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Nursing Staff Education on the Use of the American Diabetes Association Guidelines

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This is to certify that the doctoral study by

Terrie H. Allen

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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by

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MS, Albany State University, 2012

BS, Brenau University, 2007

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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May 2022

Abstract

Diabetes mellitus is a complex chronic condition that requires continuous care and management. Approximately 34 million Americans are diagnosed with diabetes and around 90%–95% suffer from Type 2 diabetes. The problem identified in this project was the need to follow the American Diabetes Association guidelines in place at the study site clinic but are not adhered to by the staff. Framed within the analysis, design, development, implementation, and evaluation model of instructional design, the purpose of this project was to plan, implement, and evaluate a nursing staff education program on the use of the American Diabetes Association Guidelines for diabetes. The project was reviewed by three content experts, and the education program was presented to six staff members of the project site. Two sources of evidence were produced by the project. The first was the dichotomous evaluation of the educational program objectives by participants. The participants agreed that all four objectives were met. The second source of evidence showed the change in knowledge from pretest to posttest. Using descriptive statistics, the mean of the pretest score was 45% and posttest was 94%. The results ranged from 45.1%–94%, which indicated a positive change in knowledge. The findings of this study have potential implications for positive social change by protecting the health of prediabetic and diabetic patients through education of nurses. These nurses will then be able to provide optimal care and consistency, improving the well-being of patients, their families, and the community.

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Dedication

This work is dedicated to my kids, my friend, and my sister. To my daughters, Kala and Katherine, for always encouraging me to go to school and continue my education. You have been my reason for working hard and wanting to provide you with a positive example to follow. To my son, Kevin, you have been my person throughout my life. I am so proud of the man that you have become. To my friend Rico Demetrius Kemp, you make me feel like I can do anything and inspire me to do everything; thank you for coming into my life. To my sister, Janice D. Kemp, who struggles daily with diabetes. To my friends, uncles, aunts, and mother-in-law all whom have died from complications of diabetes. This work is truly dedicated to you and those who continue to struggle.

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Section 1: Nature of the Project

Introduction

Diabetes is a complex chronic condition that requires continuous care and management. According to the Centers for Disease Control and Prevention (CDC, 2020), approximately 34 million Americans are diagnosed with diabetes, with around 90%–95% suffering from Type 2 diabetes (T2D). People over 45 are more likely to acquire T2D, yet the number of young children, adolescents, and young adults with this disease is growing (CDC, n.d). T2D increased from 6.9% in 2004 to 33% in 2016 (CDC, 2020). In 2019, American Indian, Hispanic, and Black adults (older than 18 years) were more likely to acquire diabetes; Asian Pacific and Hispanic children led the incidence rate among children younger than 18 (CDC, 2020). Unnikrishnana et al. (2016) found that, while the reasons for this increase could vary dramatically among patients, the difficulty of diagnosis of diabetes affects the growing incidence of this disease, especially among young people.

If left undiagnosed and untreated, diabetes can affect the human body in severe ways because a patient's cells do not respond to insulin normally, which makes the pancreas produce more insulin to stimulate a normal response. This increase in insulin production leads to a boost of blood sugar, creating conditions for prediabetes and T2D. The increased level of blood sugar interferes with normal body functions and can cause major health issues, including cardiovascular disease, loss of vision, and kidney failure (Perraudeau et al., 2020). Diabetes affects human health to a greater extent when left undiagnosed and patients are more likely to experience complications.

Diabetes affects heart health by damaging blood vessels, increasing blood pressure, and leading to an accumulation of low-density lipoproteins (LDL) cholesterol and a decrease of high-density lipoproteins (HDL) cholesterol through an increase of high triglycerides (Kenny & Abel, 2019). High blood sugar can lead to the development of chronic kidney disease, which might lead to kidney failure if left untreated (Bouhairie & McGill, 2016). Diabetes causes neuropathy, gastroparesis, and urinary tract infections (Yang et al., 2020). Many people with diabetes have problems with their feet due to impaired circulation, which in severe cases can lead to amputations (Kaya & Karaca, 2018). Finally, people with diabetes experience hearing and vision loss more often than their nondiabetic peers do (Konrad-Martin et al., 2015). These conditions could be already present before a person is diagnosed with diabetes. In my experience, the complications could be the main reason why an individual seeks healthcare.

Diabetes can be detected using a simple test measuring blood sugar; however, people may experience few to no symptoms, which create challenges for diagnosing the disease in a timely manner. The increasing prevalence of diabetes among citizens is also a major economic problem for healthcare in the United States (CDC, 2020). Investment in early diagnosis of this disease could help patients avoid some of the complications associated with diabetes and improve the economic outcomes for caring for diabetic patients (CDC, 2021).

Patients with different conditions can benefit from early screening for diabetes if they are in a risk group, which could determine their life quality long term. Moreover, because diabetes is not only a health-related problem but also an economic issue, patients

may be burdened by financial loss due to preventable conditions. Willey et al. (2018) emphasized that proper analysis of monetary management of diabetes can help create advisory recommendations for healthcare policymakers in terms of monetary resources. In other words, healthcare providers can be trained in understanding healthcare constraints and financial constraints to help patients.

To facilitate early diagnosis of diabetes, healthcare providers need to pay close attention to factors that could increase the risk of diabetes in patients despite the absence of symptoms. According to the CDC (n.d.) and the American Diabetes Association (ADA, 2020c) guidelines, the risk factors of Type 1 diabetes (T1D) include family history of diabetes and age (child or adolescent). Risk factors of T2D are prediabetes, overweight or obese, over age 45, low physical activity, family history, gestational diabetes, and being of African American or Hispanic descent. By considering these risk factors, healthcare providers may determine which patients require testing to rule out a diabetes diagnosis. The ADA (2020a) guidelines recommend that patients with risk factors and medical history be randomly tested to identify a diagnosis of prediabetes or diabetic status. In doing so, T2D could be prevented if an individual at risk changes their lifestyle, such as nutrition, weight loss, and physical activity. Thus, by diagnosing prediabetes and diabetes in patients early, healthcare providers could prevent the high incidence of this disease and ameliorate health complications related to the disease.

The evidence-based literature has revealed a lack of adherence by practitioners to the ADA guidelines (Dai et al., 2018; Fathy et al., 2016). Moreover, Dai et al. (2018), Fathy et al. (2016), and Tseng et al. (2017) associate nonadherence to an absence of

knowledge on the importance of complying with the standards. Alotaibi et al. (2016) identified nurses as having a significant diabetes care knowledge gap which could be filled with relevant and applicable information. Nurses have a large array of responsibilities following the nursing process, providing nursing care and mental support, and maintaining a connection with patients' families. Nurses are often instructed to consider patients' immediate symptoms and their financial capabilities. Thus, nurses may be hesitant to offer tests they know patients cannot afford. Insurance companies might impose their own rules concerning additional tests and diabetes prevention despite the existence of strict ADA guidelines. Thus, nurses may withhold conducting additional tests even if patients are in the diabetes risk group (Alotaibi et al., 2016). Overall, as Fathy et al. (2016) revealed that determining the risk factors of patient outcomes, such as diabetes onset, blindness, limb loss, and death-related cases, and nonadherence to ADA guidelines may encourage nurses to participate in education on the ADA guidelines, which may result in better adherence.

Problem Statement

The problem identified in this Doctor of Nursing Practice (DNP) project is the need to follow the ADA guidelines in place at the clinic that is the project site but that are not adhered to by the staff. As a part of my practicum, I conducted a review of 50 charts related to ADA compliance. My practicum preceptor oversaw the review. The review of two criteria supports the need to address this problem. Despite ADA recommendations for HbA1c screening every 3–6 months, two of the 55 clients whose charts were evaluated had not been checked in 1 year. Forty-eight patients had not been screened at

all; 40 patients had BMIs greater than 30 and 30 patients had BMIs between 25 and 29.9. Moreover, from the weekly team huddles, the providers cited that most patients had not exhibited signs for diabetes, could not afford the cost of treatment, and the staff had not followed ADA guidelines for assessment, identification, and management of diabetes. During this review, patient privacy was controlled for by reporting the findings of the problem as an aggregate issue and no individual patients were identified.

My preceptor reported the findings to the clinic leadership who agreed that the nursing staff did not follow the ADA guidelines in practice. As stated previously, researchers have found an association between nonadherence and an absence of knowledge on the importance of complying with the standards (Dai et al., 2018; Fathy et al., 2016). Alotaibi et al. (2016) identified nurses as having a significant diabetes care knowledge gap that needs be filled with relevant and applicable information.

Purpose Statement

The meaningful gap in practice for this DNP project is that nurses lack knowledge of diabetes management and do not adhere to ADA guidelines for assessment, identification, and management of diabetic patients. Evidence-based literature supports the need for nursing education and the use of guidelines. Therefore, the purpose of this DNP project was to plan, implement, and evaluate a staff education presentation for nursing staff on the use of ADA guidelines for assessment, identification, and management of the diabetic patient (EPADA). Thus, the practice-focused questions that guided this study are:

- What evidence in the literature supports the need for a staff EPADA?

- Does a staff EPADA result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest?

In this project, I sought to fill the identified knowledge and adherence gap by educating the clinic's staff on the importance of applying the ADA guidelines to facilitate optimal healthcare of the diabetic patient.

Nature of the Doctoral Project

Sources of Evidence

Evidence-based practice is used to integrate scientific evidence in clinical practice to improve quality of care, which is a hallmark of the DNP practitioner (American Association of Colleges of Nursing., 2006). I obtained evidence by reviewing relevant literature from databases such as ProQuest, CINAHL, Embase, PubMed, Google Scholar, and MEDLINE. The terms used during the search were *diabetic guidelines, importance of diabetic guidelines, and clinical guidelines of diabetic mellitus*. Nursing knowledge of diabetes and or diabetic guidelines were reviewed and tested. Guidelines from professional organizations, such as the CDC and the ADA, were reviewed. The range of research reviewed included that published between 2015 and 2021. ADA (2020b) recommends standards for bedside glucose monitoring by nurses. Additionally, a systematic review retrieved from both Google Scholar and PUBMED explained that nurses are important in diabetes management because they educate, offer psychosocial support, and provide advanced care to diabetic patients (Nikitara et al., 2019).

Approach

Framed within the analysis, design, development, implementation, and evaluation (ADDIE) model (see Appendix A) and guided by the planning, implementation, and evaluation steps in the Walden University Manual for Staff Education, I developed an educational presentation for clinic staff on ADA diabetic guidelines. The ADDIE phases comprise the analysis, design, and development of the educational project during planning. In the ADDIE analysis phase, the need for the diabetes education program was determined by my observation in my practicum clinic and after discussion with my practicum preceptor and project chair.

I conducted an ongoing literature review to support the identified problem. The literature review was placed on the Melnyk, Mazurek, and Fineout-Overholt's matrix tool (see Appendix B) for use in the project. The design of the project included designation of three content experts who provided formative evaluation of the curriculum I adapted (with permission) and validated the test items for the project. An outside PhD expert in assessment advised me on the construction of my test items. Specific learning objectives measurable and reasonable for the project were formulated and drove the curriculum. Finally, I sought appropriate ethics approval at the site and through the Walden University Institutional Review Board (IRB) process.

The implementation step includes the ADDIE implementation phase, which states that a procedure for educating learners is developed to include learning outcomes, method of delivery, and testing procedures (Gaston et al., 2016). After the formative evaluation, revisions, and approval by the content experts, the implementation occurred.

The clinical site oversaw the education program, I collaborates with site leadership who supported the project in the recruitment of staff for the presentation and needed resources such as space, scheduling, etc. I provided all project materials used such as test paper, pens, and lunch. Evidence-based resources support the use of a PowerPoint presentation to implement a staff education program (Craig & Amernic, 2006). The pretest was used to assess knowledge levels of the participants prior to the educational presentation. The same test was administered after the educational presentation to reassess knowledge levels of the participants. Additionally, the participants were provided with a small creative guideline manual as a reward for participation.

Formative evaluation for the EPADA included curriculum evaluation and the content validation of the pretest and posttest items by the CEs. Impact evaluation consisted of pretest and posttest change in knowledge after implementation of the educational presentation and the evaluation of the educational program by the participants. A summative evaluation of the project, process, and my role as the project leader was completed by the CEs.

Significance

The EPADA project was designed to have a positive impact on the stakeholders, including the nursing staff, patients, and family. The nursing staff were impacted by enhancing their knowledge, which could lead to use of best practices, better communication with patients, and development of other programs to aid the staff in their work. For patients and their families, the project could help lower healthcare costs, prevent loss of work hours, and promote healthier living.

As Munshi et al. (2016) recognized, adherence by nurses to ADA's guidelines improves the quality of life of long-term care residents. Consequently, prevention of diabetes is a more viable solution rather than treating the detrimental outcomes. While factors such as family history, genetics, and heredity cannot be changed, healthcare providers can invest efforts in educating the population about preventable forms of diabetes. Other factors, for example lifestyle and nutrition, are preventable. Therefore, the development of this educational presentation for the nursing staff was of critical importance for all stakeholders.

My hope was that this DNP project would enhance the use of ADA guidelines. This use will help in everyday nursing practice and aid in early screenings leading to prevention of diabetes mellitus. Multiple researchers have agreed that diabetes prevention is the only solution for decreasing high incidence of this disease. For example, a study showed that a diabetes prevention program is efficient for decreasing the cost of care, reducing hospital admissions, and regulating regular emergency department visits (Alva et al., 2017). Nurses could be the main actors in the prevention of diabetes among the population. According to Dai et al. (2018), the diabetes management problem in healthcare facilities could be solved by fostering compliance with ADA guidelines among nursing staff. Nurses can improve their knowledge and awareness about diabetes and its prevention, which would increase the timely diagnosis of prediabetes and help prevent diabetes mellitus. Larson-Williams (2016) insisted that diabetes educational programs help increase knowledge and awareness among healthcare providers, but this effect is short term and the same providers experience knowledge decay after two–three

implementations. This means that an educational program should be an ongoing solution with constant changes that provide nurses with adequate and relevant information. This contribution could help enhance nursing knowledge and improve patient outcomes.

Walden University's positive social change statement comprises the creation and application of ideas, tactics, and actions to uphold the value, pride, beliefs, and progress of people living in communities or working in institutions (Walden University, 2020). The aim of this project was to protect the health of patients cared for within a specific community healthcare setting through education of nurse providers on the importance of adhering to evidence-based guidelines, specifically in diabetes. This project also supports Walden University's mission to promote positive social change by researching and coordinating professional activities through the application of evidence-based research to support the practice-focused questions that guided this DNP project. Evidence from the literature indicates several social benefits of education of healthcare providers on use and adherence to diabetic guidelines (Marcial & Graves, 2019). Thus, this project could have potential implications for positive social change relevant to patients, families, and communities, thus improving the human condition.

Summary

Diabetes is a complex disease that can impose life-long outcomes on a patient. In Section 1, I identified the problem I sought to address with this DNP project, which is the need to follow ADA guidelines at the project site clinic, which staff were not adhering to. This lack of adherence led to a gap in practice. Evidence-based literature has shown that educating nurses regarding the guidelines could fill the gap. Using the phases of the

ADDIE model and guided by the practice-focused questions, I accomplished the project through the planning, implementation, and evaluation of an education program for nursing staff. The significance of this project includes the enhancement of knowledge and a better outcome for all stakeholders. In Section 2, I discuss the ADDIE model along with the relevance to nursing practice, background and context, and the role of the researcher and the content experts.

Section 2: Background and Context

Introduction

The problem identified in this DNP project is the need to follow the ADA guidelines in place at the project site clinic that are not adhered to by the staff. This led to the following practice-focused questions:

- What evidence in the literature supports the need for a staff education presentation on the importance and use of evidence-based guidelines for diabetes management?
- Does a staff EPADA result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest situation?

The purpose of this DNP project was to plan, implement, and evaluate a staff EPADA.

Concepts, Models, and Theories

The planning, implementation, and evaluation steps discussed in the Walden Staff Education Manual will be conducted using the phases of the analysis, design, development, implementation, and evaluation (ADDIE) model of instructional design which is a useful, flexible, and systematic educational tool for training and educating adult learners, and is consistent with instructional best practices (CDC, n.d). The model has various phases that will guide the EPADA and provide information to formulate a strong foundation for the educational presentation. The ADDIE model is supported by many academic programs (Lee et al., 2017; Robinson & Dearmon, 2013; Obizoba, 2015), and healthcare organizations and professional associations and regulatory bodies, including the CDC (n.d.), National Institute of Health (NIH) (Patel et al., 2018), and the

Sigma Theta Tau International (STTI), and the Honor Society of Nursing (HSN) whose mission is to support the learning, knowledge, and professional development of nurses committed to creating a positive difference in health care around the world (Jeffery & Longo, 2016).

Various nursing education programs have used the ADDIE model to help educators ensure that they are teaching the appropriate material in an optimal manner, or to provide both an appropriate destination, and the right road to get you there. The Addie model is one such instructional design model which has been used to develop curriculum in diverse fields such as library instruction and online continuing education (Cheung, 2016). The ADDIE model had been useful in nursing practice, including patient self-management of type 1 diabetes (Xie et al., 2020); adopted in a Taiwan hospital as an evidence-based practice model to improve caring behavior (Hsu et al., 2014); and in the Mayo Clinic as an EBP instructional framework for the management of diabetes (Hasfal, 2018). The ADDIE model has also been used as a framework for nurse preceptor-centered training programs (Lee et al., 2017).

Relevance to Nursing Practice

Nurses in primary care practice need to be vigilant in their approach to the assessment, diagnosis, and management of all patients to identify prediabetes or diabetes mellitus. A systematic historical review of the nursing practice relating to the current topic showed that nurses providing bedside care to patients with diabetes do not usually have specialization in diabetes (Nikitara et al., 2019). Nikitara et al. conducted a systematic historical review that revealed three major roles and several barriers in

diabetes care among nurses providing care to patients with diabetes. The results of this study showed that better nursing training and education are critical to improving nursing services by providing novice nurses with adequate resources, time, and connections to diabetes specialists (Nikitara et al., 2019). A broader problem of the nurses' lack of compliance with ADA guidelines is the absence of personnel trained in the provision of diabetes care to patients (Nikitara et al., 2019). At the same time, researchers acknowledge that nurses had fewer responsibilities compared to their modern peers, which allowed them to provide more focused care to patients (Nikitara et al., 2019). Today, nurses are overwhelmed with the responsibilities that have been expanded to include diagnosis, care, research, leadership, and ethics, which represents a barrier to the development of high-quality services (Nikitara et al., 2019). Thus, modern nurses have to be equipped with specific knowledge about diabetes and current treatment or the healthcare facilities have to include diabetes specialist nurses to provide specialized care to patients (Nikitara et al., 2019).

Several solutions are proposed by developing a set of educational courses for nurses. Munshi et al. (2016) reported on ADA's position about the treatment of diabetes in skilled nursing organizations and long-term care facilities. One way of improving the management of diabetes in such a setting is by using diabetic guidelines to educate nursing staff (Munshi et al., 2016). A similar education intervention for nurses working in long-term care facilities was reported by Hubberd and Hernandez (2018). Additionally, Larson-Williams et al. (2016) used a simulation course to educate nurses and pediatric residents on proper management of diabetic ketoacidosis in pediatric patients. The

simulation course was based on recommendations from a diabetic guideline developed by the International Society for Pediatric and Adolescent Diabetes (Larson-Williams et al., 2016). Both Hubberd and Hernandez (2018) and Larson-Williams et al. (2016) discussed the planning, implementation, and evaluation of the education process.

Education programs have demonstrated various levels of success in previous research. The education presentation by Hubberd and Hernandez (2018) and Larson-Williams et al. (2016) demonstrated that nurse training is effective in increasing knowledge. In the program of Hubberd and Hernandez (2018), following education and post testing, advanced practice registered nurses' knowledge increased from 60% to100%, vocational nurse knowledge from 63% to 71%, and registered nurse knowledge from 63% to 87%. Larson-Williams et al. (2016) established a significant improvement ($p < 0.05$) in post-test analysis for all participants, including nurses The findings of these researchers indicate that an education program can improve the knowledge of nurses.

Additional researchers have identified useful nursing education curricula and best practices in nursing education. Arnold et al. (2016) identified an educational package called the Joint Commission Advanced Inpatient Diabetes Certification program that included written blood glucose monitoring protocols, nursing training in diabetes management, medical record data identification of diabetes, a plan coordinating insulin and meals, interventions plan for addressing hypoglycemia and hyperglycemia, and education of patients on diabetes. This program was based on ADA's clinical practice guidelines (Arnold et al., 2016). According to the results of Arnold et al.'s study, the program proved to be effective and increased the quality of nursing care in a healthcare

facility. In addition, Funnell and Freehill (2018) found that regardless of technology or new treatments, nurses must never lose sight of their role as patient advocates and supporters as they work to provide quality healthcare for diabetic patients.

Evidence Based Guidelines for Management of Diabetes

ADA and CDC are both well-known organizations that provide a wealth of education on DM. Unlike the CDC, the ADA focuses on DM and how to improve diabetic health while the CDC looks at various health diseases. The CDC reference and works with the ADA to help improve diabetic health. The CDC, the American Diabetes Association (ADA), and the American Medical Association (AMA), partnered with the Ad Council to launch the first national public service advertising (PSA) campaign about prediabetes, this was an attempt to raise awareness, educated prediabetes and help them understand their diagnosis, and how to prevent the development of type 2 diabetes (CDC, n.d.).

Dai et al. (2018) utilized a survey by the National Ambulatory Healthcare to evaluate whether medical care clinics were adhering to the ADA to guidelines to make suggestions for lipid count examinations as well as HbA1c in diabetic patients. Nationwide outcomes disclosed that both tests were not performed in about 60% of diabetic clients. Additionally, Fathy et al. (2016) reported reduced adherence to the ADA standards on retinopathy screening by both carriers and patients.

Cohort research performed by An et al. (2018) at Kaiser Permanente revealed that a substantial number of diabetic clients did not adhere to the retinopathy testing guidelines. Out of the 204,073 patients reviewed, 28.9% failed to go for recommended

retinopathy testing, due to a lack of recommendations and patient compliance. (An et al., 2018). Comparable results were obtained from a survey conducted by Tseng et al. (2017) who identified that of the 145 USA-based healthcare providers who were questioned, about 30% stated that they did not totally use the ADA diabetic guidelines (Tseng et al., 2017).

Knowledge of Nurses Regarding the Identification and Management of Diabetes

Nursing knowledge in diabetic, management, treatment and care are the foundations of DM guidelines. If nurses lack knowledge and fail to implement the use of guidelines, could result in negative patient outcomes. There must be evaluations of knowledge and continued education (CE) offered to staff to bridge the gap of knowledge and care. Silva Paraizo et al. (2018) conducted a study on nursing knowledge of diabetes mellitus. The study reviewed deficit of knowledge of the disease; deficit of knowledge of the treatment; deficit of knowledge about insulin conservation and waste management; deficit of knowledge about care; deficit of knowledge about the rights of people with diabetes mellitus. The qualitative, analytical, and exploratory study was based on the guidelines of the Brazilian Society of Diabetes1and the recommendations of the Ministry of Health (Silva Paraizo et al., 2018). According to the research, some nurses had no re-enforced training on DM, some 2-3 years ago, while others failed to remember if they had any. This study helps to identify the need for this presentation, the importance of guideline usage and the need for leadership offering CE on a regular basis. Silva Paraizo et al (2018) analyzation of the literature identified an important gap in the knowledge, regarding the conceptualization of DM, diagnostic exams and their reference values,

complications, treatment, care, insulin conservation, solid waste management and the rights of the person with DM. They attributed the lack of knowledge to the fact that nurses take on, the administrative function of Primary Care services as a priority, moving away from clinical practice in the work process, which is counterproductive to the model of assistance advocated. The study supports the need for continuing education in health services, in order to provide updated knowledge for nurses and the implementation of protocols in nursing consultation for the practice of clinical practice (Silva Paraizo et al., 2018).

Nursing Education for the Identification and Management of Diabetes

Evidence from the literature suggests a number of social advantages of education of health care providers on use as well as adherence to diabetic guidelines. The authors evaluated the influence of educating companies on the significance of adhering to diabetic guidelines in a Hispanic clinic. During the post-test evaluation, the researchers established that the suppliers' perspectives towards the management of diabetic issues had improved. Additionally, clients showed a positive social change; they boosted their self-care abilities and adherence to guideline recommendations. The social adjustment likewise benefited the healthcare organization considering that the high quality of diabetic treatment was improved and the problem on the health system lowered.

Education on the use of diabetic guidelines need to be promoted by leaders in healthcare organization to help better patient's outcomes as they struggle with DM. A study performed by Gifford et al. (2011) identified leadership as important to guideline uses among nurses when caring for patients with DM and DM foot ulcers. The study was

clear that leadership is instrumental to create a context that enables and supports nurses to use research findings in health care practices. The authors stated that leadership was the only significant predictor of nurses continuing to use guidelines recommendations.

Leaders at all levels of organizations were identified as having influence in the use of guidelines including direct care staff, advanced practice nurses, managers and executive directors (Gifford et al., 2011). To help identify the importance and continued use, leadership as well as nurse will have to be held accountable for the outcome of patients when they fail to implement guideline use. Gifford et al. (2011) identified that clinical practice guidelines (CPGs) are tools to assist healthcare providers make evidence-based decisions to improve the quality of health care delivery and patient outcomes. CPGs translate research findings and other forms of evidence into recommendations for best practices and can help to bridge the gap between what is known about effective care and actual practice. CPGs translate research findings and other forms of evidence into recommendations for best practices and can help to bridge the gap between what is known about effective care and actual practice (Gifford et al., 2011). In order to understand why nurses, fail to use DM guidelines we have to identify the barriers and make positive changes. Gifford et al. (2011) implemented Barriers Assessment Taxonomy (BAT) in their study, which is a framework for classifying barriers, although it does not include a methodology for soliciting or collecting information on specific barriers. If the leaders and nursing staff work towards quality Improvement and evidence-based care being a global healthcare priority, addressing barriers to guideline implementation can help to narrow gaps in care for improved health

care delivery and positive patient outcomes (Gifford et al., 2011). This EPADA will be used to educate the nursing staff on the use of diabetic guidelines after which the guidelines will be placed in practice and have the potential goal of facilitating increased compliance and outcomes.

Local Background and Context

In this study, the EPADA was conducted in a rural community primary healthcare clinic located in the North Central section of the United States. Primarily state funded, the clinic serves individuals with low incomes and is the only facility offering health services in the area. The clinic is staffed by one nurse practitioner and six registered nurses with one physician who provides collaborative support on medical care for the team. During my clinical observation of the nursing staff, patients with prediabetic signs and symptoms were not being screened, and no diabetic guidelines were being used; the need for this DNP project became clear. The facility does not have an educational program for the staff nurses on diabetic guidelines and how to recognize people at risk for diabetes; thus, an educational program, which was approved by clinic leadership, would help meet the nurses' needs to enhance their knowledge and help improve patient outcomes.

Role of the DNP Student

Professional Context and Relationship to the Project

As a master's prepared family nurse practitioner (FNP) and psychiatric and mental health nurse practitioner (PMHNP), my goals are to improve healthcare for patients, foster preventive care, and ensure the high quality of medical services. Diabetes

remains an urgent problem in healthcare for a long time. As an FNP, I have serviced many diabetic patients and I understand the need for early diagnosis. The nursing staff has the basics formal training that college provides covering the topic of diabetes as well as they are aware of ADA guidelines however the clinic does not provide in-service training dedicated only to this topic. As a DNP student, during my practicum program, I had a chance to invest my efforts in improving preventive care for patients with the pre-diabetic state. I am motivated to do this project to develop various ways to educate nurses, to help them provide basic primary care as well as advanced services to pre- and post-diabetic patients. While I understand that nurses have a high workload and limited capabilities, I can introduce a flexible and adaptable educational presentation that focuses on the use of ADA diabetic guideline for diabetic screening, prevention and management among the population.

My leadership experience as an RN, FNP, and PMHNP helps me to understand how important educating the staff nurses on ADA diabetic guidelines is essential in changing the current practices surrounding patients at risk of diabetes. As a provider and having worked as a nurse, I believe that nurses need education is the key to improving patient's health and promoting quality of care.

Relationship to the Topic, Participants, Evidence, or Institution

My role in this project is the project leader. The project is taking place in my practicum site where the problem has been identified. The participants will be the CEs that I identify and the participants of the educational program who work in the clinic. I will develop the content from which the evidence will be forthcoming through evaluation

and content validation. Additional evidence will be through evaluation of the program and change in knowledge from pretest to posttest.

Role of the Content Experts

Content experts will be identified for this project. The role of the CEs will be to provide formative evaluation of the curriculum and content validation of the pretest/posttest items as well as to provide a summary evaluation of the project, process, and my leadership. Each CE will receive a Content Expert Packet to participate in their evaluation and feedback which will be returned within two weeks. The evidence that they provide from the evaluation of the curriculum and content validation of the test items will be analyzed by me as outlined in Section 3.

Summary

Section 2 has covered the ADDIE model of instructional design that will be used to frame the EPADA project. The relevance to nursing practice, background and context of the project were also discussed. As the developer of this project, I will collaborate with my preceptor and CEs to present and complete this EPADA. By developing the EPADA, and working with the CE, the EPADA aims at improving nursing staff knowledge in diabetes and adhering to ADA guidelines. As I move into Section 3, I will reintroduce the problem identified in the project, restate the practice-focused questions, and describe the sources of evidence and how data and evidence collected will be analyzed and synthesized.

Section 3: Collection and Analysis of Evidence

Introduction

The problem identified in this DNP project was the need to follow the ADA guidelines in place at the project site clinic that are not adhered to by the staff. The purpose of this DNP project was to plan, implement, and evaluate a staff EPADA.

Practice-Focused Questions

The meaningful gap in practice for this local DNP project was nurses' lack of knowledge of diabetes management and failure to adhere to ADA guidelines for assessment, identification, and management of the diabetic patient. Evidence-based literature supports the need for nursing education and the use of guidelines. The following practice-focused questions guided this project regarding closing this gap in practice:

What evidence in the literature supports the need for a staff education presentation on the importance and use of evidence-based guidelines for diabetes management?

Does a staff EPADA result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest?

The purpose of this DNP project was to plan, implement, and evaluate a staff EPADA to increase the knowledge of nurses on the use of the guidelines as evidenced by results of a pretest and posttest. The practice-focused questions brought evidence from the literature and evidence derived from the project, thus providing alignment between the purpose and the questions.

Sources of Evidence

The CDC provides a range of evidence-based clinical practice guidelines for usage in healthcare setups. The project study site will certainly function as a resource for a diabetic standard that can be made use of in informing the registered nurses (CDC, 2016). The guidelines supply information on the avoidance, discovery, and treatment of the condition. An additional source of proof was the ADA standards, which also provide valuable information on diabetes administration (American Diabetic Association 2020c). Evidence was retrieved by assessing relevant literature from databases such as ProQuest, CINAHL, Embase, PubMed, Google Scholar, and MEDLINE. The terms used during the search were *diabetic guidelines, the value of diabetic person standards,* and *clinical guidelines of diabetes mellitus*. Research ranged in publication from 2015 to 2020.

The research collected from these databases offered proof of the importance of proper management of diabetes mellitus in the nursing method. The American Diabetes Associations (2020) recommends criteria for bedside sugar tracking by registered nurses. Furthermore, an organized review obtained from both Google Scholar as well as PUBMED has explained that registered nurses are essential in diabetes monitoring because they enlighten, supply psychosocial support, and offer innovative treatment for diabetic people (Nikitara et al., 2019).

Sources of evidence to address the first practice-focused question were found within the literature review (see Appendix B). To address the second practice-focused question, the sources were the curriculum plan (see Appendix C), the curriculum plan evaluation by the content experts (see Appendix D), the pretest and posttest (see

Appendix E), the pretest and posttest content validation by the content experts (see Appendix F), and the pretest and posttest change in knowledge results collected from the EPADA participants (see Figure 1).

Additionally, evidence to support the project for process improvement for future use came from the staff education program (see Appendix G) and the evaluation of the staff education program by participants (see Appendix H). Upon completion of the project, the content experts completed the evaluation of the staff education project, process, and my leadership (see Appendix J).

Participants

The EPADA included staff participants who attended the educational program and the content experts. There were three content experts. The first content expert is a doctor of nursing practice and is an educational coordinator at a leading hospital in Georgia. The second content expert has a doctorate in nursing education and is currently an adjunct faculty member in a regional university and operates a prominent dialysis clinic in Georgia. The third content expert has a PhD in nursing science and works as a director for a community service board. Content experts performed a formative evaluation during the project's planning step, including the curriculum plan evaluation and the pretest/posttest content validation. The content experts also provided an evaluation of the staff education project after the project was completed.

The participants attending the educational program comprised six staff nurses. They were selected because they work directly with patients including performing patient assessments. The participants participated in the educational program and provided

impact evaluations upon completion of the program, the first resulting in evidence obtained upon completion of the pretest/posttest shown in the pre/posttest change in knowledge, and the second impact evaluation exhibited on the evaluation of the staff education program.

Procedures

I used templates developed by my Walden University project committee chair. The templates aided in the collection and development of some aspects of the project and did not require reliability and validity evidence. I used the content validity index tool to validate the pretest/posttest I developed. There were two measures. One was on each item of the test (I-CVI) and the second was the total content validity score of the test (S-CVI). The I-CVI measures the proportion of agreement on each item's relevancy to the curriculum, ranging from 0–1. The scale content validation index (S-CVI) expresses the proportion of the total items that achieved a rating of 3 or 4—that is, the items assessed as content validity (Zamanzadeh et al., 2015). I describe the tool more in the analysis and synthesis section.

An introduction letter (see Appendix I) was attached to each content expert packet, in which I introduced myself and the project. The letter contained instructions for completing the information in the packet and an invitation to contact me at any time. The information assured the anonymity to all participants, which were secured using the content expert's corresponding number identifier on each item in the packet. The literature review matrix (see Appendix B) was included for the content experts' review. Information pertinent to the approval of the content expert included the curriculum plan

(see Appendix C), curriculum plan evaluation (see Appendix D), pretest/posttest (see Appendix E), and pretest/posttest content validation (see Appendix F).

Participants in the education program completed a pretest to assess their understanding of the ADA guidelines before the education presentation. The participants completed a posttest assessment after the education presentation. Participants' anonymity was maintained as described in this document. I analyzed the results of the pretest/posttest to determine change in knowledge of participants (see Figure 1).

I developed the evaluation of the staff education program for participants based on a template related to the objectives of the curriculum (see Appendix H). The staff education program was evaluated by participants after the presentation. I left the room and program evaluations were to be placed in a blank envelope and one staff member would deliver the envelope to me.

After completion of the EPADA, content experts were asked to complete the evaluation of the project, process, and my leadership and offer any suggestions for further improvement (see Appendix J). The evaluations were hand delivered anonymously by a colleague to each content expert. Each content expert returned the completed forms to that colleague who placed them in a blank envelope and returned them to me. All the materials reviewed by the content experts were anonymous. I compiled the themes of the results.

Protection

During the development of this project, the guidelines of the ethical principles and professional conduct set forth by Walden University's Internal Review Board (IRB) to

protect all the project participants by obtaining the project site agreement before beginning the DNP project and ensuring the anonymity of all materials and information obtained from and relating the participants in the project. All the materials reviewed by the CEs will be anonymous. The pretest and posttests will be anonymous using number coding instead of names. There will be a written site agreement to assure that anonymity is kept thought out the development of the presentation. All paper documents will be kept in a locked file in the facility for five years, and then shredded. The approved IRB number is 06-23-21-1013700 and there is a site agreement completed.

Analysis and Synthesis

Recommendation provided from the analysis of the evidence will be used to revise the project as needed. This will help to develop the EPADA into a successful presentation.

A dichotomous scale with 1 = met and 2 = not met will be used to evaluate the curriculum relative to the objectives. When the curriculum evaluations by the three CEs are obtained, I will analyze the results (see Appendix K) using descriptive statistics and report a frequency and percentages.

The CEs will evaluate each pretest/posttest questionnaire's validity according to their relevance to the program objectives in the following order: not relevant, somewhat relevant, relevant, and very relevant (see Appendix F). I will analyze each item of the pretest/posttest questionnaire using a 4-point Likert Scale of 1-4 according to the degree of their relevance, 1 (not relevant), 2 (somewhat relevant), 3 (relevant), 4 (very relevant) to the program objective. I will review each CE individual item score. Add all three of the

CEs scores horizontally and divide by the number of CEs to achieve the I-CVI and put in the Total Item Rating column for that item. Add the Total Item Ratings vertically and divide by the number of test items. The S-CVI should have a score between 0 and 1. Note: Acceptable validity score should be between .78 and 1. Otherwise any items that are poorly rated need to be revisited (see Appendix L). I will present the results of the I-CVI in Section 4 using descriptive statistics including frequency, mode, and mean.

Dichotomous response for each objective – descriptive statistics of objectives met frequency, count/percentage from the results of the Summary of the Evaluation of the Staff Education by Participants (see Appendix M) will be collected to assist me in understanding my strengths and gathering recommendations for further improvements of the presentation and for further leadership opportunities.

The pretest/posttests completed by the participants will be analyzed to show the participants knowledge before the educational program and afterwards to see if there is a change in knowledge. Descriptive statistics will be used for individual changes and inferential statistics for group change in knowledge.

The CEs will evaluate my DNP project, the process, and my leadership skills and offer suggestions after the presentation of the DNP project (see Appendix N). The analysis will aid in shedding light on the importance of the ADA guidelines, the use of them, the importance of the presentation and my ongoing development as a leader.

Summary

Section 3 identified how evidence generated by the project will be collected, analyzed, and synthesized. A detailed description of various sources of evidence for the

DNP project and the methods used to collect the evidence from the literature were discussed and evaluated using the Melnyk, Bernadette Mazurek, and Ellen Fineout-Overholt's tool. Evidence generated by the project related to the participants will also be evaluated by the three CEs and analyzed by myself. The CEs will evaluate the curriculum plan and curriculum and validate the practice-focused questions to determine whether they align with the project objectives. Each pretest/posttest item will be independently assessed by each content expert related to whether they are content valid or not content valid using the item content validation index (I-CVI). This section also highlights how protection of all the participants' anonymity, including the CEs, following the stipulations of the Walden University's Internal Review Board (IRB).

Section 4 will consist of discussions of the findings and implications of the data analysis performed in section 3, including recommendations for the staff educational program on opioids use disorder. The next section also includes a description of the project team's contribution and the strengths and limitations of the project.

Section 4: Findings and Recommendations

Introduction

The problem identified in this DNP project was the need for staff to follow ADA guidelines in place at the project site clinic. The practice-focused questions to close the meaningful gap in practice for this DNP project were:

- What evidence in the literature supports the need for a staff education presentation on the importance and use of evidence-based guidelines for diabetes management?
- Does a staff EPADA result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest?

The purpose of this DNP project was to plan, implement, and evaluate a staff education program on the use of ADA guidelines intended to increase the knowledge of nurses on the use of the guidelines as evidenced by a pretest/posttest result. In Section 4, I present the findings and implications of the analysis and synthesis of the project, recommendations of ways to potentially address the gap in practice related to the findings, contribution of the content experts, and strengths and limitations of the project.

Findings and Implications

The findings for the project were generated from five areas of evaluation: evaluation of the curriculum and content validation of the pre/posttest items, evaluation of the education program by participants and the change in knowledge from pretest to posttest, and, finally, an evaluation of the project, process, and my leadership.

Evaluations were analyzed using descriptive statistics with the summary evaluation being thematic in nature.

Findings

Curriculum Plan Evaluation by Content Experts Summary

Using a dichotomous scale with 1 = met and 2 – not met, all of the objectives received a 1 by the CEs showing that all of the objectives were deemed met related to the course content (see Appendix K). From the comments, all CE's agreed that the information was needed. They identified that each area of the curriculum gave valid information and that the information was clear and the points were developed well within the presentation. The CE's also identified how well the curriculum flowed and that the information was well thought out and integrated easily with the questions of the pre/posttest. They also identified the curriculum as easy to understand. The CEs encouraged me to use the curriculum throughout my career to help other nursing professionals understand the importance of ADA guidelines. All 3 CE's identified the pre/posttest material as well developed.

Pretest/Posttest Content Expert Validity Index Scale Analysis

The analysis of the content validity of the test items showed that the CEs determined that the items represented the course objectives and content with the I-CVI = 1 and S-CVI = 1 (see Appendix L).

Summary Evaluation of the Staff Education Program by Participants

The analysis of the evaluation of the program by participants was based on a dichotomous scale with "met" = 1 and "not met" = 2 (see Appendix M). The participants

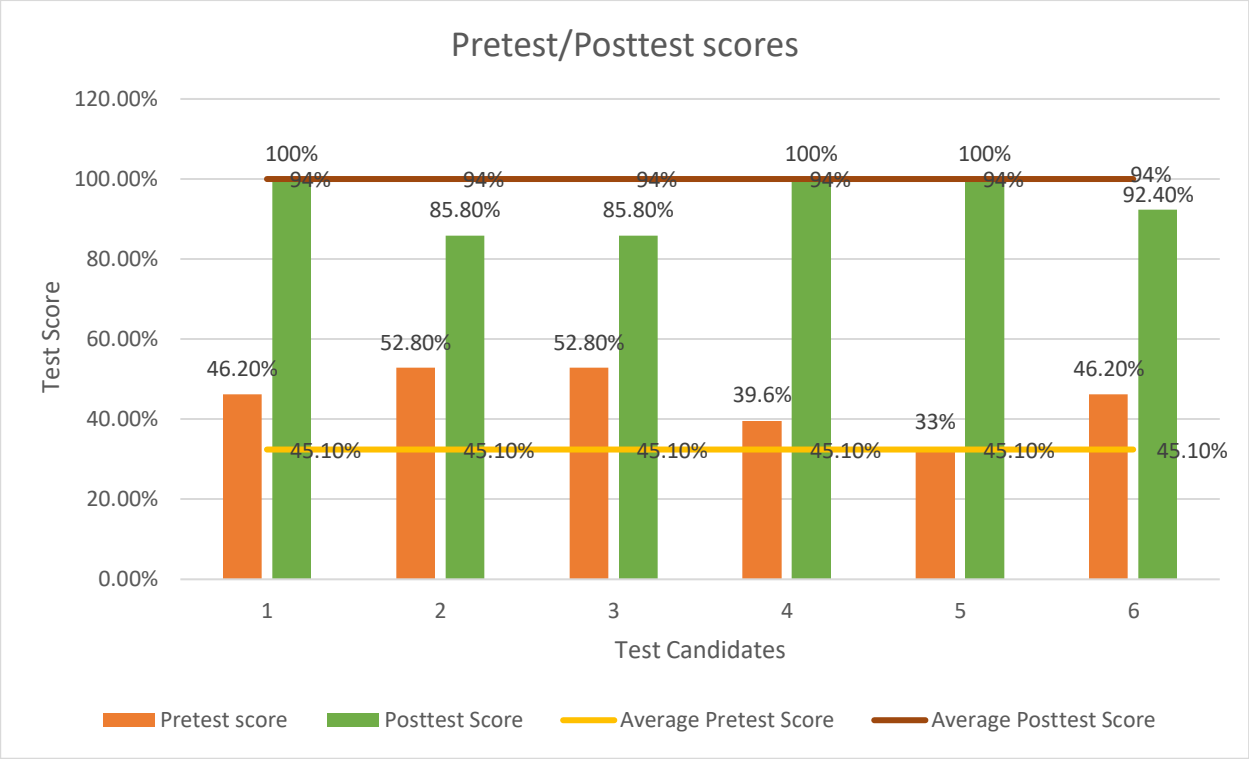
unanimously rated the program a “1” with all objectives being met. All stated the program was very educational and effective. Two of the six participants identified that the test given prior to the presentation was somewhat difficult due to their lack of training. Two more stated that the test was moderately difficult, while the remaining two identified the test had basic knowledge and that the lack of continued education created challenges with the pretest. All of the participants identified that they learned a great deal and that the program should be an ongoing educational piece for new and current employees. Participants identified that the PowerPoint was very informative and well-developed.

Pretest/Posttest Change in Knowledge Results by Participants

I conducted the analysis of the change in knowledge from the pretest to posttest using descriptive statistics. The pretest scores ranged from 33% - 52.8% with an average of 45.1. Posttest scores ranged from 85.8% - 100% with an average of 94%. All the participants scored higher on the posttest than on the pretest (see Figure 1). The increase change in knowledge changed from 45.1%-94%, which indicated a positive change in knowledge from pretest to posttest among the RN participants.

Figure 1

Pretest and Posttest Scores



Analysis of the test questions indicated that question 2 was extremely difficult for 5/6 nurses, which read:

Which of the following would warrant further diabetic testing?

a. A1C< 5.7.

b. A1C> 6.5.

c. A1C> 5.7

d. A1C< 5.0

Choice C was the correct answer. On the pretest everyone missed this question and on the posttest 5/6 missed this same question on the posttest. Most of the participants picked answer B. After looking over the question, the slides and the options, the

determination was made clear that C indicated prediabetic and further testing may be needed. Answer B indicated a diagnosis of diabetes and we should start medication at this time. One participant identified the rational as well as picked the correct answer. All the other questions were deemed relevant and no limitations were identified as far as the pre/posttest. The nurses were reeducated on the question as well as any others missed to ensure that the evidence-based information was received and disseminated properly regarding the diabetes ADA guidelines.

As previously identified, the practice-focus question for this ADA staff education program is: "The practice-focus question for this staff education program on the use of ADA diabetic guidelines (EPADA): "Does a staff education presentation on the use of the ADA guidelines for assessment, identification, and management of diabetes result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest?" The average pretest score was 45.1%, while the average posttest score was 94% indicating a positive change in knowledge from pretest to posttest. Therefore, the implementation of the staff education program on the use of ADA diabetic guidelines was effective and identifies positive change in knowledge, as evidence by the improvement of nurses scores and improvement in the posttest average. The nursing staff will now provide evidence-based education on the ADA Guidelines. The hope is that this will promote change in patient care, patient education, and outcomes. This project will bring about change within the community as well as the organization.

Summary Evaluation of the Staff Education Project by Content Experts

The CE's provided an evaluation of the staff education project and my role as the leader which is thematic in nature and summarized in Appendix N. The CE's identified the use of the PowerPoint presentation (PP) and oral communication was a more effective way to ensure positive communication, which in A's opinion led to positive outcome of the educational piece. They stated that the PP and oral presentation provided more feedback than zoom. Having a live audience was a positive experience, as I would be able to understand the groups body language and verbal cues, which allowed me to adjust as needed to helped reached outcome. Finally, they stated that the communication method of PP and oral presentation was an effective teaching method. They were good tools and very effective in helping me to reach the desired outcome.

As far as their involvement as a content expert member for this project all voiced that working with me as the student was an honor. Their role was to evaluate the curriculum and validate the test items in order for me to have the best information for the program. The CE's expressed enjoyment following the completion of their part of the project.

Although outside of the scope of this project, the CEs described how they might have liked to have participated in developing the products. They would have also liked to have been present for the presentation to be able to provide me with feedback. They further identified the various ways they would have like to deliver the information, ex: zoom, formal, and informal.

The CE's went on to express their thought on me as a leader in this section as well. They identified the providing of the CE packet with clear instructions, as well as having contact information for instructor and herself, and the timeline for competition was very helpful. In identifying how they were supported to meet the project goals, all three of the leaders identified that there was a timeline set in place, the packet contained instructions which were made clear with timeline. Finally, the 3 CE's provided suggestions for improvement on this EPADA. They identified this project as excellent work and enjoyed being a part of the development; goals and objectives met, they encouraged me to expand later and make this ongoing education for the facility as well a larger group to obtain a boarder view.

Positive social change will be realized by bringing about healthier lifestyle changes, and improving diagnostic processes, management and outcomes of diabetes. Providing the staff with this EPADA evidence-based course will provide them with the knowledge needed to better educate the patients and their families.

Recommendations

As a result of the EPADA project, one recommendation in screening, managing and diagnosing diabetes comes directly from the ADA. The recommendations include screening, diagnostic, and therapeutic actions that are known or believed to favorably affect health outcomes of patients with diabetes. Many of these interventions have also been shown to be cost-effect. These will be recommended based on the results of the 6 RN participants who had a change in knowledge after the EPADA program. The first recommendation will be that the new nurses coming on receive this training during

orientation and that the entire staff receive updates on education every 6 months throughout the year. The ADA strives to improve and update the Standards of Care to ensure that clinicians, health plans, and policy makers can continue to rely on them as the most authoritative and current guidelines for diabetes care. Nurses must be made aware of updates throughout their clinical career (ADA, 2018).

Contribution of the Content Experts

In this project there were three CEs who provided formative evaluation of the curriculum plan and validated the pretest/posttest items. They also evaluated the project, process, and my leadership.

Strengths and Limitations of the Project

Results in the change of knowledge identified that the EPADA is instrumental in enhancing ADA guideline knowledge and the diagnostic, management, and outcome of patients. Notably challenges were faced during the entire project. Covid-19 was at the forefront of all challenges. Due to polices put in place for control and prevention of the pandemic the group was limited and clinical leadership that desired to be present had to be excluded from the live presentation.

Summary

Section 4 presented the findings, implications, recommendations, contributions, strengths and limitations of the project. The evidence that was analyzed resulted in findings that answered the question related to the change in knowledge with implications for ongoing education I the clinic. As well, the role of the content experts and their perception of the project showed that they felt integral in its success. Section 5, will

consist of the dissemination plan for the project, and provide an analysis of myself as a scholar, practitioner, and project manager

Section 5: Dissemination Plan

The policymakers, various stakeholders, and nursing practitioner will receive copies of the curriculum and PowerPoint used in the EPADA. The curriculum will continue to be a part of orientation for onboarding staff and the staff of registered nurses will revisit the information every 6 months.

Analysis of Self

Practitioner

As a practitioner, I feel honored to have this opportunity to participate in this program and develop this DNP project. I have grown as a professional provider. Through bringing awareness, researching, analyzing, and presenting this project, I have actively opened the door to an important social and health issue in society. Furthermore, I have gained knowledge, experience, and skills needed to advocate for positive change in healthcare. As I continue in my practice, I can work toward enforcing a positive direction of transformation within the healthcare community and integrate significant academic theory into daily practice. After presenting this EPADA, I have developed a stronger foundation to enforce adherence through proper supervision, monitoring, and implementing assessment practices to ensure prevention, proper treatment, and better management of diabetic patients.

Scholar

During this DNP project, as a scholar I have recognized the lack of adherence to the diabetes ADA guidelines. I have monitored nurses who lacked knowledge of ADA guidelines and reviewed patient charts that indicated lack of use of ADA guidelines,

which in some cases resulted in disease. I examined the literature, developed the project, developed my writing skills, and took the evidence from the literature and developed the project into practice.

Project Manager

The support I have received from my committee chair, preceptor, and the content experts has encouraged me and significantly contributed to the development of this DNP project from the beginning to end. As project manager, I had to plan, gather, and review sources of evidence and validate and disseminate the information into the practice. There were difficulties during this process. With life's changes and challenges and the COVID-19 pandemic, I had to struggle to find resilience and strategies for accomplishing my task. These struggles inspired me to work harder to find evidence-based data and information from literature reviews, journals, and publications in an effort to improve the lives of others. This project was worthwhile, and I have gained more knowledge, strength, and awareness that will help me to be better prepared to handle any future work in a more professional and organized manner. The successful implementation, evaluation, and dissemination of this evidence-based program was necessary for my growth both individually and professionally.

Summary

The consequences of not adhering to the ADA guidelines in the care of diabetic patients can cause severe problems for those afflicted and their families. Nurses have a significant role in the management of diabetes; therefore, they need to understand the importance of the ADA guidelines. Providing nurses with appropriate education on

guideline use and adherence could significantly help reduce the impact of diabetes. Essentially, optimizing patient care should be at the forefront; by adhering to ADA guidelines as recommended, nurses in the clinic will be prepared to lead the way.

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Tseng, E., Greer, R. C., O'Rourke, P., Yeh, H. C., McGuire, M. M., Clark, J. M., & Maruthur, N. M. (2017). Survey of primary care providers' knowledge of screening for, diagnosing, and managing prediabetes. *Journal of General Internal Medicine*, *32*(11), 1172-1178. https://doi.org/10.1007/s11606-017-4103-1

Unnikrishnan, R., Shah, V. N., & Mohan, V. (2016). Challenges in diagnosis and

management of diabetes in the young. *Clinical Diabetes and Endocrinology*, 2, 18. https://doi.org/10.1186/s40842-016-0036-6

Walden University. (2020). 2014-2015 *Walden University student handbook.* https://catalog.waldenu.edu/content.php?catoid=122

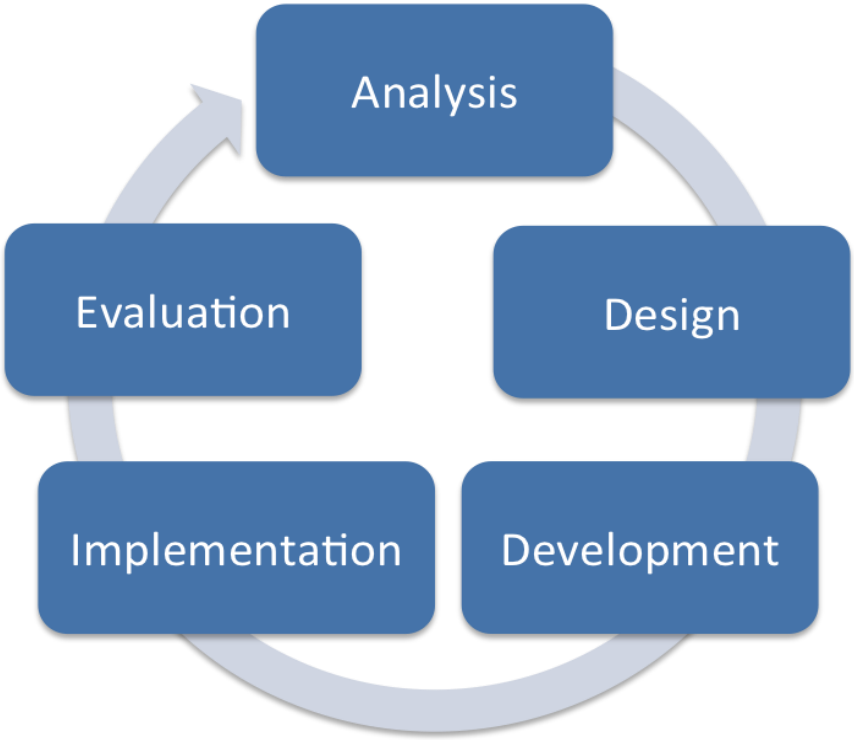
Willey, V. J., Kong, S., Wu, B., Raval, A., Hobbs, T., Windsheimer, A., & Bouchard, J. R. (2018). Estimating the real-world cost of diabetes mellitus in the United States for 8 years using 2 cost methodologies. *American Health & Drug Benefits, 11*(6), 310.

Xie, Y., Liu, F., Huang, F., Lan, C., Guo, J., He, J., Zhou, Z. (2020). Establishment of a type 1 diabetes structured education program suitable for Chinese patients: Type1 diabetes education in lifestyle and self-adjustment (TELSA). *BioMed Central (BMC) Endocrine Disorders,20*(37),1-10. https://doi.org/ezp.waldenulibrary.org/10.1186/s12902-020-0514-9

Yang, H., Sloan, G., Ye, Y., Wang, S., Duan, B., Tesfaye, S., & Gao, L. (2020). New perspective in diabetic neuropathy: From the periphery to the brain, a call for early detection, and precision medicine. *Frontiers in Endocrinology*, *10*(929), 1-13. https://doi.org/10.3389/fendo.2019.00929

Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., Alavi-Majd, H., & Nikanfar, A. (2015). Design and implementation content validity study: Development of an instrument for measuring patient-centered communication. *Journal of Caring Sciences, 4*(2), 165–178. https://doi.org/10.15171/jcs.2015.017

Appendix A: Assessment, Design, Development, Implementation, and Evaluation (ADDIE) Model of Instructional Design



From "Definition of The Addie Model," by S. Kurt, October 7, 2017, https://educationaltechnology.net/definitions-addie-model/

Appendix B: Literature Review Matrix

Melnyk, Bernadette Mazurek, and Ellen Fineout-Overholt's tool, Used with Permission.

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Alotaibi, A., Al-Ganmi, A., Gholizadeh, L., & Perry, L. (2016). Diabetes knowledge of nurses in different countries: An integrative review. *Nurse education today*, *39*, 32-49 https://doi.org/10.1016/j.nedt.2016.01.017	Longitudinal research	The majority of nurses have a deficiency of knowledge in diabetes care.	A systematic search and analysis of articles from EMBASE, CINHAL, and Medline	To identify and analyze evidence that demonstrates the nurse's knowledge of diabetes care. To identify the barriers experienced by nurses while acquiring diabetes care knowledge.		Significant diabetes care knowledge deficiencies exist in nurses. Actions are recommended to remove the barriers to knowledge acquisition.	Level I
Alva, M. L., Hoerger, T. J., Jeyaraman, R., Amico, P., & Rojas-Smith, L. (2017). Impact of the YMCA of the USA diabetes prevention program on Medicare spending and utilization. *Health Affairs*, *36*(3), 417-424. https://doi.org/10.1377/hlthaff.2016.1307	Historical research	Can weight loss interventions reduce the cost of care and utilization of health services	A case-control study in which comparison and intervention diabetes groups were followed	To determine whether a diabetes prevention program reduces healthcare spending, hospital admissions, and ED visits.		The diabetes prevention program is effective in reducing the cost of care, hospital admissions, and ED visits	Level IV

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
American Association of College of Nursing. (2006). *The essentials of doctor education for advance nursing practice*. https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf	Descriptive report	N/A	Descriptive report on the topic of doctor education for nursing practice.	To provide comprehensive information on the basics of doctoral nursing education.	Doctoral nursing practice includes both practice and research-focused education.	Change in the course of nursing practice has to be reflected in the new doctoral education.	Level VI
American Diabetes Association (ADA). (2017). Classification and diagnosis of diabetes. *Diabetes care*, *40*(1), S11-S24. https://doi.org/10.2337/dc17-S005	Descriptive article	N/A	Descriptive article providing information on classification and diagnosis of different types of diabetes.	To provide comprehensive information on classification and diagnosis of different types of diabetes.	Nurses have to consider four types of diabetes, their correct classification, and diagnoses.	Comprehensive, complex information on diabetes is critical for nurse education.	Level VI
American Diabetes Association (ADA). (2020). *The Cost of Diabetes.* https://www.diabetes.org/resources/statistics/cost-diabetes	Descriptive article	N/A	Descriptive article that analyzes the costs associated with diabetes.	To provide comprehensive data and evidence of cost of diabetes for the country and the public.	Patient care, prescription medications, physician's visits, and anti-diabetic agents cause from 13% to 30% in medical costs.	Diabetes is a costly condition that could be devastating for patients and the country.	Level VI
American Diabetes Association (ADA). (2020). Standards of Medical Care in Diabetes—2020	Descriptive article	N/A	Descriptive article illustrating the standards of medical care in diabetes.	To provide a complete review of the standards of medical care in diabetes.	Analysis of each standard of diabetic care.	ADA's standards in diabetic care are critical to follow by healthcare professionals.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Abridged for Primary Care Providers. *American Diabetes Association Clinical Diabetes, 38*(1), 10-38. https://doi.org/10.2337/cd20-as01							
American Diabetes Association (ADA). (2020). Diabetes Care in the Hospital: Standards of Medical Care in Diabetes—2020. *Diabetes Care*, *43*(1), S193-S202. https://doi.org/10.2337/dc20-S015	Descriptive article	N/A	A description of diabetes care in the hospital	To explain the standard diabetes care in hospitals.		standard diabetes care information can be retrieved from the ADA	Level VI
An, J., Niu, F., Turpcu, A., Rajput, Y., & Cheetham, T. C. (2018). Adherence to the American Diabetes Association retinal screening guidelines for the population with diabetes in the United States. *Ophthalmic epidemiology*, *25*(3), 257-265.	Cohort research	Eye examinations are not being conducted for diabetic patients as per the recommendations from the American Diabetes Association (ADA).	A retrospective cohort study in which adult patients with diabetes were followed for 2 years.	To evaluate long-term adherence to ADA's guideline for retinal screening among diabetes patients in the USA.		Interventions should be developed to address non-adherence with ADA guidelines.	Level IV

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
https://doi.org/10.1080/09286586.2018.1424344							
Arnold, P., Scheurer, D., Dake, A. W., Hedgpeth, A., Hutto, A., Colquitt, C., & Hermayer, K. L. (2016). Hospital guidelines for diabetes management and the Joint Commission-American Diabetes Association inpatient diabetes certification. *The American journal of the medical sciences*, *351*(4), 333-341 https://doi.org/10.1016/j.amjms.2015.11.024	Descriptive research	Joint Commission-American Diabetes Association inpatient diabetes certification program is recommended for diabetes care	The program was implemented in all departments of the Medical University of South Carolina (MUSC)	To implement the Joint Commission-American Diabetes Association inpatient diabetes certification program at MUSC.		The Joint Commission-American Diabetes Association inpatient diabetes certification program is essential in improving diabetes care within healthcare institutions.	Level V
Benoit, S. R., Hora, I., Albright, A. L., & Gregg, E. W. (2019). New directions in the incidence and prevalence of diagnosed diabetes in the USA. *BMJ Open Diabetes Research and*	Cross-sectional study	Has the prevalence of diabetes changed in the past 5-years?	A cross-sectional survey from the National Health Interview Survey (1980-2017) was used to calculate the prevalence of diabetes.	To determine if the prevalence of diabetes has changed or remained the same in the five past years.		Despite the stability in diabetes prevalence, the disease still has a significant effect on the health of many Americans.	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Care, *7*(1), e000657 http://dx.doi.org/10.1136/bmjdrc-2019-000657							
Bouhairie, V. E., & McGill, J. B. (2016). Diabetic Kidney Disease. *Missouri medicine*, *113*(5), 390–394.	Descriptive research	Not mentioned	Descriptive study analyzing literature on DKD	To describe the trends in treatment of diabetic kidney disease (DKD)	Treatment of DKD include screening for kidney complications, follow-up, prevention includes glucose and blood pressure control.	Standard care practices help to prevent or treat DKD, yet, interventions to slow the progression of this disease are still under-researched.	Level V
Cheung, L. (2016). Using the Addie Model of instructional design to teach chest radiograph interpretation. *Journal of Biomedical Education*, *2016*(6), https://doi.org/10.1155/2016/9502572	Descriptive Research	Not mentioned	Descriptive research analyzing literature on ADDIE model	To structure the development of a new curriculum based on ADDIE Model design (for chest radiograph interpretation).	The ADDIE model is an effective framework for teaching chest radiograph interpretation.	The ADDIE model is more effective than other instructional models, as it includes knowledge, skills, and attitudes of instructors.	Level V
CDC. (2016). Complications of Diabetes Mellitus. Retrieved July 10, 2020, from https://wonder.cdc.gov/wonder/prevgu	Descriptive article	N/A	An explanation of complication of diabetes	To elucidate the complication of diabetes		The CDC has simplified the explanations for diabetes complications.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
id/p0000063/p0000063.asp							
CDC. (2019). *Prevent complications of diabetes*. https://www.cdc.gov/diabetes/managing/problems.html	Descriptive article	N/A	Descriptive article on prevention of complications of diabetes.	To provide complete analysis of complications of diabetes	Complications include heart disease, nerve damage, vision loss, foot loss, mental health.	Complications of diabetes could be avoided by investing in prevention and adequate management.	Level VI
CDC. (2020). *National diabetes statistics report: Estimates of diabetes and its burden in the United States*, 1-21. https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.Pdf	Descriptive report	N/A	Descriptive report on the current statistics related to diabetes in the U.S.	To provide full information and data related to incidence, complications, and costs of diabetes for the U.S.	Burden of diabetes on the U.S. and the public is increasing.	Diabetes is mostly a preventable condition and it could be managed successfully to decrease the costs and incidence.	Level VI
CDC. (2021). Complications of Diabetes Mellitus. Retrieved May, 2022, from https://www.cdc.gov/diabetesv/diabetes-complications.html	Descriptive article	N/A	An explanation of complication of diabetes	To elucidate the complication of diabetes		The CDC has simplified the explanations for diabetes complications.	Level VI
Craig, R. J., & Amernic, J. H. (2006). PowerPoint	Descriptive research	Not mentioned	Descriptive research	To encourage a debate on prevalent educational	PowerPoint technology is an effective	PowerPoint technology has to be analyzed in detail, as	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Presentation Technology and the Dynamics of Teaching. *Innovative Higher Education, 31*(3), 147–160. https://doi-org.ezp.waldenulibrary.org/10.1007/s10755-006-9017-5				software technology.	method of education in tertiary educational institutions.	its effect on educational process is clearly positive.	
Dai, M., Peabody, M. R., Peterson, L. E., & Mainous, A. G. (2018). Adherence to clinical guidelines for monitoring diabetes in primary care settings. *Family Medicine and Community Health, 6*(4), 161-167 https://doi.org/10.15212/FMCH.2018.0121	Cross-sectional study	Do primary care physicians adhere to ADA diabetic guidelines?	The National Ambulatory Medical Care Survey (2013) was analyzed to establish physician adherence.	To determine whether primary care physicians in the USA are adhering to ADA's diabetic guidelines during care provision.		The diabetes management gap can be filled by promoting adherence to the ADA's guidelines.	Level V
Fathy, C., Patel, S., Sternberg Jr, P., & Kohanim, S. (2016). Disparities in adherence to screening guidelines for diabetic retinopathy in the United States: a	Descriptive research	What are the risk factors that promote non-adherence with eye-screening recommendations from diabetic guidelines?	The authors conducted a comprehensive review of disparities in adherence to guidelines that recommend eye screening for diabetic patients.	To identify the risk factors for non-adherence and determine the best interventions.		The identification of the risk factors of non-adherence can improve diabetes education, self-care, and adherence to diabetic guidelines.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
comprehensive review and guide for future directions. In *Seminars in Ophthalmology* (Vol. 31, No. 4, pp. 364-377). Taylor & Francis https://doi.org/10.3109/08820538.2016.1154170							
Funnell, M. M., & Freehill, K. (2018). Keeping up-to-date with diabetes care and education. *Nursing, 48*(10), 22–29. https://doi.org/10.1097/01.NURSE.0000545015.98790.27	Descriptive research	Not mentioned	Descriptive analysis of literature dedicated to prevention and treatment of T2D	To describe evidence-based approaches to education and prevention of patients and nurses on type 2 diabetes.	Patient and nurse education has to include a complex set of information, including treatment and prevention of type 2 diabetes.	Patients have to be educated by nurses if they are at risk of or have already been diagnosed with type 2 diabetes.	Level V
Garritano, N. F., Glazer, G., & Willmarth-Stec, M. (2016). The doctor of nursing practice essentials in action: Using the essentials to build a university-wide automatic external defibrillator program. *The Journal for Nurse Practitioners*,	Descriptive research	How are DNP essentials addressed within a project?	The authors analyzed how DNP essentials influence a program at a large university.	To determine the influence of DNP essentials on a program.		The DNP essentials are necessary for all DNP programs.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
12(4), e143-e150 https://doi.org/10.1016/j.nurpra.2015.12.003							
Gaston, T., Short, N., Ralyea, C., & Casterline, G. (2016). Promoting patient safety: results of a TeamSTEPPS® initiative. *JONA: The Journal of Nursing Administration*, *46*(4), 201-207. DOI: 10.1097/NNA.0000000000000333	Mixed-methods research	Is poor communication the major barrier to improved patient safety and teamwork among staff?	The authors employed both pre and post-implementation approaches in measuring the perception of staff on communication and teamwork. They also conducted quantitative analysis data.	To improve staff perception of communication and teamwork by implementing and evaluating a team training program called TeamSTEPPS		Promoting communication helps improve teamwork and patient safety.	Level III
Gifford, W., Davies, B., Tourangeau, A., & Lefebre, N. (2011). Developing team leadership to facilitate guideline utilization: planning and evaluating a 3-month intervention strategy. Journal of Nursing Management 19, 121–132	Qualitative descriptive research	What are the leadership approaches to facilitate nurses' use of guidelines in treating foot ulcers?	Qualitative research by using interviews (15 nurse leaders) and research audits	To depict the planning and assessment of a leadership approach to maintain nurses' application of guidelines for diabetic foot ulcers in home health.	Most effective leadership components were: identification of target indicators and development of a team leadership action plan.	More engaging leadership approaches are required to facilitate nurses' use of guidelines in treatment of diabetic foot ulcers.	Level V
Gregg, E. W., Cheng, Y. J.,	Cross-sectional study	What are the age-specific and	The researchers used information	To estimate the age-specific causes		Despite the reductions in diabetes-related	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Srinivasan, M., Lin, J., Geiss, L. S., Albright, A. L., & Imperatore, G. (2018). Trends in cause-specific mortality among adults with and without diagnosed diabetes in the USA: an epidemiological analysis of linked national survey and vital statistics data. *The Lancet*, *391*(10138), 2430-2440 https://doi.org/10.1016/S0140-6736(18)30314-3		causes of deaths among diabetic individuals in the USA?	from the National Health Interview Survey (1985-2015) to estimate death causes and rates.	of death and death rates among diabetic patients in the USA.		deaths, more appropriate strategies for managing the disease should be developed.	
Hasfal, S. (2018). *Development of a scholarly educational intervention to improve inpatient diabetes care*. Walden University: Dissertation, 1-218. https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=6365&context=dissertations	Dissertation	Not mentioned	Dissertation dedicated to the development of educational program for acute care facility.	To develop an educational program and a knowledge assessment for acute healthcare setting.	Interdisciplinary educational program was developed for nurses operating in acute facilities with diabetes patients.	The program was not yet validated by the respective agencies.	Level VI
Hsu, T., Lee-Hsieh, J., Turton, M., &	Qualitative descriptive research	Not mentioned	Descriptive research on	To elaborate online hospital courses for	Nurses' self-evaluations	ADDIE model is an effective approach to	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Cheng, S. (2014). Using the ADDIE model to develop online continuing education courses on caring for nurses in Taiwan. *The Journal of Continuing Education in Nursing, 45*(3), 124-31. https://doi.org/ezp.waldenulibrary.org/10.3928/00220124-20140219-04			assessing ADDIE model.	teaching nurses in Taiwan	showed positive results.	development of nurse non-the-job courses.	
Hubberd, A. L., & Hernandez, C. M. (2018). Training Nursing Staff to Improve Diabetes Care for Long-Term Care Facility (LTCF) Residents https://doi.org/10.2337/db18-699-P	Longitudinal quantitative research	Why are there deficiencies in the provision of evidence-based diabetes type 2 care to the residents of a local long term care facility?	A needs assessment was conducted in the local facility to establish the reasons for deficiencies in diabetes care. Thereafter, a quality improvement project was implemented to educate nurses on the importance of proving evidence-based care.	To educate nurses on the importance of adhering to the recommended standards while offering diabetes care.		Despite the challenges of implementing a diabetes quality improvement program, all nurses must advocate for the continued use of practice guidelines when offering diabetes care.	Level III
Kaya, Z. & Karaca, A. (2018). Evaluation of Nurses' Knowledge	Cross-sectional descriptive study	What are the knowledge levels of nurses regarding diabetic	Cross-sectional study involving 435 nurses and using two self-	To evaluate knowledge levels of nurses on diabetic foot care	66% nurses were not trained in diabetic foot	Nurses' knowledge and scores were adequate, yet, their diabetic foot	Level IV

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Levels of Diabetic Foot Care Management. *Nursing Research and Practice, 1*. https://doi.org/10.1155/2018/8549567		foot care management? What are influencing factors in this relationship?	reported questionnaires.	management and to detect the affecting factors.	care, 80.9% did not educate patients, 77.5% did not examine diabetic patients.	management education has to improve.	
Kenny, H. C. & Abel, D. E. (2019). Heart Failure in Type 2 Diabetes Mellitus. *Circulation Research, 124*(1), 121-142. https://doi.org/10.1161/CIRCRESAHA.118.311371	Descriptive research	Not mentioned	Descriptive study used literature review to explore heart failure and T2D	To determine if improved glycemic control improves heart failure outcomes.	Effective targeting glycemic control could improve heart failure outcomes.	The pathophysiology of heart failure in patients with T2D is complex and requires more solutions for its prevention.	Level VI
Konrad-Martin, D., Reavis, K. M., Austin, D., Reed, N., Gordon, J., McDermott, D., & Dille, M. F. (2015). Hearing Impairment in Relation to Severity of Diabetes in a Veteran Cohort. *Ear and hearing, 36*(4), 381–394. https://doi.org/10.1097/AUD.0000000000000137	Cross-sectional descriptive study	Not mentioned	Cross-sectional study involving 130 veterans and analyzing their historical clinical data.	To determine and quantify distinctions in hearing, speech recognition, and hearing-related quality of life and reveal if well-controlled diabetes mitigates the differences.	Those with uncontrolled diabetes had significantly worse hearing and speech functions, and worse overall quality of life.	Control of T2D mitigates the quality of life, hearing, speech recognition, and hearing among patients.	Level IV

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Larson-Williams, L. M., Youngblood, A. Q., Peterson, D. T., Zinkan, J. L., White, M. L., Abdul-Latif, H., ... & Tofil, N. M. (2016). Interprofessional, multiple-step simulation course improves pediatric resident and nursing staff management of pediatric patients with diabetic ketoacidosis. *World journal of critical care medicine*, *5*(4), 212 DOI: 10.5492/wjccm.v5.i4.212	Longitudinal quantitative research	The proposed diabetes educational program will increase the knowledge of nurses and pediatric residents. The program will also help the providers to distinguish their roles in diabetes care.	The modified Delphi method was used to create a multistep diabetes simulation course. Pre-test and post-test surveys were used to assess the progress of participants.	To standardize the diabetic ketoacidosis education by promoting interprofessional teaching.		Diabetes educational programs improve immediate post-survey knowledge of providers. However, knowledge decay is prone to occur several months after implementation. Therefore, more studies should be conducted to evaluate the course of knowledge decay.	Level III
Lee, Y., Lin, H., Tseng, H., Tsai, Y, & Lee-Hsieh, J. (2017). Using training needs assessment to develop a nurse preceptor-centered training program. *Journal of Continuing Education in Nursing, 48*(5),	Descriptive research	Not mentioned	Descriptive research analyzing ADDIE model and related literature	To determine if ADDIE-based nurse training program would be effective.	ADDIE-based program had a positive impact on clinical behaviors of nurses.	ADDIE could be applied as a basis for the nursing training.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
220–229. https://doi.org/ezp.waldenulibrary.org/10.3928/00220124-20170418-07							
Marcial, E., & Graves, B. A. (2019). Implementation and evaluation of diabetes clinical practice guidelines in a primary care clinic serving a Hispanic community. *Worldviews on Evidence-Based Nursing, 16*(2), 142-150 https://doi.org/10.1111/wvn.12345	Longitudinal quantitative research	The quality improvement program will improve the attitudes and knowledge of providers on the use of ADA guidelines in offering diabetes care.	The diabetes attitude scale was used to determine the providers' attitudes. After which a 2-hour educational program was provided. Pre-test and post-test surveys were used to evaluate the effectiveness of the program.	To improve the knowledge and attitudes of providers on adherence with ADA guidelines. To improve patient outcomes.		Diabetes educational programs are successful in promoting provider adherence with ADA guidelines and improving patient outcomes.	Level III
Munshi, M. N., Florez, H., Huang, E. S., Kalyani, R. R., Mupanomunda, M., Pandya, N., ... & Haas, L. B. (2016). Management of diabetes in long-term care and skilled nursing facilities: a position statement of the American Diabetes Association.	Descriptive research	What is the standard way of offering diabetes care in long term facilities and for patients receiving hospice and palliative care?	The position statement from ADA elucidates the recommended diabetes care strategies for patients in long term care.	To explain ADA's recommendations on standard diabetes care for long term care patients.		Improving the quality of life of long term care residents requires providers to adhere to ADA's recommendations on diabetes care.	Level VII

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Diabetes care, *39*(2), 308-318 https://doi.org/10.2337/dc15-2512							
Nikitara, M., Constantinou, C. S., Andreou, E., & Diomidous, M. (2019). The role of nurses and the facilitators and barriers in diabetes care: A mixed-methods systematic literature review. *Behavioral Sciences*, *9*(6), 61 https://doi.org/10.3390/bs9060061	Mixed-method research	What are the roles of nurses in diabetes care? How much do nurses know about diabetes care? What are the barriers to offering diabetes education?	The researchers conducted a systematic review and meta-analyses of relevant articles from CINAHL, MEDLINE, and Health Source. The collected information was analyzed quantitatively and qualitatively.	To identify nurses' roles and knowledge about diabetes care. To identify the barriers to offering diabetes education to diabetic patients.		Healthcare organizations should focus on eliminating barriers that prevent nurses from offering quality diabetes care.	Level I
Perraudeau, F., McMurdie, P., Bullard, J., Cheng, A., Cutcliffe, C., Deo, A… Kolterman, O. (2020). Improvements to postprandial glucose control in subjects with type 2 diabetes: a multicenter, double-blind, randomized placebo-controlled trial of a novel probiotic	Randomized control trial	Hypothesis: enteral exposure to microbes improves clinical measures of glycemic control	Randomized double-blind, placebo-control study with 76 subjects with T2D	To determine if exposure to microbes affects dietary management of diabetes.	The hypothesis was supported showing that exposure to microbes improves clinical measure of glycemic control.	Intervention was safe and well tolerated by subjects, which means that glucose control was effective by using the exposure.	Level II

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
formulation. *BMJ Open Diabetes Research and Care, 8*, e001319. https://doi.org/10.1136/bmjdrc-2020-001319							
Perrin, N. E., Davies, M. J., Robertson, N., Snoek, F. J., & Khunti, K. (2017). The prevalence of diabetes-specific emotional distress in people with Type 2 diabetes: a systematic review and meta-analysis. *Diabetic Medicine, 34*(11), 1508-1520 https://doi.org/10.1111/dme.13448	Meta-Analysis research	What is the prevalence of psychological comorbidities among people with type 2 diabetes?	A systematic review and me-analyses of relevant studies were conducted after the retrieval of articles from databases such as EMBASE, MEDLINE among others. The researchers conducted both primary and secondary meta-analyses of the collected information. Meta-regression analyses were also performed to compare variables.	To determine the overall prevalence of psychological comorbidities among individuals with type 2 diabetes.		Since the prevalence of distress is high among diabetic type 2 patients, it is important to develop appropriate treatment strategies.	Level I
Silva Paraizo, C. M., Gabriely Isidoro, J., de Souza Terra, F., Rezende Dázio, E. M.,	Descriptive research	Not mentioned	Descriptive research by using the analysis of qualitative studies and interviews of 13 nurses.	To investigate nurses' knowledge in primary healthcare units about T2D.	Nurses' knowledge in primary healthcare was satisfactory.	The study showed a need for continuing education in T2D among nurses.	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Barbosa Felipe, A. O., & Coelho Leite Fava, S. M. (2018). Knowledge of the primary health care nurse about diabetes mellitus. *Journal of Nursing UFPE Revista de Enfermagem UFPE, 12*(1), 179–188. https://doi-org.ezp.waldenulibrary.org/10.5205/1981-8963-v12i1a23087p179-188-2018							
Sussman, M., Sierra, J. A., Garg, S., Bode, B., Friedman, M., Gill, M., ... & Menzin, J. (2016). The economic impact of hypoglycemia among insulin-treated patients with diabetes. *Journal of medical economics*, *19*(11), 1099-1106. https://doi.org/10.1080/13696998.2016.1201090	Descriptive historical research	What is the economic impact of hypoglycemic events among diabetic patients who are treated with insulin? how much can be saved on healthcare costs if hypoglycemic events are reduced?	The researchers used a cost-calculator model to estimate the cost of hypoglycemic events. The assumed intervention was derived from published studies with significant results.	To estimate the economic impact of hypoglycemic events on diabetic patients. To determine the preempted cost savings after hypothetical reductions of hypoglycemic events.		The high cost of managing hypoglycemic events can be reduced by incorporating diabetes devices into care.	Level VI
Tseng, E., Greer, R. C., O'Rourke, P., Yeh, H. C.,	Descriptive research	What level of knowledge on prediabetic	A self-administered survey was	To evaluate primary care provider		primary care providers can contribute towards the	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
McGuire, M. M., Clark, J. M., & Maruthur, N. M. (2017). Survey of primary care providers' knowledge of screening for, diagnosing, and managing prediabetes. *Journal of general internal medicine*, *32*(11), 1172-1178 https://doi.org/10.1007/s11606-017-4103-1		screening and management is exhibited by primary care providers in the US?	conducted on primary care providers working in a large healthcare system in the mid-Atlantic region. Descriptive and multivariate logistic regression analyses were conducted on the collected data.	knowledge on prediabetic screening and management. To assess the providers' attitudes and beliefs towards prediabetes.		fight against diabetes by increasing their knowledge of the management of prediabetic individuals.	
Unnikrishnan, R., Shah, V. N., & Mohan, V. (2016). Challenges in diagnosis and management of diabetes in the young. *Clinical diabetes and endocrinology*, *2*, 18. https://doi.org/10.1186/s40842-016-0036-6	Descriptive research	Not mentioned	Descriptive study analyzing the literature on managing diabetes in young people.	To explore the challenges in management and diagnosis of diabetes in young population.	Diabetes have several challenges: the differential diagnosis is wide, clinical one is more aggressive.	Diagnosis of diabetes in young people has to be improved.	Level VI
Willey, V. J., Kong, S., Wu, B., Raval, A., Hobbs, T., Windsheimer, A., ... & Bouchard, J. R. (2018).	Cross-sectional research	What is the estimated annual cost of managing diabetes types 1 and 2 in the US?	The researchers used a retrospective, cross-sectional approach to analyze the data	To estimate the annual cost of managing diabetes types 1 and 2 in the US within 8 years.		Proper estimation of the cost of managing diabetes can help advise healthcare policymakers to	Level IV

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Estimating the real-world cost of diabetes mellitus in the United States for 8 years using 2 cost methodologies. *American health & drug benefits*, *11*(6), 310			of 8 cohort studies retrieved from the HealthCore Integrated Research Database. Diabetes management costs were estimated using two methods.	To estimate the treatment patterns, prevalence, resource utilization, and treatment quality in diabetes type 1 and 2.		allocated optimum monetary resources.	
Walden University. (2019). Manual for staff education: Doctor of Nursing Practice (DNP) scholarly project. Retrieved from https://drive.google.com/file/d/0B1_8mknkC0j1dU0xR19EbUtoanc/view	Descriptive research	No hypothesis	A description of staff education by Walden University	To explain the recommendations for staff education to DNP students.		Walden University has provided a guide for DNP students proposing to conduct staff education.	Level VI
Walden University. (2020). 2014-2015 Walden University Student Handbook (June 2015). Retrieved July 13, 2020, from https://catalog.waldenu.edu/content.php?catoid=122	Descriptive research	No hypothesis	Walden University statement of social change	To highlight the University's position on social change.		Walden University recommends that student projects should strive to produce positive social change.	Level VI
Xie, Y., Liu, F., Huang, F., Lan, C., Guo, J., He, J.,	Descriptive research	Not mentioned	Descriptive research on TELSA program	To determine the structure type 1 diabetes self-	TELSA is an applicable program for	TELSA could be applied for teaching patients with type 1	Level V

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
Zhou, Z. (2020). Establishment of a type 1 diabetes structured education program suitable for Chinese patients: Type1 diabetes education in lifestyle and self-adjustment (TELSA). *BioMed Central (BMC) Endocrine Disorders*, *20*, 1-10. https://doi.org/ezp.waldenulibrary.org/10.1186/s12902-020-0514-9			based on ADDIE for development of educational program for patients (on type 1 diabetes).	management educational program	patients from different social, medical, and cultural environments.	diabetes to self-manage their symptoms.	
Yang, H., Sloan, G., Ye, Y., Wang, S., Duan, B., Tesfaye, S., & Gao, L. (2020). New Perspective in Diabetic Neuropathy: From the Periphery to the Brain, a Call for Early Detection, and Precision Medicine. *Frontiers in Endocrinology, 10*(929), 1-13. https://doi.org/10.3	Descriptive research	Not mentioned	Descriptive research analyzing literature on the topic of diabetic neuropathy	To determine the factors affecting diabetic neuropathy in patients.	Using different patient characteristics could stratify individuals and assign them targeted therapies.	Diabetes has to be better managed by the current methods of prevention and intervention.	Level VI

Full Reference	Theoretical/ Conceptual Framework	Research Question(s) Hypotheses	Research Methodology	Purpose	Analysis & Results	Conclusions	Grading the Evidence
389/fendo.2019.00929							
Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., Alavi-Majd, H., & Nikanfar, A. (2015). Design and implementation content validity study: Development of an instrument for measuring patient-centered communication. *Journal of Caring Sciences*, *4*(2), 165–178. https://doi.org/10.15171/jcs.2015.017	Descriptive research	Not mentioned	Descriptive research analyzing literature on the content validity.	To determine the effective instrument for measuring patient-centered communication	There are several instruments for measuring patient-centered communication	Measuring patient-centered communication is an effective measure.	Level VI

Source: Melnyk, B., Overholt, E., Stillwell, S., & Williamson, K. (2010). The seven steps of evidence-based practice. *American Journal of Nursing*, 110(1), 51-53. https://doi.org/10.1097/01.naj.0000366056.06605.d2.

Appendix C: Curriculum Plan

Title of Project: Nursing Staff Education on the Use of the American Diabetes Association Guidelines (EPADA) for the Management of Diabetes

Student: Terrie H. Allen, MSN, FNP-C, PMHNP-BC, DNP-Student

Problem: The problem identified in this DNP project is the need to follow the American Diabetes Association (ADA) guidelines that are in place in the clinic for which this project will be developed but are not adhered to by the staff.

Purpose: The purpose of this DNP project is to plan, implement, and evaluate a staff education program for nursing staff on the use of the ADA guidelines for assessment, identification, and management of the diabetic patient (EPADA).

Practice Focused Question(s): (a) What evidence in the literature supports the need for a staff education program on the importance and use of evidence-based guidelines for diabetes management? (b) Does a staff education program on the use of the ADA guidelines for assessment, identification, and management of diabetes result in an increase in knowledge of nursing staff as evidenced by a pretest/posttest?

Administer Pretest				
Objective Number and Statement	*Detailed Content Outline*	Evidence (from Literature Review Matrix)	Method of Presenting	Method of Evaluation P/P Item
1. Participants will be able to identify the importance of guideline use.	a. *Benefits of guideline use*: ➢ According to the CDC (2019) and the American Diabetes Association (ADA) (2020) guidelines, the risk factors of Type 1 Diabetes (T1D) include family history of diabetes and age (child or adolescent) (CDC, 2019). ➢ The ADA (2020) guidelines recommend that patients with risk factors and medical history be randomly tested to identify a diagnosis of prediabetes or diabetic status. In doing so, T2D	CDC. (2019). Prevent complications of diabetes. https://www.cdcd.gov/ diabetes/managing/problems.html American Diabetes Association. (2020). 15. Diabetes Care in the Hospital: Standards of Medical Care in Diabetes 2020. *Diabetes Care*, 43(1), S193-S202. https://doi.org/10.2337/dc20-S015	PowerPoint	Pre/Posttest Items Question #1 Question # 6 Pre/Posttest Question # 5

	could be prevented if an individual at risk sought changes in their lifestyle such as nutrition, weight loss, and physical activity. ➢ Fathy et al. (2016) revealed, by determining the risk factors of patient's outcome such as diabetes onset, blindness, limb loss, and death related cases to non-adherence to ADA guidelines may encourage the nurses to participate in education on the ADA guidelines which may result in better adherence. ➢ When you have diabetes, your pancreas makes too little or no insulin; or your body prevents the insulin you make from working.	Fathy, C., Patel, S., Sternberg Jr, P., & Kohanim, S. (2016). Disparities in adherence to s Screening guidelines for diabetic retinopathy in the United States: A comprehensive review and guide for future directions. Seminares in *Ophthalmology* 31(4), 364-377. ADA Guidelines Risk factors & medical history randomly tested Identify a diagnosis of prediabetes or diabetic status T2D can be prevent Changes in lifestyle.		Question # 13
2. Participants will be able to describe the importance of HbA1c.	b. *Understanding A1c and diagnosing* ➢ A1C stands for "Hemoglobin Alpha 1 Glycosylated". ➢ It shows the average levels of blood glucose for about 3 months (90 days). ➢ This is due to the fact that glucose binds to hemoglobin, the same protein that carries oxygen and that is a very important part of red blood cells. ➢ Red blood cells live an average of 90 days, that is why they can provide good information on how the levels of blood glucose have been (regardless of fasting, non-fasting) for a longer period of time, ➢ The readings are done in percentages; higher numbers represent high blood sugar levels, which in contrast show a non-positive management of glucose by the body. ➢ A normal reading is below 5.7%. ➢ Can A1C be used to diagnose Diabetes? Yes. A1C testing is more convenient. ➢ It does not require you to be in a fasting state.	American Diabetes Association (ADA) (2021). Standards of medical care in diabetes – 2021. https://care.diabetesjournals.org/content/44/Supplement_1	PowerPoint	Pre/Posttest Items Question # 2 Question #13

3. Participants will identify the importance of assessment to identify high risk factors.	c. *Understanding fasting plasma glucose* ➢ A blood sample will be taken after an overnight fast. ➢ A fasting blood sugar level less than 100 mg/dL (5.6 mmol/L) is normal. ➢ A fasting blood sugar level from 100 to 125 mg/dL (5.6 to 6.9 mmol/L) is considered prediabetes. ➢ If it's 126 mg/dL (7 mmol/L) or higher two separate tests, you have diabetes. ➢ Here are a few easy ways to lower blood sugar levels naturally:	Mayo Clinic (2020). Diabetes-Diagnosis and treatment-2020. http://www.mayoclinic.org>diagnosis-treatment>drc-20371451	PowerPoint	Pre/Posttest Items Question # 2 Question #13 Pre/Posttest Items Question # 9 Question # 13

	1. Exercise regularly. ... 2. Manage your carb intake. ... 3. Increase your fiber intake. ... 4. Drink water and stay hydrated. ... 5. Implement portion control. ... 6. Choose foods with a low glycemic index. 7. Manage stress levels. ... 8. Monitor your blood sugar levels. ➢ Medication Management Biguanides(Metformin) Sulfonylureas (Glipizide, Glyburide), Dpp-4 inhibitors(Januvia, Onglyza), TZDs(Actos, Avandia)			
4. Participants will be able to have a better understanding of managing diabetic patients. .	➢ Choose foods with a glycemic index <55 ➢ Monitor your carb intake and pair them with a protein ➢ Make foods with a high soluble fiber content part of your regular diet. They are beneficial to your blood sugar and blood cholesterol. ➢ NutraSweet, Sweet 'N Low, Splenda, Sweet One, and Truvia do not raise blood sugar. ➢ Control your cholesterol. Choose monosaturated fats. They can lower triglycerides and increase HDL. ➢ Exercise 30 min daily. Check blood sugar before and after workout. ➢ Plan and pack meals ahead of time. ➢ Hyperglycemia may occur when BS is too high. ➢ S/S Hyper: Thirsty, blurred vision, hunger, tired, frequent urination ➢ Hypoglycemia occurs when BS is to low. ➢ S/S Hypo: Shaking, sweating, anxious fast heartbeat, dizzy, weak Headache, impaired vision ➢ Get the family, friends, doctors, nursing, podiatrist, involved- it helps with motivation and promotes health.	Centers for Disease Control and Prevention (CDC) (2021). Diabetes. https://www.cdc.gov/diabetes/basics/index.html Krall, J. S., Donihi, A. C., Hatam, M., Koshinsky, J., & Siminerio, L. (2016). The Nurse Education and Transition (NEAT) model: Educating the hospitalized patient with diabetes. Clinical Diabetes Endocrinology, 2(1). https://doi.org/10.1186/s40842-016-0020-1	PowerPoint	Pre/Posttest Items Question # 10 Question # 13 Pre/Posttest Items Question # 7 Question # 4 Question # 12 Question # 13 Pre/Posttest Item Pre/Posttest Items Question # 6

	➢ Choose to see you PCP on a regular basis – monitoring change is important (A1C, BP, Cholesterol). d. Identifying prediabetic sign and symptoms. ➢ Genes - more than 30 genetic loci have been associated with an increased risk for developing diabetes. ➢ Age - being over 45 years old ➢ Ethnicity – Native Americans, African Americans, Hispanics, Native Hawaiians, Pacific Islanders, and Asian Americans ➢ Environment – obesity is the most important environmental factor causing insulin resistance. ➢ About 8 out of 10 people with type 2 diabetes are overweight. ➢ Physically inactive ➢ High blood pressure, heart disease, stroke, low HDL or high TG ➢ History of gestational diabetes ➢ Acanthosis nigricans e. Preventing type 2 Diabetes ➢ Excess Weight and Physical Activity – many type 2 diabetics are not overtly obese but may have increased visceral fat. ➢ In the body, more glucose is used by muscle than other tissues. ➢ Active muscles burn their stored glucose for energy and refill their reserves with glucose taken from the bloodstream, keeping blood glucose levels in balance.			Question # 8 Pre/Posttest Item Question # 4 Question # 13
Administer Posttest				

Appendix D: Curriculum Plan Evaluation by Content Experts

Title of Project: Nursing Staff Education on the Use of the American Diabetes Association Guidelines

Student: Terrie H. Allen

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.	Participants will be able to identify the importance of guideline use.			
2.	Participants will be o describe the tance of HbA1c.			
3.	Participants will identify the importance of assessment to identify high risk factors.			

Appendix E: Pretest/Posttest

The following questions are designed to test your of knowledge on the subject of the American Diabetes Association guidelines. Please carefully review each question and circle the correct answer.

Student ID Number: A01013700

Date:

A. Which of the following are risk factors for Type 1 diabetes?

   A. Family history, age, child, elderly
   B. Age, child, adolescent, dietary history
   C. Child, adolescent, age, family history of diabetes
   D. Dietary history, exercise history, elderly, work history

B. Which of the following would warrant further diabetic testing?

   A. A1C < 5.7
   B. A1C > 6.5
   C. A1C > 5.9
   D. A1C < 5.0

C. The following image best describes which of the following?

   A. Hypertension
   B. Hypercalcemia
   C. Hypoglycemia
   D. Hyperglycemia

4. The following are all describes hyperglycemia except?

   A. Increased thirst and Hunger
   B. Blurred vision
   C. Increased energy
   D. Frequent urination

5. Which of the following is responsible for making too little or no insulin and prevents insulin from working in the body.

   A. Hypothalamus
   B. Pancreas
   C. Kidney
   D. Liver

6. Which of the following are identified as prediabetic sign according to the American Diabetes Association?

   A. Genes
   B. Age- Over 45
   C. History of gestational diabetes
   D. All of the above

7. How does exercise help to improve diabetes?

   A. Lower blood glucose level quickly
   B. Improves the body's ability to use insulin
   C. Reduce insulin requirement
   D. All of the Above
   E. A and B only

8. True or false all of the following helps to prevent diabetes:

   A. Monitoring blood pressure
   B. Monitoring cholesterol
   C. None smoking
   D. Good sleeping habits
   E. Monitoring mental health

9. Which of the following is used as a first choice when patients are being treated for diabetes.

   A. Actos, Avandia
   B. Januvia, Onglyza
   C. Biguanides
   D. Sulfonylureas

10. Which of the following is a Quality CARB and can be a part of a balanced diabetic diet.

   A. Refined cereal
   B. Corn grits
   C. Flax/chia seeds
   D. Legumes/beans

11. Which of the following should be monitored yearly as the progression of DM may cause irreversible damage?

   A. Teeth
   B. Eyes
   C. Hands
   D. Feet

12. Who is responsible for educating patients on diabetic guidelines?

   A. Doctors
   B. Dietary
   C. Nurses
   D. Podiatrist
   E. All

13. This should be reviewed and re-enforced during education training to improve patient's diabetic outcomes.

   A. TV Guide
   B. Medical Magazine
   C. ADA Diabetic Guidelines
   D. Nursing Publications

14. The average levels of blood glucose is measured with the HbA1c how often?

A. Every 4 month
B. Every 7 months
C. Every 3 months
D. Every 6 months

15. What in the body is used by muscle than other tissues.

A. Blood
B. Iron
C. Glucose
D. Calcium

Answers:

1. C
2. C
3. C
4. C
5. B
6. D
7. D
8. True
9. C
10. D
11. B
12. E
13. C
14. C
15. C

Appendix F: Pretest/Posttest Content Validation by Content Experts

Title of Project: Nursing Staff Education on the Use of Guidelines for the Management of Diabetes

Student: Terrie H. Allen

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 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__

Comments:

11 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

12 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

13 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

14 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

15 Not Relevant__ Somewhat Relevant__ Relevant___ Very Relevant__

Comments:

Appendix G: Staff Education Program

Let's Talk American Diabetes Guidelines

Terrie Allen, CNP-C, PMHNP-BC, FNP-BC

Objectives of the Program

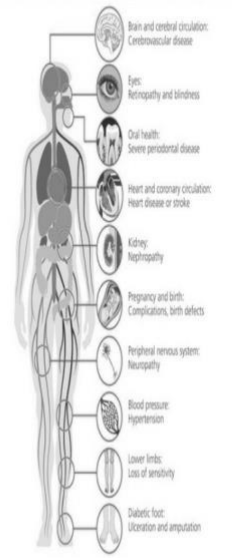
At the end of this session, the participant will be able to:

- Discuss the use of ADA guideline
- Describe Diabetes, it's impact on the body, and economic impact
- Describe HbA1c and it's importance
- Describe teaching tips to use with the diabetic patient
- Identify the importance of the team in working with the diabetic patient
- Discuss the importance of provider/patient communication in the management of diabetes.

American Diabetes Association Guidelines

- The American Diabetes Association (ADA) "Standards of Medical Care in Diabetes," referred to as the Standards of Care, is intended to provide clinicians, patients, researchers, policy makers, and other interested individuals with the components of diabetes care, general treatment goals, and tools to evaluate the quality of care.
- The guidelines in the Standards of Care include screening, diagnostic, and therapeutic actions that are known or believed to favorably affect health outcomes of patients with diabetes (American Diabetes Association (ADA) 2020).

Without Guidelines our Patients will be in Trouble....OHH NOOOOO!!



Complications associated with diabetes are serious and primarily result from damage to large and small blood vessels.

What is Diabetes?

- Complex chronic condition that requires continuous care and management.
- Approximately 34 million Americans are diagnosed with diabetes with around 90-95% suffering from Type 2 Diabetes (T2D) (Centers for Disease Control [CDC], 2019),
- Undiagnosed and untreated can affect the human body in several ways because cells do not respond to insulin normally, which makes the pancreas produce more insulin to stimulate a normal response
- Increased level of blood sugar interferes with normal body functions by causing major health issues, including cardiovascular disease, loss of vision, and kidney failure (Perraudeau et al., 2020)
- Affects health even worse when not diagnosed in time and patients experience complications

Effects of Diabetes

- Effects of diabetes on human health even worse when not diagnosed in time and patients experience complications.
- Heart health
  - Damages blood vessels
  - Increases blood pressure
    - Leads to development of chronic kidney disease
    - Potential kidney failure if not treated in time (Bouhairie & McGill, 2016).
  - Causes an accumulation of low-density lipoproteins (LDL) cholesterol (bad), and a decrease of high-density lipoproteins (HDL) cholesterol (good) through an increase of high triglycerides (Kenny & Abel, 2019).
- Neuropathy, gastroparesis, and urinary tract infections (Yang et al., 2020).

Effects of Diabetes, cont.

- Many people with diabetes have problems with their feet due to impaired circulation, which in severe cases might lead to amputations (Kaya & Karaca, 2018).
- People with diabetes are more often than their non-diabetic peers to experience hearing and vision loss (Konrad-Martin et al., 2015).
- Associated with depression, generalized anxiety, pain, problem with sleep, decline in physical and emotional well-being, low self-esteem, and diminished social interaction (Umberger & Gaddis, 2020).

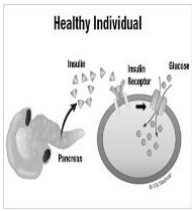
Economic Impact

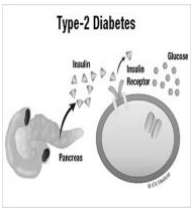
- Increase in health care usage
- Moreover, since diabetes is not only a health-related problem but also an economic issue, patients are burdened by financial loss due to preventable conditions
- Willey et al. (2018) emphasized that proper analysis of monetary management of diabetes can help to create advisory recommendations for healthcare policymakers in terms of monetary
- 34 million Americans are diagnosed with diabetes (CDC, 2019)
- 90-95% suffering from type 2 diabetes (T2D)
- 6.9% in 2004 to 33% in 2016 (CDC, 2020)

What's Happening on the Inside of Your Patient?

Insulin is made in your pancreas. It helps sugar move from your blood into your cells where it is then used for energy.

When you have diabetes your pancreas makes too little or no insulin; or your body prevents the insulin you make from working.





Identifying Prediabetic Signs and Symptoms

- Genes - more than 30 genetic loci have been associated with an increased risk for developing diabetes
- Age – over 45 years of age
- Ethnicity – Native Americans, African Americans, Hispanics, Native Hawaiians, Pacific Islanders, and Asian Americans
- Environment – obesity is the most important environmental factor causing insulin resistance. About 8 out of 10 people with type 2 diabetes are overweight.
- Physically inactive
- High blood pressure, heart disease, stroke, low HDL or high TG
- History of gestational diabetes
- Acanthosis nigricans: is a skin condition characterized by areas of dark, velvety discoloration in body folds and creases.

Understanding HbA1C

- A1C – hemoglobin Alpha 1 Glycosylated
- Average levels of blood glucose for about 3 months (90 days)
  - Glucose binds to hemoglobin
  - Same protein that carries oxygen – important part of RBC
  - RBCs live average of 90 days
  - Provides good information on how levels of blood glucose have been (regardless of fasting, non-fasting) for a longer period of time.
  - Readings in percentages: Higher numbers represent high BS levels - non-positive management of glucose by the body
  - Normal is below 5.7%
  - Fasting state not required

Diagnosis	A1C level
Normal	< 5.7
Prediabetes	5.7 – 6.4
Diabetes	>6.5

Management of Diabetes
Medication Management

Class	Example	Action
Sulfonylureas	Glipizide, Glimepiride, Glyburide	Stimulate insulin release from the pancreatic cells
Biguanides	Metformin	Decreases hepatic glucose production
TZDs	Actos, Avandia	Increases insulin sensitivity
AGIs	Precose, Glyset	Inhibits enzymes that digest starch & sucrose
GLP-1 receptor antagonist	Byetta, Victoza, Trulicity	Activates GLP-1 receptor, increasing insulin secretion
DPP-4 inhibitors	Januvia, Onglyza	Inhibits DPP-4, slowing incretin metabolism
SGLT2 inhibitors	Invokana, Jardiance	Reduces glucose reabsorption and increases urinary glucose excretion

Teaching Patients About Their HbA1C

- There can be instances when blood glucose tests and A1C tests differ.
  - Person is in early stages of the disease and blood glucose levels are not high enough to show on all the tests
  - Health care providers repeat tests before making a diagnosis
- After diagnosis, how else is A1C used?
  - To monitor the course of the diabetes
  - Gives a general idea on where blood glucose levels are for a longer period of time
  - Used by health care provider to see how patient is responding to treatment and how the changes to nutrition and physical activity are affecting the blood glucose levels

Teaching Patients About Their A1C cont.

- What can you do to improve A1C levels?
- To improve your A1C levels you have to follow a healthy diet, be mindful of your carbohydrates intake and other sources that can increase your glucose levels rather than decrease them.

- Can A1C be used to diagnose Diabetes?
- Yes. A1C testing is more convenient.

Defining the Numbers

Educating patient on what their HbA1c number means as far as Glucose in their bodies

A1c (%)	eAG (mg/dL) Estimated Average Glucose
6.0	126
6.5	140
7.0	154
7.5	169
8.0	183
8.5	197
9.0	212
9.5	226
10.0	240

American Diabetes Association: www.diabetes.org/professional/eAG

Blood Sugar and A1C Goals

Time	Goals for adults living with diabetes
Before meals	80-130 mg/dL
1-2 hours after meals	Less than 180 mg/dL
A1C	Less than 7%

Teaching What Patients Can Do Now: Prevention

Treat The Whole Body

Monitor:

- Blood Pressure
- Cholesterol
- Nicotine
- Sleep
- Mental Health

High Blood Pressure – increased risk for PVD and stroke

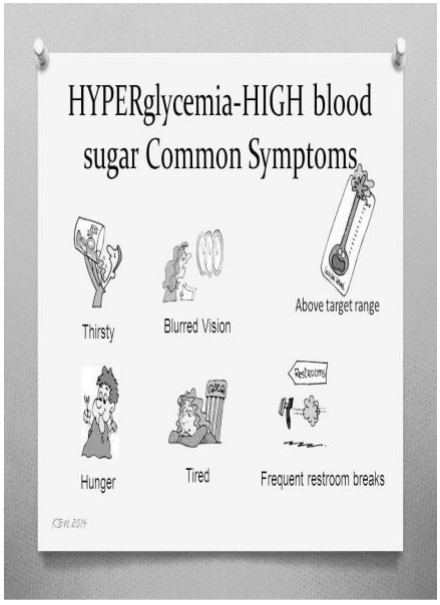
Abnormal Cholesterol - leads to atherosclerosis

Nicotine Dependence – hardens and narrows your blood vessels

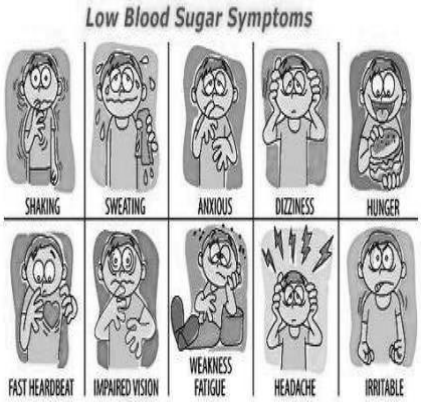
Sleep Problems – imbalance of hormones affecting glucose control

Mental Health – elevated cortisol can lead to increased insulin resistance

HYPERglycemia



HYPOglycemia



Action Plan: Consume 15 gm of a fast acting carb (OJ, milk, glucose tabs), check glucose in 15 minutes, consume an additional 15 gm of carbs if needed

What Patients Can Do Now
Preventing Type 2 Diabetes

Exercise

- Excess Weight and Physical Activity – many type 2 diabetics are not overtly obese but may have increased visceral fat. Think about Sumo wrestlers – they are extremely obese but the fat is predominantly subcutaneous. They have normal serum lipid and euglycemia. This suggests that their daily vigorous exercise prevents the accumulation of visceral fat.
- In the body, more glucose is used by muscle than other tissues. Active muscles burn their stored glucose for energy and refill their reserves with glucose taken from the bloodstream, keeping blood glucose levels in balance.

Know What The Guidelines Say:
to help Patients Choose Sugar Wisely

Paying attention to not only quantity but also quality in the diet is important.

Quality Carbs	Bad Carbs	Soluble Fiber
Whole wheat bread (Ezekial bread)	White bread/bagels	Oatmeal
Brown rice/wheat pasta	White pasta/rice	Wheat bran
Milk	Fruit juices/soda/energy drinks	Flax/chia seeds
Oatmeal	Candy/Cookies/Cakes/Pies	Black/kidney/navy beans
Barley	Refined cereal	Artichoke
Quinoa	Jelly/preserves	Green peas
Fruit	Chips	Okra
Non-starchy vegetables	French fries	Brown rice
Nuts and seeds	Pizza	Apples/pears
Legumes/beans	Beer	Corn gits

Management of Diabetes, cont.

Teaching Patients to Count Carbs

40 – 60 g per meal

15 – 20 g per snack

Learn Your Body!

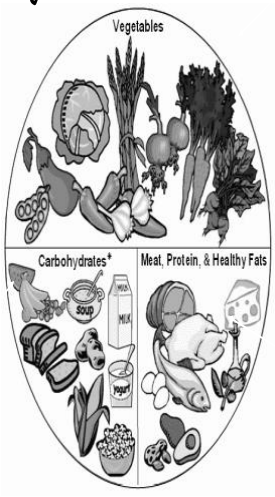
Everyone is different so it is important to log your counts for each meal and snack in the beginning. This will allow you to see how each meal affects your blood sugar. The amount of carbohydrates eaten at each meal should remain consistent throughout the day. Ideally, you should be eating 3 meals and 2-3 snacks per day.

Management of Diabetes, cont.

Making Good Choices a Habit: Tips

"The red circles are your red blood cells. The white circles are your white blood cells. The brown circles are donuts. We need to talk."

Add it up! Don't forget beverages.



Don't count raw and non-starchy vegetables ☺

Make it lean, fat matters too!

Management of Diabetes, cont.

Make Good Choices a Habit: Tips

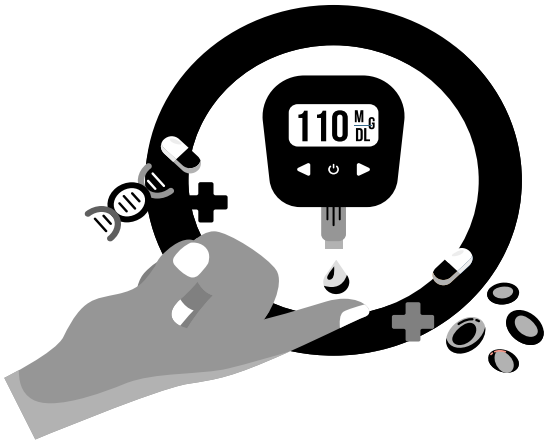
- Choose foods with a glycemic index <55
- Monitor your carb intake and pair them with a protein
- Make foods with a high soluble fiber content part of your regular diet. They are beneficial to your blood sugar and blood cholesterol
- NutraSweet, Sweet 'N Low, Splenda, Sweet One, and Truvia do not raise blood sugar
- Control your cholesterol. Choose monosaturated fats . They can lower triglycerides and increase HDL
- Exercise 30 min daily. Check blood sugar before and after workout.
- Plan and pack meals ahead of time
- Get the family involved- it helps with motivation and promotes health.
- Choose to see you PCP on a regular basis – monitoring change is important (A1C, BP, Cholesterol)

The Team

Developing a Positive Nurse-Patient Relationship

- Use of empathy and compassion
- Changing personal biases and negative attitudes
- Empowering patient
- Encouraging social support
- Treating patient with respect and dignity
- Acknowledge the patient's disease process and be responsive, and perform the needed test and teaching to encourage better compliance and diabetic outcomes

Post Test Time, Let's see what You Learned!



Appendix H: Evaluation of the Staff Education Program by Participants

Objective Statement	Were the objectives met? Please circle.	
Participants will be able to identify the importance of guideline use.	Yes No	
Participants will be able to describe the importance of HbA1c.	Yes No	
Participants will identify the importance of assessment to identify high risk factors.	Yes No	
Participants will be able to have a better understanding of managing diabetic patients.	Yes No	
	Yes No	

Appendix I: Content Expert Letter

Dear Content Expert,

Thank you for agreeing to volunteer as a content expert for my Doctor of Nursing Practice project entitled, *Nursing Staff Education on the Use of the American Diabetes Association Guidelines for the Management of Diabetes*. You have received this packet from someone other than me for you to remain anonymous. I am including a link for you to have access to the ADA Guidelines (https://www.diabetes.org), enclosed as a guide as you review my information. In the enclosed numbered packet, you will find five documents for your review plus a numbered return envelope. The instructions for completing the materials are indicated at the top of each document on which a corresponding number to both the packet and the return envelope has been assigned to ensure anonymity. After completing the packet, please put the materials in the enclosed envelope and return to my colleague who will deliver them to me. Please feel free to contact me at any time with questions or concerns via my phone or email, which are listed below. If you have a need to contact my faculty member, Dr. Joan Moon, please do so at joan.moon@mailwaldenu.edu or 419-308-3714.

Contents of Packet:

- Return envelope
- Literature Review Matrix
- Curriculum Plan
- Evaluation of Curriculum Plan by Content Experts
- Pretest/Posttest
- Pretest/Posttest Content Validity by Content Experts

Sincerely,

Terrie H. Allen, MSN, FNP-C, PMHNP-BC
Phone: 678-768-7541

Appendix J: Evaluation of the Staff Education Project, Process, and My Leadership by Content Experts

Title of Project: Nursing Staff Education on the Use of Guidelines for the Management of Diabetes

Student: Terrie Allen

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

I. Content Expert Approach

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

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

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

II. There were outcome products involved in this project 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 project.

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

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

IV. Please offer suggestions for improvement.

Appendix K: Curriculum Plan Evaluation by Content Experts Summary

Met = 1 Not Met = 2

Objective Number and Statement At the conclusion of this educational experience, learners will be able to:	Evaluator A	Evaluator B	Evaluator C	Average Score
1. Participants will be able to identify the importance of guideline use.	1	1	1	1
2. Participants will be able to describe the importance of HbA1c.	1	1	1	1
3. Participants will identify the importance of assessment to identify high risk factors.	1	1	1	1
4. Participants will be able to have a better understanding of managing diabetic patients.	1	1	1	1
Total /Average	4	4	4	1

Appendix L: Pretest/Posttest Content Expert Validity Index Scale Analysis

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

Total Item Items	Expert 1	Expert 2	Expert 3	Rating (I-CVI)
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	1
8	1	1	1	1
9	1	1	1	1
10	1	1	1	1
11	1	1	1	1
12	1	1	1	1
13	1	1	1	1
14	1	1	1	1
15	1	1	1	1

S-CVI = 1

1. Review each CE individual item score from Appendix F. Any item that gets a 1 or 2, gets a 0 on this form. Any score that is a 3 or 4 gets a 1 on this form.
2. Add all three of the CEs scores horizontally and divide by the number of CEs to achieve the I-CVI and put in the Total Item Rating column for that item.
3. Add the Total Item Ratings vertically and divide by the number of test items.
4. The S-CVI should have a score between 0 and 1.
5. Note: Acceptable validity score should be between .78 and 1. Otherwise any items that are poorly rated need to be revisited.

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 M: Summary of the Evaluation of the Staff Education Program by Participants

Met = 1 Not Met = 2

Objective Statement	Response	Number
1. Participants will be able to identify the importance of guideline use.	Yes No	6
2. Participants will be able to describe the importance of HbA1c.	Yes No	6
3. Participants will identify the importance of assessment to identify high risk factors.	Yes No	6
4. Participants will be able to have a better understanding of managing diabetic patients.	Yes No	6
	Yes No	6

Moon/Dec/2021

Appendix N: Summary Evaluation of the Staff Education Project by Content Experts

Title of Project: Nursing Staff Education on the Use of Guidelines for the Management of Diabetes
Student: Terrie Allen
Thank you for completing the Summary Evaluation on my project. Please complete and send anonymously via interoffice mail to:

I. Content Expert Approach
a. Please describe the effectiveness (or not) of this project in terms of communication, and desired outcomes etc.

Evaluator A	Evaluator B	Evaluator C
Positive communication, lead to positive outcome of educational piece. PP and oral presentation provide more fed back than zoom.	Having a live audience was a positive, able to understand body language and desired outcome reached.	The communication method PP and oral presentation is an effective teaching method.

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

Evaluator A	Evaluator B	Evaluator C
It was an honor working with you. My evolvement though minimal was effective in helping analyze information.	Enjoyed working with you. My schedule gave me just enough time to help and add to this body of work.	I enjoyed being a part of your work. For this project it was time well spent.

II. There were outcomes products in this project including an educational curriculum and pre/posttest.
c. Describe your involvement in participating in the development/approval of the products.

Evaluator A	Evaluator B	Evaluator C
Information was review, analyzed and evaluated by myself. Objects were met and the curriculum was well developed. 1 of 3 evaluators.	Feedback was provided as I was 1 of 3 evaluators. Reviewed materials, gave rating of project, analyzed test question. Reviewed scale used.	I received a packet to review and evaluate. I provide my evaluation of information to student.

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

Evaluator A	Evaluator B	Evaluator C
If time permitted, I would have help to develop some questions. Approving method	If I had more time, I would have like to be present for presentation.	Perhaps helping with ways to deliver information, zoom, formal, informal. Would have liked to have been part of the process Would have liked to have been present

III. The role of the student was to be the leader of the project.
As a leader how did the student direct you to meet project goals?

Evaluator A	Evaluator B	Evaluator C
Student provided a packet with clear instructions. Provided contact information for instructor and herself.	Student provided a packet with clear instructions. Student set timeline for competition.	Timeline set; Contact information provided. Student provided a packet and clear instructions.

How did the leader support you in meeting the project goals?

Evaluator A	Evaluator B	Evaluator C
Timeline set; packet contained instructions.	Instructions were made clear with timeline.	Student had timeline in place, strict deadline, with clear instructions provided.

IV. Please offer suggestions for improvement.

Evaluator A	Evaluator B	Evaluator C
Excellent work and enjoyed being a part of this. Goals and objectives met. Expanding on the topic and having more participant to get a broader view on the educational piece.	Enjoyed being a part of project. This project was well put together for in the future you may want to expand project and implement as a continuous teaching tool objectives and goals.	Enjoyed being a part of the project Expand the project Larger group