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Implementation of a Comprehensive Diabetic Foot Care Protocol in a Primary Care Clinic

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Abstract

Diabetes-related complications are significant in the diabetic patient population in the United States. Appropriate measures must be implemented to ensure that diabetic foot disease is prevented. One suggested approach to stopping the progression of complications is to ensure comprehensive diabetic foot exams and foot care education are performed and documented by providers, as recommended by the American Diabetes Association (ADA) annually. Diabetes poses a public health challenge requiring the implementation of evidence-based guidelines in primary care. This quality improvement project aimed to implement a comprehensive diabetic foot care protocol to impact providers' documentation and performance of foot exams in diabetic patients >18 years, compared to previous practices. A retrospective chart review was done on a sample of 40 patients pre and post implementation. The pre and post-interventions with the provider included education and end of the protocol survey. The findings from the two-tailed Wilcoxon signed rank test suggest a positive impact on documentation and performance of comprehensive diabetic foot exams and diabetic foot care education, with a substantial increase, as a result of implementing the comprehensive diabetic foot care protocol. The findings allowed the clinic to set goals for future education, enhance quality measures, and improve evidence-based practices, including documentation.

Keywords: diabetes, patient education, foot exams, American Diabetes Association (ADA), primary care clinic

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Diabetes-related complications are significant in the diabetic patient population in the United States. Appropriate measures must be implemented to ensure that diabetic foot disease is prevented. One suggested approach to stopping the progression of complications is to ensure comprehensive diabetic foot exams and foot care education are performed and documented by providers, as recommended by the American Diabetes Association (ADA) at least annually. Diabetes poses a public health challenge requiring the implementation of evidence-based guidelines and quality improvement measures in primary care.

This quality improvement project aims to determine: In a Primary Care Clinic in North Mississippi, are diabetic patients ages 18 and older receiving comprehensive diabetic foot exams and diabetic foot care education as recommended by the American Diabetes Association (ADA)? The study will be a retrospective chart review of approximately 40 charts of patients who visited the clinic between January 1, 2023, to August 25, 2023. Data collection will include the patient's gender, race, and age. The inclusion criteria will consist of adults, male and female, level of education, ages 18 years and older with a diagnosis of diabetes as supported by the ICD 10 code of E11.9, and whether or not the patients were provided comprehensive diabetic foot exams and diabetic foot care education. Exclusion criteria are all patients under 18, no diabetes diagnosis, and non-established patients. This study will be helpful to the clinic in determining to what extent providers are following the recommendations by the ADA, and the impact of documentation, to identify risk factors predictive of ulcers and amputations. The results of this project will allow the clinic to set goals for future education and evidence-based practices.

The project's ultimate goal is to ensure providers are following along with the performance of comprehensive diabetic foot exams and equipping patients with education and

educational materials, as the evidence-based guidelines suggest. The study by Green-Morris (2019) reported that there is an approximate percentage of 1.3% of Mississippians who have diabetes, whereas that is inclusive of adults, with the highest prevalence being attributed to those that are of minority races and ethnic backgrounds. In addition, the aim is for the interventions to be proactive to reduce issues in the population of diabetic patients in the location of concern. It is important to mention that the visual and vascular checks are essential components of the diabetic foot exam; however, strong recommendations from the ADA also focus on the completion of neurological and sensory exams, appropriate evaluation, and prescription of diabetic footwear, as well as prompt referral to podiatrists and diabetic programs for self-care management (Cookskey, 2020).

Background of the Problem

Diabetic foot care education and annual exams have proven to be an effective means of ensuring diabetic patients' self-care management, the risk for complications, and self-efficacy will be improved (Goodall, 2020). Implementing diabetic foot exams and, equally important, diabetic foot care education versus neither as it relates to the self-efficacy and confidence in the patients is the proposed intervention that is suitable for change and improvement as supported by a plethora of research designs and methodologies (Yıldırım et al., 2022). Additionally, policy aims, history, and future recommendations specifically address changes needed in correlation with quality improvement projects that objectively implement interventions relative to patient satisfaction, clinician benefits, and community empowerment. Practicing healthcare providers are tasked with increased responsibility to ensure diabetic patients' risk for loss of employment, emotional and social trauma, increased healthcare costs, disability and mortality are decreased as they are issues that affect the quality of life for patients (Tekir et al., 2023).

Review and Summary of Relevant Literature

Diabetes is a common, preventable disease that is chronic with a manifestation of elevated blood glucose that, over time, can progress to disabling complications, including organ damage, amputations, foot ulcers, nerve damage, and even death (World Health Organization {WHO}, 2020). Therefore, efforts to prevent the disease and prevent complications are important. In primary care, one focus of complication prevention involves providing diabetic foot care complications. The interventions often include diabetic foot care education and ensuring diabetic foot exams are done comprehensively and annually as evidence-based guidelines recommend. Target interventions such as those mentioned are essential for positive patient outcomes. In addition, patients will significantly benefit from the implementation and adherence by providers, as studies have shown that doing so promotes self-efficacy and confidence in patients and are good primary practice for providers. Specifically, microvascular complications and foot care go hand in hand.

The American Diabetes Association (ADA) addresses recommendations and guidelines that state the importance of foot care. Complications from lacking, ineffective, or omitted foot care in diabetic patients can cause lower extremity amputations (ADA, 2018). According to the ADA (2018), providers should perform comprehensive foot examinations and foot care education at least annually to detect risk factors and concerns early on. In addition, the World Health Organization (WHO) has declared that complications regarding the diabetic foot, such as diabetic foot ulcers (DFU), should be prevented; however, if a patient has them, they should be managed by providers so the patients do not become disabled with the possibility of amputation, thus education plays a vital role in reducing the incidences (Adiewere et al., 2018). The aim is

for the implementation of the interventions to be proactive measures to reduce issues in the population of diabetic patients in the location of concern.

As the project seeks to evaluate the impact of the implementation of a comprehensive diabetic foot care protocol it is duly noted and professionally expected that risk factors will be discovered and complications prevented. Experts contend that providers' modifications in primary care practices and the promotion of education are essential for documentation. In addition, enhancing these practices in primary care prompts providers to continue providing quality care and practices that will benefit patients now and in future practices.

Diabetes is such a prevalent disease that it continues to grow out of proportion. As the disease and the issues thereof increase, so do the incidences of complications. Therefore, it is imperative that prevention and all aspects of care be implemented as a way to provide measures to combat the problems associated with it. Prevention efforts and early detection, such as the exams and education, can prevent the progression of problems (ADA, 2018). It is crucial that healthcare providers, specifically primary care providers, perform diabetic foot exams under the most currently recommended guidelines.

A thorough review of literature specific to this project question was conducted. Research articles on diabetic foot care, diabetic foot care exams, and diabetic foot care education were obtained. A brief summary of the articles is provided as the information within the article is significant in the evaluation of the performance of diabetic foot care exams, comprehensively, as recommended. The findings from the project and the review will be incredibly beneficial to providers' practices in the primary care setting.

Prevention strategies and opportunities to focus on decreasing the statistics of the disease are available from many resources. Opportunities exist throughout healthcare to analyze and

study the associations between diabetes and the identifications of modalities that focus primarily on education and outcomes. Clarification is necessary for many summarized reviews and articles because not all of the information clearly defines its purpose and results. Ultimately, evidence is relied upon to move healthcare in the right direction. There is an emphasis placed on decreasing complications and moving forward with further studies that still support the need for providers to adhere to evidence-based guidelines. It is duly noted that deviation from such recommendations can be detrimental to the patient and the provider. Data is continually being extracted from reviews, patient testimonies, and providers' feedback.

During one of the reviews, it was reported that combining different treatment and educational approaches did not prove beneficial to preventing or reducing complications in foot issues in diabetic patients. In addition, there was no advantage of combining different educational approaches in preventing/reducing DFU (Adiewere et al., 2018). The articles by Armstrong suggest that communication and other efforts, individually and collaboratively, offer baselines for providers and patients to establish relationships that ensure patient-centered care that is clear, precise, and involves ways to promote patient safety, efficacy, and confidence (Armstrong et al., 2020). Likewise, the burdensome factor of diabetic foot complications plagues people who are already in poor health and are directly associated with premature death and premature loss of a limb as they are not just issues of poor health, but they also become issues of financial burdens, despite advances and efforts (Armstrong et al., 2020).

The study by Green-Morris (2019) reported that there is an approximate percentage of 1.3% of Mississippians who have diabetes, whereas that is inclusive of adults, with the highest prevalence being attributed to those that are of minority races and ethnic backgrounds. However, even with the inclusion of adults categorized as minorities regarding socioeconomic status, there

is no recorded data stating that there was effectiveness in foot care education that was provided; future studies are underway. This study concluded that more in depth and detailed research is needed to solidify the thought that early exams and education would actually improve patients' health status and prevent foot complications in diabetic patients (Green-Morris, 2019). Active research involves many parties and additional scholarly articles with accurate data collection. The basis of it all is to be proactive with patient care. In comparison to other studies, it is noted that some attention has been brought to the quality measure changes regarding diabetic foot care.

Lastly, providers are encouraged to take accountability and responsibility for their part in ensuring the patients have what they need to continue their care based on knowledge and skill. Likewise, implementing a diabetic foot care protocol inclusive of a comprehensive screening and reliable education enables patients to meet their recommended goals of partnering with their provider to take responsibility for their health and taking a proactive approach to maintain what their providers have initiated and implemented. The evidence-based recommendations and guidelines that reputable entities, such as the ADA, have set forth to promote consistency enabled them to reach recommended treatment goals while taking accountability and responsibility for their health. Patients that do not have the recommended foot exam and education are more likely to succumb to the complications of diabetic foot disease.

Statement of the Problem

Diabetes is such a prevalent disease that it continues to grow out of proportion. As the disease and the issues thereof increase, so do the incidences of complications. Therefore, it is imperative that prevention and all aspects of care including a comprehensive diabetic foot care protocol be implemented as a way to provide measures to combat the problems associated with it. Prevention efforts and early detection, such as that of diabetic foot exams and diabetic foot

care education, can prevent the progression of problems (ADA, 2018). It is crucial that healthcare providers perform diabetic foot exams and provide foot care education under the most currently recommended guidelines. Diabetes is a costly chronic condition that, due to its seriousness, is well understood and described by many clinicians, patients, and other stakeholders as a financial burden, leading to increased expenditures (Seigel et al., 2020).

Providing appropriate and evidence-based care to diabetic patients is a way of helping with the costs often incurred by patients not correctly managed. The goal is for providers to be knowledgeable and committed to adherence to the recommended guidelines for early detection and management of diabetes and its related complications. Developing workable policies and strategies, along with optimal accommodations and strategies, assist in decreasing both present and future cost-associated burdens (Seigel et al., 2020). It is noted in the literature that diabetes is a threat to the economy and the healthcare system. Not all patients can overcome the dark shadows of not knowing how to adequately care for themselves due to various constraints. Therefore, providers are tasked with following the evidence-based guidelines by completing a comprehensive diabetic foot exam, providing diabetic foot care education, and documenting the adherence to the interventions. Patients wellbeing should not be feared or impacted by the inability to have a solution to the problem, such as the implementation of a comprehensive diabetic foot care protocol.

Purpose of the Project

The project's ultimate goal is to ensure providers are following along with the performance of comprehensive diabetic foot exams and equipping patients with education and educational materials, as the evidence-based guidelines suggest. It is purposed that proactive measures, in lieu of reactiveness, will reduce issues in the population of diabetic patients in the primary care

clinics in north Mississippi. Therefore, this project is significant in the healthcare system, the stakeholders, and the population of diabetic patients. The importance of providers having a specific diabetic foot care protocol is valuable to the increase of quality of life for patients. Ensuring the performance and documentation by utilizing a foot screening template and foot care education not only meets the standards of evidence but ensures providers are guided by focusing on impacting patients lives and change within the clinic.

Documentation that is accurate and consistent with diabetic foot care screenings and education compliment the recommendations ensuring providers are adhering to a protocol that is designed to prevent complications and identify risk factors that may result in hospitalizations and amputations. Thus, the purpose of this project is clearly identified as a way to determine if implementing a diabetic foot care protocol in a primary care clinic in North Mississippi would impact the performance and documentation regarding patients aged 18 and older when compared with the practices previously and currently being done. The intent is to study the variables of diabetic foot care template, diabetic foot care education, and documentation. The key terms that directly correlate with the diabetic patient population this quality improvement project identifies are diabetes, patient education, foot exams, American Diabetes Association (ADA), and primary care clinic.

Change, Change Framework, Scope, and Limitations

Scope

The project aims to answer the question: In a Primary Care Clinic in North Mississippi, are diabetic patients ages 18 and older receiving comprehensive diabetic foot exams and diabetic foot care education as recommended by the American Diabetes Association (ADA)? The study will be a retrospective chart review of approximately 40 charts of patients who visited

the clinic between January 1, 2023, to August 25, 2023. Data collection will include the patient's gender, race, and age. The inclusion criteria will consist of adults, male and female, level of education, ages 18 years and older with a diagnosis of diabetes as supported by the ICD 10 code of E11.9, and whether or not the patients were provided comprehensive diabetic foot exams and diabetic foot care education. Exclusion criteria are all patients under 18, no diabetes diagnosis, and non-established patients.

Limitations

In an appropriate quality improvement project there are limitations that may arise that will be presented as barriers to its effectiveness and practicality. Examples of limitations for this project included time constraints and patient apprehension to the foot exam due to poor hygiene. Time constraints can affect the time needed to perform the exam, provide education, and document the information. Other limitations in the systems analysis is that all charts are not always documented in and closed by the end of the visit. Though every project is faced with limitations, it is important to understand that if all processes of the project are not cohesive, the outcomes are at risk of being affected.

Delimitations

Though this project presents with valid focus on diabetes as a disease, the disease itself will not be the broad focus. The scope of the project was narrowed down focusing on the implementation of a diabetic foot care protocol in a primary care clinic in North Mississippi. The project will focus on patients ages 18 and older and will exclude those younger than 18 years old. Boundaries have been set to impact male and female patients as well as diabetic patients of all races. The Principal Investigator made the decision to not use human subjects in this project but instead a chart review will be conducted.

Change and Change Framework

The current recommendations aim to decrease diabetic patient complications and offset some of the challenges faced by the patient with the chronic disease. The American Diabetes Association (ADA, 2018) suggests that providers should perform comprehensive foot evaluations at least once a year as a reliable way of identifying risk factors that could indicate the likelihood of patients developing foot ulcers and more severe amputations and death. Recommendations are also suggestive of patients being provided general foot care education to all diabetic patients. Implementing this requires the stakeholders and all others involved to take control of the issues, actual and potential, and ensure that, throughout the journey, providers are identified as competent, confident, compliant, and proactive rather than reactive with the ADA recommendations. To ensure the sustainability of the policy or practice change, the implementation of interventions and the effectiveness analysis must be evaluated. The issue is easily identified, yet change may only occur if it can be proven as justifiable and well-aligned with the construction and implications of the project. The needs of the patients and recommended changes are well justified.

Kurt Lewin's change theory guided the implementation of this DNP quality improvement project. The theory involves three concepts: unfreezing, moving, and refreezing. The first step of unfreezing focuses on eliminating old behaviors and adopting new behaviors that will influence change (Petiprin, 2015). The moving step includes moving the changes forward, as implementing the diabetic foot care protocol is a part of changing the thoughts and behaviors of patients and providers. Lastly, refreezing begins when the change has become accepted and new behaviors implemented as an integral part of a continuous routine. According to Butts & Rich

(2015), the transition will only be successful if it is recognized as necessary for optimal improvements. By utilizing Lewin's theory for this project, all steps were involved. Regarding unfreezing, the staff and providers accepted the need to change their current practices. Once realized, the PI educated the clinic providers and staff on the diabetic foot care protocol, including a diabetic foot exam template and a patient education handout. Education involved:

- Training the providers on performing the screenings as recommended by the ADA
- Providing diabetic foot care education
- Documenting the performance of each

Lastly, after the training and implementation of the diabetic foot care protocol and the acceptance of the changes, refreezing occurred.

Theoretical Framework

While implementing and applying translation of the evidence, it is essential to remember that there are crucial elements to this translation as the elements ensure the performances are carried out to the fullest potential. Implementation is tailored to teach us how to focus on action steps, intervene, guide the research findings, and ensure the relevant findings will be sustained as change is demonstrated. The analysis of the most appropriate approach and theoretical translation framework's application impacts future studies and research efforts that guide the inclusion and exclusion criteria specifically for patients and providers regarding diabetic foot exams and care practices (Pourkazemi et al., 2020). Subsequently, patients and providers are encouraged to take responsibility for adherence to the evidence-based guidelines and recommendations. Effective translation of evidence into practice helps to ensure the engagement of policies and procedures as enablers for the robust implementation of the proposed evidence,

thus producing descriptive statistics notating improvement in self-care management and provider-led education and examination (Pourkazemi et al., 2020).

Utilizing evidence-based practices and clinical guidelines is beneficial to improving the quality of care for patients with an aim for the improvement and positive practice environment exposure. Regardless to and in support of healthcare organizations, healthcare professionals are duly responsible for meeting the requirements of improving patient and practice outcomes (Sanluang, 2014). Many models can significantly impact quality improvement projects, such as the area of focus for my project regarding diabetic foot care education. Moving forward, this quality improvement project will be best implemented by using the John Hopkins Nursing Evidence-Based Practice Model (JHNEBP), (see Figure 1). The JHNEBP has significant influence as it provides a framework for healthcare professionals and organizations to be influential in making appropriate decisions and focuses on important details and evidence in projects and patient care (Sanluang, 2014). In addition, this model is implemented by providing a more problem-based approach toward clinical decision-making as it focuses on using tools as a guide to accomplish this (Brunt & Morris, 2023).

Fine-tuning and analyzing organizational factors are those key elements that increase the understanding of the evidence-based practice and can help healthcare institutions and affiliates manage gaps in education, research, and studies within their practice (Sanluang, 2014). This JHNEBP model includes three key phases: practice question, evidence, and translation with seven subcomponents. The JHNEBP model has been determined to be appropriate and clinically significant by disseminating knowledgeable guidelines and exceptional outcomes. The initial component is inquiry: Considering steps such as defining a problem, identifying the project team and stakeholders, and creating a timeline. The second and third components include: the PICO

question development & evidence-based literature search. The components four and five are relevant to appraising the literature review and evidence translation. The final components six and seven impacts the evaluation of outcomes and determining the significance of results.

According to Song & Chambers (2022), consistent and appropriate content development, including practice recommendations, team interventions, team monitoring, and practical assessment tools, work collaboratively to produce the desired outcomes; thus, the early identification of potential issues decreases the probability of adverse results. Diabetic foot exams and diabetic foot care education must co-exist with documentation to reflect the ability to positively impact any gaps in practice. While implementing and applying translation of the evidence, it is essential to remember all of the crucial elements to this theoretical framework as the elements ensure the performances are carried out to the fullest potential. Using the JHNEBP model impact practice changes that optimally impact the functioning of the providers and staff as a method of promoting interventions that will assist in the prevention of foot complications in the diabetic patient population of the primary care practice.

Summary

The implementation of a comprehensive diabetic foot care protocol provides evidence-based information applicable to the population of diabetic patients served in the primary care clinic in north Mississippi. Implementing a valid and reliable template and education handout, along with effective documentation counteracts previous practices as a vital component that will result in achieving the goal of changing foot care behaviors. Plans can be made to correlate with the suggestions that diabetic patients rely on more education on foot care, screenings using a tool that is effective, and documenting findings as a preventive measure thus creating standardization of foot exams and education on self-management. All aspects of the project highlights the

significance of education to the primary care provider, implications to the healthcare system as a whole and support necessary to improve patient care outcomes. The projects focus has been narrowed to meet the objective and anticipated findings.

SECTION II: METHODS

Introduction

The purpose of this DNP project is to provide a comprehensive diabetic foot protocol to ensure appropriate screening and education of adult patients with diabetes in primary care. Diabetes is a common, preventable disease that is chronic with a manifestation of elevated blood glucose that, over time, can progress to disabling complications, including organ damage, amputations, foot ulcers, nerve damage, and even death (World Health Organization {WHO}, 2023). Therefore, efforts to prevent the disease and prevent complications are important. In primary care, one focus of complication prevention involves providing diabetic foot care screenings and education (Yıldırım, Dincer, & Oğuz, 2022). The interventions often include diabetic foot care education and ensuring diabetic foot exams are done comprehensively and annually as evidence-based guidelines recommend. Target interventions such as those mentioned above are essential for positive patient outcomes. In addition, patients will significantly benefit from the implementation and adherence by providers, as doing so promotes self-efficacy and confidence in patients and are good primary practice for providers. Specifically, microvascular complications and foot care go hand in hand. Diabetic foot care education and annual exams have proven to be an effective means of ensuring diabetic patients' self-care management, the risk for complications, and self-efficacy will be improved (Goodall, 2020).

The project's ultimate goal is to ensure providers are following along with the performance of comprehensive diabetic foot exams and equipping patients with education and

educational materials, as the evidence-based guidelines suggest. The study by Green-Morris (2019) reported that there is an approximate percentage of 1.3% of Mississippians who have diabetes, whereas that is inclusive of adults, with the highest prevalence being attributed to those that are of minority races and ethnic backgrounds. In addition, the aim is for the interventions to be proactive in the early identification of complications so as not to overlook the severity of this healthcare concern (Johnson, Jones, & Williams, 2018). It is important to make mention that the visual and vascular checks are essential components of the diabetic foot exam; however, strong recommendations from the ADA also focus on the completion of neurological and sensory exams, appropriate evaluation, and prescription of diabetic footwear, as well as prompt referral to podiatrists, diabetic programs for self-care management (Cookskey, 2020).

The needs assessment at the primary care clinic resulted in the identification of the need for a diabetic foot care protocol to ensure documentation of diabetic foot care exams and diabetic foot care education. Currently the clinic did not have a hardcopy template or template within the EHR that was utilized to document diabetic foot screenings and education. The goal is to impact future practices when compared to previous practices. Due to the prevalence of diabetes and the complications thereof, early identification and proper documentation can assist greatly in preventing complications.

Project Design

The project design is a quasi-experimental quality improvement project that aims to determine: In a Primary Care Clinic in North Mississippi, does implementing a comprehensive diabetic foot care protocol impact documentation and performance in diabetic patients ages 18 and older, as recommended by the American Diabetes Association (ADA), compared to previous practices? It is desired that the outcomes will be favorable for the providers and patients. The

project will be a retrospective chart review of approximately 40 patients who visited the clinic between January 1, 2023, to August 1, 2023. Data collection will include the patient's gender, race, and age. The inclusion criteria will consist of adults, male and female, ages 18 years and older, with a diagnosis of diabetes as supported by the ICD 10 code of E11.9 and E10.9, race, and whether the patients are provided with comprehensive diabetic foot exams and have documented diabetic foot care education. Exclusion criteria are all patients under 18, no diabetes diagnosis, and non-established patients.

For the intervention, a comprehensive diabetic foot exam template and a patient foot care education handout will be implemented by the provider (see Appendix A & B). Before the intervention, provider education will be conveyed in written and verbal formats. A provider satisfaction survey will be completed by the provider following the implementation of the project (see Appendix C). The new protocol will be helpful to the clinic by early identification of risk factors predictive of ulcers and amputations. The findings will allow the clinic to set goals for future education, enhance quality measures, and improve evidence-based practices, including documentation. Using the John Hopkins Nursing Evidence-Based Practice Model (JHNEBP) has significant influence as it provides a framework for healthcare professionals and organizations to be influential in making appropriate decisions and focuses on substantial details and evidence in projects and patient care (Sanluang, 2014). In addition, this model is implemented by providing a more problem-based approach toward clinical decision-making as it focuses on using seven steps as a guide to accomplish this (Brunt & Morris, 2023).

As a framework, the JHNEBP model is a competent conceptual framework that is influential in healthcare as it supports interventions aimed at improving patient outcomes. Figure 1 provides a visual of the cycle specifically designed to guide impactful care processes regarding

quality improvement. The steps are foundational and useful throughout all phases of the DNP project. Initially inquiry is made when considering steps such as defining a problem, identifying the project team and stakeholders, and creating a timeline. The second and third components of the process involve the development of the PICO question and searching for evidence-based literature. Components four and five focuses on appraising the literature reviewed and the translation of evidence making it an integral part of practice. Lastly, the sixth and seventh components involve evaluating the outcomes and determining if the results are significant and able to be recommended for a reasonable and practical change through the dissemination of the findings.

Sample & Setting

The targeted population and stakeholders participating in the intervention include the providers at the location. The impact of improving diabetic foot care and generating financial gain outlines the benefits for the population as the clinical practices will be influenced by implementing a comprehensive diabetic foot care program. Within the microsystem, the patient and provider must be responsible for acting, through screenings and education, to deal with the chronic condition of diabetes. On the meso level, families and communities must become involved in community wellness events & diabetes self-management educational opportunities, to help facilitate changes considering all aspects of personal and professional networks. Lastly, the macro level implicates the responsibility of governing bodies and additional entities in creating, modifying, and adhering to policies for diabetes in healthcare practices. The sample size will include 40 patient charts, selected by the provider, based on the inclusion and exclusion critera, for the retrospective chart review. Employing the micro-meso-macro systems is worthy

of study and analysis as it supports frameworks and implications for change involving integrating such change strategies (Smith et al., 2019).

The setting where the project will take place is a privately-owned primary care clinic in North Mississippi. The staff of the primary care clinic includes the providers, the front office staff, medical assistant, and collaborating chiropractor. The clinic provides primary care services to patients aged 18 and older. The clinic's location is adequate as it is in a county that offers support and resources. The clinic services patients of all races. The site is near pharmacies, specialists, hospitals, and other resources. It is also nestled between a chiropractic office and an optometry office. This clinic is appropriate for this project because it provides services to patients with diabetes, and currently they do not have a comprehensive diabetic foot care program. Written permission to use this site was obtained from the owner of the practice (see Appendix D).

Instrumentation

In some instances, there are barriers to the performance of diabetic foot exams and diabetic foot care education such as time constraints, inadequate staffing, patients' inattention, and lack of desire to be educated. However, it is important when identifying problems and preparing to make changes; guidelines must be appropriately followed. Utilizing clinical practices stemming from evidence-based guidelines is specifically helpful in improving patient care, skill, and confidence. Due to the gaps mentioned between evidence obtained and actual practice, healthcare professionals are held in the highest regard for meeting the requirements of creating opportunities to improve practice and patient outcomes; thus, filling in the gaps with diligent implementation utilizing tasks and education (Sanluang, 2014). Baseline data from the

Centers for Medicare & Medicaid Services (CMS) suggest that there are gaps identified primarily from primary care clinics that require improvement interventions (Cooksey, 2020).

Several implementation frameworks can significantly impact quality improvement projects. Therefore, careful consideration, critique, and research must be undergone to identify which will work best for the area of focus and aim of the project. The JHNEBP is similar to some of the other frameworks, as there can be difficulties with utilization and implementation. Additionally, it has been identified, by researchers and in other projects, as a generally user-friendly tool. The conclusive outcome of using this framework is to support the aim of providing evidence-based practices, guidelines, and protocols that will be useful for early disease detection and prevention.

Once IRB approval is obtained, the stakeholders will be engaged through written diabetic foot care information and education along with verbal collaboration aimed at finding solutions. However, prior to engaging in the implementation phase, an action plan was developed and completed, including what tools and tasks will be done pre and post-implementation. A template will be utilized for documenting comprehensive diabetic foot exams. The valid and reliable template will assess all patients' feet elements, such as skin, temperature, nails, sensation, pulses, deformities, medical history, footwear, and any changes. The documentation of the components of this form will ensure patients are evaluated thoroughly, as the early identification of issues will affect the outcomes. Likewise, the lack of documentation issues can further complicate the diabetic foot. The hard copy document will prompt the provider to perform the assessment and ensure it is documented in the EHR system as done; then, the hard copy will be scanned into the patient's chart by the front office staff or the nurse. Additionally, the template, at the providers

discretion, can be incorporated into the EHR and formatted where the providers will be flagged as a reminder to complete the foot assessment and document accordingly.

An educational handout for patients will also be provided to the providers for utilization. The handout will provide the patients with easy-to-read tips for foot care self-management, including checking feet daily, the proper way to trim toenails, washing feet daily, and the importance of reporting changes to the health care provider (Song & Chambers, 2022), (see Appendix B). Education on both tools utilized in the diabetic foot care protocol will be provided to the providers. Instructions will be given on the best use of the recommended template, the comprehensive foot exam, the guidelines for the frequency of the exam, and the recommendations for patient education.

Once training is complete, the diabetic comprehensive foot protocol will be implemented in the clinic. After the program has been implemented into practice, a retrospective chart review will be conducted to determine if the providers were actively utilizing the template. It will also determine if the providers were performing the foot exams, documenting appropriately, and whether the educational handouts were being provided to the patients as recommended. A provider satisfaction survey will be completed post-intervention (see Appendix C). The survey is useful in obtaining feedback from the user. The opinion and perception of the template, along with recommendations for future use, will be taken into consideration regarding sustainability as well as the desire to recommend the protocol to other primary care providers who may have identified the same need. The survey questions are clear, concise, and easily understood; thus, questions are not designed to influence the providers responses. The instrument is valid and reliable and has been approved by the IRB.

Data Collection

Consent does not apply to the quality improvement project as it relates to human subjects because no human subjects are directly involved. However, site permission was needed and acquired to implement the project and collect data (See Appendix D). Data collection will include the patient's gender, race, and age. The inclusion criteria will consist of adults, male and female, ages 18 years and older, with a diagnosis of diabetes as supported by the ICD 10 code of E11.9 and E10.9, race, and whether the patients are provided with comprehensive diabetic foot exams and have documented diabetic foot care education.

The data collection tool will be used to document this information (see Table 1). Exclusion criteria are all patients under 18, no diabetes diagnosis, and non-established patients. The data will be transferred, by the DNP student, from the Word document to an Excel spreadsheet, where it will then be prepared for analysis. Also, columns will be included that will yield yes or no responses determining if diabetic foot exams and diabetic foot care education was provided and documented correctly in the patient's chart. The findings will evaluate if the implementation of the foot care program improved the primary care provider practices. The results will be needed for this project and will also be discussed with the providers. As aforementioned, written permission to conduct this quality improvement project was obtained from the owner of the primary care clinic. IRB approval was obtained (see Appendix E).

The independent variables include diabetic foot exams, diabetic foot care education, and documentation (nominal). The dependent variables include provider and participant response, provider adherence to recommended protocol, and clinical outcomes (ordinal). Overall, when considering the results and data expected to be measured, the retrospective chart review will evaluate if providers are documenting and following along with the performance of

comprehensive diabetic foot exams and equipping patients with education and educational materials, as the evidence-based guidelines suggest, thus identifying if there is improvement in compliance with the implementation of the comprehensive program. Appropriate data and clearly defined outcomes are needed to solidify the purposes of quality clinical improvements based on evidence-supported guidelines (Melnyk & Fineout-Overholt, 2019).

A query of the clinic's HER was done by the provider to identify patients with a diagnosis of diabetes who had visits during the months included in the project. The charts were reviewed confidentially. Data relevant to the project was identified and documented for analysis. Plans for benchmarking the data include, but are not limited to:

- Obtaining baseline information on current practices
- The comparison of current practices to evidence-based guidelines
- Assessment of provider response and motivation to potential changes
- Increase the number of foot exams in patients with diabetes in Primary Care as evidenced by appropriate documentation in the electronic medical record.

One important aim of this quality improvement project is for the future use of data outcomes by taking proactive measures that will reduce issues in the population of diabetic patients in primary care. Thus, ensuring diabetic foot exams and diabetic foot care education is being implemented at least annually as recommended by the American Diabetes Association (ADA).

Data Analysis Methods

Moving forward with all components of the quality improvement project, the data analysis task must be considered. There is a lot of literature and resources, but this area requires considerable research to determine the most appropriate statistical test. Having a basic knowledge of statistical tests and how to apply and interpret them is imperative to delivering

evidence-based care and presents a high level of competency; therefore, utilizing a t-test initially appeared appropriate for this quality improvement project (Carpenter et al., 2021). Thus, it was assumed the paired t-test would allow the opportunity to determine if implementing a comprehensive diabetic foot care protocol will improve consistency in assessing the feet of diabetic patients as recommended. However, it was determined, through statistical survey that the two-tailed Wilcoxon would be most appropriate. The two-tailed Wilcoxon signed rank test is a non-parametric alternative to the paired samples *t*-test and does not share its distributional assumptions (Conover & Iman, 1981).

Accurate data analysis may identify patients requiring referrals to podiatry as a preventative measure and an additional component of promoting self-care (Zugner et al., 2022). Appropriately analyzing the data will reveal whether all components of the comprehensive diabetic foot exam are being performed and whether documentation is consistent compared to previous practices. The goal is to improve practices to achieve positive patient outcomes. It is anticipated that data will be congruent with the healthcare providers' interventions to ensure diabetic patients' risk for loss of employment, emotional & social trauma, increased healthcare costs, disability & mortality are decreased as they are issues that affect the quality of life for patients (Tekir et al., 2023).

Data Management Methods

All charts will be respectfully reviewed in a confidential clinic area to ensure confidentiality and protection from HIPAA violations. Likewise, patients personal, identifiable information, will be de-identified. Careful attention will be given to data security. Data will be password protected on the PI’s personal computer and the clinics computers. The USB jump drive will be double-locked for added security. The data will be maintained only for the duration

of the project. Once the project is completed, all information collected from the clinic and charts will be adequately deleted and destroyed by shredding the paper documentation and completely deleting the USB jump drive. All data will be appropriately secured and protected by only utilizing charts and all associated patient-identifying information while in the clinic.

Ethical Considerations

Ethical considerations are essential in all aspects. This quality improvement project will not involve human participants; therefore, consent is not applicable. However, ethical considerations remain important as it is necessary to ensure the study presents participants with little to no risk. Thus, the probability and concern of harm or risks anticipated during this project will not go beyond what one may encounter on a daily basis or during a routine physical exam or psychological tests. The clinical site owner voluntarily committed to participation in this project. Verbal and written communication will remain confidential. The DNP student will ensure adherence to ethical principles throughout the project phases.

Time, Budget, Resources, and Sustainability

Creating a timeline specific to my DNP project is important in ensuring the details are workable despite influences that can alter dates and times. Having access to and utilizing a timeline throughout the development and interventions of the project is especially important for timely and adequate succession without the fear of procrastination and failure (see Appendix D). Creating a timeline with tentative dates and identifying needed resources is helpful to ensure that all factors and potential barriers are considered. The expectations from students, faculty, preceptors, and mentors are often comprehensive with short- and long-term goals and must clearly define due dates (Hande & Phillippi, 2018).

The DNP project budget reflects what costs are incurred, including those estimated costs (see Appendix F). The financial budget and expenditures should be clear and concise, with minimal ability to move finances around. Having a project budget worksheet is an excellent tool to use as a working document that may need updating as the project progresses from one phase to the next. Preparing a preliminary budget, including direct and indirect costs, is vital. Some of the direct and indirect costs may be amended. The budget should include details that may be of little significance early on. The implementation of this project will be of no cost to the clinic. Therefore, the indirect costs may include the clinic utilities, use of electrical sources, computer equipment, and copy machine. This DNP student will provide pens, paper, a jump drive, and other office supplies for my project. The budget for this project included: time and travel at a cost of $100 and materials/handouts at a cost of $100. Additionally, the DNP student budgeted cost for snacks at approximately $50, the USB jump drive was $10, and the cost of a statistician approximated $500 which brought the budget to $760. Understanding the budget of the DNP project is beneficial in ensuring clear financial obligations and no surprises that could hinder its development (Wright et al., 2022). Optimizing a workable budget with the intent to be proactive instead of reactive will benefit the project and all those involved in the activities.

Regarding sustainability, when the project is complete, it is expected that the results will benefit not only the primary care clinic, provider, and patients but that they will be beneficial to the public and healthcare professionals by determining to what extent providers are following the recommendations of the ADA after the implementation of a comprehensive diabetic foot care protocol. It intends to identify risk factors predictive of ulcers and amputations and to educate providers and patients to ensure self-care and early identification of issues. This will allow the clinic to set goals for future education and evidence-based practices for a healthy society through

early disease detection and prevention. This study will be helpful to the clinic in determining to what extent providers are following the recommendations by the ADA to identify risk factors predictive of ulcers and amputations. Additionally, the clinic will be able to set goals for future education and evidence-based practices. Ultimately, the goal is for the interventions to be productive in introducing proactive measures to reduce issues in the population of diabetic patients in the location of concern. Thus, ensuring diabetic foot exams and diabetic foot care education is being implemented at least annually as recommended by the American Diabetes Association (ADA, 2018).

Summary

The current recommendations aim to decrease diabetic patient complications and offset some of the challenges faced by the patient with the chronic disease. The American Diabetes Association (ADA, 2018) suggests that providers should perform comprehensive foot evaluations at least once a year as a reliable way of identifying risk factors that could indicate the likelihood of patients developing foot ulcers and more severe amputations and death. Recommendations also suggest that all diabetic patients receive general foot care education. Implementing this requires the stakeholders and all others involved to take control of the issues, actual and potential, and ensure that, throughout the journey, providers are identified as competent, confident, compliant, and proactive rather than reactive with the ADA recommendations. To ensure the sustainability of the policy or practice change, the implementation of interventions and the analysis of their effectiveness must be evaluated.

The issue is easily identified, yet change may only occur if it can be proven as justifiable and well-aligned with the construction and implications of the project, providing knowledge and practice for both the provider and patient (Pourkazemi et al., 2022). Data collection and analysis

supports the primary focus to determine if the project will successfully meet the goals necessary to initiate change in the practices of primary care providers regarding the implementation of a diabetic foot care protocol. The needs of the patients & recommended implementation of a comprehensive diabetic foot care protocol are well justified and supported by the conceptual framework. Thus, the primary aim of this project is to identify the impact the implementation of a diabetic foot exam template and diabetic foot care education has on completion and documentation of diabetic patient visits. Research suggests the most efficient and economical way to reduce costs associated with diabetes related complications is with preventative measures, policy amendments, and guideline compliance (Pourkazemi et al., 2022).

SECTION III: RESULTS AND DISCUSSION OF FINDINGS

Introduction

The ADA guidelines provide specific recommendations when addressing patients with diabetes in primary care. Because of the risk factors and complications associated with this disease foot screenings and education for all diabetic patients should be implemented and documented. Therefore, the purpose of this project is to make changes that will positively translate evidence into practice. The intentions of obtaining results from the data collection and analysis and discussing the findings is to promote the importance of quality improvement projects. The findings suggests a positive impact on the documentation and performance in diabetic patients as a result of implementing the comprehensive diabetic foot care protocol.

Summary of Methods and Procedures

The results of a good quality improvement project relies on appropriate analysis of statistics. A two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between the diabetic foot care protocol before and after the intervention.

The two-tailed Wilcoxon signed rank test is a non-parametric alternative to the paired samples *t*-test and does not share its distributional assumptions (Conover & Iman, 1981). The results of the two-tailed Wilcoxon signed rank test were significant based on an alpha value of .05, $V = 0.00$, $z = -4.00$, $p < .001$. This indicated that the differences between protocol scores before and after the intervention were not likely due to random variation. A score of "0" represented that a primary care provider did not complete a foot exam/screening nor provide foot care education. A score of "1" represented that a primary care provider completed either a foot exam/screening or provided foot care education but not both. A score of "3" represented that a primary care provider completed both a foot exam/screening and provided foot care education.

Summary of Sample and Setting Characteristics

The sample consisted of 40 participants by way of retrospective chart reviews. Frequencies and percentages were calculated for each nominal variable (i.e., Gender and Race). Summary statistics were calculated for each interval and ratio variable (i.e., Age). Most of the participants were Female ($n = 23$, 57.50%). Most of the participants were African American ($n = 25$, 62.50%). Frequencies and percentages are presented in Table 2. Participants had an average age of 51.55 ($SD = 15.67$, $SE_M = 2.48$, Min = 18.00, Max = 81.00, Skewness = -0.16, Kurtosis = -0.66, $Mdn = 50.50$). When the skewness is greater than 2 in absolute value, the variable is considered to be asymmetrical about its mean. When the kurtosis is greater than or equal to 3, then the variable's distribution is markedly different than a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013). The summary statistics can be found in Table 3.

Major Findings

The pre-intervention median protocol score ($Mdn = 0.00$) was significantly lower than the post-intervention median protocol ($Mdn = 2.00$). Figure 2 presents a boxplot of the ranked values

of diabetic foot care protocol before and after the intervention. Frequencies and percentages were calculated for the observations regarding whether comprehensive diabetic foot exams were recorded both before and after the intervention as well as if diabetic foot care education was reported as provided both before and after the intervention. Prior to the intervention, the majority reported that they had not completed a comprehensive foot exam/screening (n = 21, 52.50%). Similarly, prior to the intervention, the majority reported that they had not provided diabetic foot education care (n = 21, 52.50%). Following the intervention, the majority reported that they had completed a comprehensive food exam/screening (n = 35, 87.50%). Similarly, prior to the intervention, the majority reported that they had provided diabetic foot education care (n = 35, 87.50%).

From the data, we observe that the rate of both comprehensive diabetic foot exams and diabetic foot care education has increased substantially from 47.5% to 87.5% post-intervention. The findings from this quality improvement project suggests a positive impact on the documentation and performance in diabetic patients as a result of implementing the comprehensive diabetic foot care protocol. Frequencies and percentages are presented in Table 4. Fortunately, there were no barriers to this project.

Implications for Nursing Practice

The primary aim of this project was to evaluate whether or not implementing a comprehensive diabetic foot care protocol impacts documentation and performance in diabetic patients ages 18 and older compared to previous practices. The implementation and utilization of a diabetic foot care protocol allowed an opportunity for providers to identify at risk patients, provide them with reliable education to help them with self-care management, and document findings significant to clinical practices. This project provided a baseline framework for primary

care providers to set goals for future education, enhance quality measures, improve patient outcomes, and improve evidence-based practices, including documentation. The project's findings revealed the significant impact of diabetic foot screenings and diabetic foot care education post-intervention compared to pre-intervention, as evidenced in the clinical documentation. The PI shared the results with the provider and clinic staff for future use in clinical practices, hoping to interface with their electronic charting system.

Recommendations

The findings are significant for healthcare providers such as nursing professionals, medical providers, podiatrists, nursing leaders, public health, patients, stakeholders, and the diabetic patient population. The findings and the interpretive results are specifically recommended for policy makers mainly because of the influence in local areas but the ability to enhance outcomes and become changemakers that can positively improve diabetes nationally. A comprehensive foot care protocol will ensure CMS and ADA guidelines are adhered to. If recommendations are not provided and considered the chances for patients to have potential complications increases thus, suggestions to impact healthcare systems is needed. The complications that can occur secondary to diabetes should be taken seriously. Thus, the recommendations from the ADA for providers to perform and document diabetic foot screenings and education is of significant importance.

Discussion

Diabetes poses a public health challenge requiring the implementation of evidence-based guidelines in primary care. Strengths and limitations have the potential to impact all aspects of a project. Analyzing strengths and weaknesses are beneficial as the results can help benefit the project by addressing the positive, negative, internal, and external factors that communicate

information to those that may be affected by the overall value of the elements (Teoli & Sanvictores, 2022). A SWOT analysis design was used to identify and express my opinions regarding the project's results, implications, strengths, weaknesses, opportunities, and potential threats (See Appendix G). Strengths identified were inclusive of but not limited to clinic location, supportive provider and staff, and diabetic foot care equipment. Whereas, weaknesses identified but not limited to were limited staff, and the lack of an electronic diabetic foot care screening template. As a provider in the competitive field of healthcare and improvement thereof, it is essential that though some things are out of control, working on ways to improve can include having brainstorming sessions, thinking of creative ways to make changes, seeking opportunities to make an impact (Raeburn, 2022). Understanding the strengths and limitations provided me with a better understanding of the considerations and the descriptive improvements that will be beneficial for future studies.

Conclusions and Contributions to the Profession of Nursing

In conclusion, the quality improvement project is significant in its aim to improve nursing and healthcare practices. From the data, we observe that the rate of both comprehensive diabetic foot exams and diabetic foot care education has increased substantially from 47.5% to 87.5% post-implementation of the intervention. These findings support the projects goal where the results can be used by varying health care professionals to improve overall foot care practices with an emphasis on diabetic patients. Additionally, opportunities for research can be derived from the findings of this project with aspirations of comparing this protocol to protocols already established. An effective timeline was helpful in ensuring the projects success (see Appendix H). The timeline must be workable despite influences that can alter dates and times. This PI further concludes that the results of this project can be used as a contributory resource and reference for

FNP and DNP prepared nurse practitioners and health care teams when conducting similar student projects and intraprofessional and interprofessional improvements (Woo & Cui, 2023). According to Woo & Cui (2023), decreasing barriers and increasing positive foot care behaviors is demonstrated by healthcare professionals desire to improve health and optimize outcomes for diabetic patients through the continued augmentation of quality improvement projects and research.

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Table 1

Data Collection Tool							
ICD-10 (E11.9)	ICD-10 (E10.9)	Age	Gender	Race	Comprehensive Diabetic Foot Exam (yes/no)	Diabetic Foot Care Education (yes/no)	Level of Education

Table 2

Frequency Table for Nominal Variables

Variable	*n*	*%*
Gender		
Male	17	42.50
Female	23	57.50
Missing	0	0.00
Race		
Caucasian	15	37.50
African American	25	62.50
Missing	0	0.00

Note. Due to rounding errors, percentages may not equal 100%.

Table 3

Summary Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	SE_M	Min	Max	Skewness	Kurtosis	*Mdn*
Age	51.55	15.67	40	2.48	18.00	81.00	-0.16	-0.66	50.50

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Table 4

Frequency Table for Nominal Variables

Variable	*n*	*%*
Comprehensive Diabetic Foot Exam (Pre-Intervention)		
Yes	19	47.50
No	21	52.50
Diabetic Foot Care Education (Pre-Intervention)		
Yes	19	47.50
No	21	52.50
Comprehensive Foot Exam (Post-Intervention)		
Yes	35	87.50
No	5	12.50
Diabetic Foot Care Education (Post-Intervention)		
Yes	35	87.50
No	5	12.50

Note. Due to rounding errors, percentages may not equal 100%.

Figure 1

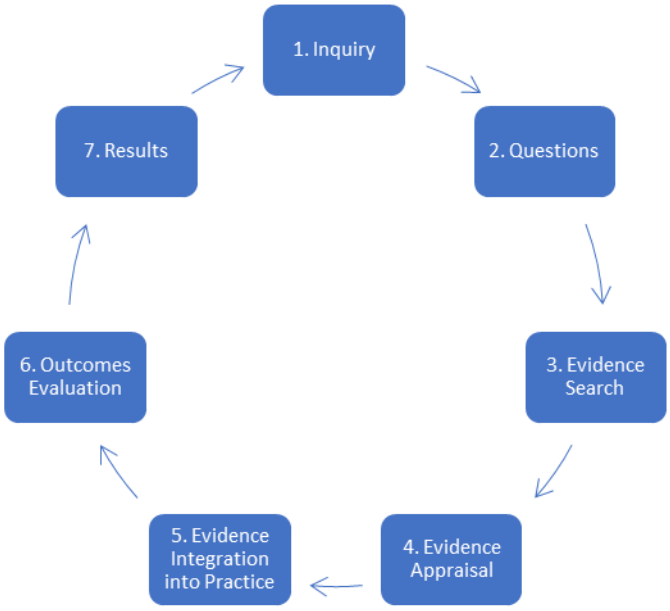
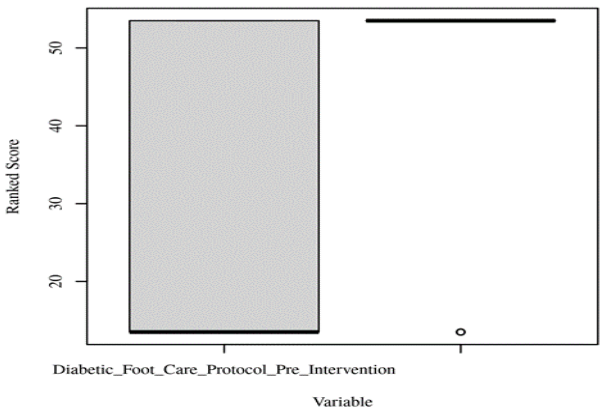


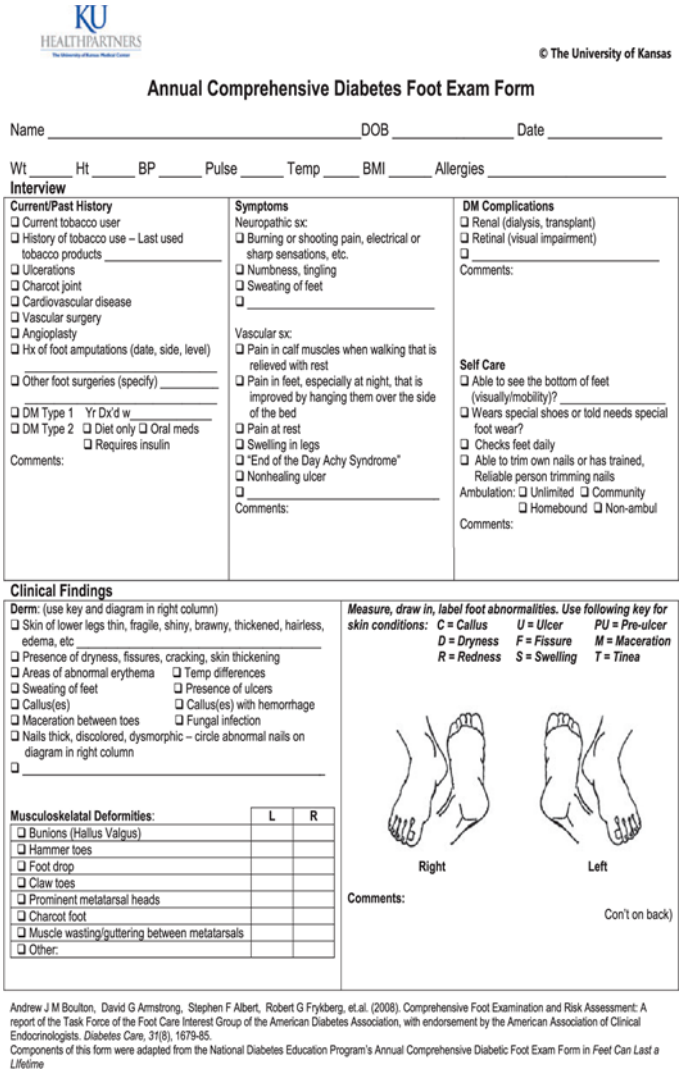
Figure 1. John Hopkins Nursing Evidence-based Practice (JHNEBP) Model (Brunt & Morris, 2023).

Figure 2

Ranked Values of *Diabetic Foot Care Protocol (Pre- and Post- Intervention)*



Appendix A



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Annual Comprehensive Diabetes Foot Exam Form

Name _____ DOB _____ Date _____

Wt _____ Ht _____ BP _____ Pulse _____ Temp _____ BMI _____ Allergies _____

Interview

Current/Past History
- ❑ Current tobacco user
- ❑ History of tobacco use – Last used tobacco products _____
- ❑ Ulcerations
- ❑ Charcot joint
- ❑ Cardiovascular disease
- ❑ Vascular surgery
- ❑ Angioplasty
- ❑ Hx of foot amputations (date, side, level) _____
- ❑ Other foot surgeries (specify) _____ _____
- ❑ DM Type 1 Yr Dx'd w_____
- ❑ DM Type 2 ❑ Diet only ❑ Oral meds ❑ Requires insulin

Comments:

Symptoms

Neuropathic sx:
- ❑ Burning or shooting pain, electrical or sharp sensations, etc.
- ❑ Numbness, tingling
- ❑ Sweating of feet
- ❑ _____

Vascular sx:
- ❑ Pain in calf muscles when walking that is relieved with rest
- ❑ Pain in feet, especially at night, that is improved by hanging them over the side of the bed
- ❑ Pain at rest
- ❑ Swelling in legs
- ❑ "End of the Day Achy Syndrome"
- ❑ Nonhealing ulcer
- ❑ _____

Comments:

DM Complications
- ❑ Renal (dialysis, transplant)
- ❑ Retinal (visual impairment)
- ❑ _____

Comments:

Self Care
- ❑ Able to see the bottom of feet (visually/mobility)? _____
- ❑ Wears special shoes or told needs special foot wear?
- ❑ Checks feet daily
- ❑ Able to trim own nails or has trained, Reliable person trimming nails

Ambulation: ❑ Unlimited ❑ Community ❑ Homebound ❑ Non-ambul

Comments:

Clinical Findings

Derm: (use key and diagram in right column)
- ❑ Skin of lower legs thin, fragile, shiny, brawny, thickened, hairless, edema, etc _____
- ❑ Presence of dryness, fissures, cracking, skin thickening
- ❑ Areas of abnormal erythema ❑ Temp differences
- ❑ Sweating of feet ❑ Presence of ulcers
- ❑ Callus(es) ❑ Callus(es) with hemorrhage
- ❑ Maceration between toes ❑ Fungal infection
- ❑ Nails thick, discolored, dysmorphic – circle abnormal nails on diagram in right column
- ❑ _____

Musculoskelatal Deformities:	L	R
❑ Bunions (Hallus Valgus)		
❑ Hammer toes		
❑ Foot drop		
❑ Claw toes		
❑ Prominent metatarsal heads		
❑ Charcot foot		
❑ Muscle wasting/guttering between metatarsals		
❑ Other:		

Measure, draw in, label foot abnormalities. Use following key for skin conditions: ***C = Callus U = Ulcer PU = Pre-ulcer D = Dryness F = Fissure M = Maceration R = Redness S = Swelling T = Tinea***

Right Left

Comments:

Con't on back)

Andrew J M Boulton, David G Armstrong, Stephen F Albert, Robert G Frykberg, et.al. (2008). Comprehensive Foot Examination and Risk Assessment: A report of the Task Force of the Foot Care Interest Group of the American Diabetes Association, with endorsement by the American Association of Clinical Endocrinologists. *Diabetes Care*, 31(8), 1679-85.
Components of this form were adapted from the National Diabetes Education Program's Annual Comprehensive Diabetic Foot Exam Form in *Feet Can Last a Lifetime*

Page 1

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Name _____ DOB _____

Clinical Findings Con't

Vascular: ABI's if absent pulses or positive vascular sx (page 1)

	L	R
Palpable Pedal Pulses		
Posterior tibial		
Dorsalis Pedis		

	L	R
Ankle/Brachial Pulses (if indicated)		
Ankle		
Brachial		
ABI		

ABI interpretation: > 1.30 non-compressible; 0.91-1.30 normal; 0.41-0.90 mild to moderate PAD; 0.00-0.40 severe PAD (N Engl J Med. [ref. 1608 nejm])

Comments:

Neurological: Exam includes monofilament test plus one of the four additional sensory exams.

Sensory Foot Exam: Label sensory level with a "√" if the patient can feel the 5.07 (10 gram) monofilament and "√" if the patient cannot feel the filament

Right Left

Add'l Neuro Exams:

	L	R
❑ Vibratory sensation (plantar hallux)		
❑ Pinprick sensation (dorsal hallux)		
❑ Ankle reflex (Achilles tendon)		
❑ VPT (plantar hallux)		

Assessment

Risk Categorization/Foot Pathology

Risk Category	Definition
❑ 0	No LOPS, no PAD, no deformity
❑ 1	LOPS ± deformity
❑ 2	PAD + LOPS
❑ 3	Hx of ulcer or amputation

1. _____
2. _____
3. _____
4. _____

Education
- ❑ Ed of preventive foot care
- ❑ Ed of other DM Self-care
  - ❑ A1c
  - ❑ Diet, basic
  - ❑ Exercise, basic
  - ❑ Self blood sugar monitoring
  - ❑ Medications
- ❑ Smoking cessation counseling
- ❑ Other:

Plan

Medical Management

Referral
- ❑ Primary Care Provider
- ❑ Endocrinologist
- ❑ Podiatrist
- ❑ Surgeon, ankle/foot
- ❑ Surgeon, vascular
- ❑ Other:
- ❑ Diabetic Educator
- ❑ RN Foot Specialist
- ❑ Medical Nutrition Specialist
- ❑ OT
- ❑ Orthotist
- ❑ Pedorthist
- ❑ PT
- ❑ Rehab. Specialist

Follow-up
- ❑ Schedule follow-up visit: When? _____
  - w/RN foot specialist For? _____
- ❑ PCP – disease management

Signature:

Andrew J M Boulton, David G Armstrong, Stephen F Albert, Robert G Frykberg, et.al. (2008). Comprehensive Foot Examination and Risk Assessment: A report of the Task Force of the Foot Care Interest Group of the American Diabetes Association, with endorsement by the American Association of Clinical Endocrinologists. Diabetes Care, 31(8), 1679-85.
Components of this form were adapted from the National Diabetes Education Program's Annual Comprehensive Diabetic Foot Exam Form in Feet Can Last a Lifetime

Page 2

Appendix A. Form used with permission from the form developer, JoAnn Peterson, DNP, APRN, FNP, WHNP (Clinical Assistant Professor-University of Kansas School of Nursing)

Appendix B

Taking Care of Your Feet

American Diabetes Association.
Diabetes Advisor

There are many things you can do to keep your feet healthy. Take care of your diabetes. Work with your health care team to keep your blood glucose in your target range.

Check your feet every day

Look at your bare feet for red spots, cuts, swelling, and blisters. If you cannot see the bottoms of your feet, use a mirror or ask someone for help. See your health care provider right away if there are any changes or if you hurt your feet.

Wash your feet every day

Use warm water and a mild soap. Avoid soaking since it can dry out the skin and lead to cracks. Dry them carefully, especially between the toes.

If you have corns or calluses, ask your health care provider to trim them for you.

Keep your skin soft and smooth

Rub a thin coat of skin lotion (lotion, cream, or petroleum jelly) over the tops and bottoms of your feet, but not between your toes.

If you can see and reach your toenails, trim them when needed

Trim your toenails straight across and file the edges with an emery board or nail file. Wear shoes and socks at all times. Never walk barefoot. Wear comfortable shoes that fit well and protect your feet. Check inside your shoes before wearing them. Make sure the lining is smooth and there are no objects inside.

Wear comfortable shoes and socks that fit well and protect your feet.

Protect your feet from hot and cold

Wear shoes at the beach or on hot pavement. Don't put your feet into hot water. Test water before putting your feet in it just as you would before bathing a baby. Never use hot water bottles, heating pads, or electric blankets. You can burn your feet without realizing it.

Keep the blood flowing to your feet

Put your feet up when sitting. Wiggle your toes and move your ankles up and down for 5 minutes, two (2) or three (3) times a day. Don't cross your legs for long periods of time. Don't smoke.

Get started now.

Begin taking good care of your feet today. Set a time every day to check your feet.

American Diabetes Association.

Visit diabetes.org or call 800-DIABETES (800-342-2383) for more resources from the American Diabetes Association.

(American Diabetes Association (ADA). Retrieved from diabetes.org)

Appendix C

Provider Satisfaction Survey

1. Did you find the diabetic foot exam template beneficial?

   - Yes
   - No

2. How does its use benefit you compared to your previous practices?

3. Is the template user-friendly?

   - Yes
   - No

4. Did you find the patient foot care education handout beneficial?

   - Yes
   - No

5. Will you continue the use of the template and education handout?

   - Yes
   - No

6. Would you recommend the comprehensive diabetic foot exam template and patient foot care education handout to other primary care clinic providers?

   - Yes
   - No

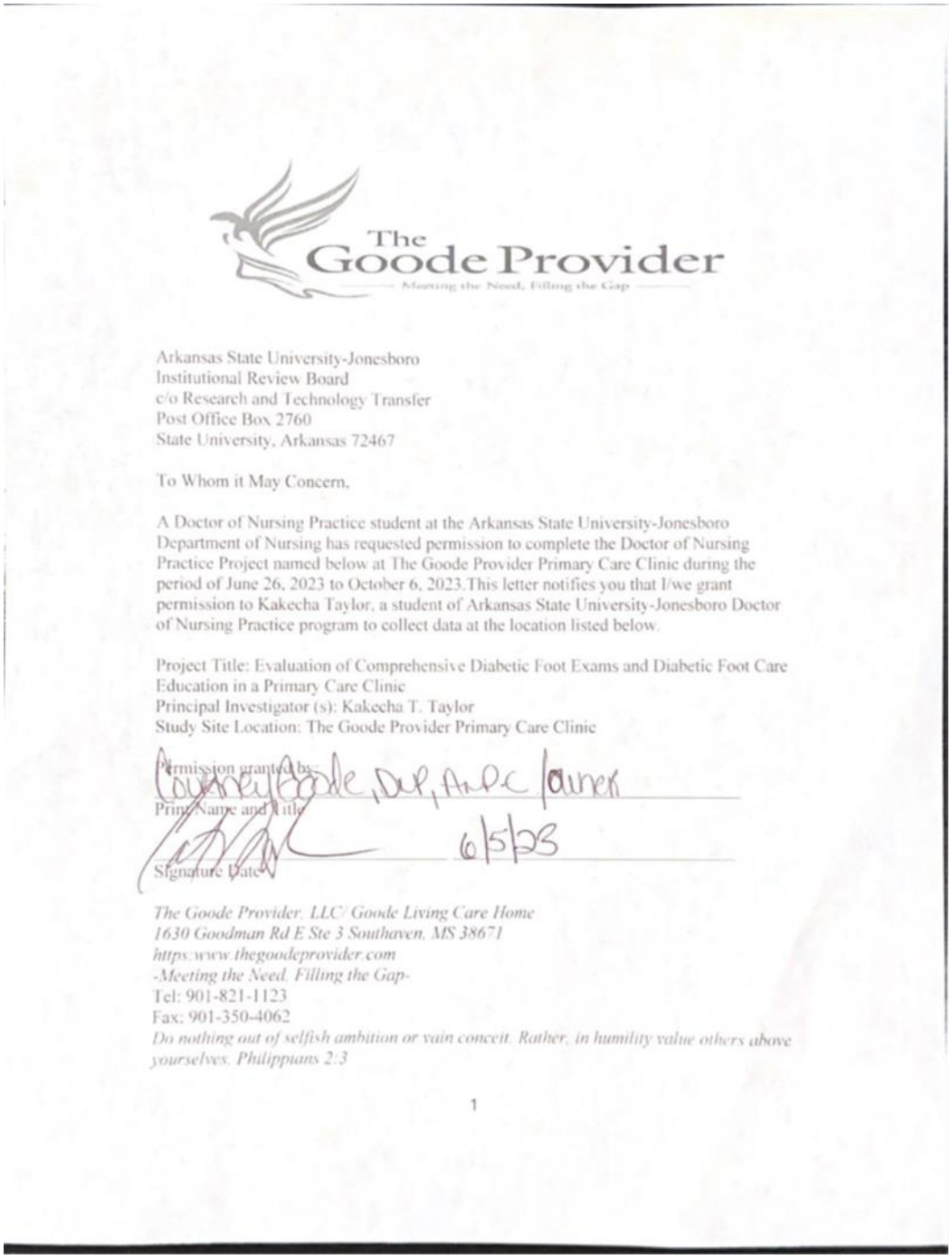
7. Do you have any recommendations or suggestions for improvement?

   - Yes
   - No

If yes, please explain:

Additional comments:

Appendix D



The Goode Provider
Meeting the Need, Filling the Gap

Arkansas State University-Jonesboro
Institutional Review Board
c/o Research and Technology Transfer
Post Office Box 2760
State University, Arkansas 72467

To Whom it May Concern,

A Doctor of Nursing Practice student at the Arkansas State University-Jonesboro Department of Nursing has requested permission to complete the Doctor of Nursing Practice Project named below at The Goode Provider Primary Care Clinic during the period of June 26, 2023 to October 6, 2023.This letter notifies you that I/we grant permission to Kakecha Taylor, a student of Arkansas State University-Jonesboro Doctor of Nursing Practice program to collect data at the location listed below.

Project Title: Evaluation of Comprehensive Diabetic Foot Exams and Diabetic Foot Care Education in a Primary Care Clinic
Principal Investigator (s): Kakecha T. Taylor
Study Site Location: The Goode Provider Primary Care Clinic

Permission granted by:
Print Name and Title
Signature Date 6/5/23

The Goode Provider, LLC/ Goode Living Care Home
1630 Goodman Rd E Ste 3 Southaven, MS 38671
https:www.thegoodeprovider.com
-Meeting the Need, Filling the Gap-
Tel: 901-821-1123
Fax: 901-350-4062
Do nothing out of selfish ambition or vain conceit. Rather, in humility value others above yourselves. Philippians 2:3

1

Appendix E

FY22-23-449 - Modification: IRB - Modification - Exempt

3 messages

do-not-reply@cayuse.com <do-not-reply@cayuse.com> Tue, Aug 8, 2023 at 10:37 AM
To: kakecha.taylor@smail.astate.edu, ldrake@astate.edu

ARKANSAS STATE UNIVERSITY

RESEARCH AND TECHNOLOGY TRANSFER
P.O. Box 2760, State University, AR 72467 | o: 870-972-2694 | f: 870-972-2336

August 8, 2023
Principal Investigator: Kakecha Taylor
Board: IRB (Institutional Review Board)
Study: FY22-23-449 Evaluation of Comprehensive Diabetic Foot Exams and Diabetic Foot Care Education in a Primary Care Clinic
Submission Type: Modification
Board Decision: No Engagement in Research
Approval Date: August 8, 2023
Administrative Check-In Date: --

Thank you for your submission of Modification for this study. The Arkansas State University Institutional Review Board has approved these changes and determined that this research continues to qualify as Not Human Subjects Research requiring IRB review.

Please retain a copy of this correspondence for your records. If you have any questions, please contact the Director of Research Compliance at (870) 972-2694 or IRB@astate.edu. Please include your study title and study label.

Sincerely,

Amy R. Pearce, Ph.D.
Chair, Institutional Review Board

Appendix F

Project Budget Worksheet

DNP Project name: Implementation of Comprehensive Diabetic Foot Care Protocol

Last updated: 08/01/2023

DNP Project Leader (student name): Kakecha Taylor

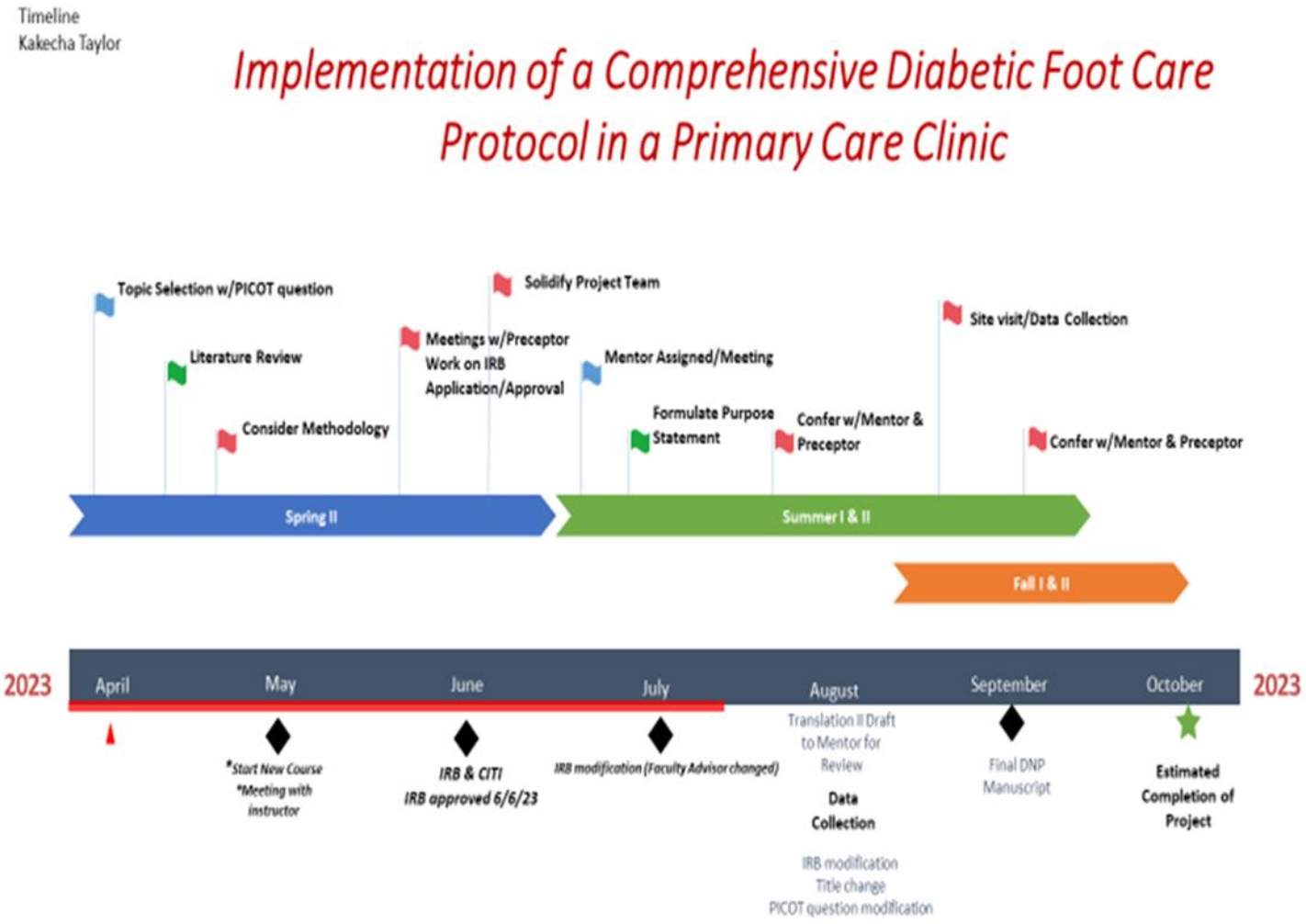
Updated by: KT

Activity	Responsible Person	Dates		Estimated Costs				Actual
		Start	End	Equipment	Materials	Labor	Total	
Direct costs				0	0	0	0	
Foot care certification training	Student	-	-	0	0	285	285	0
Foot care certification exam	Student	-	-	0	0	375	375	0
Foot care equipment	Student	May-23	Oct-23	75	0	0	75	25
Travel	Student	May-23	Oct-23	0	0	100	100	100
Salary for time spent building methodologies	Student	May-23	Oct-23	0	0	300	300	0
Snacks	Student	May-23	Oct-23	10	75	0	85	50
Statistician	Student	May-23	Oct-23	0	0	500	500	500
Educational materials/handouts	Student	May-23	Oct-23	0	120	50	170	100
Indirect costs							0	
Clinic	Preceptor			100	50	500	450	
Management and administrative overhead	Clinic Office Manager			50	50	60	160	
							0	
			Totals	235	295	1970	2500	775
								0

Appendix G

Strengths ❖ Clinic Location ❖ Electronic Medical Records ❖ Existing practices ❖ Diabetic Foot Care equipment ❖ Supportive Provider & staff	Weaknesses ❖ One Nurse ❖ One Medical Assistant ❖ Lack of EHR or hardcopy diabetic foot care template ❖ Lack of Spanish and English foot care education brochures ❖ Limited access to diabetic education programs
Opportunities ❖ Improve providers knowledge and skills based on ADA recommendations ❖ Increase patient self-care efficacy and confidence in performing self-foot care exams ❖ Decrease patient complications ❖ Improve patient outcomes	Potential Threats ❖ Limited staff ❖ Decreased motivation to change ❖ Limited resources/socioeconomic status ❖ Patient hesitancy ❖ Patient educational level

Appendix H


Timeline
Kakecha Taylor
Implementation of a Comprehensive Diabetic Foot Care Protocol in a Primary Care Clinic
Topic Selection w/PICOT question
Literature Review
Consider Methodology
Meetings w/Preceptor Work on IRB Application/Approval
Solidify Project Team
Mentor Assigned/Meeting
Formulate Purpose Statement
Confer w/Mentor & Preceptor
Site visit/Data Collection
Confer w/Mentor & Preceptor
Spring II
Summer I & II
Fall I & II
2023
April
May
June
July
August
September
October
2023
*Start New Course
*Meeting with instructor
IRB & CITI
IRB approved 6/6/23
IRB modification (Faculty Advisor changed)
Translation II Draft to Mentor for Review
Data Collection
IRB modification
Title change
PICOT question modification
Final DNP Manuscript
Estimated Completion of Project