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Staff Education of Diabetic Foot Care in an Ambulatory Setting

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This is to certify that the doctoral study by

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

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Abstract

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

One of the most important factors affecting the quality of diabetes care is the association between a patient's knowledge and their practices. The practice gap in this primary care clinic was a lack of standardized diabetic foot care. The purpose of this DNP project was to provide nursing staff with an evidence- based, culturally congruent diabetic footcare curriculum that could help decrease inconsistencies in care. The practice-focused question for this project addressed whether an educational program for nursing staff on diabetic footcare would increase their knowledge and translate this knowledge into practice to prevent diabetic foot infections and its complications. Transformative learning theory was used as a guiding framework for this project. A literature and resource review search were conducted to develop the staff education program. Participants in the program were four members of the nursing staff in a primary care clinic in California with a predominantly Filipino American patient population. A pretest and posttest were conducted before and after the education program using a 10-item test modified Summary of Diabetes Self Care Assessment tool to determine the effect of the intervention. The results showed that the educational initiative helped increase diabetic footcare knowledge among participating nursing staff. This increase in knowledge can reduce the risk of diabetic foot infections. The findings of this project and this staff education program have potential implications for positive social change by improving diabetic footcare practices among patients and overall reduction in healthcare costs from diabetic foot infection and complications.

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Dedication

I would like to thank my family, my husband Greg, my parents, and my sister for the continuous support, encouragement, and love on this educational journey. I would also like to take this opportunity to thank all my mentors, past and present, for all the valuable lessons learned. My journey to become an advanced practice nurse has been inspired by my brother's health journey and ultimately his death from cancer at a very young age. This project is dedicated to the memory of my brother Cleve, thank you for inspiring me to always do better.

Acknowledgments

I would like to express my sincere gratitude to Dr. Melanie Braswell, my committee chair, Dr. Susan Wise, my committee member, and Dr. Susan Fowler, my URR for their guidance and mentoring throughout this project.

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Section 1: Nature of the Project

Introduction

The increasing prevalence of diabetic complications involving foot and ankle infections and diabetic foot ulcers can result in significant morbidity, mortality, and increase in health care expenditures (Woods, 2020). Nurse practitioners (NPs) are key members of the diabetic footcare team who can help address this gap using the appropriate patient education, medical management, and use of therapeutic footwear which can prevent many diabetic foot problems and complications (Alaala et al….,2012). Recent research conducted on diabetic ulcers had found that 75% of foot ulcers are preventable, but prevention receives little attention and racial and ethnic disparities in leg amputations are well documented (Sharpe,2020).

Stevens et al. (2014), found that prevalence-adjusted amputation rates vary between high-income and low-income regions in California. Diabetic footcare education of clinical staff members including a Registered nurse (RN) a licensed vocational nurse (LVN), and two certified medical assistants (CMAs) working in an outpatient clinic located in an underserved area with a predominantly minority population in Los Angeles County, California can be beneficial. Jordan and Jordan (2011) conducted a study of foot self-care practices among Filipino Americans (FA) women with Type 2 diabetes mellitus (T2DM) and found suboptimal practices making them more prone to the development of foot problems such as ulcers, infections, and disfigurements.

The study site clinic has a 65% higher incidence of T2DM and its complications among patients, as demonstrated by monthly chart reviews and quality control meetings,

compared to the 16.7% prevalence rate of diabetes among all racial/ethnic groups found by Karter et al.,. (2013). According to the American Diabetes Association (ADA, 2004), early recognition and management of independent risk factors for ulcers and amputations can prevent or delay the onset of adverse outcomes as risk identification is an integral component for effective preventive management of the foot in people with diabetes.

Providing a staff education program specifically tailored to the diabetic foot care needs of the FA community can provide an important opportunity to effectively improve knowledge, self-care behaviors, and reduction of foot complications (Bonner et al., 2015). Managing a complex disease such as diabetes requires ongoing education, and this staff educational initiative can play a vital role in helping patients understand and manage their disease better.

Problem Statement

Despite the prevalence of diabetes among the FA patient population, the nursing staff at this outpatient clinic do not have a standardized practice in place for teaching patients diabetic self-foot care practices. In fact, there is currently little evidence-based literature to support specific foot care practices for this patient population (McInnes et al., 2010)

Diabetic foot is a severe and costly complication associated with T2DM which has severe financial and economic implications on the healthcare system (Raquinio et al., 2021). This scholarly project has the potential to address this gap by empowering the nursing staff to confidently provide diabetic foot care tailored to the unique needs of FA patients.

The potential significance of the scholarly project is to implement a nursing staff diabetic foot care program led by a doctor of nursing practice (DNP) student in an outpatient clinic. Nursing staff members play an indispensable role but are often overlooked as an important resource in improving patient outcomes (Raquinio et al., 2021). The current practice in this clinic and an identified practice focused problem, is that little advice or sometimes, no advice is given to patients about diabetic foot care education from nursing staff. A lack of specific and consistent diabetic foot care education given to patients has been observed and discussed in staff meetings, anecdotal reports, and informal surveys of patients recently diagnosed with diabetic foot infections and complications. Due to the increasing prevalence of the disease, there is a need to examine and developed alternative teaching models such as the use of nursing staff including paraprofessionals like LVNs and CMAs to provide basic diabetic foot care education as these personnel are commonly available in primary care clinics (Ruggiero et al., 2010).

Purpose Statement

FAs represent the third largest ethnic minority group in the United States, and chronic diseases such as hypertension, high cholesterol and diabetes are significant public health issues affecting this population (Ghimire et al., 2018). Research has demonstrated that health data remain scarce regarding diabetic foot care practices among the FA population because information is typically aggregated with other Asian American subgroups (Bhimla et al., 2017). Aggregated data conceal health problems among the Asian American subgroups causing adverse health disparities (Gordon et al., 2019).

The purpose of this project was to conduct a staff education program on the topic of diabetic footcare for the nursing staff at a primary care outpatient clinic. During the staff education program, I provided clinical guidelines based on best evidence practice to nursing staff at this primary care outpatient clinic on diabetic foot care practices to FAs with T2DM. The practice-focused question for this project was: How effective will an education program for nursing staff on diabetic footcare increase their knowledge and translate the knowledge learned in the education program into practice to prevent foot infections?

According to the ADA, one preventive tactic in diabetes care is a multidisciplinary team approach that includes physicians, nutritionists, and diabetic educators. However, not all clinics are equipped with full-time diabetic educators to optimally support patient education and self-management (Ruggiero et al., 2010). The inclusion of nursing staff in this outpatient clinic was an alternative method to extend diabetic foot education culturally tailored to the needs of this vulnerable population.

Nature of the Doctoral Project

A literature and resource review was conducted using the Walden University's library, Google Scholar, the CDC, American Orthopaedic Foot and Ankle Society, the ADA, CINAHL, and PubMed Central. Search terms included *diabetic footcare education, footcare knowledge, footcare interventions, health care disparities in Filipino Americans, diabetes self-care, barriers to diabetes self-management* and *underserved population* were included in this review.

The initial research literature reviewed pertinent to the practice problem supported evidence that self-care in diabetic patients is one of the most important strategies for controlling the complications of the disease and decreasing the rate of hospitalizations (Bullen et al., 2019). The findings from these studies provided data on the importance of diabetic foot care, and this evidence can be used to implement a foot care program that tailors these interventions culturally to improve practice in an outpatient setting (Bullen et al., 2019). This DNP project has the potential to address the gap in practice by teaching proper foot care among diabetic patients which includes daily examination of the feet and the inside the shoes, daily washing and complete drying of the feet, avoiding walking barefoot, proper nail care and the use of appropriate diabetic foot care (Jelhoni et al., 2020). The study shows that educational intervention for nursing staff has a significant effect on the promotion of patient diabetic self-care behaviors in this group.

Significance

The desired outcome of a nursing staff education program in an outpatient setting was the reduction of the risk of diabetic foot infections and its complications, as the burden of diabetes and its complications, is greater for minorities and lower income groups in the United States (Ruggiero et al., 2010). The stakeholders included patients with a diagnosis of diabetes and their primary caregivers, the nursing staff, healthcare providers and insurers.

The implementation of an evidence based diabetic footcare education helped reduced the risk of diabetic foot infections and its complications by empowering the

nursing staff to confidently provide diabetic foot care teachings to its FA patients with diabetes. Foot self-care in diabetes was considered as a critical strategy for controlling the complications of this disease, and this lack of knowledge has been recognized as a contributing factor to why people with T2DM do not undertake foot self-care practices (Bonner, et al., 2016; Bullen et al., 2019).

This scholarly project highlighted the significance of a staff diabetic education program that will promote and enhance diabetic footcare knowledge through a deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals and their communities which will results in the improvement of human and social conditions ("Walden Social Change", n.d).

Summary

This section included an overview of the project problem, purpose, nature of the doctoral project and its significance to the stakeholders and its potential to positively impact the healthcare system and the diabetic patients in the FA community. The early recognition, and management of independent risk factors for ulcers and amputations can prevent or delay the onset of adverse outcomes as risk identification is an integral component for effective preventive management of the foot in people with diabetes (ADA, 2004).

A health professional's knowledge and caring attitude were instrumental to patient compliance and good health which required more preventative work that is needed to help address diabetic foot disparity (Sharpe, 2020). The effective strategies that

were provided in this project improved the quality of diabetic foot care knowledge and self-care practices that helped address the gaps in practice.

Section 2 included an overview of the concepts, models, and theories as well as the relevance of this project development to nursing practice, local background, and context. Section 2 also included discussion of the role of the DNP student and project.

Section 2: Background and Context

Introduction

In 2018, more than 34 million Americans were estimated to have diabetes and people living with diabetes are at a greater risk of experiencing various diabetes-related complications (e.g., vision loss, nephropathy, and neuropathy), lower quality of life, and premature deaths (Smith et al., 2020). Education is an essential element of self-management of diabetes and its complications; beyond providing general knowledge of diabetes foot care, it is essential to tailor both the treatment and the education to the needs of individual patients (Burke et al., 2014).

Historically, team-based models of primary care that include an RN, care management, and pharmacist-led medication management in improving diabetes care quality and patient self-management are well established but not always financially feasible; this indicates a need to explore alternative and innovative methods to extend diabetic footcare education in a primary care setting (Rodriguez et al, 2018; Ruggiero et al, 2014). The question for this practice change project was: How does the implementation of an evidence-based diabetic foot care education on nursing staff impact the health outcomes of FA diabetic patients in a primary care clinic?

In this section, I discuss the concepts, models, theories, relevance to nursing practice, local background and context, the role of the DNP student and role of the DNP project team.

Concepts, Models, and Theories

Understanding diabetic foot infections was essential in this project. Diabetic foot infections are a significant public health problem and racial and ethnic disparities in leg amputations are well documented. Transformative learning theory can help contribute to organizational changes by assisting the nursing staff with development and implementation of an evidence-based diabetic footcare education to close the gap between health knowledge and helping FA diabetics meet their own feet health needs. (Sharpe, 2020; Warfield, 2019).

Transformative learning theory guided the implementation of this DNP scholarly project. Transformative learning is a learner-centered process of learning that actively engages students through critical reflection and discourse by encouraging students to question assumptions and expectations to achieve a deeper understanding and change perspectives that guide actions (Tsimane & Downing, 2020).

Transformative learning allows for the transformation of problematic frames of reference—sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)—to make learners more inclusive, discriminating, open, reflective, and emotionally able to change (Landry-Meyer et al., 2019). This theory is particularly applicable to the healthcare environment in which patients are empowered to understand the significance of self-management to well-being (Nitiri & Stewart, 2010).

In this scholarly project, transformative learning theory enabled the nursing staff to effectively integrate and translate the foundational knowledge to self-care behavior while allowing for continuous evaluation of outcomes (see Tsimane &Downing, 2020)

Engagement in transformative learning requires adult characteristics that include emotional maturity, awareness, empathy, and control allowing for critical reflection and opportunities to act on new perspectives, which are important when providing basic scientific competencies (Kear, 2013).

The literature I reviewed pertinent to the practice problem supports evidence that self-care in diabetic patients is one of the most important strategies for controlling the complications of the disease and decreasing the rate of hospitalizations (Bullen et al., 2019). According to Jelhoni et al., (2020), the proper diabetic footcare includes daily examination of the feet and the inside of the shoes, daily washing, and complete drying of the feet, avoiding walking barefoot, proper nail care, and the use of appropriate diabetic foot care; this shows that educational intervention can have a significant effect on the promotion of patient self-care behaviors.

Education was another major concept for this project. The use of innovative, culturally tailored strategies is needed to extend diabetes education and support efforts in low-resourced primary care practices that served racial/ethnic minority groups (Ruggiero et al., 2014). In this DNP scholarly project, the nursing staff was considered an alternative model employed to teach evidence-based diabetic foot care education because this outpatient clinic has limited access to a diabetic educator. The outcome of transformative learning in this project is the observable change in patients and patient family members who are primary caregivers, by increasing diabetic foot care knowledge and competence; this can help bridge the gap between knowledge and integration into daily activities (Green-Morris, 2019).

Nurses are health care providers who are actively involved in prevention and early detection of diabetes and its complications, but diabetic nurse educators are not always readily available or financially feasible to hire. This project was created to help address the gap in practice by teaching nursing staff about diabetic footcare, which in turn, can lead the staff to teach to their FA patients. This pragmatic approach is expected to be more cost-effective, and efficient; and has the potential to expand educational efforts and outreach to underserved populations, especially in clinic practices with limited resources (Ruggiero et al,2014).

Relevance to Nursing Practice

In 2018, was an estimated 34.2 million people of all ages — or 10.5% of the U.S population had diabetes, and among Asian groups, the rate of diabetes in adults is higher among Filipino Americans at 10.4% (CDC, 2018). This increasing prevalence of diabetes in the United States will likely bring a concomitant increase in complications including diabetic foot infections; therefore, preventative measures must be given priority (Bhimla et al., 2017). Fortunately, diabetic foot infections are preventable, and the severity can be reduced with timely self-recognition of early signs of diabetic foot complications. Current guidelines recommend patient education and daily foot monitoring (Littman et al., 2020).

A California report showed incidence rates of 14.7 cases per 1,000 persons for FA adults, compared with 7.5 for Japanese adults and 6.5 for Chinese adults; additionally, overweight and obesity, diet quality, and other lifestyle factors may explain the higher T2DM rates among second generation FA adults (Raquinio et al., 2021). The implications of this report show a need for culturally appropriate interventions to reduce

lifestyle factors that can contribute to high rates of T2DM among Filipino immigrants and their descendants (Raquinio et al., 2021).

The current practice in the study site outpatient clinic is that newly diagnosed diabetic patients are given educational materials in the form of hand-outs and brochures about diabetes in general and about diabetic footcare. Diabetic patients also received an annual diabetic foot exam, but there is no formal diabetic footcare class. Patients are often left to figure out and understand the information given under stressful time constraints. This staff educational program was conducted to advance nursing practice by expanding the role of nursing staff through diabetic footcare training. Once trained, these staff members can provide teaching to diabetic patients about how to accurately perform diabetic footcare routinely. Studies have demonstrated that interventions can enhance patient self-efficacy which can ultimately improve self-management and outcomes of chronic diseases (Warfield, 2019).

Local Background and Context

This DNP scholarly project was conducted in an outpatient primary care clinic in Southern California. Carson population was 92,079 in 2019, and the city has an 8.7% poverty rate. The population consists of 5 main ethnic groups-, the largest ethnic group is Asians (26.3%) and the most common country of origin is from the Philippines (United States Census Bureau, 2019). Nearly half of California adults, including 1 out of every 3 young adults, have either prediabetes or undiagnosed diabetes. Racial and ethnic disparities are pronounced as 31 % of Asian-Americans have prediabetes, a precursor to

T2DM, pointing to the need to focus additional prevention efforts in those communities (“The Cutting Edge,”, 2016).

Clinic staff members who attend to patients included one RN, one LVN, two CMAs, and a medical doctor. The patient population in this clinic are mainly FA who speak Tagalog as their main language other than English. Many patients choose this medical doctor because he speaks and writes Tagalog fluently. The participants in this study were FA with T2DM. All the nursing staff, including the medical doctor, speak and write Tagalog fluently.

In its position statement, the ADA recommended that all individuals with diabetes should receive an annual foot examination to identify high-risk foot conditions, and Patients with diabetes and high-risk foot conditions should be educated regarding their risk factors and appropriate management (Mayfield et al., 2004).

Aspects of proper diabetic foot care included identifying the at-risk foot, daily exam and inspection, nail care, appropriate shoe gear, and proper and early treatment of pre-ulcerative lesions (Jordan& Jordan, 2011). Once trained, nursing staff can play an indispensable role in improving the quality of diabetic foot care and preventing complications of diabetic foot infections.

According to the ADA (2017) self-monitoring of foot health is a vital concept in the prevention of diabetes complications related to the foot. Providers must use a nonjudgmental assessment, and patient-centered approach to self-selected behavioral goal setting and need to identify any self-management deficits and collaborate with patients to

developed strategies to overcome those deficits. High risk diabetic patients are recommended to a referral to podiatry for management and monitoring (Song, 2021).

Role of the DNP Student

My role in this DNP project was to implement a diabetic foot education class that was given to the nursing staff in an outpatient primary care clinic in a city in the southern region of the state of California. This city has a huge Filipino ethnic group population, and the risk for T2DM is significantly higher among this group as compared to their White counterparts and other Asian counterparts (Raquinio et al. 2021). This DNP project allowed me to fulfill one of the eight foundational DNP Essentials which is Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice. Scholarship and research are the hallmarks of doctoral education, and this application involved the translation of research into practice and the dissemination and integration of new knowledge. These key activities of DNP graduates will ultimately contribute to improving the quality of care and health outcomes for patients. (American Association Colleges of Nursing, 2006).

I was able to identify a practice gap in this health care setting through anecdotal reports from patients and monthly staff meetings. A literature search on healthcare disparities among FA and diabetic foot care infections corroborated this observation. I was motivated to implement a nursing staff education program to help extend diabetic footcare education to patients that can standardize their care using evidence-based diabetic foot care education. It is not always financially feasible to hire a diabetic educator or to send patients to a diabetic class. A primary consideration for this project

was the need for language concordant care as the majority of the clinic patients are elderly and speak Tagalog, a primary language in the Philippines. Being bilingual, I was aware that by offering an in-person interaction to the staff, I could teach the staff effectively by explaining complex medical conditions or confusing terminology which might be easier to understand if taught by someone relatable.

My role in this DNP project was to implement and teach a diabetic foot education class for nursing staff. I was also responsible for the assessment and collection of data and the analysis of results. The methods and the results of this project were used to translate evidence and improve the health of this patient population.

Through this DNP project, the nursing staff may be empowered with the right knowledge to encourage patients with diabetes to become proactive in their footcare. I did not anticipate any biases in the implementation of this project.

Role of the Project Team

The purpose of this project was to provide and implement an effective evidence based diabetic foot care educational program to the nursing staff in a primary care clinic to help standardized and improve diabetic foot care knowledge with the ultimate goal of decreasing the risk for diabetic foot complications. The project team included myself as the DNP student, the nursing staff, the office manager, and the medical doctor. I became the team leader and was in charged with the implementation and training of the nursing staff, the collection of data, and the analysis of the results. The medical doctor helped evaluate the effectiveness of the educational initiative by providing continuous support and guidance. I conducted a formal presentation, and the project team was presented

with the background information gathered from monthly staff meetings and chart reviews.

In the same presentation, the team was also provided with the purpose of the project, the design and methodology of the project, and expected results. The project was expected to finish within a two-week time frame. I utilized the latest evidence base research retrieved from online journals explaining the need to teach an effective diabetic footcare protocol to the nursing staff as an alternative model to extend diabetic foot care education. The team was expected to share their expertise on patient education by using their Filipino background and clinical expertise to enhance the patient education experience in diabetic footcare for these culturally sensitive FA patients (Clarke, 2020).

A group discussion ensued after the presentation, which allowed for feedback and dialogue between the staff and myself. The office manager and the RN helped identified patients that the nursing staff educated, and the office manager was in charge of giving these patients follow-up appointments and feedback surveys. The team worked collaboratively and shared the responsibility of continuous ongoing assessment and feedback (Warfield, 2019).

Summary

The rise in prevalence of diabetes was likely to bring a concomitant increase in its complications and diabetic foot infection was a serious complication of diabetes which can be prevented with patient education and timely diagnosis (Ren et al., 2014). The utilization of the nursing staff in the promotion of diabetic footcare education was a novel

way of addressing the gap in nursing practice. In section 3, the process will be discussed in detail.

Section 3: Collection and Analysis of Evidence

Introduction

The health care costs for diabetic foot infections is enormous and continues to present a considerable burden on health care organizations. Among the spectrum of diabetic complications, diabetic foot infections are a leading cause of morbidity. Awareness and education regarding primary healthcare including self-care pertaining to diabetic foot care is essential (Singh, 2020). One of the most important factors affecting diabetes care quality is the association between a patient's knowledge and their practices (Pourkazemi et al.,2020). Education remains the most ideal method to prevent diabetic foot complications; however not everyone is able to attend a formal diabetic class or have access to a diabetic educator. I effectively addressed this gap in nursing by providing education to the nursing staff so they can be equipped to educate diabetic patients about proper foot care in a primary care clinic in southern California to improved patient outcomes.

In this section, I discuss the practice-focused question for this staff education scholarly project, and the sources of evidence used to support this project. I also discuss the analysis and synthesis used to answer the practice focused question associated with this DNP Project.

Practice-Focused Question

The incidence rates of diabetes are significantly higher for FA adults as compared to their Japanese and Chinese adult counterparts (Raquinio et al. 2021). The practice-focused question for this project was: How effective will a staff educational

program for nursing staff on diabetic footcare increase their knowledge and translate the knowledge learned in the education program into practice to prevent foot infections? This scholarly project can help bridge the gap in nursing practice through the implementation of an evidence based diabetic foot care educational program to nursing staff, which will help standardized information regarding diabetic footcare and prevent diabetic foot infections by improving the knowledge and competence of nurses through diabetic foot assessment training and daily performance during patient encounters (Warfield, 2019). When staff translate the knowledge they learned into practice, patients can better care for themselves.

Sources of Evidence

The Walden's DNP Doctoral Project for Staff Education Template provided a pivotal tool that helped guide this project as I prepared an effective learning process that resulted in an enhanced learning experience for the nursing staff. A literature and resource review search was conducted using the database from Walden University's library, Google Scholar, the CDC, American Orthopaedic Foot and Ankle Society, the ADA, CINAHL, and PubMed Central. Search terms included were *diabetic footcare education, footcare knowledge, footcare interventions, health care disparities in Filipino Americans, diabetes self-care, barriers to diabetes self-management, underserved population, summary of diabetes self-care activities assessment.* These resources allowed me to identify a gap in nursing practice related to a knowledge deficit about proper foot diabetic foot among FA diabetic patients in an outpatient primary care clinic.

Through this project, I hoped to address this gap by implementing a diabetic footcare education initiative for the nursing staff to increase the staff's knowledge of footcare. Teaching the nursing staff evidence-based footcare practices has been found to be a promising strategy for improving diabetic outcomes specifically in individuals and ethnic minority communities that lack access to care and culturally tailored approaches (Shah et al., 2013).

Sharp ethnic disparities existed in the prevalence, complications, and burden of T2DM in the FA community (Finucane & McMullen, 2008). Compliance with proper foot care reduces the incidence of foot ulcers but many FA patients with T2DM do not receive adequate foot care instruction from their healthcare providers and do not perform routine foot examinations (Jordan & Jordan, 2011).

This scholarly project was created were to help reduce the disparity that exists in diabetic footcare education by teaching clinic staff the basic principles of foot care in clinic and home visits. The nursing staff were taught (a) to examine the feet daily for discoloration, swelling, skin cracks, pain or numbness ; (b) use of self-help methods to help foot examination such as mirrors to aid in foot inspection ; (c) foot hygiene such as daily foot washing using controlled water temperature followed by drying of feet carefully especially in between the toes; (d).cutting toenails correctly ; (e) using appropriate sized shoes and to avoid walking barefoot and wearing shoes without socks; and (e) to keep dry surfaces of the foot moisturized using lotions except in between the toes (Jordan & Jordan, 2011). One crucial aspect of this nursing staff diabetic foot education program was to include culturally relevant content and delivery of diabetic foot

care education. When a culturally relevant context is used to discuss behavior change, the information about diabetes and self-care behaviors becomes more meaningful for the intended audience (Finucane & McMullen, 2008).

The overall purpose of this project was to develop, implement, and evaluate the effectiveness of culturally tailored nursing staff diabetic foot care education in a racial/ethnic minority population with T2DM in a primary care clinic in California where the study was conducted (Ruggiero et al., 2014). The project team expected that implementing an evidence based diabetic foot care protocol would aid in achieving outcomes of the highest quality and lowest costs, such as improved documentation related to teaching and foot evaluation findings in the medical records, and improvement in knowledge and performance of diabetic foot care by nursing staff (Warfield, 2019). The knowledge gained from this educational intervention was designed to extend the reach and efforts in low resourced primary care practices to support racial/ethnic minority groups to ultimately result in a lower incidence of foot infections and complications (Ruggiero et al., 2014).

Evidence Generated for the Doctoral Project

A practice gap that I identified in this primary care clinic in Southern California was the lack of standardized diabetic foot care education among nursing staff and diabetic patients evidenced by anecdotal reports. Patients with diabetic foot infections, ulcers, or amputations lamented that had they been taught the appropriate footcare education, they could have avoided an infection or an amputation. Monthly staff meetings corroborated these statements. diabetic patients can be referred to a diabetic educator,

podiatrist, or orthotists, the referral time can be slow. This referral period can be an opportune time for nursing staff to teach the basic principles of footcare to these patients to help improve the knowledge and overall foot health. This can motivate patients to perform self-care to their feet daily by identifying obstacles that prevent best foot practices in the primary care setting (Warfield, 2019).

Participants

The project participants were nursing staff who provided care to patients with diabetes at this primary care clinic. The group included one RN, one LVN, and two CMAs. The office manager served as a liaison and helped me coordinate this project. Participating in the education program was voluntary. content expert panel comprised of an RN and medical doctor evaluated the relevance and validity of the curriculum.

Procedures

After having identified the learning needs of the nursing staff in an outpatient setting regarding diabetic footcare, a program was designed to educate the nursing staff on evidence-based diabetic foot care interventions using the Annual Diabetic Foot Assessment Form from the National Diabetes Education Program's Feet Can Last a Lifetime (NIDDK, n,d) and the Take Care of Your Feet for a Lifetime booklet by the National Diabetes Education Program (2014) as guides in performing foot assessment. One session was conducted in the clinic's staff lounge. I conducted the educational session using hand-outs, an educational module, and a PowerPoint presentation. This session was guided by peer-reviewed journal articles and resource materials from selected health organizations such as the ADA which were used to develop the content

for the educational sessions. The session covered several topics, including types of diabetic foot complications, causes, and strategies for preventing the complications. The nursing staff completed a pre-education survey. I presented the educational session. Then the nursing staff completed the same survey after the education. The nursing staff were taught to enter a de-identified 4-digit-number so the survey results remained anonymous.

The pre-education survey and the post education survey that was used was a pre-tested, structured survey prepared from the recommendations of the American College of Foot and Ankle Surgeons (ACFAS), the ADA and the Summary of Diabetes Self Care Activities-Revised and Expanded (SDSCA-R&E) which offered researchers and practitioners a brief survey that the patient completed to assess their diabetes management. This tool was developed at the Oregon Research Institute from 1993 to 2009 and supported with funding by the National Institutes of Health (Oregon Institute Organization,n.d). The SDSCA tool has undergone two sets of validations, inter-item and test-retest reliability which included one set with three studies involved and one set which included seven different studies (Toobert et al., 2000). The SDSCA measure was a brief and reliable self-report questionnaire of diabetes self-management and was revised by Jordan and Jordan (2011) to reflect the self-care foot practices of adult FA patients with T2DM.

The pretest, which was a 10-item test using the modified SDSCA tool as a guide for question development was administered before the educational session ensued and the same 10 item test was used for the post test and was administered after the class. Each correct choice was counted as one point for a total of 10 points. (See Appendix A).

The pretest and posttest surveys were presented to a context expert panel (CEP) to evaluate if course content aligned with the questions of the curriculum that will be taught. The two members of the CEP were the medical doctor and the RN. The medical doctor was also the sole practice owner and was a cardiologist by training. There was an evolving role of cardiologists in diabetes care and regardless of strategy of T2DM care moving forward, cardiovascular specialists should be equipped with the necessary practical knowledge to screen for diabetes, participate in risk factor modification, and introduce evidence-based antihyperglycemic therapies in clinical practice (Manam &Baum, 2018).

Participation in the staff education project was voluntary and not mandatory. The surveys were answered by the staff anonymously using a de-identified four-digit number.

Protections

This staff education project was submitted for Walden University's IRB approval. No foreseeable or potential ethical issues were involved. All participation was voluntary, and all nursing staff received the same training. Staff's voluntary participation served as informed consent. The surveys were anonymized. For security the DNP student maintained all data collected.

Analysis and Synthesis

The scores from the 10 questions pre-education survey were totaled. Each correct answer was assigned 1 point and any incorrect answers were assigned 0 points. These total scores were converted to simple percentages.

The scores from the 10-question post education survey were totaled. Each correct answer was assigned 1 point and any incorrect answers were assigned 0 points. These total scores were converted to simple percentages.

The results of the pre-education survey and the post-education survey were tabulated using simple percentages to determine if the educational session provided to the nursing staff was effective. These percentages were calculated to z-scores.

Essentially, was the staff educational program for the nursing staff on diabetic footcare increased their knowledge? This was evidenced by an increase in the nursing staff's post education survey scores when compared to the nursing staff's pre-education survey scores. All surveys and statistical data were maintained by the DNP student to ensure the integrity of the evidence.

Summary

Section 3 provided an overview of the practice focused questions, the sources of evidence that has guided the project and the collection and analysis of data. This scholarly project sought to address the practice gap in this clinic through the implementation of an evidence-based nursing staff diabetic foot care education program. Numerous studies have demonstrated that staff training played a major role in raising awareness and changing attitudes and footcare practices in diabetic patients (Ruggiero et al., 2014). The project sought to empower the nursing staff to perform footcare education accurately and confidently on all diabetic patients integrating this knowledge to routine office visits. The ultimate goal of this project was to decrease the risk of diabetic foot infections and its complications in this primary care clinic.

Section 4: Findings and Recommendations

Introduction

The increasing prevalence of diabetes and its complications involving the foot and ankle was a major healthcare challenge causing significant damage to limbs and lives, especially among the FA community. Poor knowledge and poor foot care practices have been identified as important risk factors. Addressing these factors should reduce the incidence of diabetic foot infections; therefore, awareness of risk factors and good footcare practices is of paramount importance.

The problem is the lack of a standardized diabetic footcare education protocol during routine office visits among adult diabetic patients in this primary care clinic. The aim of this DNP project was to implement an evidenced-base diabetic footcare program to effectively addressed the practice gap in this clinic by empowering the nursing staff to confidently provide diabetic foot care teachings to FA patients. Providing this education to staff and patients should result in improved patient outcomes (Finucane & McMullen, 2008).

In addition, I observed a lack of culturally congruent diabetic footcare education targeted to the specific needs of the predominantly FA patients in this clinic. Experts agreed that language is an important consideration to access healthcare, and culturally concordant care has been associated with better patient outcomes (Littman et al., 2020). The practice focused question for this doctoral project was: How effective is an educational staff program on diabetic footcare will be in increasing knowledge and preventing foot infections?

Several sources of evidence were used for this DNP scholarly project. Literature and evidence were drawn from Walden University's library, Google Scholar, the CDC, American Orthopaedic Foot and Ankle Society, the ADA, CINAHL, and PubMed Central. The key terms used to search for evidence-based literature for this DNP project included *diabetic footcare education, footcare knowledge, footcare interventions, health care disparities in Filipino Americans, diabetes self-care, barriers to diabetes self-management, underserved population, and summary of diabetes self-care activities assessment.* In addition, evidence was obtained from the implementation and analysis of pretests and posttests before and after the diabetic footcare education program to the nursing staff.

Findings and Implications

This DNP scholarly project was conducted in an outpatient primary care clinic in Southern California. Clinic staff members who participated in the education program were one RN, one LVN, and two CMAs. The diabetic staff education program was a 1-day event consisting of a 1-hour session offered on a Wednesday. The program was conducted in the clinic's staff lounge. A pre-education survey was completed by the staff prior to a formal educational session and an open forum. The nursing staff members were given instructions to enter a de-identified 4-digit-number to remain anonymous. The same survey was administered again post education to the nursing staff to determine if the educational session was effective.

The pre-education survey and the post education survey used were a pre-tested, structured survey prepared from recommendations of the American College of Foot and

Ankle Surgeon, the ADA, and the Summary of Diabetes Self Care Activities-Revised and Expanded. The pretest and posttest were comprised of 10-item tests from a modified SDSCA tool. Each correct choice was counted as one point for a total of 10 points. Each correct answer was assigned 1 point and any incorrect answers were assigned 0 points. The total scores were converted to simple percentages and these percentages were calculated to z-scores.

SDSCA-R&E/PrePostTestResults

Using statistical assistance, the recorded data from the pretest and posttest surveys were transferred into a percentile to Z-Score calculator for data analysis. The results showed that the educational session was effective in increasing diabetic knowledge and proper footcare practices among the nursing staff (Table 1 shows correct results both pretest and posttest and the differences for all participants).

In this DNP project, I found that implementation of this educational program can help improve diabetic foot care knowledge. When nursing staff pass along the increased knowledge, it can lead to subsequent prevention of diabetic foot infections and complications. As Figure 1 indicates, the pretest and posttest responses from 10 questions show a positive indication of the effectiveness of diabetes education for nursing staff.

The pre-test survey (see Appendix C) outcome for Question 1 suggested a need for nursing staff to learn the signs of diabetic infection. The pre-test total correct score was 25. After the educational intervention, the total correct answers increased from 25 to 39, in the post test. Question 2 highlighted the need for nursing staff to know the difference between washing the feet in warm water versus hot water to avoid incurring

burns. Question 7 has a significant implication as nursing staff showed deficient knowledge with regards to the different signs of diabetic peripheral neuropathy. Only two respondents answered correctly on the pre-test but during the post test, the number of correct responses increased by 1. This specific area of inadequate knowledge offers an opportunity to address barriers that can help prevent patients from achieving optimal diabetes care.

There were obstacles in the implementation of this DNP scholarly project. A significant limitation was staff shortage. This clinic has seen a huge turnover of staff quitting their jobs ever since the COVID-19 pandemic began in 2020 which meant that the anticipated number of participants for this project was always changing. The were 4 participants in this project and this small sample size is another major limitation as a small size can lead to cases of bias. Another project constraint was time. It would have been ideal to have a longer time teaching the staff but that would mean taking time away from other clinic duties such as filing charts, filling out paperwork, and processing laboratory requests.

There were implications from implementing this project. Diabetes education is the cornerstone of diabetes management, and the nursing staff is aware that diabetic footcare is an important topic to learn (Ruggiero et al., 2014). The project results suggest that implementing standardized diabetic foot care education of nursing staff in a primary care clinic could improve diabetes care quality and enhance patient self-management (Rodriguez et al., 2018). The results of this project also suggested that innovative and culturally tailored strategies are needed to extend diabetes education and support efforts

in low-resourced primary care practices serving racial/ethnic minority group like this project's clinic (Ruggiero et al. 2014). In order to expand access to diabetic footcare education, it is recognized that education needs to be readily available and accessible so that the utilization of CMAs in this project's clinic as an alternative model in extending diabetic footcare education shows significant potential in addressing the practice gap (Rodriguez et al., 2018). On a similar note, CMAs are often underutilized resources to teach diabetes and experts agree that given minimal structured training in basic diabetes principles, CMAs could significantly affect the quality of care and health of patients with diabetes (Marynuik et al.2013). This diabetic footcare educational initiative can be easily taught to any medical staff and could be implemented in other primary care outpatient clinics within the community demonstrating its potential for sustainability. This DNP staff education program has potential to affect positive social change including improved diabetic footcare practices of patients and the overall reduction in healthcare costs brought about from diabetic foot infections and its complications.

Table 1

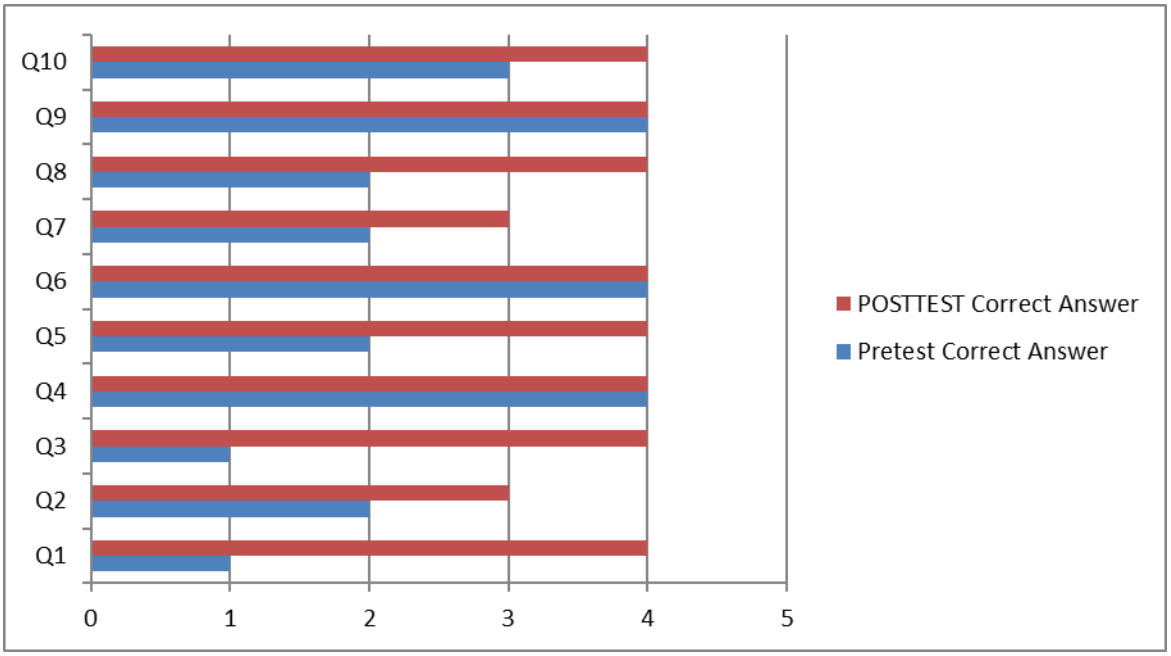
Pretest and Posttest Results

	Pretest correct answers	Posttest correct answers	Difference
Question 1	1	4	+3
Question 2	2	4	+2
Question 3	1	4	+3
Question 4	4	4	0
Question 5	2	4	+2
Question 6	4	4	0
Question 7	2	3	+1
Question 8	2	4	+2
Question 9	4	4	+0
Question 10	3	4	+1
Total score	25	39	

Note. N = 4

Figure 1

Number of Participants with Correct Answers by Question (N=4)



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Recommendations

There were several recommendations to help improve future projects on this topic. First, I recommend that nursing staff should have periodic training and staff discussions regarding diabetic foot infections, complications, and footcare practices offering opportunities improve the staff's knowledge and skills while at the same time, ensuring consistency of information (Maryniuk et al., 2013). Second, I recommend that more time be given to replicate this project because time constraints can make it difficult for the nursing staff to learn effectively while working, and to give leeway for any unforeseen circumstances. By extending the project's timeline, future researchers will be able to determine if the foot care educational program lowered the incidence of diabetic foot infections and its complications (Asiabar, 2022). A final recommendation would be to replicate this project in another primary care setting with an adequate sample size to provide a more accurate result.

Contribution of the Doctoral Project Team

The Doctoral Project team is composed of the DNP student, the nursing staff, the office manager, and the medical doctor. As the DNP student, I served as the team leader and was overall in charge of the implementation and training of the nursing staff, data collection, and analysis of the results. The medical doctor who was also the sole practice owner, has helped tremendously by offering continuous support, guidance, and feedback on the educational initiative. My role as the project leader entailed not only collaborative and coordination efforts with the project team but it was also important that I established

empowering partnerships with every member of the project team through clear and constant communication.

The office manager and the RN helped identify patients that the nursing staff educated, and the office manager was in charged with giving patients follow-up appointments and feedback surveys. All team members participated in weekly group discussions with regard to implementing an evidence-based foot care protocol in this primary care clinic and the team worked collaboratively and shared the responsibility of continuous ongoing assessment and feedback (Warfield, 2019).

Strengths and Limitations of the Project

There are strengths and limitations associated with this staff education DNP project. An important strength is that this project provided an opportunity to address a significant healthcare issue affecting a vulnerable population like the FA community (Ruggiero et al., 2014). The project provided an effective means of improving the diabetic foot care knowledge and footcare practices of the nursing staff. There nursing staff were pleased with the education provided.

The inclusion of CMAs in this project represented an often underutilized, yet readily available resource to extend diabetes footcare education and footcare practices support in primary care settings which can effectively reduce the burden of such tasks on Primary Care Providers (PCPs) ensuring that high-quality diabetes care is delivered (Marynuick et al., 2013). There are opportunities for extending this project beyond the project's clinic. This is a feasible project which has the potential to be sustainable because it offered low-cost interventions requiring few resources like less manpower to

implement, while utilizing best evidence practices in the delivery of high quality diabetic footcare education. A principal limitation of this project is the convenient sample size of 4 participants. Another limitation was time constraint and given the limited time, I recommend that increased time and another educational session be added to re-reinforce the newly learned knowledge and footcare skills.

Section 5: Dissemination Plan

To effectively disseminate the findings of this project, I plan to present the results to the project team which includes the sole proprietor of the clinic and other stakeholders using group discussions, brochures or pamphlets, and PowerPoint presentations. I will arrange for a set time and day for the meeting which will take place in the staff lounge. I plan to provide light refreshments for the staff during the meeting. The results of the project showed that the diabetic footcare education program increased the nursing staff knowledge. Encouraged with the results, I plan to create training materials I can share with other primary care clinics in the area that lack a diabetes education program or lack access to a diabetic educator (see Pontejos, 2021)

I can effectively disseminate the results of this scholarly project via several avenues. One avenue is to pursue a teaching career where I can share my DNP journey and the results of my scholarly project. Second, I plan to submit the findings of this scholarly project to professional journals. If given an opportunity, I also plan to disseminate the results through relevant participation in conferences or seminars (see Pontejos, 2021).

Analysis of Self

Working on my DNP project has been a rewarding experience that has taught me valuable lessons in leadership and clinical practice. For this project to be successful, I had to create and foster a working environment conducive to learning while improving patient outcomes. Growing the knowledge base of nursing staff is a shared responsibility and the

experience of this project helped me become a better listener, and teacher, and a more flexible individual.

As a Practitioner

Working on my DNP project has helped hone my leadership skills by improving and expanding my communication skills, mentoring abilities, and cultural competence to effectively guide the project team. I also have become adept at identifying community and other support resources which is beneficial to my profession. My DNP project aimed to improve diabetic footcare knowledge of nursing staff. Doing so required the skillful integration of knowledge from diverse sources and competence in knowledge application activities (American Association of Colleges of Nursing, 2020).

As a Scholar

This DNP project has given me the opportunity to practice in a primary care setting different from my workplace. The project allowed me to experience practice across the continuum of the disease process during care of a patient with chronic illness such as diabetes. This expanded my knowledge of preventive care including preventing diabetic foot infections and complications (see Warfield, 2019). This DNP project aligns with DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice allowing me to develop as a nurse scholar who is able to translate research into practice through the evaluation of practice, improvement of the reliability of health care practice and outcomes, and participation in collaborative research (AACN, 2020). In addition, my scholarly writing skills have improved because of this project.

As Project Manager

This scholarly project provided me with the ideal background to practice my project management skills. As a project manager, I was in charge of the project from initiation to completion. I had to make sure that the work was done efficiently and satisfactorily. My pertinent responsibilities as a project manager included developing a detailed project plan, defining the scope of the project, and assigning team members to specific tasks. I also had to troubleshoot problems and ensure that all members of the project team were working cohesively and harmoniously.

Summary

The aim of this DNP project was to implement an evidence-based diabetic foot education program for nursing staff in an outpatient primary care clinic. Diabetes is a major health problem and with the increasing incidence of diabetes mellitus affecting minorities of disproportionately, the rate of diabetic foot infections and complications like amputations could also significantly increase. Proper diabetic foot education and foot care practices are an essential part of limb preservation (Bonner et al., 2016). This DNP project demonstrated a significant increase in diabetic footcare knowledge and practices, which could result in optimal patient outcomes after the educational initiative. The results of this project could also be replicated by other primary care clinics within the community and beyond which has the potential to positively impact healthcare more widely.

References

Aalaa, M., Malazy, O. T., Sanjari, M., Peimani, M., & Mohajeri-Tehrani, M. (2012). Nurses' role in diabetic foot prevention and care: A review. *Journal of Diabetes and Metabolic Disorders, 11*(1), *24. https://doi.org/10.1186/2251-6581-11-24*

Adarmouch, L., Elyacoubi, A., Dahmash, L., El Ansari, N., Sebbani, M., & Amine, M. (2017). Short term effectiveness of a culturally tailored educational intervention on foot self-care among type 2 diabetes patients in Morocco. *Journal of Clinical & Translational Endocrinology, 7*, 54–59. *https://doi.org/10.1016/j.jcte.2017.01.002*

Adia, A. C., Nazareno, J., Operario, D., & Ponce, N. A. (2020). Health conditions, outcomes, and service access among Filipino, Vietnamese, Chinese, Japanese, and Korean adults in California, 2011-2017. *American Journal of Public Health, 110*(4), *520–526. https://doi.org/10.2105/AJPH.2019.305523*

American Association of College of Nursing (2020). DNP Essentials. http://www.accnnursing.org/DNP/DNP-Essentials

American Diabetes Association. (2017). Foot complications. https://diabetes.org./diabetes/foot-complications

Asiabar, Z, N. (2022). Implementing a diabetic footcare program in a virtual primary care clinic. Doctor of Nursing Practice Projects, 288. https://repository.usfca.edu/dnp/288

Beuscher, T. L. (2019). Guidelines for diabetic foot care: A template for the care of all feet. *Journal of Wound, Ostomy & Continence Nursing*, *46*(3), 241–245.

https://doi.org/10.1097/WON.0000000000000532

Bhimla, A., Yap, L., Lee, M., Seals, B., Aczon, H., & Ma, G. X. (2017). Addressing the health needs of high-risk Filipino Americans in the greater Philadelphia region *Journal of Community Health, 42*(2), 269–277. https://doi.org/10.1007/s10900-016-0252-0

Bonner, T., Foster, M., & Spears-Lanoix, E. (2016). Type 2 diabetes-related foot care knowledge and foot self-care practice interventions in the United States: Systematic review of the literature. *Diabetic Foot & Ankle*, *7*, 29758. https://doi.org/10.3402/dfa.v7.29758

Brown, A. F., Ma, G. X., Miranda, J., Eng, E., Castille, D., Brockie, T., Jones, P., Airhihenbuwa, C. O., Farhat, T., Zhu, L., & Trinh-Shevrin, C. (2019). Structural Interventions to reduce and eliminate health disparities. *American Journal of Public Health,* 109(S1), S72–S78. https://doi.org/10.2105/AJPH.2018.304844

Burke, S. D., Sherr, D., & Lipman, R. D. (2014). Partnering with diabetes educators to improve patient outcomes. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, *7*, 45–53. https://doi.org/10.2147/DMSO.S40036

Bullen, B., Young, M., McArdle, C., & Ellis, M. (2019). Overcoming barriers to self-management: The person-centered diabetes foot behavioural agreement. *Foot (Edinburgh, Scotland), 38, 65–69.* https://doi.org/10.1016/j.foot.2019.01.004

Centers for Disease Control and Prevention. National Diabetes Statistics Report 2020. Estimates of Diabetes and its Burden in the United States. https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-

report.pdf

Clarke, S. F. (2020). Nurse practitioner-led education program for heart failure patients. (Doctoral study,Walden University). ScholarWorks https://scholarworks.waldenu.edu/dissertations/8269/

Del Core, M, Ahn, J., Lewis, R., Raspovic, K., Lalli, A.J., Wukich, D. (2018). The evaluation and treatment of diabetic foot ulcers and diabetic foot infections. *Foot& Ankle Orthopaedics*, *3*(3),247301141878886 https://doi.org.ezp.waldenulibrary.org/10.1177/2473011418788864

Finucane, M. L., & McMullen, C. K. (2008). Making diabetes self-management education culturally relevant for Filipino Americans in Hawaii. *The Diabetes Educator. 34*(5), 841–853. https://doi.org/10.1177/0145721708323098

Green-Morris G. (2019). An evaluation of the effectiveness of foot care education in rural clinics. *Journal of Diabetes and Metabolic Disorders, 18*(1), 207–215. https://doi.org/10.1007/s40200-019-00407-0

Gordon, Lin,T.Y., Rau,J., & Lo, J.C (2019). Aggregation of Asian-American subgroups masks meaningful differences in health and health risks among Asian ethnicities: an electronic health record based cohort study. BMC Public Health,19(1), 1–14. https://doi.org/10.1186/s12889-019-7683-3

Jeihooni, A. K., Khiyali, Z., Faghih, F., Harsini, P. A., & Rahbar, M. (2019). The effect of educational program based on the extended Theory of Reasoned Action on Self-Care Behaviors in women with type 2 diabetes. *Indian Journal of Endocrinology and Metabolism, 23*(6), 609–615.

https://doi.org/10.4103/ijem.IJEM_439_19

Jordan, D. N., & Jordan, J. L. (2011). Foot self-care practices among Filipino American women with type 2 diabetes mellitus. *DiabetesTZ: 2(1), 1–8.* https://doi.org/10.1007/s13300-010-0016-2

Preventive Foot Care in People with Diabetes. (2003). Diabetes Care, 26 Suppl 1, S78–S79

Karter, A. J., Schillinger, D., Adams, A. S., Moffet, H. H., Liu, J., Adler, N. E., & Kanaya, A. M. (2013). Elevated rates of diabetes in Pacific Islanders and Asian subgroups: The Diabetes Study of Northern California (DISTANCE). *Diabetes care*, *36*(3), 574–579. https://doi.org/10.2337/dc12-0722

Kear T. M. (2013). Transformative learning during nursing education: a model of interconnectivity. *Nurse education today*, *33*(9), 1083–1087. https://doi.org/10.1016/j.nedt.2012.03.016

Landry-Meyer, L., Bae, S. Y., Zibbel, J., Peet, S., & Wooldridge, D. G. (2019). Transformative learning: From theory to practice. *International Journal of Adult Vocat ional Education and Technology*, *10*(4), *1–15.*

Littman, A. J., Knott, C. J., Boyko, E. J., & Hawes, S. E. (2020). Associations between racial and ethnic groups and foot self-inspection in people with Diabetes. *Diabetes Care*, *43*(5), 956–963. https://doi.org/10.2337/dc19-1486

The Cutting Edge: Majority of California Adults Have Prediabetes or Diabetes (Summer, 2016). *UCLA Summer Magazine*. https://www.uclahealth.org/u-magazine/workfiles/UMagSummer2016WEB.pdf

Manam, R. & Baum, S. (2018, March 15). *The role of a preventative cardiologist in managing the diabetic patient*. https://www.acc.org/latest-in-cardiology/articles/2019/08/27/15/41/the-imperative-for-cardiologists-to-engage-in-diabetes-care

Mayfield, J. A., Reiber, G. E., Sanders, L. J., Janisse, D., & Pogach, L. M. (2004). Preventive foot care in diabetes. *Diabetes Care, 27* (Suppl 1), S63–S64. https://doi.org/10.2337/diacare.27.2007.s63

Maryniuk, M. D., Mensing, C., Imershein, S., Gregory, A., & Jackson, R. (2013). Enhancing the role of medical office staff in diabetes care and education. *Diabetes, 31*(3), 116–122.

McInnes, A., Jeffcoate, W., Vileikyte, L., Game, F., Lucas, K., Higson, N., Stuart, L., Church, A., Scanlan, J., & Anders, J. (2011). Foot care education in patients with diabetes at low risk of complications: a consensus statement. *Diabetic Medicine: A Journal of the British Diabetic Association, 28*(2), 162–167. https://doi.org/10.1111/j.1464-5491.2010.03206.x

Oregon Institute of Research (n.d). *Summary of Diabetes Self-Care Activities Measure*. http://www.ori.org/sdsca

Pontejos, A. (2021). Diabetes education for nursing staff in primary health care. *Walden Dissertations and Doctoral Studies*.

Raquinio, P., Maskarinec, G., Dela Cruz, R., Setiawan, V. W., Kristal, B. S., Wilkens, L. R., & Le Marchand, L. (2021). Type 2 diabetes among Filipino American adults in the multiethnic cohort. *Preventing Chronic Disease*, 18, E98.

https://doi.org/10.5888/pcd18.210240

Ren, M., Yang, C., Lin, D. Z., Xiao, H. S., Mai, L. F., Guo, Y. C., & Yan, L. (2014). Effect of intensive nursing education on the prevention of diabetic foot ulceration among patients with high-risk diabetic foot: a follow-up analysis. *Diabetes Technology & Therapeutics*, *16*(9), 576–581. https://doi.org/10.1089/dia.2014.0004

Rodriguez, H. P., Friedberg, M. W., Vargas-Bustamante, A., Chen, X., Martinez, A. E., & Roby, D. H. (2018). The impact of integrating medical assistants and community health workers on diabetes care management in community health centers. *BMC Health Services Research*, *18*(1), 875. https://doi.org/10.1186/s12913-018-3710-9

Ruggiero, L., Moadsiri, A., Butler, P., Oros, S. M., Berbaum, M. L., Whitman, S., & Cintron, D. (2010). Supporting diabetes self-care in underserved populations: a randomized pilot study using medical assistant coaches. *The Diabetes Educator*, *36*(1), 127–131. https://doi.org/10.1177/0145721709355487

Office of Disease Prevention and Health Promotion. (n.d.). Diabetes Healthy People 2030. *U.S. Department of Health and Human Services.* https://health.gov/healthypeople/objectives-and-data/browse-objectives/diabetes/reduce- rate-foot-and-leg-amputations-adults-diabetes-d-08

Shah, M., Kaselitz, E., & Heisler, M. (2013). The role of community health workers in diabetes: update on current literature. *Current diabetes reports*, *13*(2), 163–171. https://doi.org/10.1007/s11892-012-0359-3

Sharpe, J.E. (2020). Eliminating the health disparity of the diabetic foot: A continuing public health crisis for African Americans and Latinos. *International Journal of Diabetes and Clinical Research* 7(120). doi.org/10.23937/2377-3634/1410120

Smith, M. L., Zhong, L., Lee, S., Towne, S. D., Jr, & Ory, M. G. (2021). Effectiveness and economic impact of a diabetes education program among adults with type 2 diabetes in South Texas. *BMC Public Health, 21*(1), 1646. https://doi.org/10.1186/s12889-021-11632-9

Singh, S., Jajoo, S., Shukla, S., & Acharya, S. (2020). Educating patients of diabetes mellitus for diabetic foot care. *Journal of Family Medicine and Primary Care*, 9(1), 367–373. https://doi.org/10.4103/jfmpc.jfmpc_861_19

Stevens, C., Schriger, D.,Raffetto, B.,Davis, A.,Zingmond, D., & Roby, D. (2014). Geographic clustering of diabetic lower-extremity amputation in low-income regions of California. *Health Affairs (Project Hope), 33*(8), 1383–1390.

Tsimane, T. A., & Downing, C. (2020). Transformative learning in nursing education: A concept analysis. *International Journal of Nursing Sciences*, *7*(1), 91–98. https://doi.org/10.1016/j.ijnss.2019.12.006

Toobert, D. J., Hampson, S. E., & Glasgow, R. E. (2000). The summary of diabetes self-care activities measure: results from 7 studies and a revised scale. *Diabetes Care*, *23*(7), 943–950. https://doi.org/10.2337/diacare.23.7.943

U.S Census Bureau (2019). *DATA USA: Carson, California*.: https://datausa.io/profile/geo/carson-ca/#demographics

Walden University. (2020). *2019-2020 Walden University Catalog.*

https://catalog.waldenu.edu/index.php

Walden University (2020). *Walden Social Change.* https://www.waldenu.edu/why-walden/social-change

Warfield, T. M. (2019). Implementation of an Evidence-Based Diabetic Foot Care Protocol and Impact on Health Outcomes. *Walden Dissertations and Doctoral Studies*.

Wood, J. (2020). Overview of diabetic footcare for the nurse practitioner. *The Journal of Nurse Practitioners, 16*(1), 28-33. Https://doi.org/10.1016/j.nurpra.2019.08.011

references here. Examples of some common types of references follow.

Appendix A: Curricular Outline of Content

Learning Objective	**Detailed Content Outlined**	**Source of Evidence**	**Method of Presentation**	**Method of Evaluation**
Participants will be able to identify normal skin from skin changes from infection and neuropathy	Participants are able to identify discoloration, swelling, redness, skin cracks, pain or numbness, discharge	Jordan &Jordan, 2011 American Diabetic Association	**PowerPoint**	Pretest/Posttest Questions # 1 and # 7
Participants will be able to identify and perform basic foot hygiene method and nail care	Participants are able to describe and demonstrate a. daily foot washing, foot drying especially in between the toes; and applying moisturizer/lotion b. appropriate nail care and trimming	Jordan &Jordan, 2011 American Diabetic Association	**PowerPoint**	Pretest/Posttest Questions #1 and #7
Participants will be able to describe interventions regarding wearing the	Participants will be able to avoid wearing ill fitting shoes, will avoid walking barefoot and will inspect footwear	Jordan &Jordan, 2011 American Diabetic	**PowerPoint**	Pretest/Posttest Questions #4and #8

appropriate footwear	before wearing	Association		
Participants will be provided culturally relevant content to discuss behavior change.	The pre/posttest survey will be translated in Tagalog The class will be conducted in both English and Tagalog. Educational materials will be printed out in Tagalog and in English language	Jordan &Jordan, 2011 American Diabetic Association	Power Point	Pre/Post Survey Questions and Educational Materials will be translated in Tagalog for easy understanding

Appendix B: Learning Objectives

1. The purpose of this DNP project is to create and implement an evidence base diabetic foot care educational program to the nursing staff to improve foot care practices which will prevent foot infections. The information taught can help the nursing staff understand how to provide better foot care recommendations for patients with diabetes.

2. Support the development and delivery of an educational foot care curriculum that nurses routinely provide their diabetic patients

3. Describe specific footcare interventions targeted to adult Filipino Americans with T2DM.

4. Identify how interdisciplinary team can assist in diabetic foot care prevention.

Appendix C: Pre-test Questions

1. The following are the signs of diabetic foot infection except:

   a. skin dryness (*pagkatuyo ng balat*)

   b. redness (*pamumula*)

   c. swelling (*pamamaga*)

   d. pus discharge (*nag lalabas ng nana*)

2. It is important to wash your feet daily in _____ water:

   a. warm (*maligamgam*)

   b. cold *(malamig)*

   c. hot *(mainit)*

   d. iced water (*tubig na may yelo)*

3. When cutting your toenails, it is important that the nails be cut:

   a. straight across *(diretso)*

   b. slanting *(pahilig)*

   c. round *(pabilog)*

   d. bite the nails *(kagatin ng ngipin)*

4. It is important to check your shoes before wearing them.

   a. true (*tama)*

   b. false (*mali)*

   c. never (*hindi kailanman)*

5. When drying the feet, it is important to keep the toes dry to avoid skin breakdown.

   a. true (tama)

   b. false (mali)

   c. never (*hindi kailanman)*

6. Inspecting the feet everyday especially at night is an effective way of preventing blisters and wounds.

   a. true (*tama)*

   b. false *(mali)*

c. never (*hindi magpakailanman)*

7. The following are signs of diabetic neuropathy except

a. numbness and tingling (*pamamanhid at pangingilig)*

b. localized pain (*lokal na sakit)*

c. burning sensation (*nasusunog na sensasyon)*

d. none of the above *(wala sa itaas)*

e. all of the above (*lahat sa itaas)*

8. It is important to moisturize your feet with lotion or cream but not in between your toes.

a. true *(tama)*

b. false *(mali)*

c. never (*hindi magpakailanman)*

9. It's okay to walk barefoot at home if I am diabetic.

a. true (*tama)*

b. false (*mali)*

10. Controlling my diabetes will also help prevent diabetic foot infections and complications

a. true*(tama)*

b. false *(mali)*

c. never (*hindi magpakailanman)*

Appendix D: Post-test Questions

1.The following are the signs of diabetic foot infection except:

a. skin dryness (*pagkatuyo ng balat*)

b. redness (*pamumula*)

c. swelling (*pamamaga*)

d. pus discharge (*nag lalabas ng nana*)

2. It is important to wash your feet daily in _____ water:

a. warm (*maligamgam*)

b. cold *(malamig)*

c. hot *(mainit)*

d. iced water (*tubig na may yelo)*

3. When cutting your toenails, it is important that the nails be cut:

a. straight across

b. slanting

c. round

d. bite the nails

4. It is important to check your shoes before wearing them.

a. true (*tama)*

b. false (*mali)*

c. never (*hindi kailanman)*

5. When drying the feet, it is important to keep the toes dry to avoid skin breakdown.

a. true (tama)

b. false (mali)

c. never (*hindi kailanman)*

6. Inspecting the feet everyday especially at night is an effective way of preventing blisters and wounds.

a. true (tama)

b. false (mali)

c. never (hindi magpakailanman)

7. The following are signs of diabetic neuropathy except

a. numbness and tingling (pamamanhid at pangingilig)

b. localized pain (lokal na sakit)

c. burning sensation (nasusunog na sensasyon)

d. none of the above (wala sa itaas)

e. all of the above (lahat sa itaas)

8. It is important to moisturize your feet with lotion or cream but not in between your toes.

a. true (tama)

b. false (mali)

c. never (hindi magpakailanman)

9. It's okay to walk barefoot at home if I am diabetic.

a. true (tama)

b. false (mali)

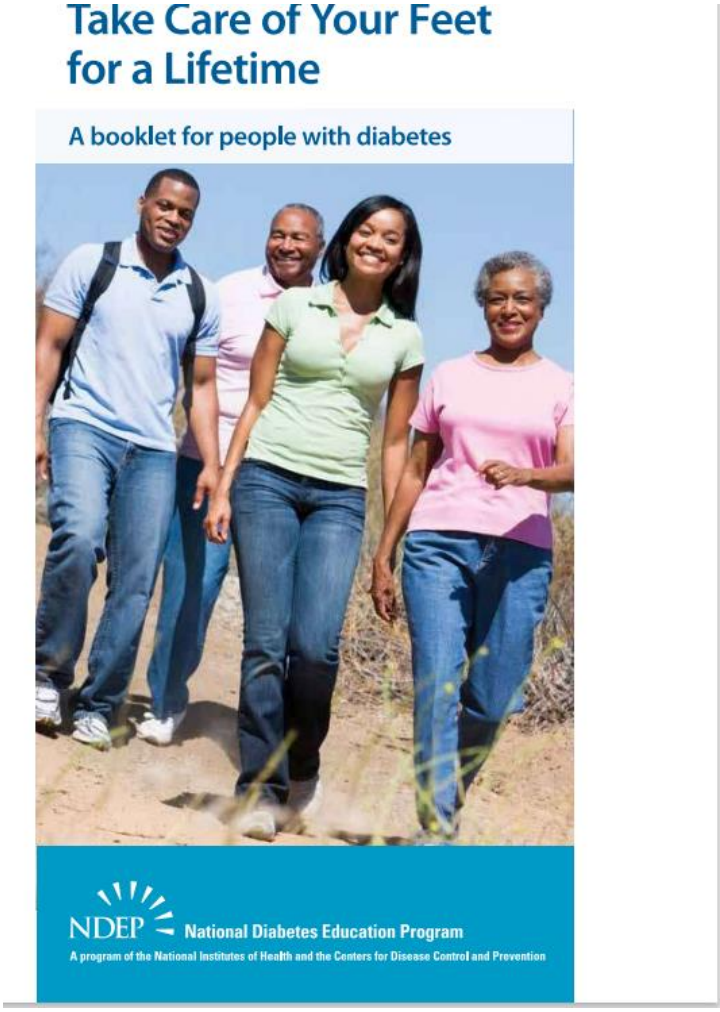
10. Controlling my diabetes will also help prevent diabetic foot infections and complications

a. true(tama)

b. false (mali)

c. never (hindi magpakailanman)

Appendix E: Take Care of Your Feet



Why is foot care important?

Over time, diabetes can cause you to lose feeling in your feet. When you lose feeling in your feet, you may not feel a pebble inside your sock or a blister on your foot, which can lead to cuts and sores. Diabetes also can lower the amount of blood flow in your feet. Numbness and less blood flow in the feet can lead to foot problems.

Foot care is very important for all people with diabetes, but even more so if you have:

- pain or loss of feeling in your feet (numbness, tingling)
- changes in the shape of your feet or toes
- sores, cuts, or ulcers on your feet that do not heal

If you take care of your feet every day, you can lower your chances of losing a toe, foot, or leg. Managing your blood sugar can also help keep your feet healthy.

Work with your health care team to make a diabetes plan that fits your lifestyle and includes foot care. The team may include your doctor, a diabetes educator, a nurse, a foot doctor (podiatrist) and other specialists who can help you manage your diabetes.

1 Check your feet every day.

- Check your feet for cuts, sores, red spots, swelling, and infected toenails. You may have foot problems, but feel no pain in your feet.
- Check your feet each evening when you take off your shoes.
- If you have trouble bending over to see your feet, use a mirror to help. You can also ask a family member or caregiver to help you.

Check your feet every day.

2 Wash your feet every day.

- Wash your feet in warm, not hot, water. Do not soak your feet because your skin will get dry.
- Before bathing or showering, test the water to make sure it is not too hot. You can use a thermometer (90° to 95° F is safe) or your elbow to test the water.
- Use talcum powder or cornstarch to keep the skin between your toes dry to prevent infection.

3 Keep the skin soft and smooth.

- Rub a thin coat of lotion, cream, or petroleum jelly on the tops and bottoms of your feet.
- Do not put lotion or cream between your toes because this might cause an infection.

Put lotion on the tops and bottoms of your feet.

4 Smooth corns and calluses gently.

- Thick patches of skin called corns or calluses can grow on the feet. If you have corns or calluses, check with your foot doctor about the best way to care for them.
- If your doctor tells you to, use a pumice stone to smooth corns and calluses after bathing or showering. A pumice stone is a type of rock used to smooth the skin. Rub gently, only in one direction, to avoid tearing the skin.
- Do not cut corns and calluses.
- Do not use razor blades, corn plasters, or liquid corn and callus removers—they can damage your skin and cause an infection.

Gently rub calluses with a pumice stone.

5 If you can see, reach, and feel your feet, trim your toenails regularly.

- Trim your toenails with nail clippers after you wash and dry your feet.
- Trim your toenails straight across and smooth the corners with an emery board or nail file. This prevents the nails from growing into the skin. Do not cut into the corners of the toenail.
- Have a foot doctor trim your toenails if:
  - you cannot see or feel your feet
  - you cannot reach your feet
  - your toenails are thick or yellowed
  - your nails curve and grow into the skin

Trim your toenails straight across and smooth the corners with a nail file.

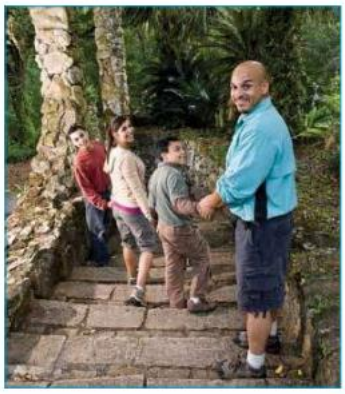
6 Wear shoes and socks at all times.

- Wear shoes and socks at all times. Do not walk barefoot when indoors or outside. It is easy to step on something and hurt your feet. You may not feel any pain and not know that you hurt yourself.
- Make sure you wear socks, stockings, or nylons with your shoes to keep from getting blisters and sores.
- Choose clean, lightly padded socks that fit well. Socks that have no seams are best.
- Check inside your shoes before you put them on. Make sure the lining is smooth and that there are no objects in your shoes.
- Wear shoes that fit well and protect your feet.

Check the inside of your shoes before you put them on.

7 Protect your feet from hot and cold.

- Wear shoes at the beach and on hot pavement. You may burn your feet and may not know it.
- Put sunscreen on the top of your feet to prevent sunburn.
- Keep your feet away from heaters and open fires.
- Do not put hot water bottles or heating pads on your feet.
- Wear socks at night if your feet get cold.
- Wear lined boots in the winter to keep your feet warm.



Protect your feet when walking on hot surfaces.