



DIABETES:

REDUCING FOOT ULCERS THROUGH A PROTOCOL APPROACH

Jesus I. Macanas Jr.

Touro University, NV

DNP Project Chair: Dr. Jessica Grimm

DNP Project Member: Dr. Michelle Palokas

ABSTRACT

OVERVIEW: Diabetic foot ulcers (DFU) is a phenomenon that affects both type I and type II diabetes. DFU screening, education, and prevention are highly important within the primary care setting; however, there was no protocol addressing care of DFUs at the project site.

AIM: The purpose of this project was to develop and implement a Diabetic Foot Ulcer Screening and Education Protocol (DFUSEP) at a project site. In addition, this protocol is to guide leadership and staff members alike in reducing DFU incidence.

RESULTS: The implementation of a DFUSEP within the project site decreased DFU presence by 10%, DFU education was increased from 20% to 80%, and DFU screening rates increased to 70%. An overall vast improvement post implementation.

PRACTICE PEARLS:

- Assess/screen diabetic patient's feet at every visit
- Provide proper education to diabetes
- Accountability

PROBLEM STATEMENT

The practice site where I implemented my DNP project is located in Bakersfield, CA. It is a primary care clinic that serves the pediatric, adult, and geriatric population. At the start of this project, there was no protocol at the DNP project site that addressed DFU screening or education. This posed a big problem to all diabetic patients in that setting. There was no routine screening for DFUs when diabetic patients are seen for a regular visits or even annual visits. Although there was education given to diabetic patients when they go in specifically for a diabetic problem, the screening for DFUs just weren't there.

PURPOSE STATEMENT

Through this project, an evidence-based DFU Screening and Education Protocol (DFUSEP) will be implemented at the project site. The aim of this protocol is to guide leadership and staff members alike in reducing DFU incidence. Approximately 8%, or 1 in 12 patients, of diabetics in the project site has a DFU. After completing this project, the goal is to reduce the percentage to more than half of its current state. Moreover, this DNP project aims to increase staff knowledge on evidence-based approaches to DFU care and prevention.

BACKGROUND/PROJECT SITE

- DFUs presented in the mid-19th century
 - tx of choice was prolonged bed rest
- Frederick Treves
 - Principles of ulceration treatment
- American Association of Diabetes
 - Prevention and care
- No protocol at the project host site
- Project site lacked screening and education of DFUs

PROJECT OBJECTIVES

- Develop an evidence-based DFUSEP designed to meet the needs of diabetic patients at the project site.
- Implement a DFUSEP at the project site in the timeframe of the DNP Project.
- Provide multidisciplinary staff education and training for the DFUSEP protocol prior to implementation of the DNP Project.
- Develop a system for monitoring ongoing DFUs through EMR audits.
- Reduce DFU rates by 4% and improve screening rates for DFU's by the end of the DNP Project.

LITERATURE REVIEW

- Assessment, prevention, and screening
- Home Prevention
 - Protection
 - Monitor and inspect
- Wound Infections
 - Classic signs: erythema, warmth, pain, functional decline, foul odor
- Off-loading
 - Hallmark treatment since the 19th century
 - Promotes wound healing
 - Diabetic shoes/inserts
- Wound Care
 - Moist Dressings
 - Wound Debridement

CURRENT PRACTICE

Currently there are guidelines in place to treat DFUs nationally

- there are no recommendations on how to treat non-healing ulcers

Current practice focuses on the healing process and how to meet guidelines within the DFU standards to treatment.

Current practice must include versatile management, patient education, debridement, offloading, infection control, as well as the proper techniques to the standard of care initiated previous year (Braun et al., 2014).

THEORETICAL MODEL

Theory of Interpersonal Relations

- The Theory of Interpersonal Relations was written by nursing theorist Hildegard Peplau
 - Help nurses intervene more intelligently and sensitively in situations with patients
- Theory in Practice
 - Peplau's theory relates to modern concepts of motivational interviewing, patient self-management, making informed decisions and patient engagement
- Affects patients and staff members



APPLICATION TO DNP PROJECT

- Therapeutic Relationship

- Four phases

- Orientation Phase

- Nurse-Patient relationship

- Includes all staff members

- Identification Phase

- Patient plays a part in their care

- Exploitation Phase

- Seek assistance from others

- Resolution Phase

PROJECT DESIGN

- Quality Improvement Project Design
 - Reduce DFU rates
 - Increase provider and staff knowledge on DFUs
 - Implement a guideline for standardized practice
 - Improve overall patient health
- Direct Population of Interest/Stakeholders
 - Providers, nurses, leadership
 - Indirect population- type I and II diabetics
 - men, women, all ethnic backgrounds
 - non-compliant patients and those under the age of 18 will be excluded.
- Training courses provided at two different times during the day for convenience.
- Why is the education of the DFUSEP important?

PROJECT DESIGN CONT.

- Setting
 - Primary care facility
- Recruitment Methods
 - Flyers, emails, word of mouth
- Chart Review
 - Chart audit tool
 - Used for data collection/analysis
- DFUSEP tool

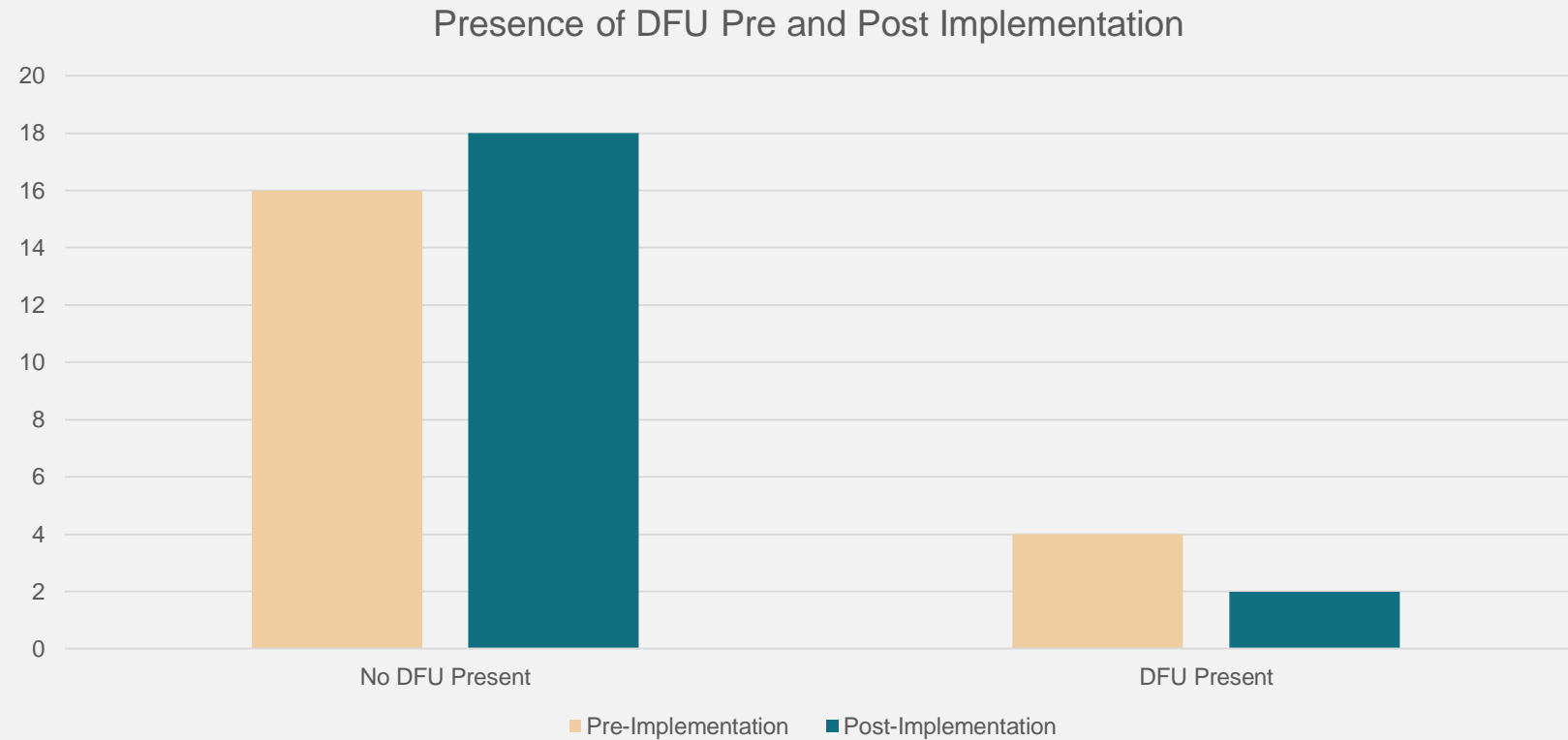
IMPLEMENTATION

Week/Date	Activity
Week 1 October 30-November 5, 2019	Staff will be trained on the DFUSEP by November 5, 2019.
Week 2 November 6-12, 2019	Data collection will be performed to monitor for specific data points. 20 charts of diabetic patients either type I/II with or without DFU's will be reviewed pre and post implementation. Week 2 will focus on pre implementation.
Week 3 November 13-19, 2019	Data collection continues during week 3. Post implementation charts will be reviewed.
Week 4 November 20-26, 2019	Data collection continues into week 4.
Week 5 November 27-December 3, 2019	Evaluation of post implementation. Data analysis will be completed and compiled for review.

EVALUATION

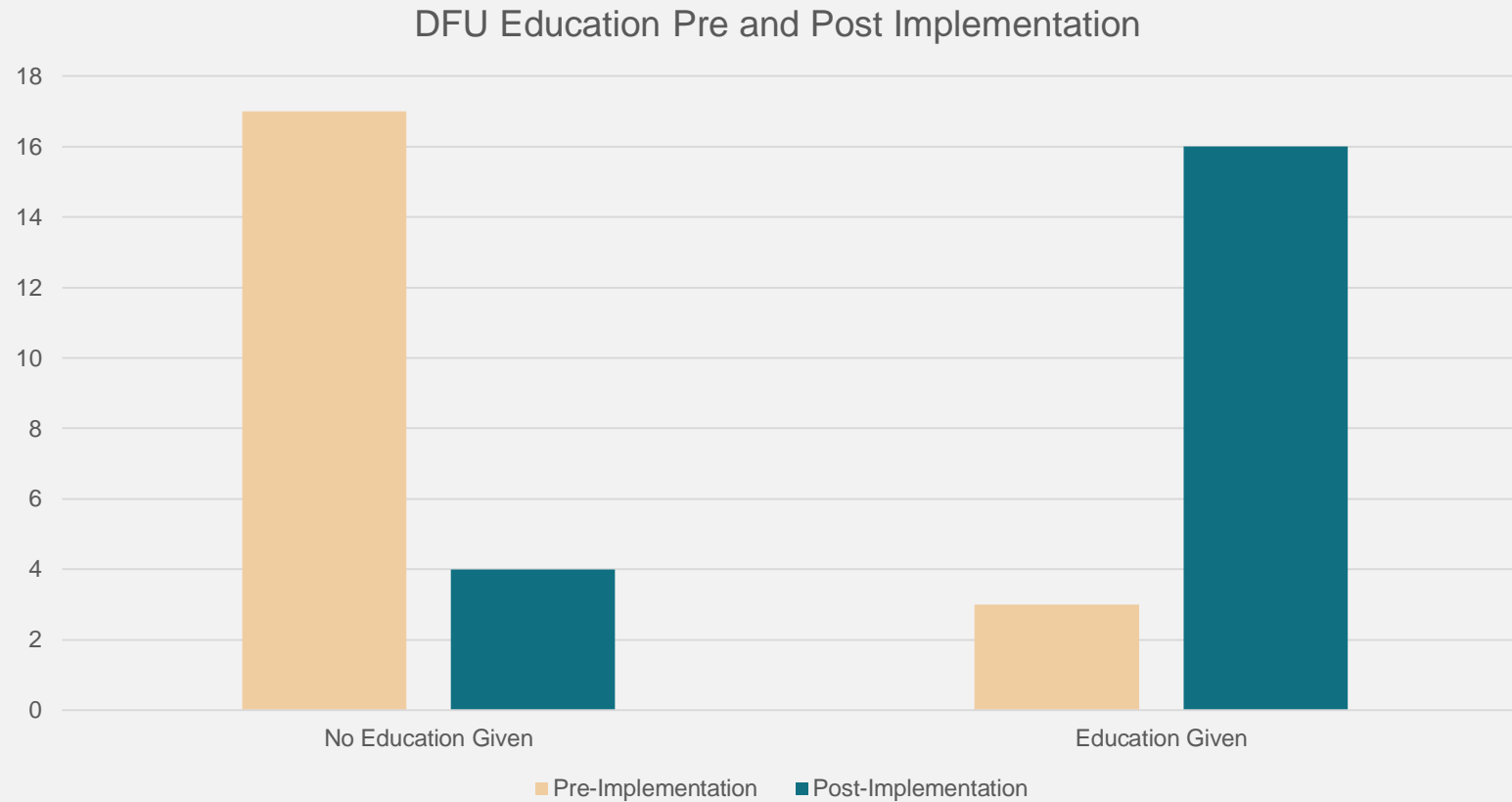
- Statistical analysis was performed using the McNemar's test
 - The SPSS software was utilized in inputting the data collection to run the McNemar's test
- In a 5 week time span a total of 108 diabetic patients were seen
 - this was a total from all providers seeing patients
- 20 charts were audited pre and post protocol implementation
 - Assumptions included dichotomous variables and one categorical independent variables
- Results concluded success of DFUSEP

EVALUATION CONT.



- Presence
 - 10% decrease post implementation
 - P-value = .625

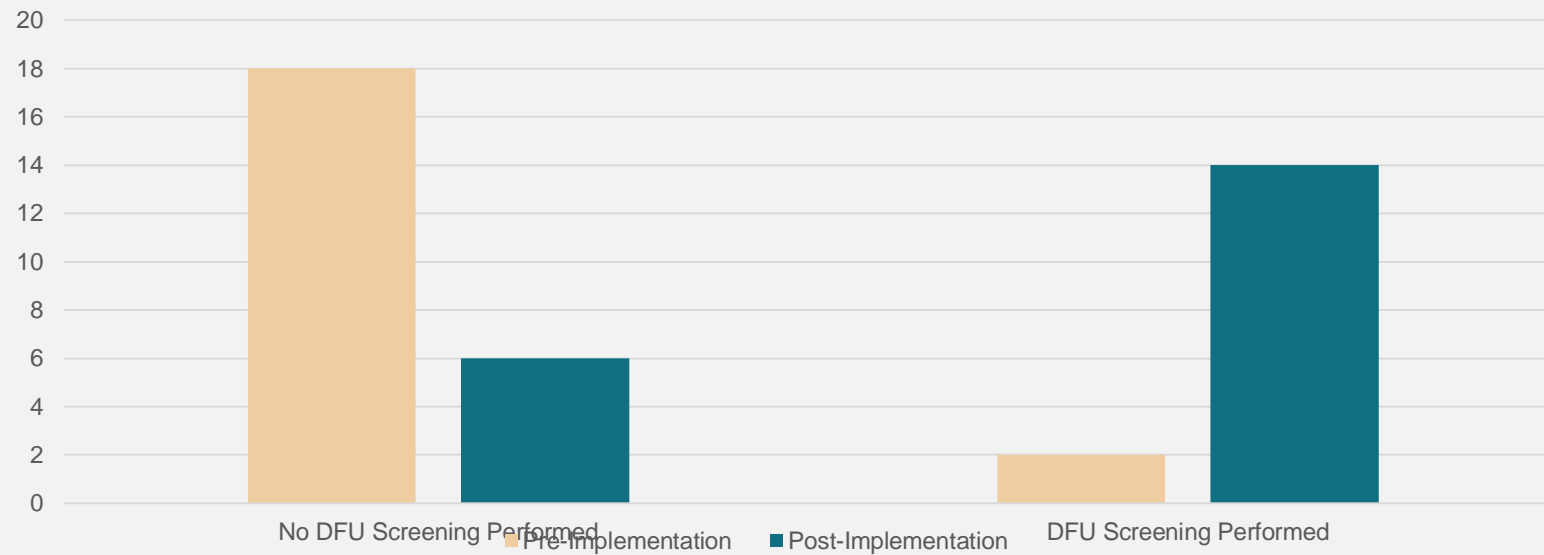
EVALUATION CONT.



- Education
 - Increased from 20% to 80%
 - P-value = .000244

EVALUATION CONT.

DFU Screening Pre and Post Implementation



- Screening
 - Increased from 10% to 70%
 - P-value = .000488

LIMITATIONS

- No protocol in place prior to project implementation
- Data collection and analysis
 - Select few charts were audited
- Determining the significance
- Provider variations
 - Staff members may have not screened for DFUs
- Time frame
 - Limited to 5 weeks

FUTURE DISSEMINATION

- Submission to the Journal for Healthcare Quality
- Submission to the DNP Project Repository
 - doctorsofnursingpractice.org
- Dissemination of project results to a broader audience
 - clinic sites
 - conferences
 - health fairs

CONCLUSION

- Were the results significant?
- End results
 - Reduced DFU rates in the primary care setting
 - Increased the knowledge of staff members
 - Multidisciplinary team trained on DFUSEP

A woman with dark hair and glasses, wearing a white lab coat, is holding a test tube in a laboratory. The background is a blurred laboratory setting with various pieces of equipment. The image is overlaid with a semi-transparent dark blue filter.

THANK YOU



Jesus Macanas Jr.

REFERENCES

- American Diabetes Association. (2019). *Foot care*. Retrieved from <http://www.diabetes.org/living-with-diabetes/complications/foot-complications/foot-care.html>
- Braun, L.R., Fisk, W.A., Lev-Tov, H., Kirsney, R.S., & Isseroff, R.R. (2014). Diabetic foot ulcer: An evidence-based treatment update. *American Journal of Clinical Dermatology*, 15(3), 267-281.
- Bus, S.A., Van Netten, J.J., Lavery, L.A., Monteiro-Soares, M., Rasmussen, A., Jubiz, Y., & Price, P.E. (2015). IWGDF guidance on the prevention of foot ulcers in at-risk patients with diabetes. *Diabetes/Metabolism Research and Reviews*, 32(1), <https://doi.org/10.1002/dmrr.2696>.
- D'Antonio, P., Beeber, L., Sills, G., & Naegle, M. (2014). The future in the past: Hildegard Peplau and interpersonal relations in nursing. *Nursing Inquiry*, 21(4), 311-317.
- Doctors of Nursing Practice. (2020). *Doctoral project repository*. Retrieved from <https://www.doctorsofnursingpractice.org/doctoral-project-repository/>
- Everett, E. & Mathioudakis, N. (2018). Update on management of diabetic foot ulcers. *Annals of the New York Academy of Sciences*, 1411(1), 153-165.
- Fernandes, S. & Naidu, S. (2018). Promoting participation in self-care management among patients with diabetes mellitus: An application of Peplau's Theory of Interpersonal Relationships. *International Journal of Nursing Education*, 9(4), 129-134.
- Formosa, C., Gatt, A., & Chockalingam, N. (2016). A critical evaluation of existing diabetic foot screening guidelines. *The Review of Diabetic Studies*, 13(2), 158-186.
- Hilton, J.R., Williams, D.T., Beuker, B., Miller, D.R. & Harding, K.G. (2004). Wound dressings in diabetic foot disease. *Clinical Infectious Diseases*, 39(2), 100-103.

REFERENCES

- Katherine, M. (2006). Using Peplau's Theory of Interpersonal Relations to guide the education of patients undergoing urinary diversion. *Urologic Nursing, 26*(5), 363-370.
- Kavitha, K.V., Tiwari, S., Purandare, V.B., Khedkar, S., Bhosale, S.S., & Unnikrishnan, A.G. (2014). Choice of wound care in diabetic foot ulcer: A Practical approach. *World Journal of Diabetes, 5*(4), 546-556.
- Lee, C.T. & Doran, D.M. (2017). The role of Interpersonal Relations in healthcare team communication and patient safety: A proposed model of interpersonal process in teamwork. *Canadian Journal of Nursing Research, 49*(2), 75-93.
- National Association for Healthcare Quality. (2020). *The journal for healthcare quality*. Retrieved from <https://nahq.org/education/journal-healthcare-quality>
- Naves, C. (2016). The diabetic foot: A historical overview and gaps in current treatment. *Advances in Wound Care, 5*(5), 191-197.
- Nursing Theories. (2012). *Theory of Interpersonal Relations*. Retrieved from http://currentnursing.com/nursing_theory/interpersonal_theory.html
- Petiprin, A. (2016). *Hildegard Peplau theory*. Retrieved from <http://www.nursing-theory.org/theories-and-models/peplau-theory-of-interpersonal-relations.php>
- Smith-Strom, H., Iversen, M.M. Igland, J., Ostbye, T., Graue, M., Skeie, S., Wu, B., & Rokne, B. (2017). Severity and duration of diabetic foot ulcer (DFU) before seeking care as predictors of healing time: A retrospective cohort study. *PLOS One, 12*(5), e0177176.
- Swezey, L. (2015). *Identifying infection in wounds: Overview and assessment*. Retrieved from <https://www.woundsource.com/blog/identifying-infection-in-wounds-overview-and-assessment>
- Washington, G.T. (2013). The Theory of Interpersonal Relations applied to the preceptor- New graduate relationship. *Journal for Nurses in Professional Development, 29*(1), 24-29.