in the ADDIE model related to SEP was to establish the education program's need and analyze the clinical practice problem (see Jeffrey & Longo, 2016). I started by meeting with my committee chair to narrow down my topic, obtaining verbal approval from my preceptor to proceed with the program, and conducting 50 charts reviews of the providers' patient progress notes as part of my practicum. There were no standard practice guidelines for diabetes care readily available for providers to use during patient encounters at the program site. I discussed this gap with the organization leadership (i.e., an administrator and the medical director) via informal conversation, and they confirmed the practice gap and the need for an educational program. The anecdotal evidence for the need for DSME was consistent with the evidence from the literature

review. I obtained verbal approval from the preceptor and a written agreement in the
Walden University Manual for Staff Education as well as sought institutional review
board (IRB) approval per the Walden University guidelines.

After identifying the problem, the next ADDIE phases are designing a solution
and developing teaching materials (Jeffrey & Longo, 2016), which occurred after my
proposal for this program was approved. I conducted a literature search for the
information on the topic guided by the program questions and graded the literature found
using Fineout-Overholt and Melynk's Rating System for the Hierarchy of Evidence for
Intervention Studies (see Appendix B). I developed my own curriculum for education and
a pretest/posttest. Three content experts (CEs; a diabetes nurse educator, clinical nurse
practitioner (NP), and dietician) were identified to provide a formative evaluation of the
curriculum; perform content item validation of the pretest/posttest; and complete a
summary evaluation of the program, process, and my leadership after the SEP was
completed. The CEs were selected based on their expertise, education, and professional
position. Finally, I applied for Walden University IRB approval after completing a
defense of my proposal.

Implementation

The implementation phase of the ADDIE model includes training the learners to
increase their knowledge, ensuring that they have access to materials and tools they need,
and setting up an environment conducive to learning (Jeffrey & Longo, 2016). In the
current program, this implementation phase followed formative evaluation during the
planning step and approval by leadership and involved the delivery of the education

program to staff nurses and stakeholders. I provided staff nurses with an education

manual and administered a pretest before the education and a posttest after to assess

knowledge change. The staff education program took place in a staff meeting held in the

conference room. I delivered a PowerPoint presentation to the nurses and gave out patient

discharge handouts for nurses to give patients after each visit. A list of referral resources

for nurses and patients was also made available to the nurses. Lunch and gifts, such as

pens and pocket hand sanitizer, were provided to the staff that attended.

Evaluation

The ADDIE framework is known to help evaluate learners (Jeffrey & Longo,

2016). The purpose of the evaluation phase of the ADDIE model is to gather feedback

from the participants related to the program development and outcome. In the current

program, the formative evaluation process started with the CEs evaluating the curriculum

and validating the pretest/posttest items in the planning step. In addition, I analyzed the

participants' pre- and posttest scores using descriptive statistics to determine if there was

a change in knowledge from implementing the SEP. The participants also completed an

impact evaluation of the SEP related to the curriculum objectives to help revise and

improve future education programs. Finally, a summary evaluation of the program,

process, and leadership was completed by the CEs upon completion of the program.

Significance

The SEP impacted not only the nurses receiving the training but also affected

important stakeholders, including patients, their families, and the overall health care

organization. Educating nurses on DSME promotes better understanding of DM care, and

more importantly, empowers nurses to deliver high-quality, evidence-based care to their patients, ultimately positively affecting patient outcomes and influencing health policy. This understanding of the SEP content empowered nurses to teach their patients how to self-manage their diabetes, thus promoting self-care behaviors, improved health outcomes, and reduced health care costs. This program will positively impact the patients by improving their glycemic control and increasing their patient satisfaction. A similar program was conducted by Peros et al. (2016) who showed improved A1C and improved patient satisfaction. According to Debussche et al. (2018), there was a substantial improvement in glycemic control in their study evaluating the effectiveness of peer-led self-management education in improving glycemic control in patients with T2DM.

DSME is now being used in office settings, medical homes, and accountable care organizations (Powers et al., 2015). Thus, this SEP has transferability potential in similar practice areas, such as family medicine, pediatrics, internal medicine, Obstetrics & Gynecology and other health departments.

This SEP on DSME provided valuable knowledge and skills to staff nurses regarding the promotion of self-care behaviors in patients with DM. By promoting and enabling patients to take charge of their own health, the patients will feel a measure of empowerment and support, improving the human condition. In addition, nurses delivering DSME to patients may become aware of some of the social barriers that prevent patients from engaging in self-care behaviors. This awareness may be helpful in affecting social change and delivering patient-centered, compassionate care. Thus, this SEP supports Walden University's vision for social change, which is characterized as "a

deliberate process of developing and implementing ideas, strategies, and actions that enhance the worth, dignity, and growth of individuals, communities, organizations, institutions, cultures, and societies."

Summary

DM is a significant disease burden in the United States, affecting patients, families, caregivers, communities, health care organizations, and the nation at large. Lack of knowledge on DM self-management among the nursing staff can have a negative impact on DM care and patient outcomes. Evidence-based solutions to address the problem of diabetes self-management need to be established and successfully translated into practice. In Section 2, I will provide a detailed review of the literature to identify evidence-based interventions that could be implemented to close the gap in DSME care at the clinical site along with the model and theory that guided the program. A discussion on the local background and context, my role in the program, and the CEs' role in the program will also be addressed in the following section.

Section 2: Background and Context

Introduction

The problem identified in this Staff Education Program was the need for nurse education on DM self-management, which can then be provided to patients. I identified the nurses' lack of knowledge of DM self-management after reviewing 50 patient charts in my practicum and conducting a need assessment. The following practice-focused questions guided this doctoral program:

1. What evidence in the literature supports the planning, implementation, and evaluation of a SEP on DSME?

2. As evidenced by a pretest/posttest, will there be a change in nurses' knowledge on DSME after the SEP?

The purpose of this program was to plan, implement, and evaluate a SEP on diabetes self-care management and the incorporation of the ADA guidelines into the practice setting for which the program was intended. In Section 2, I discuss the ADDIE model, which guided this program conceptually. The section also contains a description of the DNP CEs' responsibilities and my position as the program leader.

The ADDIE Model of Instructional Design

I developed this program using the ADDIE instructional design model. The ADDIE model is considered an essential framework in designing and developing educational and training programs (Beck et al., 2018). Instructional designers and training developers traditionally use the ADDIE model because it is a dynamic and flexible guideline for building practical training and performance support tools (Kurt, 2018). The

ADDIE framework was originally designed in 1975 for the U.S Army by the Centre for

Educational Technology at Florida State University and later implemented across all

branches of the U.S. Armed Forces (Kurt, 2018).

The ADDIE model's systematic approach for training development ensures

critical phases for a successful outcome, provides a guide for managing the training

program, and helps support communication about the program with the team (Jeffrey &

Longo, 2016). The ADDIE model also offers evidence-based practice learning strategies

for promoting workforce development and performance in real-world practice

environments (Patel et al., 2018). The ADDIE model is supported by many academic

programs, such as health care organizations, professional associations, regulatory bodies,

the National Institute of Health, and Sigma Theta Tau International (Jeffery & Longo,

2016).

Phases of the ADDIE Model

Analysis

In the initial phase of the ADDIE model in this program, I identified the practice

issue. The analysis phase of ADDIE includes obtaining evidence-based data from a

literature review, practice standards, and organizational information (Jeffery & Longo,

2016). In this phase, instructional designers examine the existing situation, study the

training grounds, and develop an understanding of the objective of the training. The

analysis phase is the goal-setting stage because, during this phase, the designer's focus is

on the target audience (Kurt, 2018). In the analysis phase, the instructional designer also

determines each staff member's degree of competence and intelligence, so they ensure

that what staff already know is not repeated and the emphasis is placed on topics and concepts that staff are not knowledgeable about (Kurt 2018).

Design and Development

After identifying the problem, the next phase of ADDIE is designing a solution and developing teaching materials (Jeffery & Longo, 2016). This design phase occurred after my proposal was approved and entailed creating learning materials, defining how educational resources would be delivered to participants, and working with CEs on content evaluation and validation. The stage is like creating the educational program's blueprint and providing an outline of the learning activities for addressing the needs identified in the analysis phase (Patel et al., 2018). In this stage, I established all objectives, performance indicators, tests, subject matter analysis, planning, and resource allocation. Learning objectives, content, subject matter analysis, exercise, lesson preparation, assessment tools employed, and media selection were priorities throughout the design phase.

Implementation

The ADDIE model's fourth phase is implementation, which involves delivering the learning materials to the program participants using the methods identified in the design and development phase (Jeffery & Longo, 2016). The implementation phase includes training the learners to increase their knowledge, ensuring access to materials and tools they need, and setting up an environment conducive to learning (Jeffery & Longo, 2016).

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Evaluation

      The last phase of the ADDIE model is evaluation, which can either be performed during implementation (i.e., a formative evaluation) or after the completion of the program (i.e., a summative evaluation; Jeffery & Longo, 2016). The ADDIE framework is known to help evaluate learners (Jeffery & Longo, 2016). In the evaluation phase of the ADDIE model, I gathered feedback from the participants related to the program development and outcomes.

Nursing Education Use of the ADDIE Model

      The ADDIE model has been used as a practical task-oriented framework to train nurses and nursing students in many hospitals and nursing education programs (Jeffery & Longo, 2016). The ADDIE paradigm allows instructors to construct programs that are systematic and tailored to the needs of their students. The ADDIE model has also been shown to help design health programs in other areas of nursing. Lu et al. (2016) used the ADDIE model to develop a new graduate nurses' nursing information system training program. After the training course, the participants' self-efficacy report showed a significant improvement compared to their scores on the pretest, and 88% of participants passed the practical exam (Lu et al., 2016).

<center>**Relevance to Nursing Practice**</center>

      According to Horigan et al. (2016), diabetes self-care education is critical because DM self-management requires continual monitoring and coaching, and a food plan can lower blood sugar levels and prevent long-term diabetic issues. To attain their objectives, people diagnosed with diabetes require individualized patient planning and education.

Powers et al. (2015) reported that most diabetic patients have a limited understanding of controlling their illness. Most diabetic patients say their doctors do not teach them self-care or provide recommendations about diabetes education programs at their local hospitals; therefore, there is a critical need to inform patients about the importance of DM self-care.

Self-Care Management

The impact of DM, such as complications, costs, and poor quality of life, can be decreased by introducing DSME to staff (Chrvala et al., 2016). Fortunately, Beck et al. (2018) reported that the recommendation of National Standards for Diabetes Self-Management Education and Support (DSMES) has proven effective in improving nursing practice.

DSMES Toolkit

Many strategies and standard practices have been used previously to address nurses' lack of knowledge on DSME. The CDC's (2021) DSMES Toolkit is one strategy that has been proven effective in providing patients with the education and support needed for managing their DM. The DSMES Toolkit is an online program that was developed by the CDC to provide centralized resources to assist with the development, promotion, and implementation of DSMES services. To increase use of DSMES services among people with diabetes and promote health care provider referrals, this toolkit provides resources and tools specific to each of the 10 2017 standards (CDC, 2021). The DSMES services help people control their diabetes and related illnesses by providing them with information and skills (CDC, 2019). The DSMES Toolkit is based on

evidence-based standards and is personalized to specific requirements, goals, and life experiences. With the DSMES Toolkit, the patient learns how to eat well, exercise regularly, monitor blood sugar levels, take medicine, problem solve, minimize their chance of developing other health problems, deal with the emotional side of diabetes, and generally enhance health and quality of life (CDC, 2019).

The Centers for Medicare and Medicaid Services provides reimbursement for Medicare beneficiaries for diabetes self-management training under certain conditions (CDC, 2020). To ensure valid payment, diabetes self-management training providers must follow all Centers for Medicare and Medicaid Services rules and check information before proceeding (CDC, 2020). In addition, before providing the benefit and submitting a claim, the practitioner must confirm that the patient has Medicare Part B insurance.

Nurses and DSME

Even with the tremendous negative impact of DM, practitioners do not have enough knowledge about its management, which affects their treatment approaches, such as self-management (Debussche et al., 2018). This lack of knowledge creates missed opportunities for managing the condition. Once nurses understand the importance of having DSME and the need to refer patients to a DSME program, such as in the local hospital program site, they should be able to teach the component of the education because they might need to support what has been taught or provide the teaching for patients who do not attend the formal education as recommended.

Many studies have proven that diabetes self-care management is effective. For instance, in Azami et al.'s (2018) study, the control group got standard diabetic treatment

and the intervention group was given DSME by a nurse in addition to the usual diabetic treatment. Patients in the intervention group showed significant changes in outcomes, such as blood pressure, HbA1c, body weight, and self-management behavior. Chrvala (2016) reported that all methods of DSME delivered by either a solo or team provider achieved a more significant reduction in HbA1c than the control group. When nurses understand the significance of the diabetes self-care management program and how the program can change the behavior of the patients, they will be motivated to empower their patients, thereby increasing patient satisfaction.

Local Background and Context

This staff education program was provided for staff within a private health care center with one family NP, five registered nurses, and me as the practicum student. The health care center has been established in an urban city on the east coast of the United States for 5 years. The primary care center serves people of all ages but predominantly adults, with a patient population of approximately 100. The patient population consists primarily of individuals of African American descent who are insured through Medicaid. The health care center owner agreed to support the SEP by providing space, equipment, and lunch. The nursing staff are charged to provide DSME to their patients to improve their knowledge and understanding of DM self-care. As a NP who worked closely with a diabetes nurse educator in the past, I had the expertise and experience to create the education program for the nursing staff.

My Role

My current position as an family nurse practitioner (FNP) in an outpatient facility involves treating patients' same-day complaints and chronic condition management, including diabetes management. I help patients better manage their diabetes through proper self-care, and with the evidence-based curriculum, I helped the staff at the program site learn about the condition and its management.

I was the program manager. As a NP, I was responsible for delivering patient education on self-care management to improve diabetes outcomes. As an experienced NP, I understand the consequences of poor glycemic control due to a lack of patient awareness of their diabetes management and the benefits of empowering patients via education. As a DNP student, my educational foundation in evidence-based practice research can help influence positive health care outcomes for patients and systems leadership in quality improvement and in developing this program. As the program leader for this DNP program, I created a diabetes training module and program based on current literature and diabetes research.

I was thrilled to implement DSME in the program site facility. I was inspired and motivated to produce this DSME to provide evidence-based knowledge about DM self-care and improve patient care quality. The program was carried out without regard for potential bias. I had no close or personal ties to the program site or provided participants with monetary compensation that could have jeopardized this program's successful completion and implementation.

Role of the CEs

CEs are thoroughly familiar with the skills and content that training must impart (Advocates for Human Potentials, Inc. n.d.). The CEs involved in this DNP program were one nurse practitioner, one dietitian, and one diabetic nurse educator with a Ph.D. degree. The dietitian helped me to explain the ADA guidelines and answer questions related to nutrition and diabetes. During the implementation of the education program, they provided practical dietary advice and information about how diabetes is food related in terms of causes and recovery. The NP ensured that the nurses were educated based on the guidelines and ensured alignment between the SEP and her requested train-the-trainer approach, so the trainer can provide education using the contents as a reference. A nurse educator was also a resource and helped to answer questions that may have arose during the program development and evaluation.

Identifying CEs during this DNP program was critical because CEs provided commitment and support to assure that the program aligned with the facility's expectations for DM self-care management. During the program's planning phase, the CEs conducted formative evaluations, such as the curriculum plan evaluation by CEs (see Appendix D) and pre-/posttest content validation by CEs (see Appendix F). Following completion of the SEP, the CEs also provided a summary review of the program, process, and my leadership as well as gave suggestions for future growth.

Summary

Use of the ADDIE model as the framework for this program helped address the problem through planning, implementation, and evaluation. The practice questions were

addressed by applying evidence from diverse sources, including information from the literature and practice guidelines, to close the knowledge gap and gap in practice as well as enhance patient care. In Section 3, I will reintroduce the program's problem, restate the practice-focused questions, and describe the evidence sources and how the data and evidence gathered were analyzed and synthesized.

Section 3: Collection and Analysis of Evidence

Introduction

The problem identified in this DNP program was a lack of DM self-management knowledge among staff nurses and the possible impact this lack of understanding may have on the nurses' care. According to the needs assessment results conducted during my practicum (from the review of 50 patient charts), the nurses at the program site lacked knowledge on DM self-management. This lack of understanding was supported by the literature, which showed that many nurses do not benefit from evidence-based nursing education on DSME, resulting in a gap in nursing practice and unsatisfactory patient care (Debussche et al., 2018). However, the evidence-based literature also showed that nurses can fill the void when the nurses receive education on DSME. According to Chrvala et al. (2016), DSME to nurses helps to reduce the impact of DM, such as complications, costs, and poor quality of life. Therefore, the DSME program was an appropriate avenue for this program site, which called for a need to implement and evaluate an approach to improve patient's knowledge on self-management of their disease. As a result, the DSME program was an excellent option to implement and evaluate a strategy to increase patients' understanding of illness self-management.

DSME promotes the information, decision making, and skill competency required for optimum diabetic self-care while considering the individual's requirements, aspirations, and life experiences (Powers et al., 2020). The overarching aims of DSME are to support patients' self-care behavior, problem solving, informed decision making, and active collaboration with the health care team to improve their outcomes, health

status, and well-being at a low cost (Powers et al., 2020). Understanding diabetes and

diabetes management, good eating, physical activity, taking medicine, testing blood

sugar, foot care, minimizing the risk of additional health issues, and learning to live with

stress, depression, and other worries are all part of DSME (Powers et al., 2020).

According to Zhang and Chu (2018), one of the practices of self-care is educating

patients on a healthy diet, which plays a critical role in enabling diabetes patients to

properly manage their disease and attain a quality of life. Zhang and Chu studied the

effectiveness of systematic health education model for T2DM patients and found that the

model is a useful method in the treatment of T2DM because the education contributes to

a decrease in HbA1c, low-density lipoprotein cholesterol, and systolic blood pressure

levels as well as helping to increase the compliance with the control criteria.

Practice-Focused Questions

The nursing staff is primarily responsible for teaching diabetes patients the

necessary information and skills (i.e., self-care practices); however, the nursing staff at

the program site do not engage in teaching patients how to self-manage their diabetic

condition. Improving staff understanding of the best strategies to teach their diabetic

patients is a crucial step toward better glycemic control.

I examined current clinical strategies to enhance diabetes care in the literature and

developed the education program in this program to address the gap in nurses'

knowledge. The following practice-focused questions guided this program:

1. What evidence in the literature supports the planning, implementation, and

   evaluation of a SEP on DSME?

2. Will there be a change in nurses' knowledge on DSME after the SEP as evidenced by the pretest/posttest results?

The practice-focused questions were important to this program's aims because they assisted me in identifying and addressing the gap in nurses' understanding of diabetes self-care management and the execution of a SEP to broaden their knowledge and abilities. I used a pretest/posttest evaluation to determine the nurses' levels of knowledge about diabetes self-care management.

Sources of Evidence

The program was supported by evidence from evidence-based literature which was graded using Melnyk and Fineout (2015) evidence grading systems Databases are useful when searching relevant articles on staff education in promoting diabetes counseling and improving glycemic control for diabetic patients. For this program, I searched the PubMed, Web of Science, Scopus, EMBASE, Google Scholar, and CINAHL databases and search engines. Diabetes Self Care Guidelines, the American Association of Diabetes Educator Care Behavior, and ADA Guidelines were among websites that were searched for additional information. The literature review matrix (see Appendix B), curriculum plan (see Appendix C), curriculum plan evaluation by CEs (see Appendix D), pretest/posttest (see Appendix E), pretest/posttest content validation by CEs (see Appendix F) and change in knowledge by participants (see Appendix G) provided evidence to answer the practice-focused questions and filling the gap in practice. I developed a SEP PowerPoint (see Appendix H) to present the education to the

participants who provided evidence from their evaluations of the presentation (see

Appendix I).

Participants

One of the aspects that adds to the success of any program is having clearly

defined roles for each participant so that expectations are clear, and duties are

understood. There were three CEs in this doctoral program. The first CE (who also served

as my preceptor), has a Doctor of Nursing Education degree. She is a family nurse

practitioner who also served as a preceptor for nursing students. She is also the owner of

the clinical site where this program was conducted. The second CE holds a doctorate in

nursing education and previously worked as a nurse educator at one of the country's most

prestigious universities. The third CE is a certified dietician with a master's degree in

nutrition and experience working as a diabetic educator in a well-known teaching

hospital.

The second group of participants were five nurses who attended the educational

program and provided an evaluation of the program after its completion. The five nurses

also took the pretest and posttest, which provided evidence for a change in knowledge

after SEP completion.

Procedures

My Walden University program chair created the DSME templates for

developing, collecting, evaluating, and validating evidence to provide a consistent

standard for this DNP program. The templates were not meant to be used as measurement

tools; thus, they did not need to be tested for reliability and validity.

CE Packet

I provided a letter that introduced me as the program manager and the program itself in each CE packet (see Appendix J). To ensure their anonymity, I provided an anonymous identification number for each CE on each item in the packet. The letter included instructions for filling out the packet information and an invitation to contact me at any time. The literature review matrix was included for the CEs' review. The curriculum plan, curriculum plan evaluation by CEs, pretest/posttest, and pretest/posttest content validation by CEs were included in the CE material as well.

Pretest/Posttest Change in Knowledge by Participants

The SEP material was distributed to attendees during the staff meeting. All participants completed a pretest and posttest, with the questionnaires being kept anonymous and number coded. Each participant took a pretest with a specific number and then took the posttest with that same number. After the pretest, I used one envelope to collect the test results and another envelope to collect the results of the posttest. The volunteer submitted envelopes to me. The goal of the pretest was to examine the participants' comprehension of DSME at the beginning of the presentation, while the posttest was used to assess their understanding after the presentation. To analyze their change in knowledge from the pretest to posttest, I reviewed the changes in the participants' scores.

SEP

I developed a PowerPoint presentation using the curriculum with which to deliver the SEP.

Evaluation of the SEP by Participants

Based on the course goals in connection to the curriculum, I produced a course evaluation for the participants). After the presentation of the SEP, participants evaluated the education presentation. While I left the room, a staff member placed the program evaluations in a blank envelope and mailed the results to me. Upon receiving the results, I examined the findings.

Evaluation of the SEP, Process, and My Leadership by the CEs

Following completion of the SEP program, I asked the CEs to provide an evaluation of the program, process, and my leadership. The CEs were also asked to offer any future development ideas. Someone else distributed each anonymous CE packet. Each CE delivered the completed form to my mailbox in an anonymous manner. I compiled the results of the CEs which concluded that the SEP program was effective.

Protection

While conducting this program, I adhered to the Walden University Manual for Staff Education guidelines to meet ethical criteria. Following approval by my committee and submission of the proposal to the university research reviewer, I initiated the IRB approval process by submitting Form A. All materials were anonymous, and no names were identified, whether CE or staff participants. Any products, computers, or paper were secured and will be kept for 5 years before being shredded. Participation was completely optional, and all materials were completed anonymously by the CEs. I assured test confidentiality by using corresponding numbers for the pretests and posttests. All materials will be kept in a locked file at the facility for 5 years before being shredded.

Analysis and Synthesis

Data analysis is critical in research since doing so requires the use of statistical and logical techniques to explain, present, condense, and analyze the data obtained (Gilmore et al., 2019). Data analysis and synthesis help to provide genuine meaning from raw data and describe an issue. The application of proper methodologies for accurate analysis was an emphasis of mine in the data analysis and synthesis in this program (see Gilmore et al., 2019).

Curriculum Plan Evaluation by CEs Summary

Using a dichotomous scale, each CE provided an evaluation of either 1 (*met*) or 2 (*not met*) for each objective of the curriculum. I analyzed the results of their curriculum summary evaluation of each learning objective and calculated the means per descriptive statistics. The findings are reported in Section 4.

Pretest/Posttest CEs Validity Index Scale Analysis

I used two scales to assess content validity in this program. The first was the Item-Level Content Validity Index (I-CVI), which measured each individual item by the CEs. The CEs assessed the validity of each pretest/posttest item related to the curriculum objectives and content using the following Likert scale: *not relevant* = 1, *slightly relevant* = 2, *relevant* = 3, and *extremely relevant* = 4. On the Pre/Posttest Content Validity Index Scale (see Appendix N), every item that received a score of 3 or 4 received a 1 placed on the worksheet. Every item that had a 1 or 2 received a 0. Then horizontally on each line, I added all the item scores and divided them by the number of CEs to access the I-CVI result for that test item. Then, the Scale Content Validity Index (S-CVI) was used to

measure the percentage of total items from the I-CVI individual results. I added the I-CVI

column and divided the sum by the number of items. The content validity of the I-CVIs is

0.78 or higher, the Scale-Level Content Validity Index/Universal Agreement (S-CVI/UA)

is 0.8 or higher, and the Scale-Level Content Validity Index/Average (S-CVI/Ave) is 0.9

or higher (Yusoff, 2019).

Summary Evaluation of the SEP by Participants

I reviewed the summary evaluation of the SEP by participants (see Appendix M)

results to assist me in making recommendations for further strengthening the educational

program. With 1 = *met* and 2 = *not met*, I calculated the means for each objective and

overall group mean.

Pretest/Posttest Change in Knowledge by Participants

To present the participants' change in knowledge from pretest to posttest results, I

employed descriptive statistics and a table (see Appendix G). I examined the scores of

both tests to determine the effectiveness of the program. I evaluated individual ranges

(i.e., who gained the most and the least), determined the lowest and highest pretest

scores, and calculated individual and group scores.

Summary Evaluation of the SEP by CEs

The CEs evaluated the program, the process, and my leadership after the SEP had

been completed and supplied their recommendations (see Appendix O). I organized their

responses into themes that may have affected how I reacted to discoveries related to my

role in developing the program, my processes, and leadership.

Summary

In Section 3, I reintroduced the program's problem, restated the practice-focused questions, and discussed the evidence sources and how the collected data and evidence were examined and synthesized. Section 3 also included a discussion of the procedures for the program, the protection of the participants, and the synthesis and analysis of the data collected. In the section, I described the techniques used to gather evidence from literature. Also, Section 3 discussed Melnyk and Fineout (2015) evidence grading systems. This section also included a discussion of how, following the requirements of Walden University's IRB, I safeguarded the confidentiality of all participants, including the CEs. Section 4 will contain a reintroduction to the topic along with my recommendations for the SEP on DSME. In Section 4, I will also discuss the outcomes and implications of the data analysis, the contribution of the doctoral pro team, and the strengths and limitations of the program before concluding with a summary and transition to Section 5.

Section 4: Findings and Recommendations

Introduction

The problem addressed in this DNP program was the lack of staff education on

knowledge of diabetes self-management in the program site clinic. According to the

needs assessment results based on 50 chart reviews conducted during my practicum, the

nurses lacked knowledge on diabetes self-management. This lack of knowledge was

consistent with the literature, which has shown that nurses lack adequate training in

providing diabetes self-management to patients with diabetes (Debussche et al., 2018).

The practice-focused questions were:

1. What evidence in the literature supports the planning, implementation, and

   evaluation of a SEP on DSME?

2. Will there be a change in nurses' knowledge on DSME after the SEP as

   evidenced by the pretest/posttest results?

The purpose of this DNP program was to plan, implement, and evaluate an

education program on diabetic self-management. Evidence generated by the program was

gained from the curriculum plan, curriculum plan evaluation by CEs, pretest/posttest, the

pretest/posttest CE validation by CEs, the pretest/posttest change in knowledge by

participants, and the summary evaluation of the SEP by CEs.

Findings and Implications

Setting

This doctoral program was carried out at a private family practice clinic in

Maryland. Schedules were created to allow nurses to participate. Lunch was served in the

conference room during the SEP as a courtesy. I initially delivered a pretest, consisting of 10 questions based on the curriculum design, to create a knowledge baseline for the participants. After grading the pretest, I began the instructional program with a 90-minute PowerPoint presentation followed by the posttest. Participation in the SEP was voluntary and anonymous.

Summary of Currculum Plan Evaluation by CEs

Three CEs evaluated the learning objectives and content in the curriculum plan. Using a dichotomous scale, each of the three CEs provided an evaluation of either 1 (*met*) or 2 (*not met*) for each learning objective. I then analyzed the results of their evaluations using descriptive statistics with a resulting mean of 1 showing that each objective was met (see Appendix L). The CEs commented that the educational program was very effective, aligned to the objectives, and was based on current literature. The CEs also concurred that the educational program should be incorporated into new employee onboarding, annual in-services, and replicated and distributed among different family practices.

Pretest/Posttest by CEs Validity Scale Analysis

I used two scales to assess content validity in this program. The first was the I-CVI, which was used to measure each item by the CEs. The CEs assessed the validity of each pretest/posttest item related to the curriculum objectives and content using the following Likert scale: *not relevant* = 1, *slightly relevant* = 2, *relevant* = 3, and *extremely relevant* = 4. On the Pretest/Posttest Content Validity Index Scale, each of the 10 items that received a score of 3 or 4 had a 1 placed next to them on the worksheet. There were

no items evaluated with a score of 1 (*not relevant*) or 2 (*somewhat relevant*), which would have been reflected with a 0. Then horizontally, on each line, I added all the item scores and divided them by the number of CEs to access the I-CVI result for that test item. Each of the 10 items received an I-CVI score of 1. For the S-CVI, I added the I-CVI scores and the results by 10, which resulted in a S-CVI mean score of 1, demonstrating that each pre- and posttest item was valid to the curriculum and the program objectives (see Appendix N). The acceptable cut off limit was 0.78.

Summary Evaluation of the SEP by Participants

I reviewed the summary evaluation of the SEP by participants results to assist me in strengthening the educational program for future use. All five participants answered "yes" to each of the nine learning objectives as having been met (*met* =1 and *not met* = 2), for a mean score of 1 (see Appendix M). The five participants agreed that all objectives were met as well as felt that the educational program was necessary, increased the knowledge of the attendees, and provided a clearer vision of care and management of patients with diabetes.

Pretest/Posttest Change in Knowledge by Participants

I employed descriptive statistics to analyze the participants' change in knowledge from the pretest to posttest results. Five staff nurses completed the pretest and subsequently were educated on diabetes self-management for 1.5 hours after which they completed the posttest. The participants' change in knowledge from the pretest to the posttest were compiled, and the results showed that the correct answers in the individual pretests ranged from 6 to 8 for a mean of 7.2 (72%). The posttest individual scores were

10 for each participant, for a mean of 10 (100%). The mean change from the pretest to posttest score for the group was 2.8 or a positive change in knowledge of 28% (see Appendix G).

Summary Evaluation of the SEP by CEs

I invited the CEs to comment on the educational process, program, and my leadership. The CEs concurred that the educational initiative was precisely managed, professional, culturally competent, informative, and eye opening. They also agreed that I had exceptional communication skills as the program leader. The CEs expressed appreciation for being a part of the educational initiative and for being asked to evaluate the program, with no observed or recommended improvement areas. All CEs agreed that disseminating the initiative to all providers and other clinics may be significant (see Appendix O).

Social Change

This doctoral program findings impact not only the nurses who received the training but also affected stakeholders, including patients, their families, and the program site health care organization. The SEP on DSME improved nurses' understanding of diabetes management and, more importantly, gave nurses the opportunity to offer high-quality, evidence-based care to their patients, positively influencing patient outcomes and health policy. This understanding of the SEP content empowered nurses to teach their patients how to self-manage their diabetes, thus promoting patient self-care behaviors, improving their health outcomes and overall health, and reducing health care costs and complications. DSME will be attractive to policy makers because the program has been

shown to be effective. The goal of Healthy People 2030 is to use policy to prevent diseases (Health Policy - Healthy People 2030 | Health.gov, n.d.). DSME can be disseminated to health care facilities and become part of the plan of care for diabetes patients.

Recommendations

To sustain the SEP, the program site organization should incorporate this educational program into the center's policies and procedures. The facility's staff education department should integrate this SEP as part of the annual competence/skill training, new employee orientation packet, and routine in-service training for all nurses of the facility and across all other centers within the organization. Regular and random monitoring of the SEP by the nurse managers and directors is necessary to assess the program's performance and sustenance. The managers and directors should make themselves available to offer support, encouragement, and mentorship to nurses to promote the nurses' commitment, compassion, advocacy, and therapeutic relationship toward patients diagnosed with diabetes.

Contribution of the CEs

The CEs in this program included a DNP family nurse practitioner, a DNP nurse educator, and a licensed dietitian. The CEs performed a formative evaluation during the program's planning step, including the curriculum plan evaluation (see Appendix D) and the pretest/posttest content validation (see Appendix F). The CEs also completed the program summary evaluation relating to the overall program, process, and my leadership. They offered further improvement suggestions (see Appendix K), such as a quarterly

review of diabetes self-management strategies with staff nurses and new employees to improve patient care delivery and outcomes within the practice.

Strengths and Limitations of the Program

Strengths

One major strength of this doctoral program was the use of three experienced, independent CEs who shared their expertise during the planning steps of the program. Another strength was the CEs' summary evaluations, which provided insights and themes concerning the overall program, the process, and my leadership as well as included suggestions for improvement of the program.

Limitations

One limitation of this program is that the results cannot be extrapolated to a larger or different population because of the small population size used in the program.

Summary

I presented this doctoral program in the form of a SEP to five staff nurses after the CEs had declared that the program was ready to implement. After the SEP was delivered, the participants evaluated the program, and their responses demonstrated that the goals of the program had been achieved and the participants' knowledge on the topic had improved from the pretest to the posttest. The major strengths of this doctoral program were the use of three experienced, independent CEs who shared their expertise during the planning steps of the program and the participants' willingness to be involved in the SEP. Section 5 includes a dissemination plan, an analysis of self, and a program summary.

Section 5: Dissemination Plan

Ongoing dissemination of this staff education program will assist nurses at the family clinic program site in improving their knowledge about diabetes self-management and their ability to teach the patient and their family about diabetes self-management. The findings of this program will be presented at interprofessional care team meetings at the program site yearly, staff competency training, and new employee trainings. This program could also be disseminated through active participation in annual community health conferences and church programs. As a clinical instructor for undergraduate nursing, I will include the findings from the program in my lectures for students in the diabetes curriculum. I could also develop an article from this capstone program and submit it for publication to a broader audience in a peer-reviewed journal.

Analysis of Self

Practitioner

My current position as an FNP in an outpatient facility involves treating same-day complaints and chronic condition management, including diabetes management. I identified a lack of knowledge of DSME as a practice gap involving staff at the program site clinic and the impact this gap had on patient outcomes. I understood the consequences of poor glycemic control due to a lack of patient awareness of diabetes management and the benefits of empowering patients via education. As a DNP student, I undertook the role of contributing to nursing practice through planning, implementing, and evaluating the education pro. The resulting program provided a meaningful, ongoing product to serve the program site clinic and their patients. My educational foundation in

evidence-based practice research has helped me influence health care outcomes for patients and systems leadership in quality improvement and in developing this program. I am thrilled to have implemented DSME in the program site facility to improve the quality of patient care provided.

Scholar

Throughout this DNP program, I transitioned from being a consumer of information, where my responsibility was to complete academic courses, to completing a DNP capstone program to solve a substantial practical problem. This doctoral program was conducted to generate significant insights regarding how to become a culturally competent provider and disseminate new evidence related to diabetes self-management to colleagues and nurses. Conducting a DNP program is a challenging but crucial component of the scholar-practitioner experience. Throughout this program, I occasionally entertained certain concerns and ambivalence regarding my position as program leader. As a nurse who has now completed a DNP program, I am aware that one of my primary responsibilities is to recognize practice problems in clinical practice settings and gather evidence-based knowledge from the literature and practice guidelines that can be applied in the real world to address the issue. As a DNP-prepared nurse, I am also aware that one of my professional responsibilities is to enhance professional nursing practice in organizational and system leadership and health care policy to improve patient health outcomes through evidenced-based practice. I designed this SEP to provide education about diabetes self-management to staff nurses in the primary care setting to improve their knowledge of the topic. Conducting this program allowed me to hone my

skills and prepared me for my long-term professional goals such as being part of health policy makers at the state level.

Program Manager

As the program manager, I was properly organized and effectively and transparently communicated with my preceptor, program chair, CEs, and clinic team members to make the doctoral program a success and a significant accomplishment. I identified CEs and collaborated with them to obtain their feedback on and suggestions for the program. As the leader of this program, I oversaw planning, implementation, and evaluation. My educational foundation in bringing evidence-based practice to the clinic helped me influence positive health care outcomes for patients. In developing this program, I created and organized a diabetes training module and program based on current literature and diabetes research. As the program leader, my main goal was to fill the knowledge gap among the nurses so that they can educate their patients and community based on the latest evidence in clinical practice. This doctoral program has changed my attitude and expanded my understanding, respect, loyalty, and admiration for nursing.

Summary

In conclusion, I conducted this staff education program to educate staff nurses on diabetes self-management in a private family clinic located in Maryland. DM is a significant disease burden in the United States, and lack of knowledge of diabetes self-management among the nursing staff at the program site was consistent with the literature, which has shown that nurses lack adequate training in providing diabetes self-

management (Debussche et al., 2018). However, evidence from the literature has strongly supported that this gap can be filled by providing nurses with diabetes self-management training, which has the potential to positively impact DM-related complications and improve patient quality of life (Debussche et al., 2018). Educating nurses on diabetes self-management promotes a better understanding of DM care and empowers nurses to deliver high-quality, evidence-based care to their patients, positively affecting patient outcomes and influencing health policy. The evaluation of the program by participants and the change in participants' knowledge shown by the differences in their pretest and posttest scores answered the program questions and met the program goal of improving the staff nurses' knowledge of diabetes self-management so they could translate the new knowledge into patient care and educating patients on diabetes self-management.

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Physicians, the American Academy of PAs, the American Association of Nurse

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Appendix A: ADDIE Model

The 5-Stepwise Process of the ADDIE Model
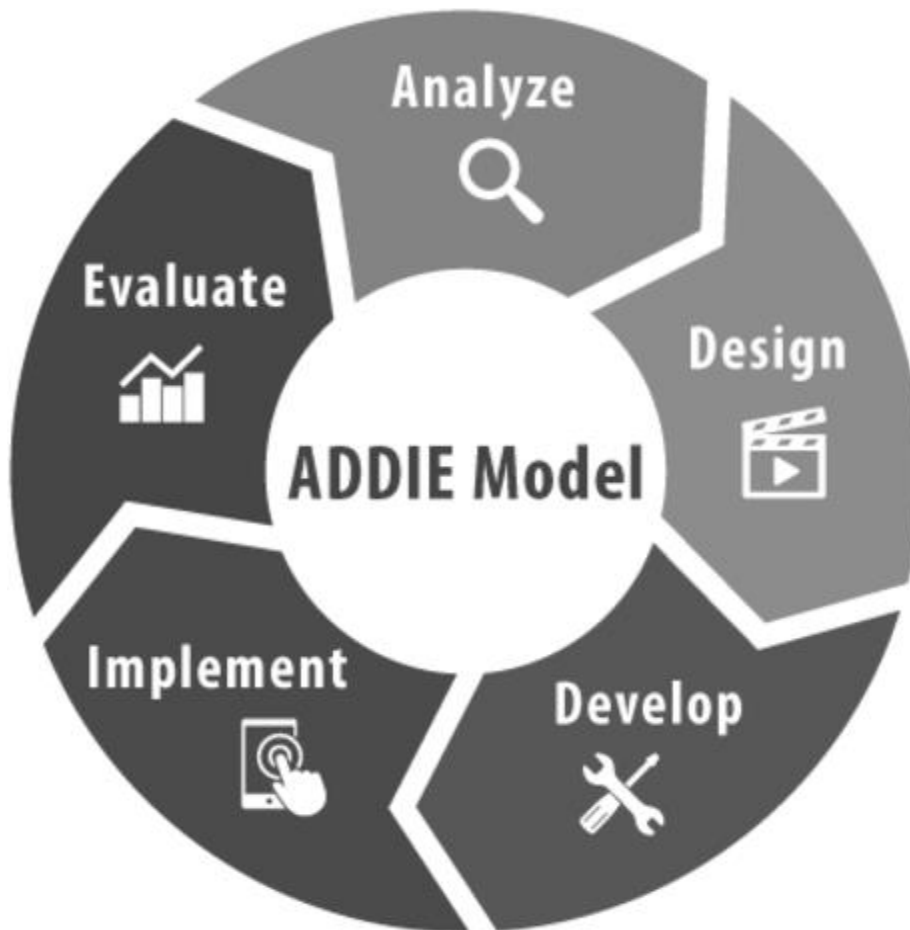
ADDIE Model |Training Development | CDC. (2020).

Www.cdc.gov. https://www.cdc.gov/training/development/addie-model.html

Appendix B: Literature Review Matrix**Error! Bookmark not defined.**

Reference	Theoretical Conceptual Framework	Research Question(s) Hypothesis	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
Azami, G., Soh, K. L., Sazlina, S. G., Salmiah, M., Aazami, S., Mozafari, M., & Taghinejad, H. (2018). Effect of a nurse-led diabetes self-management education program on glycosylated hemoglobin among adults with type 2 diabetes. *Journal of diabetes research*, *2018*. https://doi.org/10.1155/2018/4930157	Effect of a Nurse-Led Diabetes Self-Management Education Program on Glycosylated Hemoglobin among Adults with Type 2 Diabetes	To investigate the effectiveness of a nurse-led diabetes self-management education on glycosylated hemoglobin.	A two-arm parallel-group randomized controlled trial with the blinded outcome assessor.	Patients in the intervention group showed significant improvement in HbA1c, blood pressure, body weight, efficacy expectation, outcome expectation, and diabetes self-	The beneficial effect of a nurse-led intervention continued to accrue beyond the end of the trial resulting in sustained improvements in clinical, lifestyle, and psychosocial outcomes.	II

				management behaviors.		
Chrvala, C. A., Sherr, D., & Lipman, R. D. (2016). Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Education and Counseling*, *99*(6), 926–943.https://doi.org/10.1016/j.pec.2015.11.003	Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. Patient Education and Counseling,	Assess effect of diabetes self-management education and support methods, providers, duration, and contact time on glycemic control in adults with type 2 diabetes.	A systematic review of the effect on glycemic control	61.9% of 118 unique interventions reporting significant changes in A1C. In patients with persistently elevated glycemic values (A1C>9), A greater proportion of studies reported statistically significant reduction in A1C (83.9%).	This systematic review found robust data demonstrating that engagement in diabetes self-management education results in a statistically significant decrease in A1C levels.	1

Colberg, S. R., Sigal, R. J., Yardley, J. E., Riddell, M. C., Dunstan, D. W., Dempsey, P. C., Tate, D. F. (2016). Physical activity/exercise and diabetes: A position statement of the American Diabetes Association. *Diabetes Care*, *39*(11), 2065-2079. https://doi.org/10.2337/dc16-1728	Physical Activity/Exercise and Diabetes: A Position Statement of the American Diabetes Association	Physical activity are critical foci for blood glucose management and overall health in individuals with diabetes and prediabetes.	In this Position Statement, we provide a clinically oriented review and evidence-based recommendations regarding physical activity and exercise in people with DM.	Physical activity and exercise should be recommended and prescribed to all individuals with diabetes as part of management of glycemic control and overall health.	Physical activity and exercise should be recommended and prescribed to all individuals with diabetes as part of management of glycemic control and overall health.	VII. An expert team involving professionals drawn from health agencies such as the ADA, the (AADE)
Debussche, X., Besançon, S., Balcou-Debussche, M., Ferdynus, C., Delisle, H., Huiart, L., & Sidibe, A. T. (2018). Structured peer-led diabetes self-management and support in a low-income country: The ST2EP randomised controlled trial in Mali. *PLOS ONE*, *13*(1), e0191262. https://doi.org/10.1371/journal.pone.0191262	Structured peer-led diabetes self-management and support in a low-income country: The ST2EP randomized	To evaluate the effectiveness of peer-led self-management education in	Open label randomized controlled trial. 151 adults with type 2 diabetes were treated in the diabetes consultation	From baseline to 12 months, the decrease in HbA1c levels was 1.05% (SD = 2.0;	Peer-led structured patient education delivered over 1 year to patients with poorly controlled type 2	II

	controlled trial in Mali.	improving glycemic control in patients with type 2 diabetes in a low-income country (Mali).	units. Peer-led structured patient education or conventional care alone. The intervention group received 1 year of culturally tailored structured patient education. Both groups underwent conventional diabetes monitoring and follow-up.	CI95%: 1.54; -0.56) in the intervention group compared with 0.15% (SD = 1.7; CI95%: -0.56; 0.26) in the control group	diabetes in Mali yielded substantial improvements in glycaemic control and anthropometric parameters.	
Gilmore, B., McAuliffe, E., Power, J., & Vallière's, F. (2019). Data analysis and synthesis within a realist evaluation: toward more transparent methodological approaches. *International Journal of Qualitative Methods, 18*, 1-11.			Two realist evaluation studies of community health interventions taking place	All case studies were first analyzed separately, to refine PTs		IV

https://doi.org/10.1177/1609406919859754			across Uganda, Tanzania, and Kenya. Data from several case studies across all three countries and the data analysis software NVivo	specific to each case.		
Hildebrand, J. A., Billimek, J., Lee, J.-A., Sorkin, D. H., Olshansky, E. F., Clancy, S. L., & Evangelista, L. S. (2019). Effect of diabetes self-management education on glycemic control in Latino adults with type 2 diabetes: A systematic review and meta-analysis. *Patient Education and Counseling*. https://doi.org/10.1016/j.pec.2019.09.009	Effect of diabetes self-management education on glycemic control in Latino adults with type 2 diabetes: A systematic review and meta-analysis. Patient Education and Counseling.	This systematic review and meta-analysis evaluated the effectiveness of diabetes self-management education (DSME) in reducing glycosylat	Five databases were searched for DSME randomized controlled trials or quasi-experimental trials published between January 1997 and March 2019. A random	Pooled estimate effect of DSME on A1C from the random effect model was -0.240 (95% confidence interval = -0.345, -0.135, p < 0.001). Subgroup	Meta-analysis results showed that culturally tailored DSME interventions significantly reduce AIC in Latinos with T2DM despite the heterogenei	I

		ed hemoglobin (A1C) levels in adult Latinos with type 2 diabetes (T2DM).	effects model was utilized to calculate combined effect sizes. Subgroup analyses were performed to explore possible sources of heterogeneity between studies.	analyses demonstrated greater A1C reductions in studies with intervention duration ≤6 months, initial A1C baseline values >8.0, and team-based approach.	ty across the studies.	
Horigan, G., Davies, M., Findlay-White, F., Chaney, D., & Coates, V. (2016). Reasons why patients referred to diabetes education programs choose not to attend: a systematic review. *Diabetic Medicine, 34*(1), 14–26. https://doi.org/10.1111/dme.13120	To identify the reasons why those offered a place on diabetes education programs	Despite the significant clinical and personal rewards offered by diabetes	A systematic search of the following databases was conducted for the period from 2005-2015:	Two broad categories of non-attenders were identified: 1) those who could not attend	New and innovative methods of delivering diabetes education are required which address the	I

| | declined the opportunity. | education, programs are underused, with a significant proportion of patients choosing not to attend. | Medline; EMBASE; Scopus; CINAHL; and PsycINFO. | for logistical, medical, or financial reasons and those who would not attend because they perceived no benefit from doing so. Diabetes education was declined for many reasons, and the range of expressed reasons was more diverse and complex | needs of people with diabetes whilst maintaining quality and efficiency. | |

				than anticipated.		
Lu, S.-C., Cheng, Y.-C., & Chan, P.-T. (2016). Using ADDIE model to develop a nursing information system training program for new graduate nurse. *Studies in Health Technology and Informatics*, 225, 969–970. https://pubmed.ncbi.nlm.nih.gov/27332436/	Using ADDIE model to develop a nursing information system training program for new graduate nurses. Studies in Health Technology and Informatics	Is ADDIE Model helpful in Developing a Nursing Information System Training Program for New Graduate Nurse	ADDIE model was used to develop NIS training program. Preliminarily, the researcher followed the framework of the model to design a NIS training program and implement it for the newcomers' training of nursing information system.	After the training course, the self-efficacy report has a significant (p<.000) improved compared to pre-test, and 88% of participants passed the pragmatic exam.	ADDIE Model helpful is helpful in Developing a Nursing Information System Training Program for New Graduate Nurse	IV
Patel, S. R., Margoiles, P. J., Covell, N. H., Lipscomb, C., & Dixon, L. B. (2018). Using instructional design, analyze,	Using instructional design,	The field of instruction	Quantitative and qualitative	Formative evaluation with key	Instructional design approaches	VI

develop, implement, and evaluate, to develop eLearning modules to disseminate supported employment for community behavioral health treatment programs in New York State. *Frontiers in Public Health, 6*, 113. http://doi.org/10.3389/fpubh.2018.00113	analyze, develop, implement, and evaluate, to develop eLearning modules to disseminate supported employment for community behavioral health treatment programs in New York State.	al design offers ecologically valid and systematic processes to develop learning strategies for workforce development and performance support.	methods were used to develop and evaluate three IPS e-learning modules. Throughout the ADDIE process, the researchers conducted formative and summative evaluations and identified determinants of implementation using the Consolidated Framework for Implementation Research (CFIR).	stakeholders identified a range of learning needs that informed the development of a pilot training program in IPS. Summative evaluation revealed that learners rated the modules positively, and self-report of knowledge acquisition was high (mean range:	such as ADDIE may offer implementation scientists and practitioners a flexible and systematic approach for the development of e-learning modules as a single component or one strategy in a multifaceted approach for training in EBPs.	

				4.4–4.6 out of 5). About half of learners indicated that they would change their practice after watching the modules (range: 48–51%). Learners completed the level 1 evaluation demonstrated 80% or better mastery of knowledge on the level 2 evaluation		
Peros, J., James, K., Nolan, S., & Meyerhoff, B. (2016). Diabetes self-	Diabetes self-	To implement	A quality improvement	The average	As the prevalence	VII

management education (DSME) program for glycemic control. *Integrative Obesity and Diabetes*, *2*(3): 239-244. https://doi.org/10.15761/iod.1000151	management education (DSME) program for glycemic control. Integrative Obesity and Diabetes	and evaluate the impact of Diabetes Self-Management Education (DSME) program with type 2 diabetes mellitus (DM) patients. The goals were to improve glycosylated hemoglobin (A1C) and improve patient satisfaction.	program using the Iowa model was implemented in a primary care setting in Southern California to provide DSME program for adults with type 2 diabetes. A nurse practitioner conducted three DSME group sessions, which were done for 90 minutes per session in a 4-month period. The American Association of Diabetes	AIC for patients at the initiation of DSME was 9%. After the completion of DSME program, the mean change in A1C was 1.44%, and the range change was 1% to 1.8%. Twenty percent of total participants met the objective of decreasing the A1C level	and incidence of diabetes increase, a coordinated model of care can meet the growing demand for access and utilization of DSME programs. Health care providers in primary care settings can replicate DSME programs focusing on chronic conditions to improve outcomes.	

			Educators (AADE) 7 self-care behavior guidelines were used to develop the DSME program. Five patients with type 2 DM participated in the program. Patient satisfaction and A1C levels were collected at baseline and after the completion of the program.	below 7%. Five patients, (100%), had 10% decrease in their A1C levels after completing the program and scored "highly satisfied" with the DSME program.		
Yusoff MSB (2019). ABC of content validation and content validity index calculation. *Education in Medicine Journal.*11(2):49–54. https://doi.org/10.21315/eimj2019.11.2.6	ABC of content validation and content validity	Since content validity is vital to ensure the	The following are the six steps of content validation:	Content validity is vital to ensure the overall	This paper has provided a systematic and	VII

	index calculation. Education in Medicine	overall validity, therefore content validation should be performed systematically based on the evidence and best practice	(a) Preparing content validation form (b) Selecting a review panel of experts (c) Conducting content validation (d) Reviewing domain and items (e) Providing score on each item (f) Calculating CVI	validity of an assessment, therefore a systematic approach for content validation should be done based on the evidence and best practice.	evidence-based approach to conduct a proper content validation.	
Zhang, Y., & Chu, L. (2018). *Effectiveness of Systematic Health Education Model for Type 2 Diabetes Patients*. International Journal	Effectiveness of Systematic Health Ed] Education	To test effectiveness of the systematic	Eligible patients completed the	The systematic health education	The systematic health education	II

of Endocrinology. https://doi.org/10.1155/2018/6530607 https://www.hindawi.com/journals/ije/2018/6530607/	Model for Type 2 Diabetes Patients.	health education model for T2DM,	enrollment and were randomized to systematic health education model and conventional model groups. The systematic health education model was based on image education, visitation of the exhibition hall, dissemination of educational materials, individualized medical nutrition therapy and exercise	model led to a favorable variation in HbA1c, LDL cholesterol, and systolic blood pressure (SBP). After adjusted analysis, the HbA1c decreased by 0.67%, SBP decreased by 10.83 mm Hg, and the level of diastolic blood pressure (DBP), HDL	model is a useful method in the treatment of T2DM because it contributes to decrease in HbA1c, LDL cholesterol, and SBP levels, as well as helps in increasing the compliance with the control criteria, except for DBP and BMI.	

			programs. The main outcome measures were glycated hemoglobin A1c (HbA1c), blood pressure, body mass index (BMI), and lipids during the 2-year follow-up.	cholesterol, and total cholesterol decreased slightly and was not significant. The BMI did not change significantly during the study in either of the two groups.		

Appendix C: Curriculum Plan

Title of Program: Nursing Staff Education on Diabetes Self-Management for Patients

Student: Happiness Ifeoma Oguariri CRNP, FNP

Problem: The problem identified in this staff education program is the lack of knowledge on DM self-management among the nursing staff and the potential impact this can have on DM care and patient outcomes.

Purpose: The purpose of this staff education program was to plan, implement, and evaluate a staff education program (SEP) on diabetes self-management education (DSME) and the incorporation of the ADA guidelines into the practice setting.

Practice Focused Questions: What evidence in the literature supports the planning, implementation, and evaluation of a staff education program (SEP) on diabetic self-management education (DSME)? As evidenced by a pretest/posttest, will there be a change in nurses' knowledge on DSME after the staff education program?

Objective Number and Statement	Detailed Content Outline	Evidence (from Literature Review Matrix)	Grading	Method of Presenting	Method of Evaluation P/P Item
1.Describe diabetes disease process, types, and treatment options.	**What is Diabetes?** ➢ A heterogeneous metabolic disorder that affects how the body converts food into energy. ➢ Characterized by the presence of hyperglycemia due to impairment of insulin secretion, defective insulin action or both. ➢ The body either does not produce enough insulin or does not use the insulin produced as well as it should. ➢ Too much blood sugar stays in bloodstream when there is insufficient insulin or cells stop responding to insulin. ➢ Over time, that can cause serious health problems, such as heart disease, neuropathy, vision loss, and kidney disease. (Punthakee et al., 2018) **Two Main Types of Diabetes** *Type 1 Diabetes* ➢ Caused predominantly by pancreatic beta cell loss resulting in insulin insufficiency and ketoacidosis. ➢ Includes cases caused by an autoimmune process and those where the cause of beta cell loss is uncertain.	Punthakee et al., 2018)	VII	Power Point	Test Item 1

	➢ Risk Factors: Overweight or obesity, Asian American, African American, younger age, family history ➢ Signs/symptoms: Hyperglycemia, polyuria, polydipsia, and polyphagia. Unintentional weight loss, ketoacidosis, glucose >360 at presentation ➢ Treatment option: Mainstay is insulin. Insulin has high efficacy, causes weight gain, hypoglycemia. (Powers et al., 2020).			
	Type 2 Diabetes ➢ Results from significant insulin resistance ➢ Insulin deficit to a predominant secretory defect with insulin resistance ➢ Ketosis is less prevalent. ➢ Risk Factors: First-degree relative with diabetes, African American, Latino, Native American, Asian American, Pacific Islander, CVD, Hypertension, HDL polycystic ovary syndrome, prediabetes ➢ Signs/symptoms: Hyperglycemia, obesity, polyuria, polydipsia, and polyphagia ➢ Treatment option: Firstline agent is Metformin. ➢ Metformin is an oral agent that has high efficacy, causes GI symptoms such as nausea, vomiting, diarrhea, contraindicated in patient with eGFR<30 (ADA, 2021)	(Powers et al., 2020).	VII		

2. Identify strategies to incorporate nutritional management into lifestyle	**Role of Nutrition in Diabetes Management** ➢ The diabetes diet is a healthy eating strategy. ➢ Aids in blood glucose control **Carbohydrates and Diabetes**. ➢ Best energy source for the body especially brain ➢ When broken down, form glucose in the blood. ➢ Insulin takes the glucose from the bloodstream to muscles, liver, and other cells where it will provide energy. ➢ Has greatest impacts on the blood glucose level? **Proteins and Diabetes** ➢ Protein is needed by the body for growth and repair. ➢ Does not breakdown to glucose therefore it does not directly raise blood glucose. ➢ Protein foods are meats and chicken, fish, tofu, eggs, nuts and seeds, cheese. **Fats and Diabetes** ➢ Fat is a source of essential fatty acids, which the body cannot make itself. ➢ Helps body absorb vitamin A and E ➢ Can easily cause weight gain which makes it harder to manage diabetes. ➢ Sources of fats include nuts, seeds avocados, Trans fats (Zhang, 2018) **Healthy and Poor Diets**	(Zhang, 2018)	II	Power Point	Test Item 2

	Healthy eating means adhering to recommended diabetic guidelines. ➤ Poor diet means not adhering to recommended diabetic guidelines such as eating foods high in fats, caffeine, energy drinks (Zhang,2018) **Healthy Menus Preparation** ➤ Example: Get a 9-inch plate, fill half of the plate with no starchy vegetables, one quarter of the plate of protein foods and the last quarter of the plate with carbohydrate foods. Then water or zero calorie drink (Zhang, 2018)				
3. Identify strategies to incorporate physical activity into the lifestyle	**Physical Activity** ➤ All movement that increases energy use **Exercise** ➤ A planned, structured physical activity (Colberg et al., 2016) **Benefits of Physical Exercise** ➤ Improves blood glucose control in type 2 diabetes. ➤ Reduces cardiovascular risk factors. ➤ Contributes to weight loss and improves well-being.	Colberg et al., 2016).	VII	Power Point.	Test Item 3

> ➤ Regular exercise may prevent or delay type 2 diabetes development. (Colberg et al., 2016)

How Physical Exercise Impacts Blood Sugar

> ➤ Helps decrease blood sugar.
> ➤ Helps lower AIC.

Necessary Changes Relating to Insulin and Diets to Compensate for the Physical Activities

> ➤ Insulin sensitivity increases during exercise.
> ➤ Muscle cells are better able to use any available insulin to take up glucose during and after activity.
> ➤ Hypoglycemia can occur in individuals taking insulin if insulin dose or carb consumption are not modified by activity.
> ➤ It is crucial to check blood sugar levels before engaging in any physical activity to avoid hypoglycemia. (Colberg et al., 2016)

Follow the 15-15 Rule
> ➤ Check blood sugar If reading is 100mg/dl or lower have 15-20 grams of carb to raise blood sugar.
> ➤ Check blood sugar again after 15 mins. If it is still below 100mg/dl, have another serving of 15grams of carbohydrates.
> ➤ Repeat these steps every 15 mins until blood sugar is at least 100mg/dl.

Develop an Exercise Plan

	➢ Adults with diabetes should engage in 2–3 sessions/week of resistance exercise on nonconsecutive days. (Colberg et al., 2016)				
4.Identify strategies to use medication (s) safely and for maximum therapeutic effectivene ss	**Insulin** ➢ A hormone in the pancreas that regulates blood glucose. ➢ Principal action is to restrain hepatic glucose production. ➢ Main side effect is hypoglycemia (ADA, 2019) **Metformin** ➢ An oral preferred initial pharmacologic agent for the treatment of type 2 diabetes ➢ Reduce hepatics glucose production. ➢ Side effect are weight gain, hypoglycemia, gastrointestinal intolerance due to bloating, abdominal discomfort, and diarrhea, and has renal filtration (ADA, 2019) **Process of Diabetes Self- Management** ➢ Activities such as healthy eating, medication adherence, being active, monitoring. ➢ Also risk reduction, problem-solving, and good coping, all of which are required for optimal disease control. (Adu et al., 2019) **Enablers Affecting Medication and Insulin Therapy**	(ADA, 2019). https://doi.org/10.2337/dc20-s009	.VII	Power Point	Test Item 4

	➢ Social support, higher educational level, effective communication, and trust (Rsheed, A. B., & Chenoweth, 2017) **Barriers Affecting Medication and Insulin Therapy**. ➢ Sense of personal failure, injection phobia, myths, and misconceptions about the drug ➢ Also limited insulin self-management training, lack of resources, lack of income, lack of communication (Rsheed, A. B., & Chenoweth, 2017)				
5 Identify strategies to check blood glucose and other parameters and interpret and use the results for self-management decision making	**Normal Blood Glucose Ranges** ➢ In 2015, ADA changed its pre-prandial glycemic target from 70–130 mg/dL to 80–130 mg/Dl (ADA, 2019) **When to Measure Blood Glucose Levels** ➢ Before meal and at bedtime, when feeling dizzy, frequent urination, before certain exercise e.t.c ➢ Also measure when your gut told you to (ADA, 2019) **Level of Hypoglycemia** ➢ Level 1 Glucose <70 mg/dL: Symptoms may not be present. ➢ Level 2 Glucose <54 mg/dL: Most people have symptoms. ➢ Level 3: Severe event characterized by altered mental and/or physical status requiring assistance for treatment of hypoglycemia.	(ADA, 2019). https://doi.org/10.2337/dc20-s009	.(VII)	Power Point .	Test Item 5

	An A1C goal for many nonpregnant adults of <7%. (ADA, 2019)				

6. Identify strategies to prevent, detect, and treat acute complications	**Define Hypoglycemia**
	
	➢ Abnormally low plasma glucose concentration (<70 mg/dL)
	➢ Exposes individual to potential harm (ADA, 2019)
	
	Define Hyperglycemia
	    ➢ High blood sugar in the blood
	    ➢ Hyperglycemia, i.e., plasma glucose >250 mg/dL, Venous pH <7.3 and/or bicarbonate <15 mmol/L, with moderate or large ketone levels in urine. (ADA, 2019)
	
	Signs and Symptoms of Diabetes
	    ➢ Classic triad of polydipsia, polyuria, and polyphagia
	    ➢ Blurred vision, hunger, sweating, shaking, Fast heartbeat, Headache, Trouble concentrating, Fatigue, Irritability, Confusion, weight loss (ADA, 2019)
	
	Define Diabetic Ketoacidosis
	
	    ➢ A life-threatening complication and common in Type 1 diabetes
		(ADA, 2019). https://doi.org/10.2337/dc20-s009	. (VII)	Power Point	Test Item 6

	➤ Caused by low levels of effective circulating insulin and a concomitant increase in counterregulatory hormones levels, such as glucagon, catecholamines, cortisol, and growth hormone. (ADA, 2019)				
7. Identify strategies to. Prevent, detect, and treat chronic complications	**Define Diabetic Retinopathy** ➤ Damage to the retina ➤ S/S Flashes or floaters in the vision. Dark or blurry vision, halos around lights ➤ Adults with type 1 diabetes should have initial dilated and comprehensive eye examination by an ophthalmologist within 5 years after the onset of diabetes. ➤ Patients with type 2 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist at the time of the diabetes diagnosis. (ADA, 2019) **Define Neuropathy** ➤ Damage to the nerve's peripheral nerves	(ADA, 2019) https://doi.org/10.2337/dc20-s009	(VII)	Power Point.	Test Item 7

	➢ S/S weakness, numbness, and pain, usually in the hands and feet ➢ Assess for diabetic peripheral neuropathy at diagnosis of type 2 diabetes. ➢ Assess for diabetic peripheral 5 years after the diagnosis of type 1 diabetes and at least annually thereafter. ➢ Annual 10-g monofilament testing to identify feet at risk for ulceration and amputation (ADA, 2019) **Explain Diabetes Foot** ➢ The result was due to nerve damage. ➢ S/S tingling, pain, or weakness in the foot ➢ All patients will perform a comprehensive foot evaluation annually to identify risk factors for ulcers and amputations. ➢ Patients should not soak their feet or go bare foot. (ADA, 2019) **Vision Loss or Blindness** ➢ Most common vision loss are caused by macular edema and retinopathy that causes retinal changes. ➢ S/S cloudy vision, trouble seeing at night, seeing double, blurry vision, redness, or pain in			

	your eye, seeing floaters or spots, Loss of peripheral vision (CDC, 2021) **Hypertension** ➢ Hypertension, defined as a sustained blood pressure ≥140/90 mmHg. ➢ Also known as a silent killer ➢ Common among type 1 or type 2 diabetes. ➢ All hypertensive patients with diabetes should monitor their blood pressure at home. ➢ Lifestyle modification focusing on weight loss, DASH diet, reduce saturated and trans-fat. ➢ Also, increase of dietary n-3 fatty acids, viscous fiber, and plant stanols/sterols intake, increased physical activity (CDC, 2021) **Coronary Artery Disease** ➢ Coronary arteries struggle to send enough blood, oxygen, and nutrients to the heart muscle. ➢ Caused by plaques and or inflammation of the coronary artery. ➢ S/S chest pain, and shortness of breath, fatigue ➢ Risk factors: Smoking, high cholesterol, diabetes, obesity, family history	(CDC, 2021).	VII		

	➤ Prevention: Quit smoking, control high blood pressure and high cholesterol, exercise, maintain a healthy weight, eat a low-fat, low-salt diet that's rich in fruits, vegetables, and whole grains. (CDC, 2021) https://www.cdc.gov/diabetes/library/features/diabetes-and-heart.html **Kidney Damage** ➤ Damage to the nephrons ➤ CKD is characterized by persistent albuminuria, low eGFR, and other manifestations of kidney damage. ➤ S/S increased urination, insomnia, itchy skin, muscle cramps, headaches ➤ Maintain blood pressure below 140/90 mm Hg. ➤ Maintain blood glucose. Stay active and lose weight if overweight. (CDC,2021) https://www.cdc.gov/diabetes/library/spotlights/diabetes-and-kidneys.html				

8.Identify personal strategies to address psychosocial issues and concerns	**Psychological and Social Needs** ➢ Denial, anger, guilt, acceptance, diabetes distress, Depression, and anxiety, feeling frustrated, fatigue, anger, burn out, and poor mood. ➢ Effective management of diabetes requires complex, continual, and demanding self-care behavior. ➢ Addressing psychological needs improves HbA1c by 0.5%–1% in adults with T2DM. ➢ Psychosocial interventions problem-solving therapy, coping skills training, and family behavior therapy have been recognized as an integral part of diabetes care. (Jena et al., 2018) **Psychological Interventions** ➢ Incorporate psychological screening and management at every level of diabetes care. ➢ Sensitize health-care professionals, patients, and their family members about the importance of psychological screening and intervention along with other advised treatment. ➢ Advocacy program to improve the awareness level of psychological well-being of persons with diabetes. (Jena et al., 2018)	(Jena et al., 2018)	(I)	Power Point.	Test Item 8

| 9. Identify personal strategies to promote health and behavior change | **Health Promotion and Strategies**

➤ Weight Management: It is important to provide guidance on an individualized meal plan containing nutrient-dense food.
➤ Physical Activity: Engage in physical activity as prescribed.
➤ Stop use of cigarettes and other tobacco products or e-cigarettes
➤ With the new device, ensure that people with diabetes/caregivers receive initial and ongoing education and training and evaluation. (ADA. 2021) | (ADA, 2019). | (VII) | Power Point | Test Items 9and10 |

Appendix D: Curriculum Plan Evaluation by CEs

Title of Program: Nursing Staff Education on Diabetes Self-Management for Patient

Student: Happiness Oguariri CRNP, FNP

Respondent: (A, B, C)

Products for Review: Curriculum Plan, Complete Curriculum Content, Literature

Review Matrix

Instructions: Please review each objective related to the curriculum plan, content and

matrix. The answer will be a "met" or "not met" with comments if there is a problem,

understanding the content or if the content does not speak to the objective, At the

conclusion of this educational experience, the participant will be able to:

Objective Number	Objective Statement	Met	Not Met	Comment
1	Describe diabetes disease process, types, and treatment options.			
2	Incorporate Nutritional Management into Lifestyle			
3	Identify strategies to incorporate physical activity into the lifestyle Identify strategies to incorporate physical activity into the lifestyle.			
4	Identify strategies to use medication(s) safely and for maximum therapeutic effectiveness.			
5	Identify strategies to monitor blood glucose and other parameters and interpret and use the results for self-management decision making			
6	Identify strategies to prevent, detect, and treat acute complications.			
7	Identify strategies to prevent, detect, and treat chronic complications.			
8	Identify personal strategies to address psychosocial issues and concerns			
9	Identify personal strategies to promote health and behavior change.			

Appendix E: Pretest/Posttest

This pretest/posttest will be taken anonymously. Please be sure that you have the same NUMBER on the upper righthand corner of both your Pretest and Posttest. After taking the Pretest, put the test in the envelope marked "PRETEST". After the presentation you will be given the Posttest. Put the same number on the upper righthand corner of the Posttest as you had on the Pretest. Take the Posttest and place in the envelope marked POSTTEST. A volunteer will be asked to return the envelopes to me.

Please choose the best option from the multiple-choice questions.

1. Which of the following is a definition for diabetes?

    A. **A metabolic disorder characterized by the presence of hyperglycemia due to impairment of insulin secretion, defective insulin action or both.**

    B. A condition in which pancreatic cells attack itself causing excess production of insulin, Lipase and Amylase resulting high blood sugar in the blood.

    C. A condition in which blood stops flowing to the pancreas causing it to alter the body's processing and distribution of macronutrients such as proteins, fats, and carbohydrates.

    D. None of the above

2 Which of the following has the greatest impact on the blood glucose level.

    A. Protein

    B. **Carbohydrate**

    C. Fat

    D. None of the above

3. Which of the following is not benefit of physical exercise

    A. Improves blood glucose control in Type 2 Diabetes

    B. Reduces cardiovascular risk factors.

    C. **Increases blood sugar.**

    D. Decreases blood glucose.

4. Major side effect of insulin is

    A. **Hypoglycemia**

    B. Headache

    C. Nausea

    D. None of the above

5. In 2015, ADA changed its pre-prandial glycemic target from

    A. **70–130 mg/dL to 80–130 mg/dL**.

    B. 70—120 mg/dl to 80—130 mg/dl

    C. 70—130 mg/dl to 80—140 mg/dl

    D. 80—120 mg/dl to 80—130 mg/dl

6. Diagnosis of hyperglycemia is made if plasma glucose is

    A. **>250 mg/dL, Venous pH <7.3 and/or bicarbonate <15 mmol/L, with moderate or large ketone.**

    B. >240 mg/dL, Venous pH <7.3 and/or bicarbonate <15 mmol/L, with moderate or large ketone.

    C. >300 mg/dL, Venous pH <7.3 and/or bicarbonate <15 mmol/L, with moderate or large ketone.

    D. >250 mg/dL, Venous pH <7.5 and/or bicarbonate <15 mmol/L, with moderate

       or large ketone.

7. Signs and symptoms of diabetic neuropathy include all the following EXCEPT

    A. Weakness

    B. Numbness

    C. Pain, usually in the hands and feet

    D. All the above

8. According to Jena et al., 2018, addressing psychological needs in adults with Type 2

Diabetes improves HbA1c by

    A. 2%-4%

    B. 1%-2%

    C. 0.5%-1%

    D. None of above

9. Which of these is an EXAMPLE of health promotion and strategies.

    A. Weight management

    B. Engaging in physical Activity.

    C. Cigarettes Cessation

    D. All the above

10. Risk factors for coronary artery disease include the following EXCEPT

    A. **Weight Management**

    B.   High cholesterol

    C. Diabetes

    D. Family history

Appendix F: Pretest/Posttest Content Validation by CEs

Title of Program: Nursing Staff Education on Diabetes Self-Management for Patients

Student: Happiness Oguariri, CRNP, FNP

Respondent: (A, B, C)

Accompanying Packet: Curriculum Plan, Pretest/Posttest with answers, Pretest/Posttest

Expert Content Validation Form

Instructions: Please check each item to see if the question is representative of the course

objective and if the correct answer is reflected in the course content.

Test Item # 1 2 3 4

1 Not Relevant __ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

2 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

3 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

4 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

5. Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

6 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

7 Not Relevant__ Somewhat Relevant__ Relevant ___ Very Relevant__

Comments:

8 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

9 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

10 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Appendix G: Pretest/Posttest Change in Knowledge by Participants

Number of Student	Pretest Score Numerical	Posttest Score Numerical	Change in Knowledge	% Change in Score
1	8	10	+2	20%
2	7	10	+3	30%
3	6	10	+4	40%
4	7	10	+3	30%
5	8	10	+2	20%
Mean	Pretest Range: 6 to 8 Pretest Individual Mean: 7.2	Posttest Range: 10 Posttest Individual Mean 10	Group Mean 2.8	Mean 28%

Appendix H: SEP

Pretest

► There are ten test questions.

► A volunteer will pass the Pretest envelope around. Take a test out. Your test has a number on it. There is a small piece of paper with the same number. Keep it with you. NO NAMES ON THE TEST.

► Answer all questions to the best of your ability.

► Test time is 15 minutes.

Learning Objectives

► At the conclusion of this program the participant will be able to:
  ► Describe diabetes disease process, types, and treatment options
  ► Describe strategies to incorporate nutritional management into lifestyle
  ► Identify strategies to incorporate physical activity into the lifestyle
  ► Identify strategies to use medication(s) safely and for maximum therapeutic effectiveness
  ► Discuss personal strategies to promote health and behavior change

Learning Objectives, cont.

► Identify strategies to monitor blood glucose and other parameters and interpret and use the results for self-management decision making
► Describe strategies to prevent, detect, and treat acute complications
► Determine strategies to prevent, detect, and treat chronic complications
► Identify personal strategies to address psychosocial issues and concerns

Diabetes and Treatment Options

► What is Diabetes?
  ► Excess glucose in blood due to insufficient insulin or insulin resistance
  ► Heterogeneous metabolic disorder
  ► Affects how the body converts food into energy
  ► Characterized by the presence of hyperglycemia
  ► Due to insufficient insulin or insulin resistance
  ► Resulting serious health problems

Diabetes and Treatment Options, cont.

► Type 1 Diabetes (T1DM)
  ► Caused predominantly by pancreatic beta cell loss
  ► Risk Factors
    ► Overweight, Asian American, African American, younger age
  ► Signs/symptoms
    ► Hyperglycemia,
    ► The three p's (polydipsia, polyuria, polyphagia), unintentional weight loss, ketoacidosis
  ► Treatment
    ► Insulin

Diabetes and Treatment Options, cont.

► Type 2 Diabetes (T2DM)
  ► Results from significant insulin resistance
  ► Insulin deficit to a predominant secretory defect with insulin resistance
  ► Ketosis is less prevalent
  ► Risk Factors: Family hx, ethnicity, CVD, Hypertension, HDL, polycystic ovary syndrome, prediabetes
  ► Signs/symptoms: Hyperglycemia, obesity, polyuria, polydipsia & polyphagia
  ► Treatment option:
    ► Metformin – first line agent….high efficacy, GI symptoms
    ► Insulin

Nutritional Management in Lifestyle

- ► Nutrition in Diabetes Management
  - ► Diabetes diet is a healthy eating strategy
  - ► Aids in blood glucose control
- ► Carbohydrates and Diabetes
  - ► Best energy source for the body especially brain
  - ► Form glucose in the blood
  - ► Insulin takes the glucose from the bloodstream to cells
  - ► Greatest impact on the blood glucose level

Nutritional Management in Lifestyle, cont.

- ► Proteins and Diabetes
  - ► Needed for growth and repair
  - ► Does not breakdown to glucose
  - ► Meats and chicken, fish, tofu, eggs, nuts and seeds, cheese
- ► Fats and Diabetes
  - ► Essential fatty acids, which the body cannot make itself
  - ► Helps body absorb vitamin A and E
  - ► Easy weight gain; harder to manage diabetes
  - ► Sources of fats include nuts, seeds avocados, trans fats

Nutritional Management in Lifestyle, cont.

- ► Healthy/Poor Diets
  - ► Healthy – adhering to recommended diabetic guidelines
    - ►Healthy menu example
      - ►9-inch plate, fill/ half of the plate with no starchy vegetables, one quarter of the plate of protein foods and the last quarter of the plate with carbohydrate foods.
      - ► Water or zero calorie drink
  - ► Poor - not adhering to recommended diabetic guidelines
    - ►Foods high in fats, caffeine, energy drinks

Physical Activity and Lifestyle

- ► Physical Activity
  - ► All movement that increases energy use
- ► Exercise
  - ► Planned, structured physical activity
- ► Benefits of Physical Exercise
  - ► Improves blood glucose control in T2D
  - ► Reduces cardiovascular risk factors
  - ► Contributes to weight loss and improves well-being
  - ► Helps decrease blood sugar
  - ► Helps lower AIC

Physical Activity and Lifestyle, cont.

Changes Relating to Insulin/Diets to Compensate for the Physical Activities
- ► Insulin sensitivity increases during exercise
- ► Muscle cells better able to use available insulin to take up glucose during and after activity
- ► Hypoglycemia occurs in individuals taking insulin if insulin dose or carb consumption are not modified by activity

Physical Activity and Lifestyle, cont.

Follow the 15-15 Rule
- ► A stepwise approach that can help diabetics control their blood sugar and prevent complications
  - ► Consume 15g of simple carbohydrates e.g. orange juice
  - ► Wait 15 minutes and recheck blood sugar
  - ► If blood sugar is still between 55 to 69mg/dl, take another carbohydrate
  - ► Keep repeating until blood sugar is above 70mg/dl
- ► Check blood sugar levels before engaging in any physical activity to avoid hypoglycemia

Physical Activity and Lifestyle, cont.

Follow the 15-15 Rule

► A stepwise approach that can help diabetics control their blood sugar and prevent complications
  ► Consume 15g of simple carbohydrates e.g. orange juice
  ► Wait 15 minutes and recheck blood sugar
  ► If blood sugar is still between 55 to 69mg/dl, take another carbohydrate
  ► Keep repeating until blood sugar is above 70mg/dl
  ► Once blood glucose is back to normal, eat a meal or snack to make sure it doesn't lower again.
► Check blood sugar levels before engaging in any physical activity to avoid hypoglycemia
► Develop an exercise plan
► Adults with diabetes should engage in 2–3 sessions/week of resistance exercise on nonconsecutive days

Strategies to Use Medications Safely

► Keep list of all medications
  ► Prescription and non-prescriptions
  ► Include medication name, dose, time and route
► Fill your prescription
  ► Immediately after appointment
  ► Work with your pharmacy to know medication options
► Take medicine at right time
  ► Create daily routine for taking and tracking medications
  ► Find best time to take your medication
► Safely dispose of needle
  ► Visit SafeNeedleDisposal.org to learn more about disposing needles

Blood Glucose Monitoring

► Normal Blood Glucose Ranges
  ► 80–130 mg/DL
  ► Measure blood glucose before meal and at bedtime, when feeling dizzy, frequent urination and before some certain exercise
  ► Measure when you do not feel well

Blood Glucose Monitoring, cont.

- ► Level of Hypoglycemia
  - ► Level 1 Glucose <70 mg/dL: Symptoms may not be present
  - ► Level 2 Glucose <54 mg/dL: Most people have symptoms
  - ► Level 3:   Severe event characterized by altered mental and/or physical status requiring assistance for treatment of hypoglycemia
  - ► An A1C goal for many nonpregnant adults of <7%

Acute Complications

- ► Define Hypoglycemia
  - ► Abnormal low plasma glucose concentration (<70 mg/dL)
  - ► Exposes individual to potential harm
- ► Define Hyperglycemia
  - ► High blood sugar in the blood
  - ► Hyperglycemia, i.e., plasma glucose >250 mg/dL
  - ► Venous pH <7.3 and/or bicarbonate <15 mmol/L, with moderate or large ketone levels in urine

Acute Complications, cont.

- ► Signs and Symptoms of Diabetes
  - ► Classic triad of polydipsia, polyuria, and polyphagia
  - ► Blurred vision, hunger, sweating, shaking, Fast heartbeat, Headache
  - ► Trouble concentrating, Fatigue, Irritability, Confusion, weight loss

Acute Complications, cont.

- ► Diabetic Ketoacidosis
  - ► A life-threatening complication
  - ► Common in Type 1 diabetes
  - ► Low levels of insulin
    - ► concomitant increase in counterregulatory hormones levels
      - ► glucagon, catecholamines, cortisol, growth hormone

Chronic Complications

- ► Define Diabetic Retinopathy
  - ► Damage to the retina
- ► Symptoms
  - ► Flashes, floaters in dark or blurry vision
  - ► Halos around lights
- ► A comprehensive eye exam done by ophthalmologist upon diagnosis and as recommended thereafter

Chronic Complications, cont.

- ► Neuropathy
  - ► Damage to peripheral nerves
  - ► Signs/Symptoms
    - ► weakness, numbness, and pain, usually in the hands and feet
  - ► Assess for neuropathy at diagnosis and each visit
  - ► Annual 10-g monofilament testing
    - ► identify feet at risk for ulceration and amputation

Chronic Complications, cont.

► Diabetes Foot
  ► Result due to nerve damage
  ► S/S tingling, pain, weakness in the foot
  ► Foot evaluation every visit
  ► Comprehensive foot evaluation annually
    ► to identify risk factors for ulcers and amputations
  ► Do not soak feet or go bare foot

Chronic Complications, Cont.

Hypertension (Silent Killer)
  ► Sustained blood pressure ≥140/90 mmHg
  ► Common among T1DM or T2DM
  ► Monitor blood pressure at home
  ► Focus on weight loss
    ► DASH diet, reduce saturated and trans-fat
    ► Increase:
      ► n-3 fatty acids like nuts, salmon
      ► viscous fiber like sprouts, beans
      ► plant stanols like peas, peanuts
  ► Increased physical activity

Psychosocial Issues and Concerns

► Psychological and Social Needs
  ► Denial, anger, guilt, acceptance, diabetes distress, depression, etc.
  ► Management of diabetes requires complex, continual, and demanding self-care behavior
  ► Addressing psychological needs improves HbA1c by 0.5%–1% in adults with T2DM
  ► Psychosocial interventions include problem-solving therapy, coping skills training, and family behavior therapy

Psychosocial Issues and Concerns, cont.

► Psychological Interventions
  ► Incorporate psychological screening and management at every level of diabetes care
  ► Program to improve the awareness of psychological well-being

Psychosocial Issues and Concerns, cont.

► Psychological Interventions
  ► Incorporate psychological screening and management at every level of diabetes care
  ► Program to improve the awareness of psychological well-being

Health and Behavior Changes

► Health Promotion and Strategies
  ► Weight Management: Important to provide guidance on an individualized meal plan containing nutrient-dense food
  ► Physical Activity: Engage in physical activity as prescribed
  ► Stop use of cigarettes and other tobacco products or e-cigarettes
  ► With new device, ensure that people with diabetes/caregivers receive initial and ongoing education and training and evaluation

Summary

► Diabetes Mellitus (DM) is a severe disease Affects millions of individuals worldwide.

► May lead to many complications if not properly managed.

► Staff education on self-care will empower nurses to provide optimum care to DM patients.

► When nurses provide DSME to their patients
  ► Patients are most likely to be motivated to comply with their plan of care.
  ► Leading to the improvement in their condition.
  ► Beneficial to the patients, families, organization as well as the nurses
  ► Resulting to the creation of positive social change

Thank You – Questions?

Posttest Instructions

► The Posttest will be handed out and not be numbered
► Please put the number on the test from the piece of paper provided
► After completing the Posttest, paperclip the paper with the number on it to the Posttest
► Put the test in the envelope marked Posttest which will be put on the table
► The volunteer will deliver to me
► Thank you

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Appendix I: Evaluation of the SEP by Participants

Objective Statement At the conclusion of this prese presentation, the participant will be able to:	Were the objectives met? Please circle.	Comments
1.Describe Diabetes Disease Process, types, and Treatment Options	Yes No	
2. Incorporate Nutritional M management into Lifestyle	Yes No	
3. Identify strategies to incorporate physical activity into the lifestyle.	Yes No	
4. Identify strategies to use medication(s) safely and for maximum therapeutic effectiveness	Yes No	
5. Identify strategies to monitor blood glucose and other parameters and interpret and use the results for self-management decision making.	Yes No	
6. Identify strategies to prevent, detect, and treat acute complications.	Yes No	
7. Identify strategies to prevent, detect, and treat chronic complications.	Yes No	
8. Identify personal strategies to address psychosocial issues and concerns.	Yes No	
9. Identify personal strategies to promote health and behavior change.	Yes No	
Additional Comments		

Appendix J: Evaluation of the SEP, Process, and My Leadership by CEs

Title of Program: Nursing Staff Education on Diabetes Self-Management for Patient

Student: Happiness Oguariri CRNP, FNP

Thank you for completing the Summary Evaluation on my program. Please complete and send anonymously via interoffice mail to:

I. Content Expert Approach

 a. Please describe the effectiveness (or not) of this program in terms of communication, and desired outcomes etc.

 b. How do you feel about your involvement as a content expert member for this program?

 c. What aspects of the content expert process would you like to see improved?

II. There were outcome products involved in this staff education program including an educational curriculum and pre/ posttest.

 a. Describe your involvement in participating in the development/approval of the products.

 b. Share how you might have liked to have participated in another way in developing/approving the products.

III. The role of the student was to be the leader of the program.

 a. As a leader how did the student direct you to meet the program goals?

 b. How did the leader support you in meeting the program goals?

IV. Please offer suggestions for improvement.

Appendix K: Summary of Curriculum Plan Evaluation by CEs

Objective number and statement At the conclusion of the program the participant will be able to:	Evaluator A	Evaluator B	Evaluator C	Average score
1. Describe diabetes disease process, types, and treatment options.	1	1	1	1
2. Identify strategies to incorporate nutritional management into lifestyle.	1	1	1	1
3. Identify strategies to incorporate physical activity into lifestyle.	1	1	1	1
4. Identify strategies to use medication(s) safely and for maximum therapeutic effectiveness.	1	1	1	1
5. Identify strategies to monitor blood glucose and other parameters and interpret and use the results for self-management decision making.	1	1	1	1
6. Identify strategies to prevent, detect, and treat acute complications.	1	1	1	1
7. Identify strategies to prevent, detect, and treat chronic complications.	1	1	1	1
8. Identify personal strategies to address psychosocial issues and concerns.	1	1	1	1
9. Identify personal strategies to promote health and behavior change.	1	1	1	1
Mean = 1				
Comments:				
Very effective and aligned to the objectives.				
The information was based on current literature.				
The educational program should be incorporated into new employee onboarding, annual in-services, replicated and distributed among different family practices.				

Note: Met = 1, Not Met = 2

Appendix L: Summary of the Evaluation of the SEP by Participants

Objective statement Upon completion of this program, the participants will be able to:	Response Met = 1 NotMet = 2	Number
1. Describe diabetes disease process, types, and treatment options.	**Met** Not Met	5
2. Identify strategies to incorporate nutritional management into lifestyle.	**Met** Not Met	5
3. Identify strategies to incorporate physical activity into lifestyle.	**Met** Not Met	5
4. Identify strategies to use medication(s) safely and for maximum therapeutic effectiveness.	**Met** Not Met	5
5. Identify strategies to monitor blood glucose and other parameters and interpret and use the results for self-management decision making.	**Met** Not Met	5
6. Identify strategies to prevent, detect, and treat acute complications.	**Met** Not Met	5
7. Identify strategies to prevent, detect, and treat chronic complications.	**Met** Not Met	5
8. Identify personal strategies to address psychosocial issues and concerns.	**Met** Not Met	5
9. Identify personal strategies to promote health and behavior change.	**Met** Not Met	5
Mean: 1		

Comments:
1. The SEP on DSM information is beneficial to me.
2. The program gave me the proper tools to help patients.
3. The program provided me with a better understanding of DSM.
4. The program helped me comprehend the challenges related to DSM.
5. The program provided new evidence about DSM.

Moon Dec 2021

Appendix M: Pre/Posttest CE Validity Index Scale Analysis

Rating on X-Items Scale by Three Experts on a 4-point Likert Scale

Pretest/Posttest	Expert 1	Expert 2	Expert 3	Total rating	Item CVI
1	1	1	1	3	1
2	1	1	1	3	1
3	1	1	1	3	1
4	1	1	1	3	1
5	1	1	1	3	1
6	1	1	1	3	1
7	1	1	1	3	1
8	1	1	1	3	1
10	1	1	1	3	1
Proportion				I-CVI = 1	
Relevant				S-CVI=1	

I-CVI, item-level content validity index.

S-CVI/UA, scale-level content validity index, universal agreement calculation method

Adopted from Polit, D. F., & Beck, C. T. (2006). The content validity index.

Appendix N: Summary Evaluation of the SEP by CEs

Title of Program: Nursing Staff Education on Diabetes Self-Management for Patient

Student: Happiness Oguariri CRNP, FNP

I. Content Expert Approach

Please describe the effectiveness (or not) of this program in terms of

communication, and desired outcomes etc.

Evaluator A	Evaluator B	Evaluator C
Very effective, excellent communication.	Clear, concise, very relevant to clinical practice.	Great approach to culture in healthcare, desired outcomes were met.

How do you feel about your involvement as a content expert member

for this program?

Evaluator A	Evaluator B	Evaluator C
Highly involved, great opportunity to incorporate knowledge and expertise.	Really enjoyed the process, honored to be part of the program.	Amazing interprofessional communication, great experience.

II. There were outcomes products in this program including an educational curriculum

and pre/posttest.

Describe your involvement in participating in the development/approval of the

products.

Evaluator A	Evaluator B	Evaluator C
Participated in reviewing CE packet, did not make any change.	Reviewed CE packet, products were approved without the need for changes.	I reviewed CE packet, no changes needed.

Share how you might have liked to have participated in another way in

developing/approving the products.

Evaluator A	Evaluator B	Evaluator C
I would not make any changes.	Program development was very professional, I do not recommend any change.	I would not change anything.

III. The role of the student was to be the leader of the staff education program.

As a leader how did the student direct you to meet program goals?

Evaluator A	Evaluator B	Evaluator C
The student provided clear and concise instructions.	The student gave straightforward instructions to facilitate the completion of the program.	The student was a great leader, providing all the information and resources needed for the program.

How did the student support you in meeting the program goals?

Evaluator A	Evaluator B	Evaluator C
The student supported effective communication.	The student maintained open and clear instructions and maintained open communication.	The student was very receptive to feedback and was very passionate about the program.

IV. Please offer suggestions for improvement.

Evaluator A	Evaluator B	Evaluator C
No suggestions needed at this time.	I do not have any other suggestions.	No suggestions needed.

Moon/Mar 2022